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13 January 2023

100 MEGAWATT (MW) LOERIESFONTEIN 3 PHOTOVOLTAIC (PV) SOLAR ENERGY FACILITY (SEF), 33/132KV INDEPENDENT POWER PRODUCER (IPP) PORTION OF THE SHARED ON-SITE SUBSTATION (INCLUDING TRANSFORMER) AND ASSOCIATED INFRASTRUCTURE (DFFE REFERENCE NUMBER: 12/12/20/2321/2/1/AM1)

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To whom it may concern:

ECOLOGICAL SPECIALIST INPUT FOR THE PART 1 ENVIRONMENTAL AUTHORISATION (EA) AMENDMENT APPLICATION TO EXTEND THE VALIDITY PERIOD OF THE EA FOR THE AUTHORISED 100 MW LOERIESFONTEIN 3 PV SEF, 33/132KV IPP PORTION OF THE SHARED ON-SITE SUBSTATION (INCLUDING THE TRANSFORMER) AND ASSOCIATED INFRASTRUCTURE, NEAR LOERIESFONTEIN, HANTAM LOCAL MUNICIPALITY, NORTHERN CAPE PROVINCE – DFFE REFERENCE NUMBER: 12/12/20/2321/2/1/AM1

INTRODUCTION AND BACKGROUND

South Africa Mainstream Renewable Power Loeriesfontein 3 (Pty) Ltd received the original Environmental Authorisation (EA) for the 100 megawatt (MW) Loeriesfontein 3 Photovoltaic (PV) Solar Energy Facility (SEF) and Grid Connection infrastructure on 29 October 2012 (DFFE Ref: 12/12/20/2321/2). Further to this, the original EA was amended on 10 July 2014 (DFFE Ref: 12/12/20/2321/2/A1), 27 October 2015 (DFFE Ref: 12/12/20/2321/2/AM2), 04 October 2017 (DFFE Ref: 12/12/20/2321/2/AM3) and 24 September 2019 (DFFE Ref: 12/12/20/2321/2/AM4). In addition, following the 2019 amendment, the EA was subsequently split into two separate EAs (1 for the 100MW PV SEF and 1 for the grid connection infrastructure), both dated 21 May 2021, as follows :

1) EA for the 100MW Loeriesfontein 3 PV SEF, 33/132kV IPP portion of the shared on-site substation (including Transformer) and associated infrastructure (DFFE Ref: 12/12/20/2321/2/1); and
2) EA for the 132kV Grid Alignment and 132kV Eskom Portion of the shared on-site substation to service the 100 MW Loeriesfontein 3 PV SEF (DFFE Ref: 12/12/20/2321/2/2).

It should be noted that the split EAs for the 100MW Loeriesfontein 3 PV SEF (DFFE Ref:.12/12/20/2321/2/1) and Grid Connection infrastructure (DFFE Ref: 12/12/20/2321/2/2) dated 21 May 2021 respectively replaced the original EA dated 29 October 2012, as well as the subsequent amendments. **This report however addresses the Loeriesfontein 3 PV SEF EA extension application specifically, and the EA extension application for the Grid Connection infrastructure has been assessed and reported on as part of a separate standalone report.**

The validity of the split EA for the 100MW Loeriesfontein 3 PV SEF and associated infrastructure lapsed on 29 October 2022, however, a Part 1 EA Amendment Application to extend the validity of the EA by 5 years (i.e., EA lapses on 29 October 2027) was submitted to the Department of Forestry, Fisheries and the Environment (DFFE) on 20 October 2022. It is important to note that according to Regulation 28(1B) of the National Environmental Management Act (NEMA) Environmental Impact Assessment (EIA) Regulations of 2014 (as amended), "*an environmental authorisation which is the subject of an amendment application contemplated in this Chapter remains valid pending the finalisation of such amendment application."* The Part 1 EA Amendment Application was acknowledged by the DFFE on 07 November 2022 and additional information was requested to be submitted to the DFFE for

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consideration. Following this, comparative assessments are to be undertaken to motivate why the Department should extend the validity period of the EA for a further 5 years.

As part of the Part 1 EA Amendment Application, separate comparative assessments are required for:

- 100 MW Loeriesfontein 3 PV SEF, 33/132kV IPP Portion of the Shared On-site Substation (including the Transformer) and associated infrastructure, near Loeriesfontein, Hantam Local Municipality, Northern Cape Province – DFFE Reference Number: 12/12/20/2321/2/1.
- 132kV Grid Alignment (i.e., Overhead Power Line) and 132kV Eskom Portion of the Shared On-site Substation for the 100 MW Loeriesfontein 3 PV SEF near Loeriesfontein, Hantam Local Municipality, Northern Cape Province – DFFE Reference Number: 12/12/20/2321/2/2,

As mentioned, this Biodiversity Comparative Assessment is for the 100MW Loeriesfontein 3 PV SEF and associated infrastructure (DFFE Ref No. 12/12/20/2321/2/1). A separate standalone Biodiversity Comparative Assessment has been compiled to address the EA extension application for the Grid Connection infrastructure.

PROJECT DESCRIPTION

The 100MW Loeriesfontein 3 PV SEF and associated infrastructure will comprise the following (as authorised as part of split EA dated 21 May 2021 with reference: 12/12/20/2321/2/1)(Figure -1):

- PV array with a height of between 5-10m on approximately 405,77 hectares.
- Internal cabling network to connect the PV panels to the substation.
- A new substation of approximately 10 800m^2 and associated transformers (IPP portion of the shared on-site substation).
- Access roads of 6-10m wide which includes an internal road network.
- Temporary construction area.
- Administration and warehouse building with a maximum area of up to 5000m^2.

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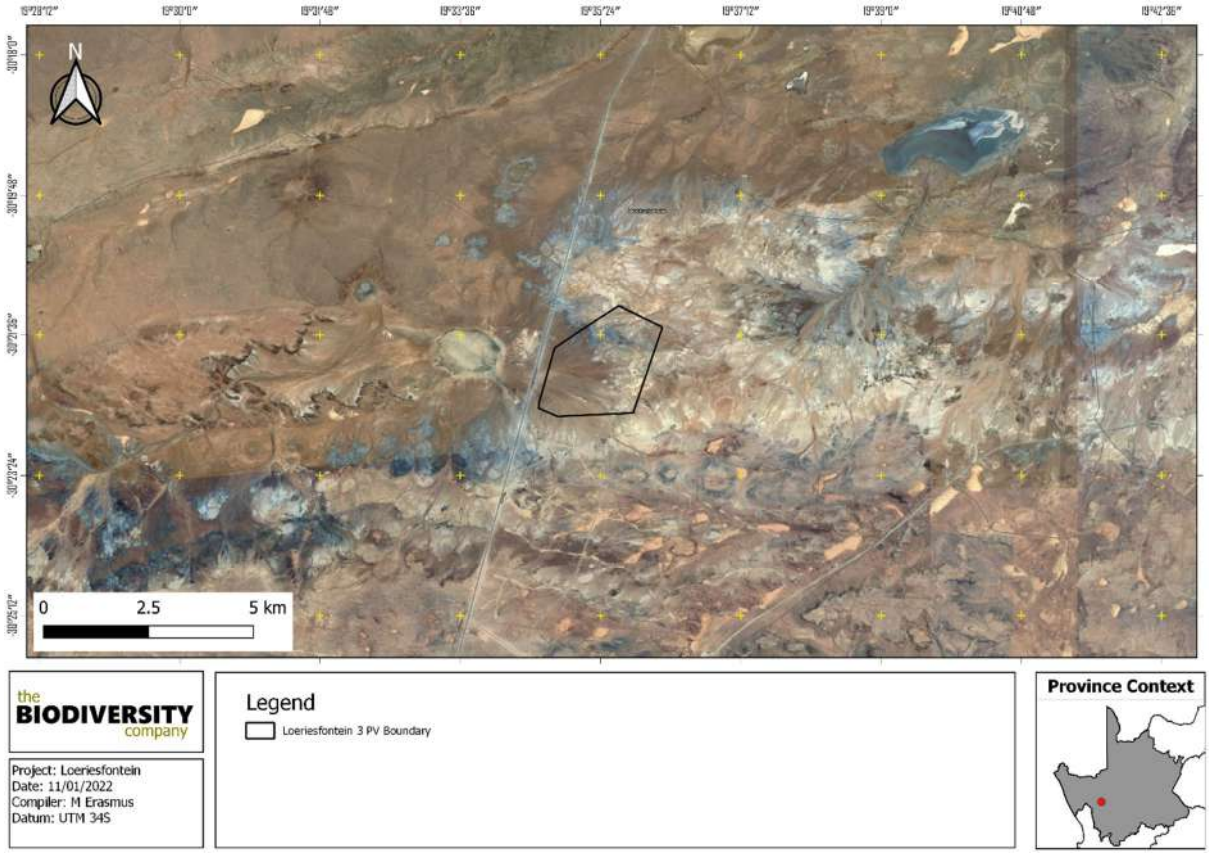

Figure -1 Location of the Loeriesfontein 3 PV SEF

TERMS OF REFERENCE

The Terms of Reference (ToR) for the specialist inputs into the provision of a specialist statement for the Application for Amendment of the EA to extend the validity period require:

- Description of the status (baseline) of the environment that was assessed during the initial assessment.
- Confirmation of the current status of the assessed environment.
- Description and assessment of any changes to the environment that has occurred since the initial EA was issued, if any.
- Indication if the impact rating as provided in the initial assessment remains valid; if the mitigation measures provided in the initial assessment are still applicable; or if there are any new mitigation measures which need to be included into the EA/EMPr, should the request to extend the commencement period, and other proposed amendments, be granted by the Department.
- Indication if there are any new assessments and/or guidelines which are now relevant to the authorised development which were not undertaken as part of the initial assessment, must be taken into consideration, and addressed in the specialist statement/ report.
- Description and an assessment of the surrounding environment, in relation to new developments or changes in land use which might impact on the authorised project, the assessment must consider the following:
  - Similar developments within a 30km radius.

