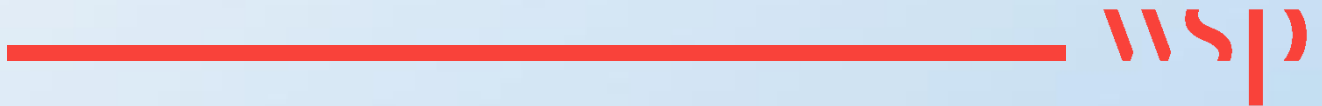


Appendix H.3

TERRESTRIAL BIODIVERSITY COMPLIANCE STATEMENT



MURA 4 SOLAR FACILITY

TERRESTRIAL BIODIVERSITY COMPLIANCE STATEMENT



PRODUCED ON BEHALF OF RED CAP



Simon.Todd@3foxes.co.za

November 2022

MURA 4 SOLAR FACILITY

TERRESTRIAL BIODIVERSITY COMPLIANCE STATEMENT

EXECUTIVE SUMMARY

Mura 4 (Pty) Ltd is proposing the construction and operation of the 360 MW Mura 4 Solar Photovoltaic (PV) Energy Facility (SEF) south-east of Loxton in the Western Cape Province. The development is currently in the EIA process and 3Foxes Biodiversity Solutions has been appointed to provide a Terrestrial Biodiversity Compliance Statement for the development.

The DFFE Screening Tool indicates that the site has a low sensitivity for Terrestrial Biodiversity Theme and the field assessment was able to confirm that there are no significant vegetation or faunal features within the development footprint. The site does not lie within a NPAES Focus Area or a Strategic Water Resource Area (SWSA). The contribution of the current project to cumulative impact is considered to be relatively low given the low sensitivity of the features within the development footprint and hence is considered acceptable.

This Terrestrial Biodiversity Theme Compliance Statement therefore finds that the footprint of the Mura 4 Solar PV Facility is restricted to low sensitivity areas with no observed plant or animal species of conservation concern present, and as such, there are no reasons to oppose the Mura 4 Solar PV facility.



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

File Reference Number:	(For official use only)
NEAS Reference Number:	DEA/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

PROJECT TITLE

Mura 4 PV Project

Kindly note the following:

1. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
2. This form is current as of 01 September 2018. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at <https://www.environment.gov.za/documents/forms>.
3. A copy of this form containing original signatures must be appended to all Draft and Final Reports submitted to the department for consideration.
4. All documentation delivered to the physical address contained in this form must be delivered during the official Departmental Officer Hours which is visible on the Departmental gate.
5. All EIA related documents (includes application forms, reports or any EIA related submissions) that are faxed; emailed; delivered to Security or placed in the Departmental Tender Box will not be accepted, only hardcopy submissions are accepted.

Departmental Details

Postal address:

Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Private Bag X447
Pretoria
0001

Physical address:

Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Environment House
473 Steve Biko Road
Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:
Email: EIAAdmin@environment.gov.za

1. SPECIALIST INFORMATION

Specialist Company Name:	3Foxes Biodiversity Solutions			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	4	Percentage Procurement recognition	100%
Specialist name:	Simon Todd			
Specialist Qualifications:	BSc. (Zool. & Bot.), BSc Hons (Zool.), MSc (Cons. Biol.)			
Professional affiliation/registration:	SACNASP 400425/11			
Physical address:	23 De Villiers Road, Kommetjie 7975			
Postal address:	23 De Villiers Road, Kommetjie			
Postal code:	7975	Cell:	082 3326502	
Telephone:		Fax:		
E-mail:	Simon.Todd@3foxes.co.za			

2. DECLARATION BY THE SPECIALIST

I, Simon Todd, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



Signature of the Specialist

3Foxes Biodiversity Solutions

Name of Company:

25 October 2022

Date:

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, Simon Todd, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.



Signature of the Specialist

3Foxes Biodiversity Solutions

Name of Company

25 October 2022

Date

Signature of the Commissioner of Oaths

Date

SHORT CV/SUMMARY OF EXPERTISE – SIMON TODD

 <p>3Foxes Biodiversity Solutions ECOLOGICAL SPECIALIST SERVICES Assessment/Management/Research</p>	<p>Simon Todd Pr.Sci.Nat Director & Principle Scientist C: 082 3326502 Simon.Todd@3foxes.co.za</p> <p>23 De Villiers Road Kommetjie 7975</p>	<p>Ecological Solutions for People & the Environment</p>
--	--	--

Simon Todd is Director and principal scientist at 3Foxes Biodiversity Solutions and has over 20 years of experience in biodiversity measurement, management and assessment. He has provided specialist ecological input on more than 200 different developments distributed widely across the country, but with a focus on the three Cape provinces. This includes input on the Wind and Solar SEA (REDZ) as well as the Eskom Grid Infrastructure (EGI) SEA and Karoo Shale Gas SEA. He is on the National Vegetation Map Committee as representative of the Nama and Succulent Karoo Biomes. Simon Todd is a recognised ecological expert and is a past chairman and current deputy chair of the Arid-Zone Ecology Forum. He is registered with the South African Council for Natural Scientific Professions (No. 400425/11).

Skills & Primary Competencies

- Research & description of ecological patterns & processes in Nama Karoo, Succulent Karoo, Thicket, Arid Grassland, Fynbos and Savannah Ecosystems.
- Ecological Impacts of land use on biodiversity
- Vegetation surveys & degradation assessment & mapping
- Long-term vegetation monitoring
- Faunal surveys & assessment.
- GIS & remote sensing

Tertiary Education:

- 1992-1994 – BSc (Botany & Zoology), University of Cape Town
- 1995 – BSc Hons, Cum Laude (Zoology) University of Natal
- 1996-1997- MSc, Cum Laude (Conservation Biology) University of Cape Town

Employment History

- 2009 – Present – Sole Proprietor of Simon Todd Consulting, providing specialist ecological services for development and research.

- 2007 Present – Senior Scientist (Associate) – Plant Conservation Unit, Department of Botany, University of Cape Town.
- 2004-2007 – Senior Scientist (Contract) – Plant Conservation Unit, Department of Botany, University of Cape Town
- 2000-2004 – Specialist Scientist (Contract) - South African National Biodiversity Institute
- 1997 – 1999 – Research Scientist (Contract) – South African National Biodiversity Institute

A selection of recent work is as follows:

Strategic Environmental Assessments

Co-Author. Chapter 7 - Biodiversity & Ecosystems - Shale Gas SEA. CSIR 2016.

Co-Author. Chapter 1 Scenarios and Activities – Shale Gas SEA. CSIR 2016.

Co-Author – Ecological Chapter – Wind and Solar SEA. CSIR 2014.

Co-Author – Ecological Chapter – Eskom Grid Infrastructure SEA. CSIR 2015.

Contributor – Ecological & Conservation components to SKA SEA. CSIR 2017.

