

KOTULO TSATSI PV 3 FACILITY PLANT SPECIES COMPLIANCE STATEMENT



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March 2023

KOTULO TSATSI PV 3 FACILITY

PLANT SPECIES COMPLIANCE STATEMENT

EXECUTIVE SUMMARY

The Applicant, Kotulo Tsatsi Energy (Pty) Ltd, is proposing the construction of a photovoltaic (PV) solar energy facility (known as the Kotulo Tsatsi Energy PV3 Solar Facility located on a site located approximately 70km south-west of the town of Kenhardt and 60km north east of Brandvlei in the Northern Cape Province. The development is currently in the EIA process and 3Foxes Biodiversity Solutions has been appointed to provide a Plant Compliance Statement for the development.

The DFFE Screening Tool indicates that the site has a low sensitivity for the Plant Species Theme and no species of concern are known from the area. The site verification was able to confirm that there are no significant vegetation features or other plant SCC within the development footprint. The vegetation within the footprint is typical for the area and consists of low shrubland on open plains representative of the Bushmanland Basin Shrubland vegetation type, with some areas of Bushmanland Vloere near the development. Based on the results of the field assessment, the site is therefore confirmed to be low sensitivity from a Plant Species Theme perspective.

This Plant Species Theme Compliance Statement therefore finds that the footprint of the Kotulo Tsatsi PV 3 Facility is restricted to low sensitivity areas with no observed plant species of conservation concern present, and as such, there are no reasons to oppose the Kotulo Tsatsi PV 3 Facility.



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

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

	(For official use only)
File Reference Number:	
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

Kotulo Tsatsi PV 3 Facility

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:

28 March 2023

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

28 March 2023

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>
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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 Recent Studies Requiring Similar Expertise to the Current Project

- 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.

Kotulo Tsatsi PV 3 Facility

Plant Species Compliance Statement

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KOTULO TSATSI PV 3 FACILITY

Plant Species Compliance Statement

1. INTRODUCTION

The Applicant, Kotulo Tsatsi Energy (Pty) Ltd, is proposing the construction of a photovoltaic (PV) solar energy facility (known as the Kotulo Tsatsi Energy PV3 Solar Facility located on a site located approximately 70km south-west of the town of Kenhardt and 60km north east of Brandvlei in the Northern Cape Province. The solar energy facility will comprise arrays of PV panels and associated infrastructure and will have a contracted capacity of up to 480MW. The facility will be located within the farm Portion 3 of Farm Styns Vley 280. Savannah Environmental are conducting the required EIA process and 3Foxes Biodiversity Solutions has been appointed to provide Terrestrial Biodiversity inputs for the proposed Kotulo Tsatsi Energy PV3 Solar Facility as part of the EIA 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 site falls within an area with Low Sensitivity under the Plant Species Theme. The site verification was able to confirm this low sensitivity and no plant SCC were observed on the site. Consequently, in terms of the regulations, a Plant Species Compliance Statement is the recommended level of study for the EIA process. To these ends, this Plant Species Compliance Statement for the Kotulo Tsatsi PV 3 Facility, addresses the potential impacts of the project on vegetation and plant species 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 the GN 1150 30 October 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*, the Terrestrial Plant Species Compliance Statement should include the following details:

- The compliance statement must be prepared by a SACNASP registered specialist under one of the two fields of practice (Botanical Science or Ecological Science).
- The compliance statement must:
 - be applicable within the study area;
 - confirm that the study area is of “low” sensitivity for terrestrial plant species; and

- indicate whether or not the proposed development will have any impact on SCC.
- The compliance statement must contain, as a minimum, the following information:
 - contact details and relevant experience as well as the SACNASP registration number of the specialist preparing the compliance statement including a curriculum vitae;
 - a signed statement of independence by the specialist;
 - a statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;
 - a description of the methodology used to undertake the site survey and prepare the compliance statement, including equipment and modelling used where relevant;
 - where required, proposed impact management actions and outcomes or any monitoring requirements for inclusion in the EMP; and
 - a description of the assumptions made and any uncertainties or gaps in knowledge or data;
 - the mean density of observations/ number of samples sites per unit area; and
 - any conditions to which the compliance statement is subjected.
- A signed copy of the Terrestrial Plant Species Compliance Statement must be appended to the Basic Assessment Report or the Environmental Impact Assessment Report.

2. TECHNICAL DESCRIPTION

2.1 Project Description

Kotulo Tsatsi Energy PV3 Solar Facility is part of the Kotulo Tsatsi PV Cluster and is located approximately 70km south-west of the town of Kenhardt and 60km north east of Brandvlei in the Northern Cape Province. The layout and location of the Facility is illustrated below in Figure 1. The output of the facility would be up to 480MW and the infrastructure associated with the PV development includes the following:

- Solar PV array footprint comprising of:
 - PV modules and mounting structures
 - Inverters and transformers
 - Integrated Energy Storage System (IESS)
 - Cabling between the project components
- On-site facility substation to facilitate the connection between the solar PV facility and the Eskom electricity grid
- Battery Energy Storage System (BESS)
- Internal access roads
- Access roads, internal distribution roads and fencing around the development footprint area.
- Admin block comprising of:
 - Site offices and maintenance buildings, including workshop areas for maintenance and storage.

- Assembly plant
- Laydown areas and temporary man camp area
- Access roads, internal distribution roads and fencing around the development area.