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- Identified cumulative impacts must be clearly defined, and where possible the size of the identified impact must be quantified and indicated, i.e., hectares of cumulatively transformed land.
- Detailed process flow and proof must be provided, to indicate how the specialist's recommendations, mitigation measures and conclusions from the various similar developments in the area were taken into consideration in the assessment of cumulative impacts and when the conclusion and mitigation measures were drafted for this project.
- The cumulative impacts significance rating must also inform the need and desirability of the proposed development.
- A cumulative impact environmental statement on whether the proposed development must proceed.

The study must conclude the following:

- Has the baseline status of the receiving environment changed significantly since the original Biodiversity Assessment in 2012?
- Is the initial impact rating undertaken during the initial assessment still valid?
- Are the mitigation measures provided in the initial assessment (or subsequent updated assessments) still applicable?
- Are there any new mitigation measures that should be added to the EA/EMPr, should the DFFE approve the amendments?
- Describe any update/new mitigations (or refer to them in the EMPr update report), where relevant.
- Are the proposed amendments, including proposed extension of the validity period, acceptable (relative to your area of expertise)?

OVERVIEW OF BASELINE CONDITIONS

The original Environmental Impact Assessment (EIA) process was undertaken more than 10 years ago (namely in 2012), and therefore the DFFE has requested that additional information be submitted with the part 1 EA amendment applications to extend the validity periods of the EAs for the Loeriesfontein 3 PV SEF and Grid Connection infrastructure.

1 The 2012 EIA, compiled by SiVEST Environmental as part of the EIA process for the proposed Project (DEA REF. NO. 12/12/20/2321/2/1 and NO.12/12/20/2321/2/2), refers. A Site Sensitivity Verification & Terrestrial Ecology Compliance statement was written for a Battery Energy Storage System (BESS) by Dr David Hoare for SiVEST Environmental in 2020, to form part of a Draft Basic Assessment Report, refers. The Bird Impact Assessment report for the project, done in 2012 Chris van Rooyen, was assimilated into the abovementioned EIA.

2 The abovementioned studies that form part of the EA application process (DEA REF. NO. 12/12/20/2321/2/1 and NO.12/12/20/2321/2/2) have been reviewed by The Biodiversity Company, who also conducted a rapid site assessment on 4-6 January 2023.

3 The construction date for the Project is not yet finalized. However, to optimize the proposed project, the following amendments are applied in terms of the EIA Regulations, 2014 (as amended in 2017):

3.1. It is being requested that the validity period of the EA be extended by an additional 5 years (i.e., EA lapses on 29 October 2027).

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4 This validity extension requires that the respective specialist studies hitherto undertaken as part of the original EIA process in 2012 must be reviewed by respective specialists in order to ascertain whether conditions on site have changed. This letter serves this purpose.

5 Conclusions from the 2012 EIA report (SiVEST, 2012) included the following:

5.1. Flora: The vegetation type on the site is described as Bushmanland Basin Shrubland located in the Nama Karoo Biome. Species diversity on the site is limited given the aridity of the region. A species of concern in the study area is *Hoodia gordonii* (Boboejaanghaap), an important medicinal plant that is over-harvested in the Northern Cape. Specimens were present on the farms. The study area does not fall into a Critical Biodiversity Area or Ecological Support Area as defined by the Namakwa Bioregional Plan.

5.2. Fauna:

5.2.1. Mammals: Two small mammal species were recorded. These include the Striped Mouse (*Rhabdomys pumilio*) and the Round-eared elephant-shrew (*Macroscelides proboscideus*). Furthermore, Yellow mongoose (*Cynictis penicillata*), Scrub hare (*Lepus saxatilis*), Porcupine (*Hysterix africaeaustralis*) and Aardvark (*Orycteropus afer*) were recorded.

5.2.2. Reptiles: The Namaqua Sand Lizard (*Pedioplanis namaquensis*), Spotted desert lizard (*Meroles suborbitalis*) were recorded with no amphibian species recorded in the study site during field surveys.

5.3. Avifauna: Several species were recorded, including some Species of Conservation Concern (SCC), including Ludwig's Bustard, Lanner Falcon, Red Lark and Martial Eagle. The following was concerns stated regarding the internal cabling;

5.3.1.1. Ludwig's Bustard could be negatively impacted by the proposed power line as its vulnerability to power line collisions is well known, but its occurrence at the site is likely to be sporadic.

5.3.1.2. Electrocutions on power lines when birds perch on the electrical structure. Given the flat landscape, birds often use power lines as vantage points. Suitable mitigation measures were however suggested in order to reduce this impact and discourage perching on the power lines.

5.3.1.3. Commenting on habitat loss, it was stated that the construction phase is likely to result in habitat loss for bird species occupying the site, in particular smaller species. The author further added that it is unlikely that these species would be able to re-colonize the area after construction, due to the panels which would hinder their flight, it was said that the surrounding area however provides sufficient habitat for these species to move into and the development would not be to the detriment of these species.

5.4. The site is very uniform in nature with very few distinct sensitive areas. Drainage lines on the site are not well defined to the infrequent rains that occur. Those that have been clearly identified are considered to be sensitive as they provide rare habitat on the site when water is

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available. No “no-go” areas were identified from a biodiversity perspective on the site, mitigation measures were identified to ensure that the habitat on the site is not unnecessarily destroyed.

5.5. Impact significance ratings from the studies are summarised as follows:

5.5.1. Construction and Operational impact on habitat for red data / general species and edge effect was rated negative low impact after mitigation.

5.5.2. Decommissioning impact on loss of habitat for red data / general species and edge effect was rated positive low impact persists after mitigation.

5.5.3. Cumulative Impacts were rated as follows:

5.5.3.1. Construction: Due to the negligible amount of infrastructure present within the study area, cumulative impacts are anticipated to be low during construction.

5.5.3.2. Operation: The infrastructure to be added is very small in comparison to that already present. No existing wind farms are in place and no cumulative impacts are thus anticipated. Some solar infrastructure is planned for the adjacent farm however this will not isolate the site and movement of fauna and flora will still be possible.

5.5.3.3. Decommissioning: Decommissioning of the plant will result in the elimination of the cumulative impacts mentioned above.

5.6. The Project was not likely to cause detriment to the biodiversity of the region due to the natural nature of the area. It was however added that strict implementation of the suggested mitigation measures must be undertaken to ensure this.

6 Conclusions from the 2020 Site Sensitivity Verification & Terrestrial Ecology Compliance Statement (SiVEST, 2020) report for the BESS development included the following:

6.1. The BESS site is low sensitivity in a terrestrial biodiversity and plant species context.

6.2. The proposed location of the BESS (which is proposed within the Loeriesfontein 3 PV site) would have similar effect anywhere on the site due to the uniformity of the habitat.

6.3. The overall impact of the Loeriesfontein 3 PV SEF, on the terrestrial biodiversity and plant species resources, is seen as acceptably low after the recommendations have been implemented and therefore, impacts can be mitigated to acceptable levels allowing for the development to be authorised.

7 Mitigation measures prescribed by each of the reviewed specialist reports remain applicable and must be adhered to. Recommended monitoring must be undertaken, specifically:

7.1. Conduct construction walk down prior to construction to conduct a search and rescue exercise.

7.2. Rehabilitation to be undertaken as soon as possible after construction in sensitive area has been completed

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7.3. The construction phase should be closely monitored by an Environmental Control Officer (ECO), who should identify any areas that would require rehabilitation in the post-construction phase.

7.4. Post-construction monitoring should be implemented as part of the continuation of the current monitoring programme, to assess displacement and actual collision rates. If actual collision and displacement levels are high, the following mitigation measures would need to be considered.