Relevant Studies Related to the Current Project

- Nuweveld North, East and West WEFs. Fauna & Flora Specialist Study for EIA. Zutari 2021.
- Beaufort West PV Facility. Fauna & Flora Assessment. SiVest Environmental 2022.
- San Solar PV Facility, Kathu. Fauna & Flora Assessment. Savannah Environmental 2022.
- Soventix Phase 3 PV Facility, De Aar. Fauna & Flora Assessment. Ecologes Environmental Consultants, 2022.
- Sadawa PV Facilities, Tankwa Karoo. Fauna & Flora Assessment. Savannah Environmental 2021.
- Kotulo Tsatsi PV 1 Facility near Kenhardt. Fauna & Flora Assessment. Savannah Environmental 2021.
- Hyperion 2 PV Facility, Kathu. Fauna & Flora Assessment. Savannah Environmental 2021.

Mura 4 Solar PV Facility

Terrestrial Biodiversity Compliance Statement

Contents

1.	SPECIALIST INFORMATION.....	III
2.	DECLARATION BY THE SPECIALIST	III
3.	UNDERTAKING UNDER OATH/ AFFIRMATION	IV
	SHORT CV/SUMMARY OF EXPERTISE – SIMON TODD	V
1.	INTRODUCTION.....	1
1.1	Scope and Objectives	1
2.	TECHNICAL DESCRIPTION	2
2.1	Project Location	2
2.2	Project Description.....	3
3.	ASSESSMENT METHODOLOGY	4
3.1	Site Visit.....	4
3.2	Data Sourcing and Review.....	5
4.	ASSUMPTIONS AND LIMITATIONS	6
5.	DESCRIPTION OF THE RECEIVING ENVIRONMENT	7
5.1	Vegetation	7
5.2	Fauna	8
5.3	Critical Biodiversity Areas & Broad-Scale Processes	9
5.4	Site Sensitivity Assessment	10
5.5	Cumulative Impacts	11
6.	COMPARATIVE ASSESSMENT OF ALTERNATIVES	12
6.1	No-Go Alternative	12
7.	PROPOSED MITIGATION ACTIONS.....	13
8.	CONCLUSION	13

8.1 Impact Statement..... 13

9. REFERENCES..... 0

List of Figures

- Figure 1:** Locality Map of the Mura Series of PV developments and their associated EGI corridor, showing the location of the Mura 4 Solar project with the red boundary outline.3
- Figure 2.** Map showing the sampling track (yellow line) that was walked through the Mura 3 (red) and Mura 4 (blue) PV footprint areas.5
- Figure 3.** DFFE Screening Tool output for the Mura 4 site showing that tool indicates that the site falls entirely within low sensitivity areas for the Terrestrial Biodiversity Theme.7
- Figure 4.** Typical open plains within the Mura 4 Solar project area, representative of the Eastern Upper Karoo vegetation type, with a high abundance of *Arctotis leiocarpa*, following the rains that occurred earlier in the season.8
- Figure 5.** Critical Biodiversity Areas and ESAs for the wider Mura project area, which is a combination of the Western Cape Biodiversity Spatial Plan for the Beaufort West municipality and the Northern Cape CBA map.10
- Figure 6.** Sensitivity map for the Mura 3 and Mura 4 project areas, illustrating areas with habitats of higher sensitivity that should be avoided as much as possible by the development.11

MURA 4 SOLAR PV FACILITY

Terrestrial Biodiversity Compliance Statement

1. INTRODUCTION

Mura 4 (Pty) Ltd has appointed WSP Group Africa (Pty) Ltd to undertake the required EIA Process for the proposed construction of the Mura 4 Solar Photovoltaic (PV) Energy Facility (SEF) and associated grid connection infrastructure southeast of Loxton in the Western Cape Province. The project involves the development of a solar-energy facility with a total generation capacity of approximately 360 MWac electricity from renewable solar energy to be supplied to the national Eskom grid via the approved Nuweveld Collector Substation, west of the site. The necessary associated infrastructure, including BESS, access roads, substations and control building(s) form a part of this application.

As part of the required studies for the required Scoping and EIA application for environmental authorisation, 3Foxes Biodiversity Solutions has been appointed to provide terrestrial ecological input for the development application. The DFFE Screening Tool indicates that the Terrestrial Biodiversity Theme for the site is restricted to areas of low sensitivity. Consequently, in terms of the regulations, a Terrestrial Biodiversity Compliance Statement is required for the Mura 4 PV Facility. To these ends, this Terrestrial Biodiversity Compliance Statement for the Mura 4 PV Facility, addresses the potential impacts of the Mura 4 PV Facility on Terrestrial Biodiversity and must be included in the EIA for the development and any mitigation and monitoring measures as identified, must be incorporated into the EMP for the development.

1.1 Scope and Objectives

In terms of GN 320 (20 March 2020) and GN 1150 (30 October 2020) of the NEMA EIA Regulations of 2014 (as amended), prior to the commencement of 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 Screening Tool. In terms of the Assessment Criteria, the following guidelines are provided for areas identified as Low Sensitivity:

1.1 An applicant, intending to undertake an activity identified in the Scope of this Protocol, on a site identified as being of “low sensitivity” for terrestrial biodiversity on the national web based environmental screening tool must submit a Terrestrial Biodiversity Compliance Statement to the competent authority, unless:

1.1.1 The information gathered from the Initial Site Sensitivity Verification differs from that identified as having a “low” terrestrial biodiversity sensitivity by the national web based environmental screening tool and it is found to be of a “very high” sensitivity.

1.2 Should paragraph 1.1.1 apply, a Terrestrial Biodiversity Impact Assessment is to be undertaken and a report should be prepared in accordance with the requirements of a Terrestrial Biodiversity Impact Assessment.

2. Terrestrial Biodiversity Compliance Statement

2.1 The Terrestrial Biodiversity Compliance Statement, must be prepared by a suitably qualified specialist in the field of ecological sciences, on the site being submitted as the preferred development site and must verify:

2.1.1 That the site is of “low” sensitivity for terrestrial biodiversity; and

2.1.2 Whether or not the proposed development will have any impact on the biodiversity feature.

3. The Terrestrial Biodiversity Compliance Statement, must contain, as a minimum, the following information:

3.1 Contact details and curriculum vitae of the specialist including SACNASP registration number and field of expertise;

3.2 A signed statement of independence by the specialist;

3.3 Baseline profile description of biodiversity and ecosystems, including the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;

3.4 Methodology used to verify the sensitivities of the terrestrial biodiversity on the national web based environmental screening;

3.5 Methodology used to undertake the site survey and prepare the Compliance Statement, including equipment and modelling used where relevant;

3.6 Where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPr;

3.7 A description of the assumptions made and any uncertainties or gaps in knowledge or data as well as a statement of the timing and intensity of site inspection observations; and

3.8 Any conditions to which the statement is subjected.

4 A signed copy of the full **Terrestrial Biodiversity Compliance Statement** must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.