8 Regarding new assessments/guidelines which are now relevant to the authorised development which was not undertaken as part of the initial assessment which must be taken into consideration, the following applies:

8.1. Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, GNR 320 of Government Gazette 43310 (March 2020)

9 Loeriesfontein 3 PV SEF Assessment (2023).

A summary of the terrestrial surveys undertaken as part of the Loeriesfontein 3 PV SEF and Grid Connection infrastructure is provided in Table 1 Summary of terrestrial desktop survey

Desktop Information Considered	Relevant/Irrelevant
Ecosystem Threat Status	Relevant – The Project area overlaps with a Least Concern ecosystem
Ecosystem Protection Level	Relevant – The Project area overlaps largely with a Not Protected Ecosystem.
Critical Biodiversity Area	Relevant – The Project area overlaps mainly with Other Natural Areas and small portions of ESA.
Renewable Energy EIA Application Database (REEA)	Relevant – The Project area overlaps entirely within an “Approved” area.
South African Inventory of Inland Aquatic Ecosystems	Irrelevant - The Project area does not overlap with any areas.
National Freshwater Priority Area and Inland Water	Relevant – The Project area overlaps with two Non-FEPA wetlands
Strategic Water Source Areas	Irrelevant- The Project area is located 160 km from the closest SWSA
Protected Areas	Irrelevant – The Project area is 98 km from the closest Protected Area
Renewable Energy Development Zones	Irrelevant – The PAIO doesn’t fall within any REDZ.
National Protected Areas Expansion Strategy	Irrelevant – The closest NPAES is 18km away.
Important Bird and Biodiversity Areas	Irrelevant – Project area located 70 km from the nearest IBA
Powerline Corridor	Relevant – The Project area falls within the Western Corridor

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Table 2 and Table 2. A sensitivity map can be seen in Figure -2.

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Table 1 Summary of terrestrial desktop survey

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Table 2 *Summary of terrestrial fieldsurvey*

Loeriesfontein PV	Sample Date: 4-6 January 2023
Site photo	
A photo showing the typical vegetation present. 	

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Typical Landscape of the Project Area

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Existing Wind Energy Farm that the previous reports were compiled for.

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Rare Plant (Habitat specialist) *Dregeochloa calviniensis found within the project area*

Habitat state and Vegetation present.	**The habitats were found in the same ecological state as during the 2012 studies (mainly due to no change in land use)**. The condition of the vegetation is considered semi-natural (degraded) shrubland but slightly disturbed due to the grazing by livestock, mismanagement, and also human infringement. Provides grazing for livestock. Aids in the filtration of water permeating through the soil into drainage lines. Acts as a corridor for fauna dispersion within the landscape. Acts as a greenland that supports viable plant species populations and is also used for foraging by fauna. Succulents were ubiquitous throughout the assessment area and occurred within the community described above. It is important to note that these growth forms (All species of Aizoaceae/ Mesembryanthemaceae, Hyacinthaceae, and Euphorbiaceae) are protected under the Northern Cape Legislation. *Dregeochloa calviniensis* is a Rare listed plant that is considered a habitat specialist and is known to occur in localized subpopulations on Limestone outcrops. The species was recorded within the project area during the 2023 surveys, the species was not noted during the 2012 studies. The Species Environmental Assessment Guideline (Sanbi,2020)[1] for Rare species recommends a minimum buffer of 200m around the population.

[1] South African National Biodiversity Institute (SANBI). 2020. Species Environmental Assessment Guideline. Guidelines for the implementation of the Terrestrial Fauna and Terrestrial Flora Species Protocols for environmental impact assessments in South Africa. South African National Biodiversity Institute, Pretoria. Version 1.2020.

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	Inconspicuous drainage lines occur within the project area and can be regarded as non-perennial and possess surface flow only briefly during and following a period of rainfall (ephemeral), which is a feature of semi-arid/arid regions. These seasonal streams create an ecological link between the stream and its surrounding terrestrial landscape and have the same function albeit on a smaller scale than a river.
Current Impacts	Limited impacts within the proposed area, mainly grazing by livestock.

Site Ecological Importance[2]

Habitat	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance
Limestone	Medium > 50% of receptor contains natural habitat with potential to support SCC. Supports *Dregeochloa calviniensis* a Rare plant recorded within the habitat.	High Presence of Rare species.	**Medium**	Low Habitat that is unlikely to be able to recover fully after a relatively long period: > 15 years required to restore ~ less than 50% of the original species composition and functionality	**High**
Degraded Shrubland	Medium > 50% of receptor contains natural habitat with potential to support SCC.	Medium Medium semi-intact area for any conservation status of ecosystem type. Mostly minor current negative ecological impacts, with some major impacts and a few signs of minor past disturbance.	**Medium**	Medium Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	**Medium**

Guidelines for interpreting Site Ecological Importance in the context of the proposed development activities

Site Ecological Importance	Interpretation in relation to proposed development activities
High	Avoidance mitigation wherever possible. Minimisation mitigation – changes to project infrastructure design to limit the amount of habitat impacted, limited development activities of low impact acceptable. Offset mitigation may be required for high-impact activities.

[2] The different habitat types within the project area were delineated and identified based on observations during the field assessment, and available satellite imagery. These habitat types were assigned Ecological Importance (EI) categories based on their ecological integrity, conservation value, the presence of species of conservation concern and their ecosystem processes, as per the new protocols. Site Ecological Importance (SEI) is a function of the Biodiversity Importance (BI) of the receptor (e.g., SCC, the vegetation/fauna community or habitat type present on the site) and Receptor Resilience (RR) (its resilience to impacts) as follows. BI is a function of Conservation Importance (CI) and the Functional Integrity (FI) of the receptor. The method can be provided upon request.

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	Medium	Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.

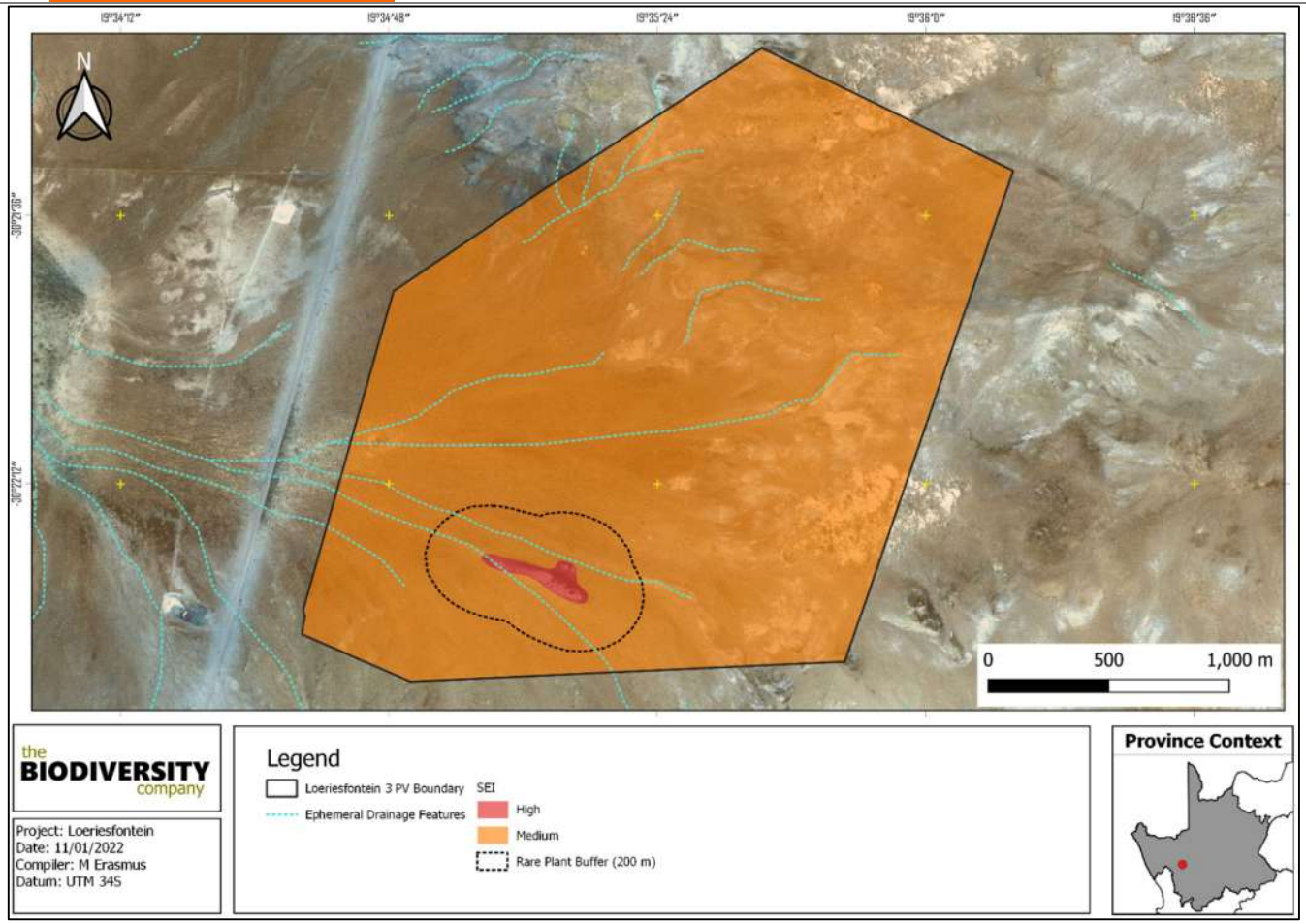

Figure -2 SEI of the Project area

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Cumulative Impacts

The impacts of projects are often assessed by comparing the post-project situation to a pre-existing baseline. Where projects can be considered in isolation, this provides a good method of assessing a project's impact. However, in areas where baselines have already been affected, or where future development will continue to add to the impacts in an area or region, it is appropriate to consider the cumulative effects of development. This is similar to the concept of shifting baselines, which describes how the environmental baseline at a point in time may represent a significant change from the original state of the system.

This section describes the cumulative potential impacts of the project on biodiversity. Cumulative impacts are assessed in context of the extent of the proposed development area, other developments in the area, as well as general habitat loss and transformation resulting from other activities in the area.

Presently, the surrounding immediate and broader landscape consists of natural vegetation used for supporting livestock. The remnants layer was released as part of the NBA (Skowno et al, 2019) and provides the present spatial extent of vegetation. The South African Renewable Energy EIA Application Database (Q3, 2022) contains spatial data for renewable energy applications for EA. It includes spatial and attribute information for both active (in process and with valid authorisations) and non-active (lapsed or replaced by amendments) applications. Data is captured and managed on a parcels level as well as aggregated to the project level at the boundary level.

Assuming the entire Project area (448 Ha), except for the High SEI area and its associated buffer (34.67 Ha), will be developed, the following is calculated:

The total area within the 30 km buffer around the PV development area amounts to 303674.50 Ha, but when considering the transformation (1255.10 ha) that has taken place within this radius, 302.419.40 ha of intact habitat remains according to the 2018 National Biodiversity Assessment. Therefore, the area within 30 km of the project has experienced approximately 0.41% loss in natural habitat. Considering this context, the PV development footprint for is 413.33 Ha similar project exists in the 30 km region measuring a maximum of 84438.71 Ha, which the Project area is already part of (as per the latest South African Q3 2022 Renewable Energy EIA Application Database) which means that the total amount of remaining habitat lost as a result of the solar project amounts to 27.92% (PV developments as a percentage of the total remaining habitat).

	Total Habitat (Ha)	Total Loss (Ha)	Tot. Remaining Habitat (Ha) (Remnants)	Total Historical Loss	PV Development Similar Projects	Tot. Remaining Habitat (Ha)	Cumulative Habitat Lost
Approximate Solar development cumulative effects (Spatial)	303674.50	1255.10	302419.40	**0.41%**	84438.71	217980.69	**27.92%**

Considering the severe extent of approved and in-process developments within the area (Figure 5 2), the expected cumulative impact of PV development as a whole is expected to be of a '**Moderate-High' significance**, however, the contribution of the Project area itself (413.33 Ha) is calculated at 0.49% of the total (84438.71 Ha) 27.92%, which results in a 'Low Significance'. Thus, it can be concluded that the proposed development will not result in any unacceptable loss considering all the projects proposed in the area.

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Table 3 Cumulative impact rating of loss of habitat within a 30 km area.

Nature: Cumulative habitat loss within the region **The development of the proposed infrastructure will contribute to cumulative habitat loss within ESAs and thereby impact the ecological processes in the region.**		
	Overall impact of the proposed project considered in isolation	**Cumulative impact of the project and other projects in the area**
Extent	Low (2)	High (4)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Moderate (6)
Probability	Improbable (2)	Highly probable (4)
Significance	**Low**	**Medium**
Status (positive or negative)	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation: • Minimise vegetation clearing to the minimum required. • Ensure that a rehabilitation plan and IAP management plan be compiled for each development and are effectively implemented.		
Residual Impacts: The loss of currently intact vegetation is an unavoidable consequence of the project and cannot be entirely mitigated. The residual impact would however be low.		

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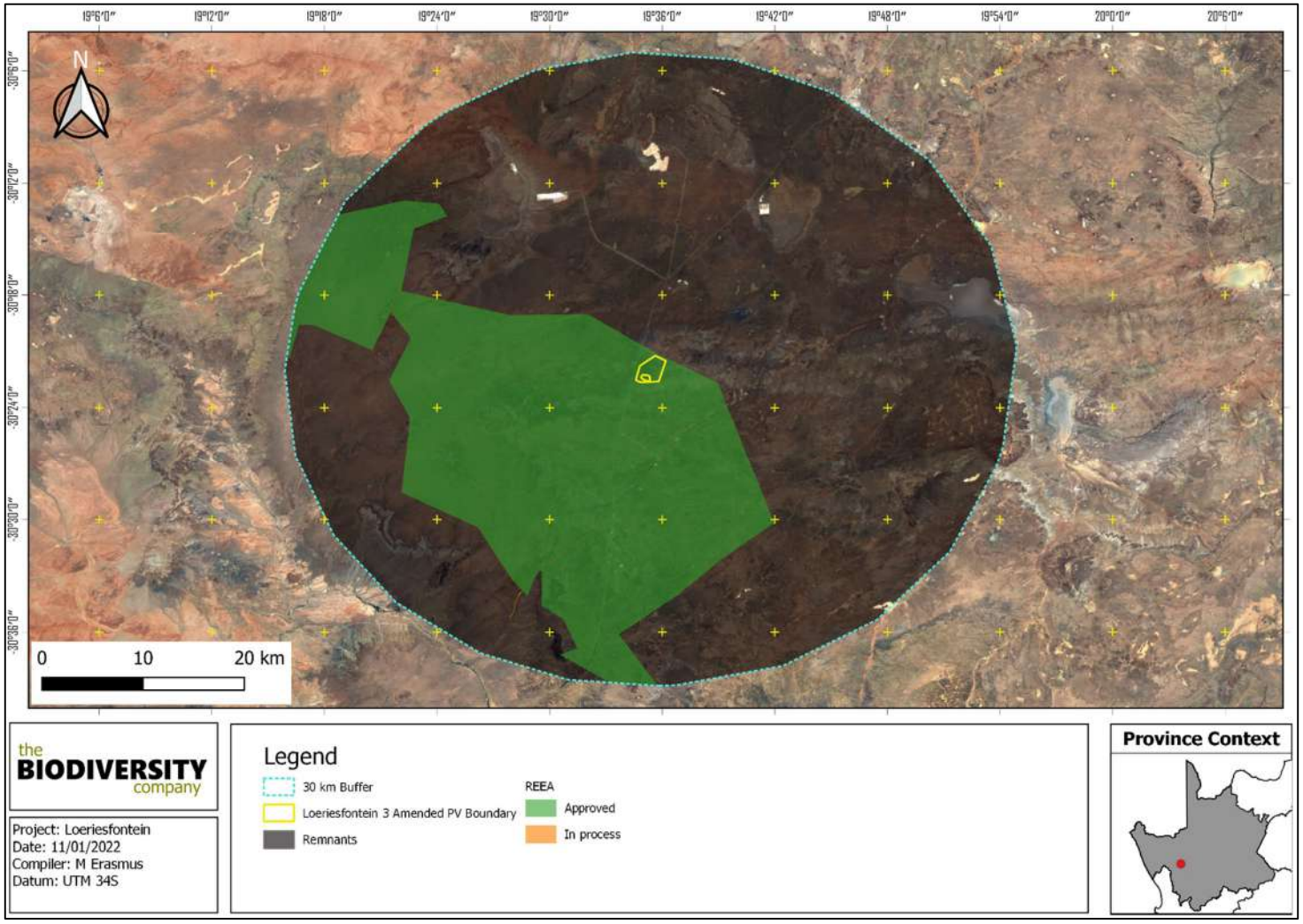

Figure -3 *Map illustrating additional renewable energy developments within 30 km area.*

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10 In order to manage the impacts effectively, the following additional (possible repeats) mitigation management should be incorporated into the existing EMPr, as well as the previous studies' mitigations, for the impacts associated with habitat, flora and fauna:

Impact Management Actions	Implementation	
	Phase	Responsible Party
Clearing of vegetation should be minimized and avoided where possible. All activities must be restricted to flat areas and Medium SEI areas as far as possible. It is recommended that areas to be developed be specifically demarcated so that during the construction phase, only the demarcated areas be impacted upon. All disturbed footprints to be rehabilitated and landscaped after installation is complete. Rehabilitation of the disturbed areas existing in the project area must be made a priority. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are endemic to the project area vegetation type. • Indigenous vegetation to be maintained under the solar panels to ensure biodiversity is maintained and to prevent soil erosion (Beatty et al, 2017; Sinha et al, 2018). • Vegetation clearing to commence only after the necessary permits have been obtained. • The High SEI area, including the 200 m buffer must be avoided.	Life of operation	Project manager, Environmental Officer
Existing servitudes, access routes, and especially roads must be made use of.	Construction/Operational Phase	Environmental Officer & Design Engineer
All laydown, chemical toilets etc. should be restricted to outside of the project area. No materials may not be stored within the project area, and all materials must be removed from the project area once the construction phase has been concluded. No permanent construction structures/formwork should be permitted. No storage of vehicles or equipment will be allowed outside of the designated project areas.	Construction/Operational Phase	Environmental Officer & Design Engineer
Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood and wind events. This will also reduce the likelihood of encroachment by alien invasive plant species. All livestock should always be kept out of the project area, especially areas that have been recently re-planted.	Operational phase	Environmental Officer & Contractor
A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use. No servicing of equipment to take place within the project area unless necessary. All contaminated soil/yard stone shall be treated in situ or removed and placed in containers. Appropriately contain any diesel or oil storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them from leaking and entering the environment. Construction activities and vehicles could cause the spillage of lubricants, fuels and waste material potentially negatively affecting the functioning of the ecosystem. All vehicles and equipment must be maintained, and all re-fuelling and servicing of equipment is to take place in demarcated areas outside of the project area.	Life of operation	Environmental Officer & Contractor
It should be made an offence for any staff to take/bring any plant species into/out of any portion of the project area. No plant species whether indigenous or exotic should be brought into/taken from the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants.	Life of operation	Project manager, Environmental Officer

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A fire management plan needs to be complied and implemented to restrict the impact that fire might have on the surrounding areas.	Life of operation	Environmental Officer & Contractor
Any protected plant that may be present needs a relocation or destruction permit for any individual that may be removed or destroyed due to the development. If left undisturbed the sensitivity and importance of these species needs to be part of the environmental awareness program. All protected and red-list plants should be relocated, along with as many other geophytic species.	Life of operation	Project manager, Environmental Officer
Develop and implement a monitoring program for the Rare plant SCC.	Life of operation	Project manager, Environmental Officer
A qualified environmental control officer must be on site when construction begins A site walk through is recommended by a suitably qualified ecologist prior to any construction activities, preferably during the wet season, and any SSC should be noted. Should animals not move out of the area on their own relevant specialists must be contacted to advise on how the species can be relocated. Should any large nests be observed within the project area construction should stop immediately and a qualified specialist must be contacted.	Construction Phase	Environmental Officer, Contractor
The areas to be developed must be specifically demarcated to prevent movement of staff or any individual into the surrounding environments: • Signs must be put up to enforce this.	Construction/Operational Phase	Project manager, Environmental Officer
The duration of the construction should be minimized to as short term as possible, to reduce the period of disturbance on fauna.	Construction	Project manager, Environmental Officer & Design Engineer
Noise must be kept to an absolute minimum during the evenings and at night to minimize all possible disturbances to amphibian species and nocturnal mammals.	Construction/Operational Phase	Environmental Officer
No trapping, killing, or poisoning of any wildlife is to be allowed: • Signs must be put up to enforce this.	Life of operation	Environmental Officer
All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. Speed limits must still be enforced to ensure that road killings, dust and erosion is limited. The speed limits should be restricted to a maximum of 30 km/h within the project area.	Life of operation	Health and Safety Officer
Outside lighting should be designed and limited to minimize impacts on fauna. Lighting fixtures should be fitted with baffles, hoods or louvres and directed downward. Outside lighting should be directed away from highly sensitive areas such as the wetland. Fluorescent and mercury vapor lighting should be avoided and sodium vapor (yellow) lights should be used wherever possible	Construction/Operational Phase	Project manager, Environmental Officer & Design Engineer
Schedule activities and operations during least sensitive periods, to avoid migration, nesting and breeding seasons: • Driving on access roads at night should be restricted in order to reduce or prevent wildlife road mortalities which occur more frequently during this period.	Life of operation	Project manager, Environmental Officer & Design Engineer
Any holes/deep excavations must done in a progressive manner on a needs basis only. No holes/excavations may be left open overnight. In the event holes/excavations are required to remain open overnight, these areas must be covered to prevent fauna falling into these areas and subsequently inspected prior to backfilling	Planning and Construction	Environmental Officer & Contractor, Engineer
Ensure that cables and connections are insulated successfully and adequately to reduce electrocution risk.	Life of project	Environmental Officer & Contractor, Engineer

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Compilation and Implementation of an Invasive Alien Plant (AIP) management plan. • Regular monitoring for IAP encroachment during the operation phase to ensure that no alien invasion problems have developed as a result of the disturbance. This should be every 3 months during the first two years of the operation phase and every six months for the life of the project. • All IAP species must be removed/controlled using the appropriate techniques as indicated in the IAP management plan	Life of operation	Project manager, Environmental Officer & Contractor
A pest control plan must be put in place and implemented; it is imperative that poisons not be used due to the presence of faunal SCC in the area.	Life of operation	Environmental Officer & Health and Safety Officer
Dust-reducing mitigation measures must be put in place and must be strictly adhered to. This includes wetting of exposed soft soil surfaces: • No non-environmentally friendly suppressants may be used as this could result in the pollution of valuable water sources.	Life of operation	Contractor
Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests from entering the site	Life of operation	Environmental Officer & Contractor
Litter, spills, fuels, chemical and human waste in and around the project area must be cleared and safely/appropriately stored immediately.	Construction/Operation/Closure Phase	Environmental Officer & Health and Safety Officer
A minimum of one toilet must be provided per 10 persons. Portable toilets must be pumped dry to ensure the system does not degrade over time and spill into the surrounding area.	Life of operation	Environmental Officer & Health and Safety Officer
The Contractor should supply sealable and properly marked domestic waste collection bins and all solid waste collected shall be disposed of at a licensed disposal facility.	Life of operation	Environmental Officer & Health and Safety Officer
Where a registered disposal facility is not available close to the project area, the Contractor shall provide a method statement with regard to waste management. Under no circumstances may domestic waste be burned on site or stored in pits.	Life of operation	Environmental Officer, Contractor & Health and Safety Officer
Refuse bins will be emptied and secured. Temporary storage of domestic waste shall be in covered waste skips. Maximum domestic waste storage period will be 10 days.	Life of operation	Environmental Officer, Contractor & Health and Safety Officer
All personnel and contractors to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof. Discussions are required on sensitive environmental receptors within the project area (Rare plant) and to inform contractors and site staff of the presence of red-listed species, their identification, conservation status and importance, biology, habitat requirements and management requirements in line with the Environmental Authorisation and within the EMPr. The avoidance and protection of the high sensitivity area and associated buffer must be included in a site induction. Contractors and employees must all undergo the induction and be made aware of the "no-go" areas to be avoided.	Life of operation	Health and Safety Officer
Speed limits of 30 km/h must be put in place to reduce erosion: • Dust generated, especially by earth moving machinery, must be minimised through wetting of the soil surface and putting up signs to enforce speed limits. Speed bumps must be built to force slow speeds; • Signs must be put up to enforce this.	Life of operation	Project manager, Environmental Officer
Where possible, existing access routes and walking paths must be made use of.	Life of operation	Project manager, Environmental Officer

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Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events and strong winds. This is to be done according to the Re-vegetation and Habitat Rehabilitation Plan.	Life of operation	Project manager, Environmental Officer
A stormwater management plan must be compiled and implemented.	Life of operation	Project manager, Environmental Officer

11 The terrestrial biodiversity screening theme sensitivity for the area is 'Very High', due to the presence of an Ecological Support Area (ESA) and the Freshwater Ecological Priority Area (FEPA) Sub catchment. The assessment (January 2023) determined the sensitivity of the degraded shrubland habitat to be 'Medium', whereas the Limestone habitat was rated with a High SEI. Thus, the following is concluded: The completion of the terrestrial biodiversity assessment **disputes the very high sensitivity of degraded shrubland habitats that overlap with the screening report, however, corroborates with the screening report in regard to the Limestone habitat**.

12 Comparison with the previous reports and recent studies results in **no significant changes to the impact rating, except for the recording of the Rare plant species during the 2023 assessment. This exception may however be mitigated by adding the mentioned avoidance mitigation, to be included in the EA, should the request to extend the commencement period be granted by the Department**. Avoidance mitigation will result in avoiding approximately 35[3] Ha of the proposed 448 Ha in order to prevent any significant impact on the Rare plant species population recorded.