The above Terms of Reference and reporting requirements are achieved in this study and report.

2. TECHNICAL DESCRIPTION

2.1 Project Location

The project is located approximately 42km southeast of the town of Loxton within the Beaufort West Municipality, Western Cape Province (Figure 1). The site falls outside of any REDZ with the result that a full S&EIA process is required for authorisation. The Mura 4 Solar project lies immediately adjacent to the Mura 3 Solar Project site and will share an access road.

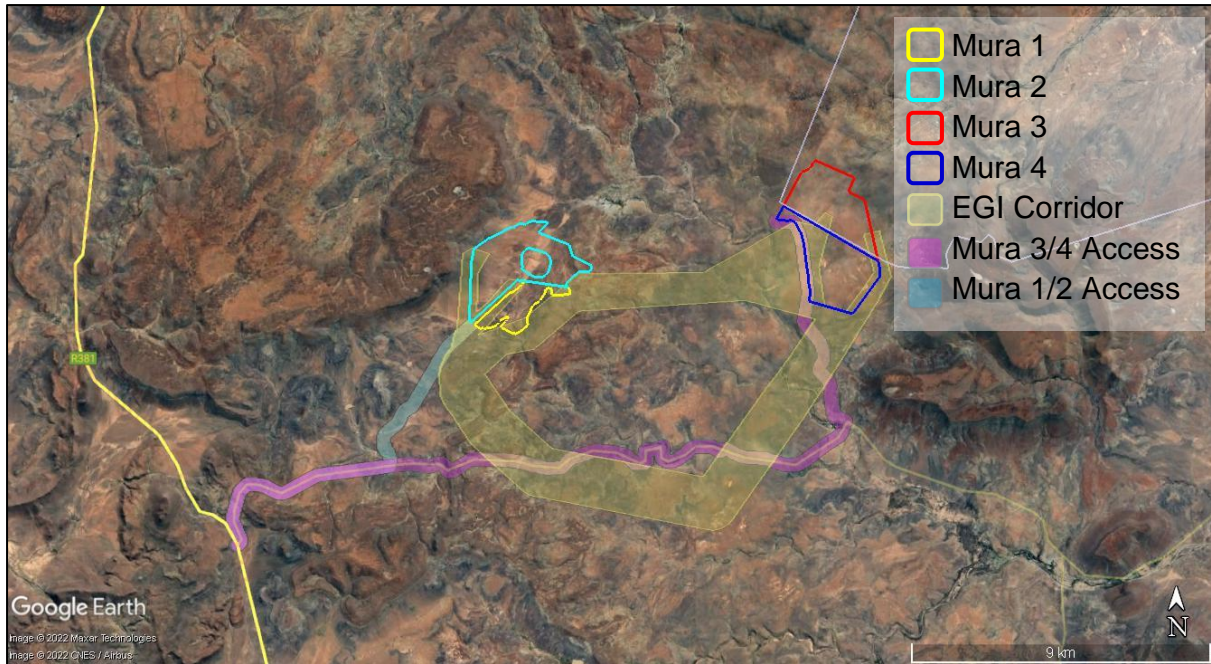


Figure 1: Locality Map of the Mura Series of PV developments and their associated EGI corridor, showing the location of the Mura 4 Solar project with the dark blue boundary outline.

2.2 Project Description

The following are proposed as part of each project. It should be noted that the areas under consideration for each solar project site should be assumed to be wholly transformed and will contain the following:

A. Solar Field, comprising Solar Arrays:

- Maximum height of 6 m;
- PV Modules that are located on either single axis tracking structures or fixed tilt mounting structures or similar

B. Solar Farm Substation:

- Maximum height of 12m;
- Two up to 150 m x 75 m substation yards that will include:
 - Substation building; and
 - High voltage gantry.

C. Building Infrastructure:

- Maximum height of 8m;
- Offices;
- Operational and maintenance (O&M)/ control centre;
- Warehouse/workshop;
- Ablution facilities; and

- Converter/inverter stations.

D. Li-ion or similar solid state Battery Energy Storage System (BESS):

- Each solar farm will have up to a 4 ha area for a 240 MWac BESS;
- BESS substation (same specifications as the solar farm substations)
- Connected to the solar farm sub/switching stations via an underground high voltage cable.

E. Other Infrastructure located within the solar area footprint:

- Internal underground cables of up to 132 kV;
- Internal gravel roads;
- Fencing (between 2 – 3 m high) around the PV Facility;
- Panel maintenance and cleaning area;
- Storm water management system; and
- Up to two construction camps.

F. Associated Infrastructure (outside the solar area footprint but part of each solar project's application):

- Internal access gravel roads will have a 2-4 m wide driving surface and may require side drains on one or both sides. During construction the roads may be up to 12m wide but this will be a temporary impact and rehabilitated following the construction phase; and
- Up to two 2.2 ha construction camps located within the access road corridor.

3. ASSESSMENT METHODOLOGY

3.1 Site Visit

The site was visited twice for the current project. An initial field assessment took place on the 8th of June 2022 and a follow-up field assessment on the 19th of October 2022. During the initial field assessment, a broad area was investigated in the field and the primary aim was to survey the ecological features of the site to inform a sensitivity map of the whole project area that can be used to guide the final development footprint for the PV areas and grid connection. A full species list for the site was developed during the field sampling and attention was paid to the possible presence of any flora of concern within the development footprint. Sensitive species and habitats within the footprint were recorded where present and mapped with a GPS if necessary. The track that was walked through the Mura 4 Solar PV footprint areas has a total length in excess of 8km (Figure 2). During the follow-up field assessment, the vegetation had dried significantly from the initial site visit and no additional species were observed.