12.1. The cumulative impacts contribution of the proposed project results in a 'Low Significance'. It can be concluded that the proposed development will not result in any unacceptable loss considering all the projects proposed in the area, especially when considering the proposed project occurs within an area already "approved".

13 Assuming the High SEI area, as well as the associated 200m buffer, will be avoided; all prescribed mitigation measures and supporting recommendations presented here will help to achieve an acceptable residual impact, as per the previous findings. **These measures and recommendations will remain applicable for the requested extension of the EA**. To this end, these measures have to be included in the updated EMPr for this development as per the requirements of the EA.

13.1. As such, considering the review of the 2012 Biodiversity Assessment and associated documentation, and the implementation of the mitigation measures described above and as included in the updated EMPr for this development be implemented, it is the reasoned opinion of the specialist that the EA for the Loeriesfontein 3 PV SEF may be extended for an additional 5 years (i.e., EA to lapse on 29 October 2027).

14 We trust you find the above in order. If there are any uncertainties or additional information required, please feel free to contact the undersigned.

Kind regards,

[3] Total area of the 200 m Rare plant species buffer

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APPENDIX 1: ASSESSMENT CRITERIA

The EIA Methodology assists in evaluating the overall effect of a proposed activity on the environment. The determination of the effect of an environmental impact on an environmental parameter is determined through a systematic analysis of the various components of the impact. This is undertaken using information that is available to the environmental practitioner through the process of the environmental impact assessment. The impact evaluation of predicted impacts was undertaken through an assessment of the significance of the impacts.

Determination of Significance of Impacts

Direct, indirect and cumulative impacts of the issues identified through the EIA process were assessed in terms of the following criteria:

- The nature, which includes a description of what causes the effect, what will be affected and how it will be affected.

- The extent, wherein it is indicated whether the impact will be
  - 1 = site only
  - 2 = local
  - 3 = regional
  - 4 = national
  - 5 = international

- The duration, wherein is indicated whether:
  - 1 = the lifetime of the impact will be of a very short duration (0–1 years)
  - 2 = the lifetime of the impact will be of a short duration (2-5 years)
  - 3 = medium-term (5–15 years)
  - 4 = long term (> 15 years)
  - 5 = permanent

- The consequences (magnitude), quantified on a scale from 0-10, where:
  - 0 = small and will have no effect on the environment
  - 2 = minor and will not result in an impact on processes
  - 4 = low and will cause a slight impact on processes
  - 6 = moderate and will result in processes continuing but in a modified way
  - 8 = high (processes are altered to the extent that they temporarily cease)
  - 10 = very high and results in complete destruction of patterns and permanent cessation of processes.

- The probability of occurrence, which describes the likelihood of the impact actually occurring. Probability is estimated on a scale of 1–5, where:

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  - 1 = very improbable (probably will not happen)
  - 2 = improbable (some possibility, but low likelihood)
  - 3 = probable (distinct possibility)
  - 4 = highly probable (most likely)
  - 5 is definite (impact will occur regardless of any prevention measures)

- The significance, which is determined through a synthesis of the characteristics described above and is assessed as low, medium or high
- The status, which is described as either positive, negative or neutral.
- The degree to which the impact can be reversed.
- The degree to which the impact may cause irreplaceable loss of resources.
- The degree to which the impact can be mitigated.

The significance is calculated by combining the criteria in the following formula:
S = (E+D+M)P
S = Significance weighting
E = Extent
D = Duration
M = Magnitude
P = Probability

The significance weightings for each potential impact are as follows:

- < 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- 30-60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- 60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).

SITE SENSITIVITY VERIFICATION REPORT

CONTENTS

1. INTRODUCTION

The applicant, South Africa Mainstream Renewable Power Loeriesfontein 3 (Pty) Ltd is proposing the validity extension of the 100MW Loeriesfontein 3 PV facility and associated infrastructure (Figure 1)

South Africa Mainstream Renewable Power Loeriesfontein 3 (Pty) Ltd received the original Environmental Authorisation (EA) for the 100 megawatt (MW) Loeriesfontein 3 Photovoltaic (PV) Solar Energy Facility (SEF) and Grid Connection infrastructure on 29 October 2012 (DFFE Ref: 12/12/20/2321/2). Further to this, the original EA was amended on 10 July 2014 (DFFE Ref: 12/12/20/2321/2/A1), 27 October 2015 (DFFE Ref: 12/12/20/2321/2/AM2), 04 October 2017 (DFFE Ref: 12/12/20/2321/2/AM3) and 24 September 2019 (DFFE Ref: 12/12/20/2321/2/AM4). In addition, following the 2019 amendment, the EA was subsequently split into two separate EAs (1 for the 100MW PV SEF and 1 for the grid connection infrastructure), both dated 21 May 2021, as follows :

1) EA for the 100MW Loeriesfontein 3 PV SEF, 33/132kV IPP portion of the shared on-site substation (including Transformer) and associated infrastructure (DFFE Ref: 12/12/20/2321/2/1); and

2) EA for the 132kV Grid Alignment and 132kV Eskom Portion of the shared on-site substation to service the 100 MW Loeriesfontein 3 PV SEF (DFFE Ref: 12/12/20/2321/2/2).

It should be noted that the split EAs for the 100MW Loeriesfontein 3 PV SEF (DFFE Ref:.12/12/20/2321/2/1) and Grid Connection infrastructure (DFFE Ref: 12/12/20/2321/2/2) dated 21 May 2021 respectively replaced the original EA dated 29 October 2012, as well as the subsequent amendments. This report however addresses the Loeriesfontein 3 PV SEF EA extension application specifically, and the EA extension application for the Grid Connection infrastructure has been assessed and reported on as part of a separate standalone report.

The validity of the split EA for the 100MW Loeriesfontein 3 PV SEF and associated infrastructure lapsed on 29 October 2022, however, a Part 1 EA Amendment Application to extend the validity of the EA by 5 years (i.e., EA lapses on 29 October 2027) was submitted to the Department of Forestry, Fisheries and the Environment (DFFE) on 20 October 2022. It is important to note that according to Regulation 28(1B) of the National Environmental Management Act (NEMA) Environmental Impact Assessment (EIA) Regulations of 2014 (as amended), "an environmental authorisation which is the subject of an amendment application contemplated in this Chapter remains valid pending the finalisation of such amendment application." The Part 1 EA Amendment Application was acknowledged by the DFFE on 07 November 2022 and additional information was requested to be submitted to the DFFE for consideration. Following this, comparative assessments are to be undertaken to motivate why the Department should extend the validity period of the EA for a further 5 years.

As part of the Part 1 EA Amendment Application, separate comparative assessments are required for:

- 100 MW Loeriesfontein 3 PV SEF, 33/132kV IPP Portion of the Shared On-site Substation (including the Transformer) and associated infrastructure, near Loeriesfontein, Hantam Local Municipality, Northern Cape Province – DFFE Reference Number: 12/12/20/2321/2/1.

- 132kV Grid Alignment (i.e., Overhead Power Line) and 132kV Eskom Portion of the Shared On-site Substation for the 100 MW Loeriesfontein 3 PV SEF near Loeriesfontein, Hantam Local Municipality, Northern Cape Province – DFFE Reference Number: 12/12/20/2321/2/2,

As mentioned, this Biodiversity Comparative Assessment is for the 100MW Loeriesfontein 3 PV SEF and associated infrastructure (DFFE Ref No. 12/12/20/2321/2/1). A separate standalone Biodiversity Comparative Assessment has been compiled to address the EA extension application for the Grid Connection infrastructure.

PROJECT DESCRIPTION

The 100MW Loeriesfontein 3 PV SEF and associated infrastructure will comprise the following (as authorised as part of split EA dated 21 May 2021 with reference: 12/12/20/2321/2/1)(Figure 1):

- PV array with a height of between 5-10m on approximately 405,77 hectares.
- Internal cabling network to connect the PV panels to the substation.
- A new substation of approximately 10 800m2 and associated transformers (IPP portion of the shared on-site substation).
- Access roads of 6-10m wide which includes an internal road network.
- Temporary construction area.
- Administration and warehouse building with a maximum area of up to 5000m2.

Figure 1. Proposed Layout map for the proposed development and associated infrastructure

In accordance with GN 320 and GN 1150 (20 March 2020)[1] of the NEMA EIA Regulations of 2014 (as amended), prior to commencing with a specialist assessment, a site sensitivity verification must be undertaken to confirm the current land use and environmental sensitivity of the proposed project areas as identified by the National Web-Based Environmental Screening Tool (i.e., Screening Tool). Martinus Erasmus and Andrew Husted as terrestrial specialists have been commissioned to verify the sensitivity of the project sites under these specialist protocols.