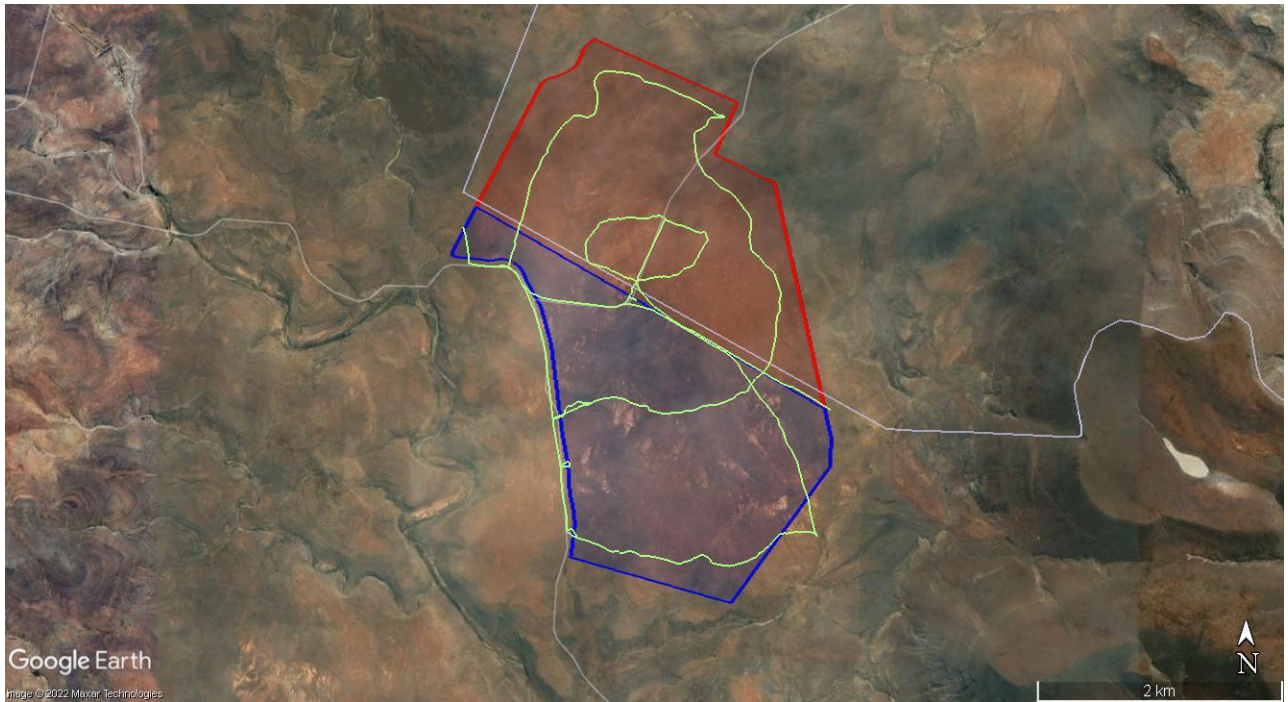


Figure 2. Map showing the sampling track (yellow line) that was walked through the Mura 3 (red) and Mura 4 (blue) PV footprint areas.

3.2 Data Sourcing and Review

Data sources from the literature consulted and used where necessary in the study includes the following:

Vegetation:

- Vegetation types were extracted from the South African National Vegetation Map (2018 update).
- Information on plant and animal species recorded for the wider area was extracted from the South African Biodiversity Information Facility (SABIF)/ SANBI Integrated Biodiversity Information System (SIBIS) database hosted by the South African National Biodiversity Institute (SANBI). Data was extracted for a significantly larger area than the study area, but this is necessary to ensure a conservative approach as well as counter the fact that the site itself has not been well sampled in the past.
- The International Union for Conservation of Nature (IUCN) conservation status of the species in the list was also extracted from the database and is based on the Threatened Species Programme, Red List of South African Plants (2022).

Ecosystem:

- Freshwater and wetland information was extracted from the National Freshwater Ecosystem Priority Areas assessment, NFEPA (Nel *et al.* 2011) as well as the 2018 NBA.
- Critical Biodiversity Areas (CBAs) and ESAs in the study area were obtained from the 2017 Western Cape Biodiversity Spatial Plan (WC-BSP), for the Beaufort West Municipality, which includes the study area.
- Protected Area Expansion Strategy Focus Areas for the region were extracted from the 2018 NPAES (DEA 2018) available at https://egis.environment.gov.za/data_egis/data_download/current

- There are no threatened ecosystems within the site (NBA 2018)
- Strategic Water Source Areas (SWSAs) for the area were extracted from the SWSAs map available on the SANBI BGIS data portal (Water Research Commission. 2017 Surface and Groundwater SWSA [Vector] 2017).

Fauna

- Lists of mammals, reptiles and amphibians which are likely to occur at the site were derived based on distribution records from the literature and the ADU databases (ReptileMap, Frogmap and MammalMap) <http://vmus.adu.org.za> as well as the iNaturalist citizen science site <https://www.inaturalist.org/>
- Literature consulted includes Branch (1988) and Alexander and Marais (2007) for reptiles, Du Preez and Carruthers (2009) for amphibians, EWT & SANBI (2016) and Skinner and Chimimba (2005) for mammals.
- The faunal species lists provided are based on species which are known to occur in the broad geographical area, as well as an assessment of the availability and quality of suitable habitat at the site.
- The conservation status of mammals is based on the IUCN Red List Categories (EWT/SANBI 2016), while reptiles are based on the South African Reptile Conservation Assessment (Bates et al. 2013) and amphibians on Minter et al. (2004) as well as the IUCN (2022).

4. ASSUMPTIONS AND LIMITATIONS

A number of limitations and assumptions are inherent in ecological studies generally and with the assessment of rare fauna. These include the following:

- It is not possible to confirm the absence of a faunal species with 100% certainty. A species may be absent from an area during sampling but may move through the area occasionally or seasonally.
- Some species are rare or difficult to locate and it may be very difficult to confirm either the absence or presence of such species without long-term studies.
- The presence of such species are assessed in the current study based on observations of such species from the wider area in the various publicly available databases and citizen science websites (Virtual Museum & iNaturalist), as well as the habitat suitability, quality and condition as observed in the field.

In terms of vegetation, conditions at the time of the initial survey were in a relatively favourable condition for the field assessment as there had been rain prior to sampling and the abundance of annuals and geophytes as relatively high, with many species growing or in flower. Although not all of the PV area could be searched given its' large extent, the footprint area is considered to have been well-covered and it is highly unlikely that there are any significant vegetation features present that would not have been observed during the study. Given the extent of the sample track and the relatively favourable conditions at the time of the site visit, there are few limitations and assumptions required with regards to the vegetation of the site and the presence of plant SCC within the PV development footprint.

5. DESCRIPTION OF THE RECEIVING ENVIRONMENT

The output of the DFFE Screening Tool for the Terrestrial Biodiversity Theme is illustrated below and indicates that the whole of the Mura 4 site falls within areas classified as Low Sensitivity. The fauna and flora of the site is described in detail in the Plant and Animal Compliance Statements for the project and a summary is provided below to provide the context for the site and the broader receiving environment.