The scope of this report is for one (1) application, namely the 100MW Loeriesfontein 3 SEF and associated infrastructure,

2. SITE SENSITIVITY VERIFICATION METHODOLOGY

The following information sources were consulted to compile this report:

- National Biodiversity Assessment 2018 (Skowno *et al,* 2019) - The purpose of the National Biodiversity Assessment (NBA) is to assess the state of South Africa's biodiversity based on best available science, with a view to understanding trends over time and informing policy and decision-making across a range of sectors. The NBA deals with all three components of biodiversity: genes, species and ecosystems; and assesses biodiversity and ecosystems across terrestrial, freshwater, estuarine and marine environments. The two headline indicators assessed in the NBA are:
- Ecosystem Threat Status – indicator of an ecosystem's wellbeing, based on the level of change in structure, function or composition. Ecosystem types are categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near

[1] GN 320 (20 March 2020): Procedures for The Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(A) and (H) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation

Threatened (NT) or Least Concern (LC), based on the proportion of the original extent of each ecosystem type that remains in good ecological condition.

- Ecosystem Protection Level – indicator of the extent to which ecosystems are adequately protected or under-protected. Ecosystem types are categorised as Well Protected (WP), Moderately Protected (MP), Poorly Protected (PP), or Not Protected (NP), based on the proportion of the biodiversity target for each ecosystem type that is included within one or more protected areas. Not Protected, Poorly Protected or Moderately Protected ecosystem types are collectively referred to as under-protected ecosystems.
- Protected areas:
    - South Africa Protected Areas Database (SAPAD) and South Africa Conservation Areas Database (SACAD) (DEA, 2022) – The South African Protected Areas Database (SAPAD) and South Africa Conservation Areas Database (SACAD) contains spatial data for the conservation of South Africa. It includes spatial and attribute information for both formally protected areas and areas that have less formal protection. The database is updated on a continuous basis and forms the basis for the Register of Protected Areas which is a legislative requirement under the National Environmental Management: Protected Areas Act, Act 57 of 2003.
    - National Protected Areas Expansion Strategy (NPAES) (SANBI, 2018) – The National Protected Area Expansion Strategy (NPAES) provides spatial information on areas that are suitable for terrestrial ecosystem protection. These focus areas are large, intact and unfragmented and are therefore, of high importance for biodiversity, climate resilience and freshwater protection.
- Northern Cape Critical Biodiversity Areas (2016): The Northern Cape Department of Environment and Nature Conservation has developed the Northern Cape CBA Map which identifies biodiversity priority areas for the province, called Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs). These biodiversity priority areas, together with protected areas, are important for the persistence of a viable representative sample of all ecosystem types and species as well as the long-term ecological functioning of the landscape as a whole.
    - The identification of Critical Biodiversity Areas for the Northern Cape was undertaken using a Systematic Conservation Planning approach. Available data on biodiversity features (incorporating both pattern and process, and covering terrestrial and inland aquatic realms), their condition, current Protected Areas and Conservation Areas, and opportunities and constraints for effective conservation were collated.
    - The Northern Cape Critical Biodiversity Area (CBA) Map updates, revises and replaces all older systematic biodiversity plans and associated products for the province.
- Important Bird and Biodiversity Areas (BirdLife South Africa, 2015) – Important Bird and Biodiversity Areas (IBAs) constitute a global network of over 13 500 sites, of which 112 sites are found in South Africa. IBAs are sites of global significance for bird conservation, identified through multi-stakeholder processes using globally standardised, quantitative and scientifically agreed criteria.

Desktop Flora Assessment

The Vegetation of South Africa, Lesotho and Swaziland (Mucina & Rutherford, 2006) was used in order to identify the vegetation type that would have occurred under natural or pre-anthropogenically altered conditions. Furthermore, the Plants of Southern Africa (POSA) database was accessed to compile a list of expected flora species within the proposed development area and surrounding landscape. The Red List of South African Plants (Raimondo *et al.,* 2009; SANBI, 2020) was utilized to provide the most current national conservation status of flora species.

Desktop Faunal Assessment

The faunal desktop assessment comprised of the following:

- Compiling an expected amphibian list generated from the FrogMap database of the Animal Demography Unit (http://vmus.adu.org.za/) using the 3019BC quarter-degree square
- Compiling an expected reptile list generated from the IUCN spatial dataset (2017) and the ReptileMap database of the Animal Demography Unit (http://vmus.adu.org.za/) using the 3019BC quarter degree square; and
- Compiling an expected amphibian list generated from the MammalMap database of the Animal Demography Unit (http://vmus.adu.org.za/) using the 3019BC quarter degree square.

Flora Assessment

The flora assessment consisted of timed meanders of the survey area. This primarily involved meandering through habitat types and identifying all species observed and particularly locating any species of conservation concern.

Relevant field guides and texts consulted for identification purposes included, but was not limited, to the following:

Identification Guide to Southern African Grasses: An Identification Manual with Keys, Descriptions, and Distributions (Fish *et al,* 2015);

- Problem Plants and Alien Weeds of South Africa (Bromilow, 2018);
- Field Guide to Succulents in Southern Africa (Smith *et al,* 2017);
- Field Guide to Wildflowers of South Africa (Manning, 2009); and
- iNaturalist. Available at https://www.inaturalist.org/home (the project specific data can be found at https://www.inaturalist.org/projects/kangela, where a full up-to-date species list of all photographed species resides).

Faunal Assessment

The faunal assessment within this report pertains to herpetofauna and mammals. The faunal field survey comprised of the following active and passive techniques:

- Visual and auditory searches - This typically comprised of meandering and using binoculars to view species from a distance without them being disturbed as well as listening to species calls or locating tracks and scat;
- Active hand-searches - are used for species that shelter in or under particular micro-habitats (typically under rocks, rocky crevices, coarse woody debris, etc.);

Diagnostic features of the individuals that were captured were photographed at site and released.

Relevant field guides and texts consulted for identification purposes included the following:

- Field Guide to Snakes and other Reptiles of Southern Africa (Branch, 1998);
- A Complete Guide to the Snakes of Southern Africa (Marais, 2004);
- Atlas and Red List of the Reptiles of South Africa, Lesotho and Swaziland (Bates *et al,* 2014);
- A Complete Guide to the Frogs of Southern Africa (du Preez and Carruthers, 2009);
- Stuarts' Field Guide to Mammals of Southern Africa including Angola, Zambia & Malawi (Stuart and Stuart, 2015); and
- A Field Guide to the Tracks and Signs of Southern and East African Wildlife (Stuart and Stuart, 2000).

Site Ecological Importance

The different habitat types within the assessment area were delineated and identified based on observations during the field assessment as well as available satellite imagery. These habitat types were assigned Ecological Importance (EI) categories based on their ecological integrity, conservation value, the presence of species of conservation concern and their ecosystem processes.

Site Ecological Importance (SEI) is a function of the Biodiversity Importance (BI) of the receptor (e.g., SCC, the vegetation/fauna community or habitat type present on the site) and Receptor Resilience (RR) (its resilience to impacts) as follows.

BI is a function of Conservation Importance (CI) and the Functional Integrity (FI) of the receptor as follows. The criteria for the CI and FI ratings are provided in Table 1.5 and Table 1.6 respectively.

Table 1.5. Summary of Conservation Importance criteria

Conservation Importance	Fulfilling Criteria
Very High	Confirmed or highly likely occurrence of CR, EN, VU or Extremely Rare or Critically Rare species that have a global EOO of < 10 km^2.
	Any area of natural habitat of a CR ecosystem type or large area (> 0.1% of the total ecosystem type extent) of natural habitat of an EN ecosystem type.
	Globally significant populations of congregatory species (> 10% of global population).
High	Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km^2. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A.
	If listed as threatened only under Criterion A, include if there are less than 10 locations or < 10 000 mature individuals remaining.
	Small area (> 0.01% but < 0.1% of the total ecosystem type extent) of natural habitat of EN ecosystem type or large area (> 0.1%) of natural habitat of VU ecosystem type.
	Presence of Rare species.
	Globally significant populations of congregatory species (> 1% but < 10% of global population).
Medium	Confirmed or highly likely occurrence of populations of NT species, threatened species (CR, EN, VU) listed under Criterion A only and which have more than 10 locations or more than 10 000 mature individuals.
	Any area of natural habitat of threatened ecosystem type with status of VU.
	Presence of range-restricted species.
	> 50% of receptor contains natural habitat with potential to support SCC.
Low	No confirmed or highly likely populations of SCC.
	No confirmed or highly likely populations of range-restricted species.
	< 50% of receptor contains natural habitat with limited potential to support SCC.
Very Low	No confirmed and highly unlikely populations of SCC.
	No confirmed and highly unlikely populations of range-restricted species.
	No natural habitat remaining.