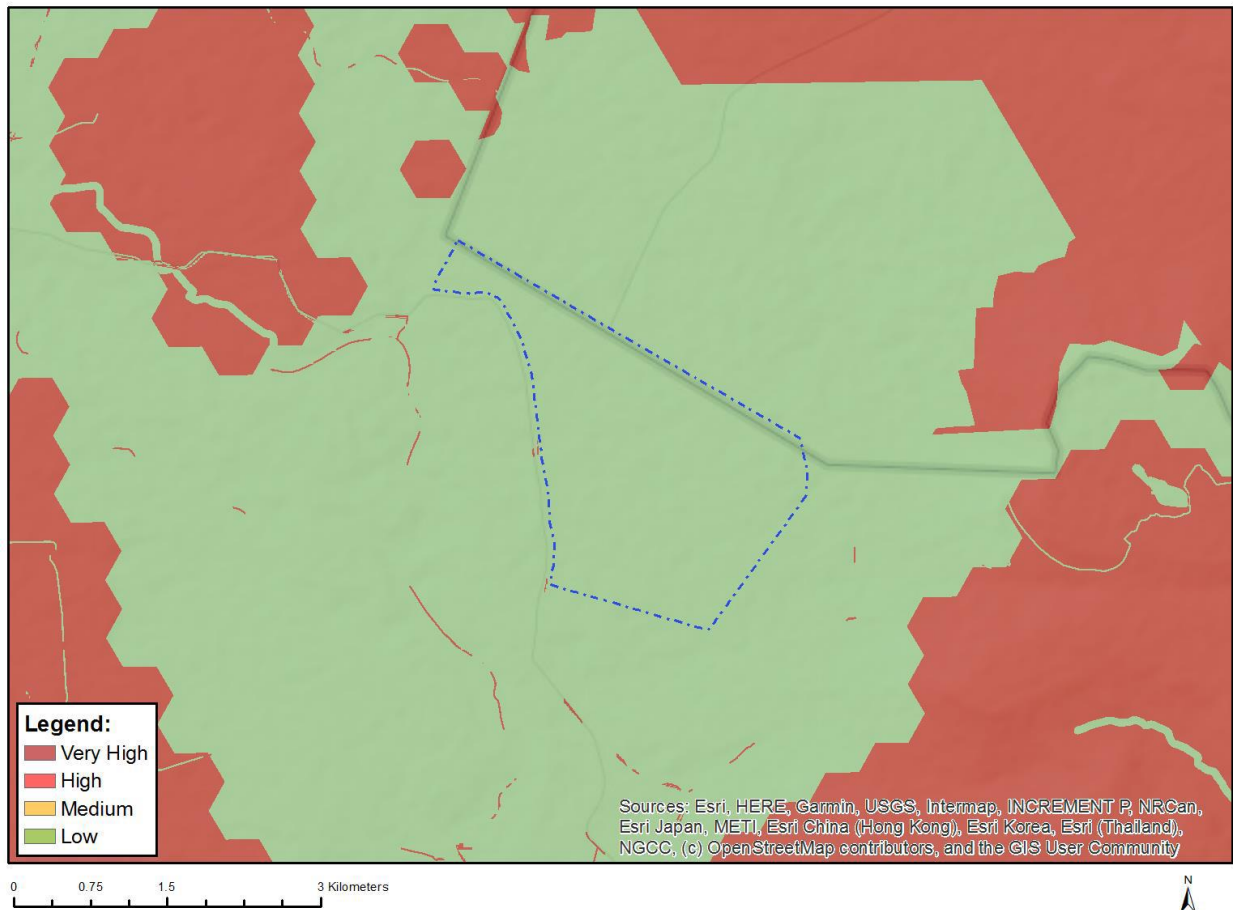


Figure 3. DFFE Screening Tool output for the Mura 4 site showing that tool indicates that the site falls entirely within low sensitivity areas for the Terrestrial Biodiversity Theme.

5.1 Vegetation

The Mura 4 Solar footprint falls entirely within the Eastern Upper Karoo vegetation type (**Figure 4**). Eastern Upper Karoo has an extent of 49 821 km² and is the most extensive vegetation type in South Africa and forms a large proportion of the central and eastern Nama Karoo Biome. This vegetation type is classified as Least Threatened, and about 2% of the original extent has been transformed largely for intensive agriculture. Eastern Upper Karoo is however poorly protected and less than 1% of the 21% target has been formally conserved. Mucina & Rutherford (2006) list eight endemic species for this vegetation type, which considering that it is the most extensive unit in the country, is not very high. As a result, this is not considered to represent a sensitive vegetation type. Within the study area, the vegetation is relatively homogenous, although there is some variation in which species are dominant depending on soil depth and the degree of rockiness.



Figure 4. Typical open plains within the Mura 4 Solar project area, representative of the Eastern Upper Karoo vegetation type, with a high abundance of *Arctotis leiocarpa*, following the rains that occurred earlier in the season.

5.2 Fauna

In terms of the fauna that potentially occur at the site, the potential diversity is considered to be moderate and numbers approximately 38 mammals, 28 reptiles and about 6 frog and toads. Mammals observed at the site directly, indirectly or through the camera trapping include Steenbok, Kudu, Cape Hare, Cape Porcupine, Suricate, Bat-eared Fox, Cape Fox, Cape Mongoose, Yellow Mongoose, Common Genet, Aardwolf and Black-backed Jackal. Reptiles and amphibians observed on the site or in the immediate environment include Leopard Tortoise, Southern Tent Tortoise, Karoo Girdled Lizard, Spotted Sand Lizard, Southern Rock Agama, Cape Thick-toed Gecko, Variegated Skink, Ground Agama and Karoo Toad. Although the DFFE Screening Tool identified only the Karoo Dwarf Tortoise and Riverine Rabbit as being of potential concern at the site, there are several other fauna species of concern that occur in the wider area (**Table 1**). However, interrogation of these also suggests that none of these are likely to occur within the site as they all occur in habitats that are not represented within the PV footprint area.

In terms of the two species identified by the Screening Tool, the Karoo Dwarf Tortoise and the Riverine Rabbit, there is no suitable habitat for either species within the development footprint. The Riverine Rabbit is associated with well-vegetated alluvial floodplains of the ephemeral rivers of the central and upper Karoo and in the Upper Karoo at least, do not tend to stray far from this habitat. Since there is no alluvial floodplain habitat within the site, it can be confirmed that the site can be considered low sensitivity for this species. The Karoo Dwarf Tortoise *Chersobius boulengeri* occurs in association with dolerite ridges and rocky outcrops of the southern Succulent and Nama Karoo biomes, and peripherally in the Albany Thicket biome in the southeast, at altitudes of approximately 800 to 1,500 m. The vegetation usually consists of dwarf shrubland

that often contains succulent and grassy elements. The tortoises usually take shelter under rocks in vegetated areas or in rock crevices. However, these are quite specific in terms of their requirements with the result that suitable retreats for the species are not common. Due to their strong habitat association, populations are isolated on rocky outcrops with specialized vegetation (Hofmeyr et al. 2018). The typical dolerite outcrops associated with this species do not occur within the PV footprint areas and there are no other significant rocky outcrops present within the PV areas that would be likely to offer shelter for this species. As such, it is concluded that the Mura 4 Solar PV area can be considered low sensitivity for this species.

Table 1. Faunal species conservation concern known from the broad area, and their likely presence within the site.

Species	Wider area	Mura 4 PV footprint
Vaal Rhebok (NT)	Present on higher ground, especially the Nuweveld mountains.	Not present within the site or within the PV areas.
Black-footed Cat (VU)	Previously recorded from within the Karoo National Park, but no recent records.	No recent records from the area. The habitat within the site is also considered sub-optimal for this species as the cover is very low and there are very few burrow refuge sites available.
Leopard (VU)	This species is generally confined to protected areas or mountainous terrain and may be present in the wider area.	The terrain within and near the site is highly unlikely to be attractive for this species which prefers rugged terrain with more cover than the site offers.
Riverine Rabbit (CR)	There are records from the Krom River and some of the larger tributaries.	There is no habitat within the site for this species and it is not present.
Littledale's Whistling Rat (NT)	Occurs in the wider area and the arid parts of the Nama and Succulent Karoo and Namibia.	This species is associated with sandy soils and makes characteristic burrows that are easily observed. There is no habitat for this species within the site.
Karoo Dwarf Tortoise (NT)	Occasional records from the broad area. Associated with dolerite outcrops.	There is no habitat considered suitable for this species within the PV development footprint.

5.3 Critical Biodiversity Areas & Broad-Scale Processes

The CBA and ESA map for the broader project area is indicated below in Figure 5 and indicates that there are no CBAs within the Mura 4 footprint area. There are a few small ESAs within the site associated with the minor drainage features that occur within the site. The Mura 3 and Mura 4 access road traverses a large CBA in the Western Cape, but as this is along the existing public access road to the site, the access road route is considered low sensitivity and would not generate a significant negative impact on the affected CBA. The site does not lie within an area that appears to have a high significance in terms of faunal movement. The camera traps located within the site did not show a higher-than-average species diversity or abundance of fauna and overall diversity and abundance within the site was low compared to some other camera trapped areas in the wider vicinity. As such, the site is considered low sensitivity for ecological processes and the development of the Mura 4 site as a PV facility would not generate a significant disruption of ecological processes in the area. In addition, the site does not lie within an NPAES Focus Area or SWSA area, indicating that the site has not been identified as being of significance for conservation or water resource protection.

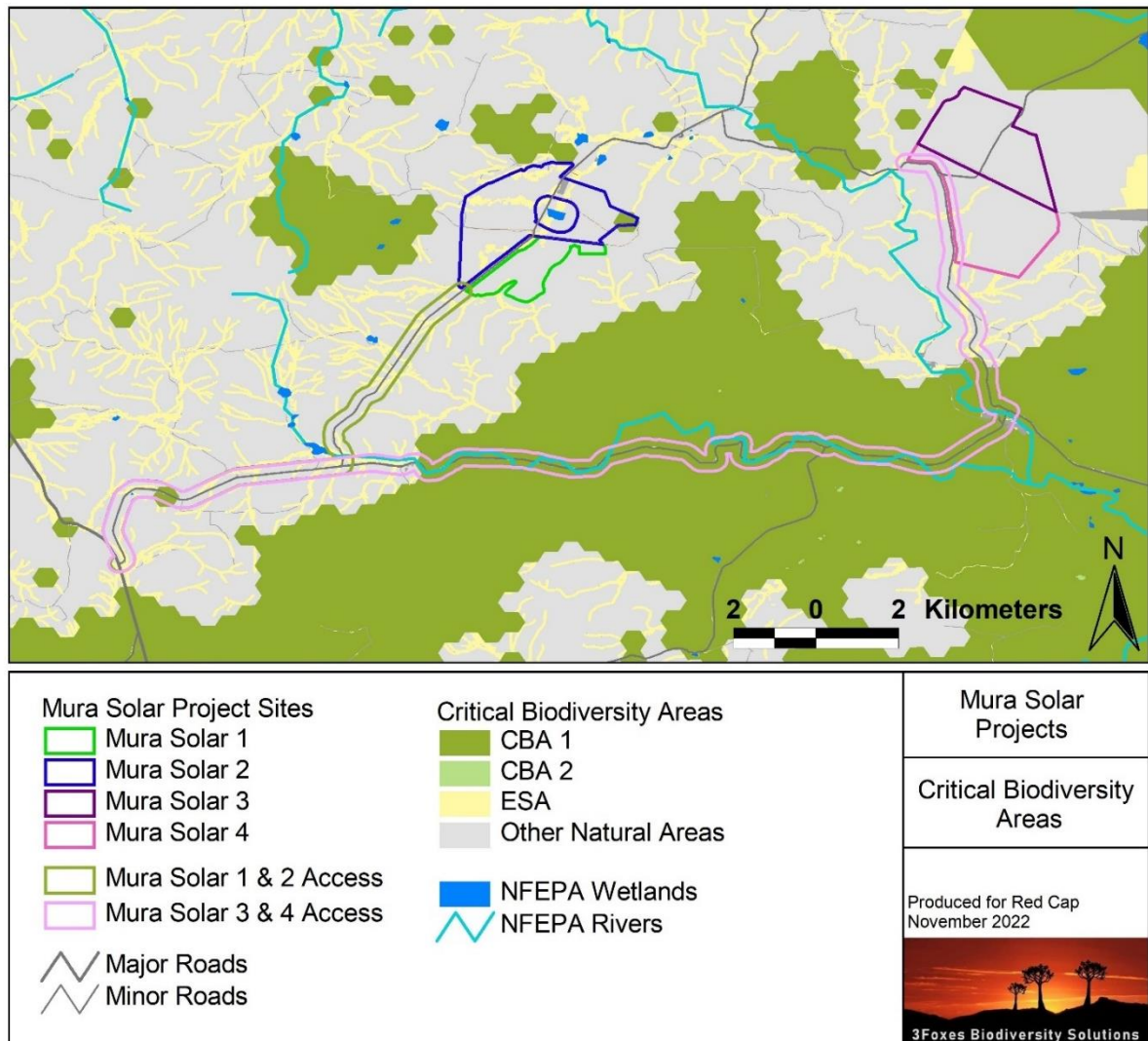


Figure 5. Critical Biodiversity Areas and ESAs for the wider Mura project area, which is a combination of the Western Cape Biodiversity Spatial Plan for the Beaufort West municipality and the Northern Cape CBA map.

5.4 Site Sensitivity Assessment

In order to inform the planning and layout of the development, an ecological sensitivity map for the full project site was developed in order to guide the developer and aid in reducing the overall impact of the development. The sensitivity map is illustrated below in **Figure 6** and illustrates areas that are considered to represent more sensitive areas from a general ecological perspective. It is important to note that these areas are not areas where SCC have been observed, but rather habitats that are considered more vulnerable to disturbance due to their higher diversity or lower tolerance of disturbance. As can be seen from the map, there are no areas within the development footprint that have been classified as High sensitivity and it is restricted to low sensitivity areas with some restricted areas of habitat considered to represent medium sensitivity areas which are considered vulnerable to disturbance and should preferably be left free from PV development.