Table 1.6 Summary of Functional Integrity criteria

Functional Integrity	Fulfilling Criteria
Very High	Very large (> 100 ha) intact area for any conservation status of ecosystem type or > 5 ha for CR ecosystem types.
	High habitat connectivity serving as functional ecological corridors, limited road network between intact habitat patches.
	No or minimal current negative ecological impacts with no signs of major past disturbance.
High	Large (> 20 ha but < 100 ha) intact area for any conservation status of ecosystem type or > 10 ha for EN
	ecosystem types.
	Good habitat connectivity with potentially functional ecological corridors and a regularly used road network between intact habitat patches.
	Only minor current negative ecological impacts with no signs of major past disturbance and good rehabilitation potential.
Medium	Medium (> 5 ha but < 20 ha) semi-intact area for any conservation status of ecosystem type or > 20 ha for VU ecosystem types.
	Only narrow corridors of good habitat connectivity or larger areas of poor habitat connectivity and a busy
	used road network between intact habitat patches.
	Mostly minor current negative ecological impacts with some major impacts and a few signs of minor past disturbance. Moderate rehabilitation potential.
Low	Small (> 1 ha but < 5 ha) area.
	Almost no habitat connectivity but migrations still possible across some modified or degraded natural habitat
	and a very busy used road network surrounds the area.
	Low rehabilitation potential.
	Several minor and major current negative ecological impacts.
Very Low	Very small (< 1 ha) area.
	No habitat connectivity except for flying species or flora with wind-dispersed seeds.
	Several major current negative ecological impacts.

BI can be derived from a simple matrix of CI and FI as provided in Table 1.7

Table 1.7 Matrix used to derive Biodiversity Importance from Functional Integrity and Conservation Importance

Biodiversity Importance (BI)		Conservation Importance (CI)				
		Very high	High	Medium	Low	Very low
Functional Integrity (FI)	Very high	Very high	Very high	High	Medium	Low
	High	Very high	High	Medium	Medium	Low
	Medium	High	Medium	Medium	Low	Very low
	Low	Medium	Medium	Low	Low	Very low
	Very low	Medium	Low	Very low	Very low	Very low

The fulfilling criteria to evaluate RR are based on the estimated recovery time required to restore an appreciable portion of functionality to the receptor as summarised in Table 1.8

Table 1.8 Summary of Resource Resilience criteria

Resilience	Fulfilling Criteria
Very High	Habitat that can recover rapidly (~ less than 5 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a very high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a very high likelihood of returning to a site once the disturbance or impact has been removed.
High	Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a high likelihood of returning to a site once the disturbance or impact has been removed.
Medium	Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a moderate likelihood of returning to a site once the disturbance or impact has been removed.
Low	Habitat that is unlikely to be able to recover fully after a relatively long period: > 15 years required to restore ~ less than 50% of the original species composition and functionality of the receptor functionality, or species that have a low likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a low likelihood of returning to a site once the disturbance or impact has been removed.
Very Low	Habitat that is unable to recover from major impacts, or species that are unlikely to remain at a site even when a disturbance or impact is occurring, or species that are unlikely to return to a site once the disturbance or impact has been removed.

Subsequent to the determination of the BI and RR, the SEI can be ascertained using the matrix as provided in Table 1.9

Table 1.9 Matrix used to derive Site Ecological Importance from Receptor Resilience and Biodiversity Importance

Site Ecological Importance		Biodiversity Importance				
		Very high	High	Medium	Low	Very low
Receptor Resilience (RR)	Very Low	Very high	Very high	High	Medium	Low
	Low	Very high	Very high	High	Medium	Very low
	Medium	Very high	High	Medium	Low	Very low
	High	High	Medium	Low	Very low	Very low
	Very High	Medium	Low	Very low	Very low	Very low

3. OUTCOME OF SITE SENSITIVITY VERIFICATION

The combined Terrestrial Biodiversity Theme Sensitivity for the assessment area was derived to be Very High as indicated in the National Environmental Screening Tool (Figure 2).

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Ecological support area
Very High	FEPA Subcatchments

Figure 2: The classification of the study area in the DFFE online screening tool.

Two (2) different habitat types were delineated within the assessment area (Table 1.10). Based on the criteria provided in the species protocols for the site ecological sensitivity, all habitats within the assessment area of the proposed development were allocated a sensitivity category or SEI. The sensitivities of the habitat types delineated are illustrated in Figure 3.

Table 1.10 Summary of habitat types delineated within the field assessment area of the proposed development

Habitat	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecologica Importance
Degraded Shrubland	Medium	Medium	Medium	Medium	**Medium**
Limestone	Medium	High	Medium	Low	**High**

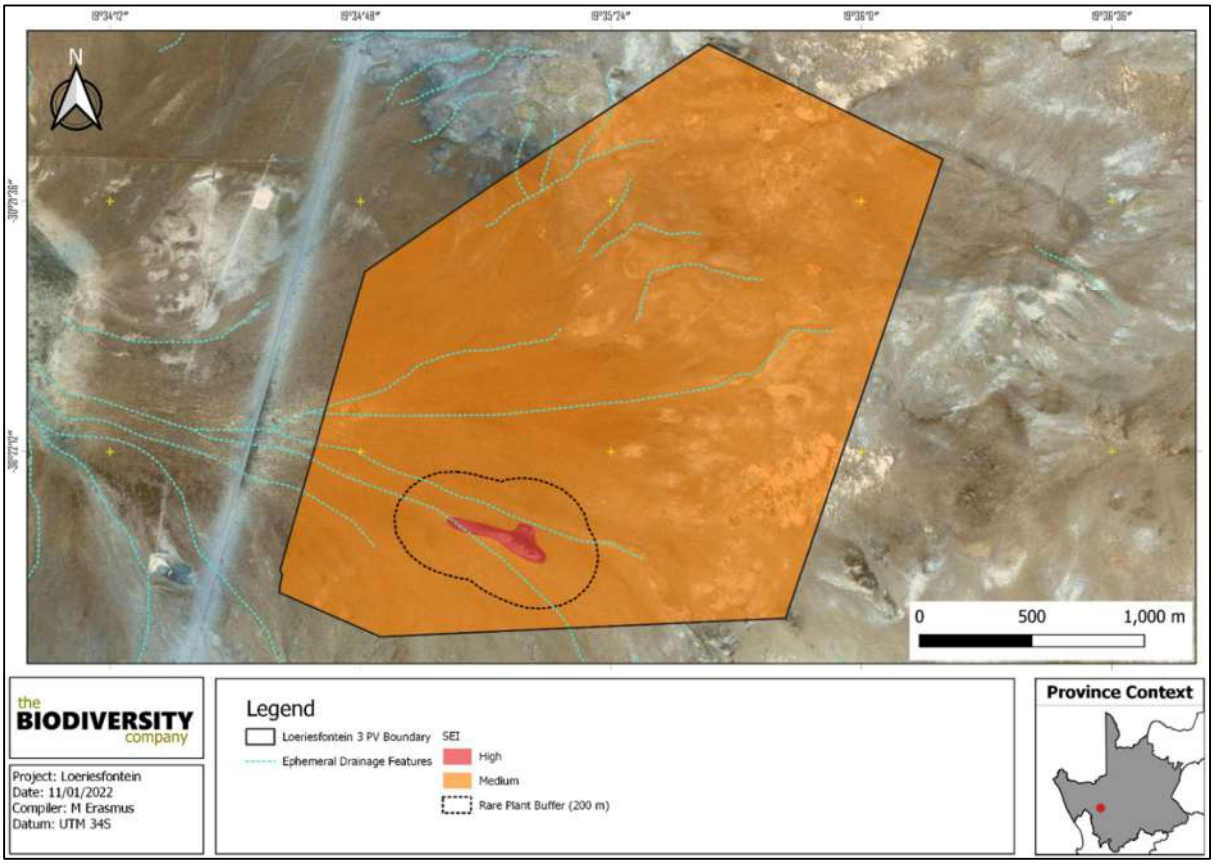

Figure 3 Map illustrating Site Ecological Importance (SEI) of the terrestrial habitat types within the assessment area

4. CONCLUSION

The assessment area was identified with the screening as possessing a Very High sensitivity within a Terrestrial Biodiversity context, with the area and surrounding landscape regarded as part of an ESA. Presently, there are natural habitats within the assessment area that possess a High SEI. This is due to the combination of their functional integrity and conservation importance.

The assessment (January 2023) determined the sensitivity of the degraded shrubland habitat to be 'Medium', whereas the Limestone habitat was rated with a High SEI. Thus, the following is concluded: The completion of the terrestrial biodiversity assessment disputes the very high sensitivity of degraded shrubland habitats that overlap with the screening report, however, corroborates with the screening report in regard to the Limestone habitat, due to the recording of the Rare plant species during the 2023 assessment