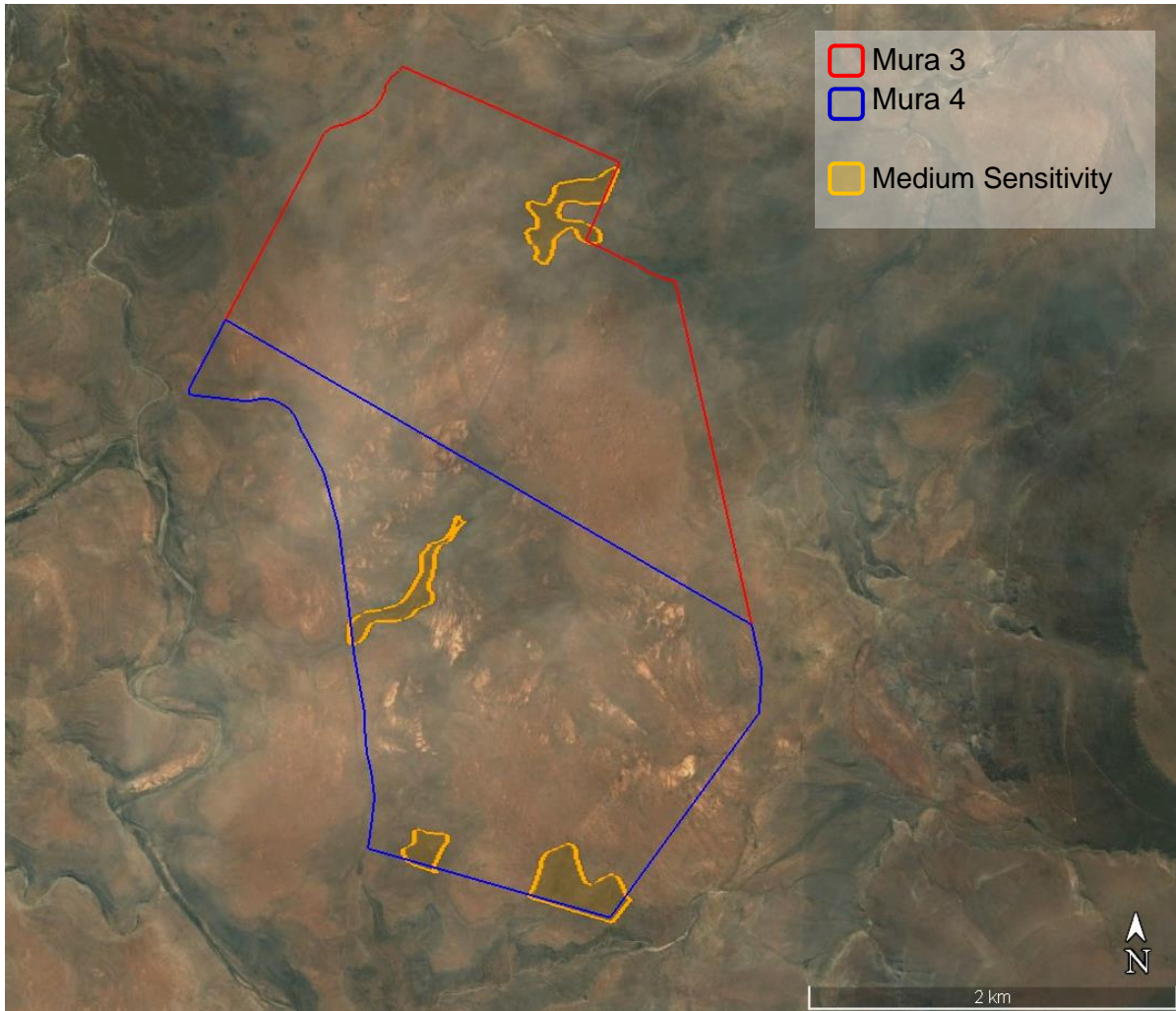


Figure 6. Sensitivity map for the Mura 3 and Mura 4 project areas, illustrating areas with habitats of higher sensitivity that should be avoided as much as possible by the development.

5.5 Cumulative Impacts

In terms of cumulative impacts in and around the site, there are no built PV or wind energy facilities within 30km of the site to date. The three adjacent Nuweveld WEFs, and the Hoogland 1 and 2 WEFs which lie to the north and southwest of the Nuweveld WEF site have been authorised. The total footprint from these projects is estimated at 600ha, while the Mura 1 and 2 PV projects which are currently in process would also cover an area of approximately 704 ha. The adjacent Mura 3 project would add an additional 436 ha to this total. While it is clear that there is a node of renewable energy development starting to develop south of Loxton, there are no facilities built to date and the current level of transformation in the area remains low. The contribution of the Mura 4 project at 466 ha is therefore considered acceptable, especially given the low sensitivity of the affected habitats. The Taaibos WEFs and Soutrivier WEFs that are also within 30km of the Mura SEF development have not received EA.

In terms of specific cumulative impacts, the major fauna species of potential concern in the area would be the Riverine Rabbit and Karoo Dwarf Tortoise. However, as the current development lies outside of the habitat of either species, the contribution of the current project to cumulative impact on these two species is

considered very low. In addition, there are no specific plant communities or habitats present within the footprint that are considered to be rare, localised or of high ecological significance, the development would not contribute to an impact on these features. As such, the contribution of the Mura 4 PV Facility to habitat loss would not change the overall threat status of any vegetation types or special habitats and the overall level of cumulative impact in the area is considered acceptable.

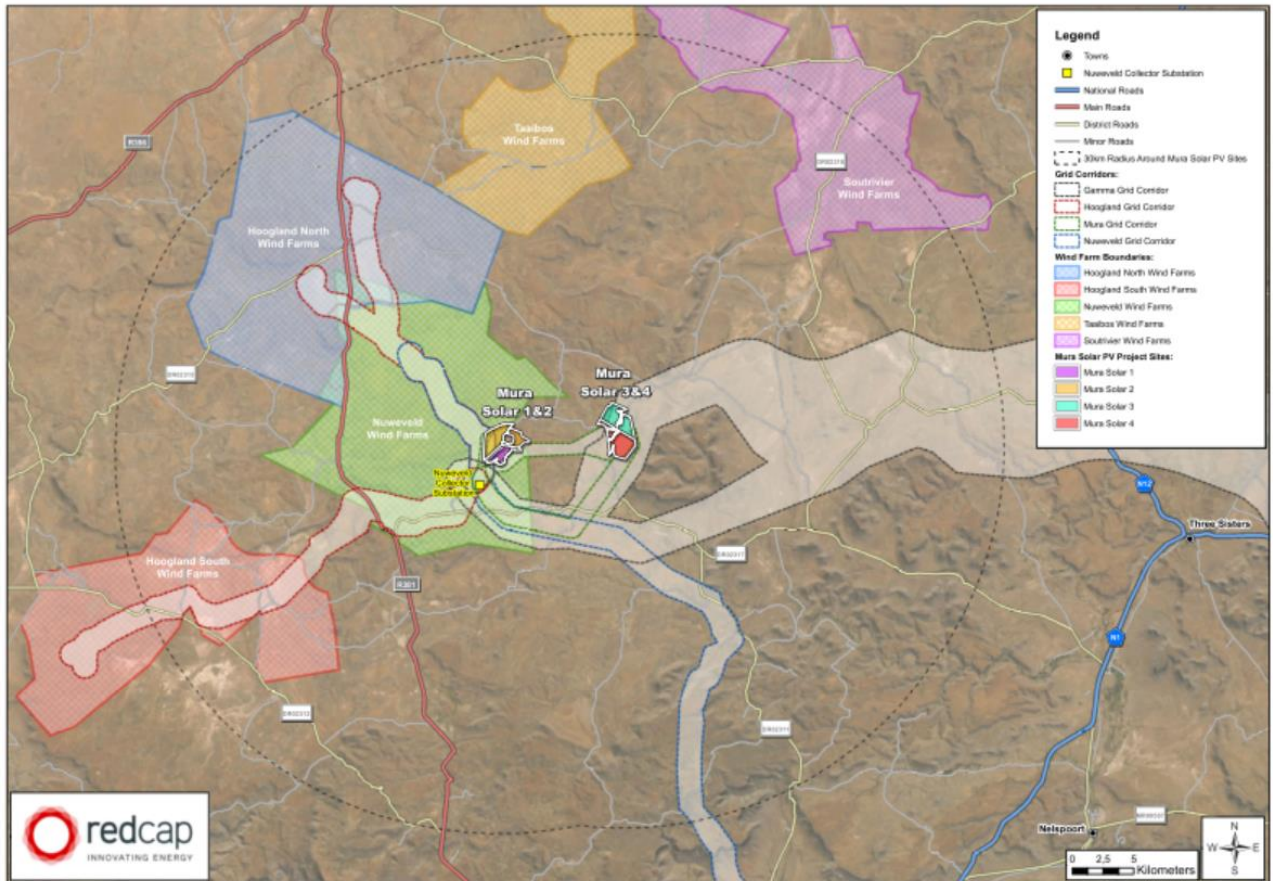


Figure 7. Cumulative assessment map of projects within 30km of the proposed Mura PV Development

6. COMPARATIVE ASSESSMENT OF ALTERNATIVES

The site selection and pre-screening process undertaken ensured that all areas not suitable for development were excluded from the footprint considered for this assessment. There are therefore no alternatives to be considered with regards to the PV facility.

6.1 No-Go Alternative

Under the no-go alternative, the current land use consisting of extensive livestock grazing would continue. When applied correctly, such livestock grazing is considered to be largely compatible with long-term biodiversity conservation, although in practice there are some negative effects associated with such land use such as predator control and negative impacts on habitat availability for the larger ungulates that would historically have utilised the area. Under the current circumstances, the no-go alternative is considered to

represent a low long-term negative impact on the environment, but has less impact than the loss of habitat resulting from the construction of the PV facility.

7. PROPOSED MITIGATION ACTIONS

The following avoidance and mitigation measures should be included in the EMP for the Mura 4 Solar Facility in order to avoid, reduce and manage impacts on terrestrial biodiversity:

Impact/Aspect	Mitigation/Management Actions	Responsibility	Methodology	Mitigation/Management Objectives and Outcomes	Frequency
Construction Phase disturbance	Demarcate sensitive areas as no-go areas	Environmental Officer	Demarcate sensitive areas with construction tape, shield fencing etc as appropriate.	No excess habitat loss within sensitive areas.	Daily/As required during construction
Construction Phase disturbance	Rehabilitation of disturbed areas	Environmental Officer	Surface scarification and active rehabilitation of temporary use areas after construction with indigenous species.	Revegetation of cleared areas	After construction with annual follow-up to ensure adequate revegetation.
Alien Vegetation Management	Alien vegetation control	Environmental Officer	Walked Surveys of access roads, PV areas and associated infrastructure.	Alien vegetation clearing & control	Annual
Erosion Management	Erosion control and revegetation	Environmental Officer	Walked Surveys of PV perimeter, access roads and other areas adjacent to hard infrastructure.	Remedial action to reduce erosion including revegetation where necessary.	Annual

8. CONCLUSION

The DFFE Screening Tool indicates that the Mura 4 PV project site has a low sensitivity for Terrestrial Biodiversity Theme and the field assessment was able to confirm the low sensitivity as there are no significant vegetation or faunal features within the development footprint. The site does not lie within a NPAES Focus Area or a Strategic Water Resource Area (SWSA). The contribution of the current project to cumulative impact is considered to be relatively low given the low sensitivity of the features within the development footprint and the low level of transformation the broader area has experienced. This Terrestrial Biodiversity Theme Compliance Statement therefore finds that the footprint of the Mura 4 Solar PV Facility is restricted to low sensitivity areas with no observed plant or animal species of conservation concern present, and as such, there are no reasons to oppose the Mura 4 Solar PV facility.

8.1 Impact Statement

The footprint of the Mura 4 PV Facility is restricted to low sensitivity features and in terms of terrestrial biodiversity is considered acceptable. As such, from a terrestrial ecology perspective there are no reasons to oppose the Mura 4 PV Facility.

9. REFERENCES

- Alexander, G. & Marais, J. 2007. A Guide to the Reptiles of Southern Africa. Struik Nature, Cape Town.
- Branch W.R. 1998. Field guide to snakes and other reptiles of southern Africa. Struik, Cape Town.
- Bates, M.F., Branch, W.R., Bauer, A.M., Burger, M., Marais, J., Alexander, G.J. & de Villiers, M. S. 2013. Atlas and Red List of the Reptiles of South Africa, Lesotho and Swaziland. *Strelitzia* 32. SANBI, Pretoria.
- Department of Environmental Affairs and Tourism, 2007. National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004): Publication of lists of Critically Endangered, Endangered, Vulnerable and Protected Species. Government Gazette, Republic of South Africa.
- Department of Environmental Affairs. 2018. National Protected Areas Expansion Strategy for South Africa 2018. Department of Environmental Affairs, Pretoria.
- Du Preez, L. & Carruthers, V. 2009. A Complete Guide to the Frogs of Southern Africa. Struik Nature., Cape Town.
- Mills, A., Fey, M., Donaldson, J. *et al.* Soil infiltrability as a driver of plant cover and species richness in the semi-arid Karoo, South Africa. *Plant Soil* **320**, 321–332 (2009). <https://doi.org/10.1007/s11104-009-9904-5>
- Mills, A.J. and Fey, M.V., 2004. Effects of vegetation cover on the tendency of soil to crust in South Africa. *Soil Use and Management*, 20(3), pp.308-317.
- Minter LR, Burger M, Harrison JA, Braack HH, Bishop PJ & Kloepfer D (eds). 2004. Atlas and Red Data book of the frogs of South Africa, Lesotho and Swaziland. SI/MAB Series no. 9. Smithsonian Institution, Washington, D.C.
- Mucina L. & Rutherford M.C. (eds) 2006. The Vegetation of South Africa, Lesotho and Swaziland. *Strelitzia* 19. South African National Biodiversity Institute, Pretoria.
- Skinner, J.D. & Chimimba, C.T. 2005. The mammals of the Southern African Subregion. Cambridge University Press, Cambridge.