Figure 1. Satellite image showing the location of the proposed Kotulo Tsatsi PV 3 development, west of the R27, located between Kenhardt and Brandvlei.

3. ASSESSMENT METHODOLOGY

3.1 Site Visit

An initial site visit took place on the 14th of August 2016 when the proposed development was still a CSP plant, and the follow-up field assessment to verify and sample the current footprint took place on the 12th of December 2021. During the site visits, the different biodiversity features, habitat, and landscape units present at the site were identified and mapped in the field. Specific features visible on the satellite imagery of the site were also marked for field inspection and were verified and assessed during the site visit. Walk-through-surveys were conducted within representative areas across the different habitat units identified and all plant and animal species observed were recorded. Active searches for reptiles and amphibians were also conducted within habitats likely to harbour or be important for such. The presence of sensitive habitats such as stands of large trees, pans or rocky outcrops were noted in the field where present and recorded on a GPS. The site is homogenous and open, with the result that any features present are easily observable and it is highly unlikely that there are any species of significance or sensitive features present that were not observed during the site visits.

3.2 Data Sourcing and Review

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

- Vegetation types and their conservation status were extracted from the South African National Vegetation Map (2018 update).
- Information on plant 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.
- 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).

4. ASSUMPTIONS AND LIMITATIONS

The current study included two sites visits with associated field assessment which took place across different seasons as well as a desktop study. This serves to significantly reduce the limitations and assumptions required for the study. During both sampling periods, conditions at the site were fairly dry with a low abundance of forbs and annuals. The perennial species present were however in an adequate condition for identification. As a result, the species lists obtained for the site are considered representative and reliable for the perennial flora of the site but forbs and annual are poorly represented. However, since there are few forbs or annuals of conservation concern in the area, this is not considered to represent a significant limitation of the current study.

5. LEGAL REQUIREMENT AND GUIDELINES

5.1 National Permitting

In terms of national permits, a protected tree clearing permit is potentially required under the National Forests Act. The Notice of the List of Protected Tree Species Under the National Forests Act, 1998 (ACT NO 84 OF 1998) can be obtained from this location: <https://www.gov.za/documents/national-forests-act-list-protected-tree-species-7>. This list has not been changed since it was last published in 2014. However, no protected tree species were observed present within the site and as such, no tree clearing permit would be required.

Threatened Or Protected Species (TOPS) permits for the carrying out of restricted activities in terms of the National Environmental Management: Biodiversity Act 2004 (No. 10 of 2004) may be required. However, TOPS permits are submitted to either the national minister or the provincial minister. In

terms of the legislation, the relevant issuing authority for the current project would be the office of the MEC of the province.

The most recent lists of top species and associated legislation is available in the National Environmental Management: Biodiversity Act, 2004 (ACT NO. 10 of 2004), Threatened or Protected Species Regulations Notice 255 of 2015.

In terms of these lists, species that this might be required for, would include *Pachypodium succulentum* and *Sceletium tortuosum* (present in the area but not observed on the site). In addition to these species, SANBI maintains a national list of the IUCN conservation status of all plant species in South Africa. Any endangered (VU, EN, CR) species under this list are also subject to the TOPS regulations.

5.2 Provincial Permitting

In terms of Northern Cape provincial permits, a protected flora clearing permit from DENC would be required. This permit must list the number and location of all individuals of protected plants as listed in the provincial ordinance (Northern Cape Nature Conservation Act, 2009) as well as those plants listed as being of conservation concern by the Red List of South African Plants (<http://redlist.sanbi.org/index.php>).

This permit requires a full walk-through of the final approved PV Facility development footprint, following which the number of individuals of protected species that would be affected by the development can be quantified and used to populate the permit application. Depending on the identity of the species concerned, some would be destroyed, while other species would need to be translocated within the site to a safe site outside the development footprint, based on the recommendations of the walk-through study.

6. DESCRIPTION OF THE RECEIVING ENVIRONMENT

6.1 Vegetation Types

The Kotulo Tsatsi PV 3 Facility falls entirely within the Bushmanland Basin Shrubland vegetation type (**Figure 2**). This is an extensive vegetation type that occupies over 34 000 km² of the Northern Cape and is among the most extensive vegetation types in South Africa. As a result of the arid nature of the area, very little of this vegetation type has been affected by intensive agriculture and it is classified as Least Threatened. The field assessment identified the following species as common and characteristic species at the site: Shrubs such as *Rhigozum trichotomum*, *Phaeoptilum spinosum*, *Lycium pumilum*, *Aizoon schellenbergii*, *Osteospermum armatum*, *Eriocephalus pauperrimus*, *Rosenia glandulosa*, *Pteronia leucoclada*, *P.glomerata*, *P.sordida*, *P.leucoclada*,

Salsola tuberculata, *Sarcocaulon patersonii*, *Hermannia spinosa*, *Osteospermum armatum*, and *Zygophyllum chrysopteron*. Grasses present include *Stipagrostis ciliate*, *Stipagrostis obtusa*, *Stipagrostis uniplumis* *Enneapogon scaber*, *E.desvauxii*, *Fingerhuthia africana* and *Aristida adscensionis*. The only species of significance present are occasional individuals of the provincially protected species *Aloe claviflora* and *Hoodia gordonii* which occur at a low density.

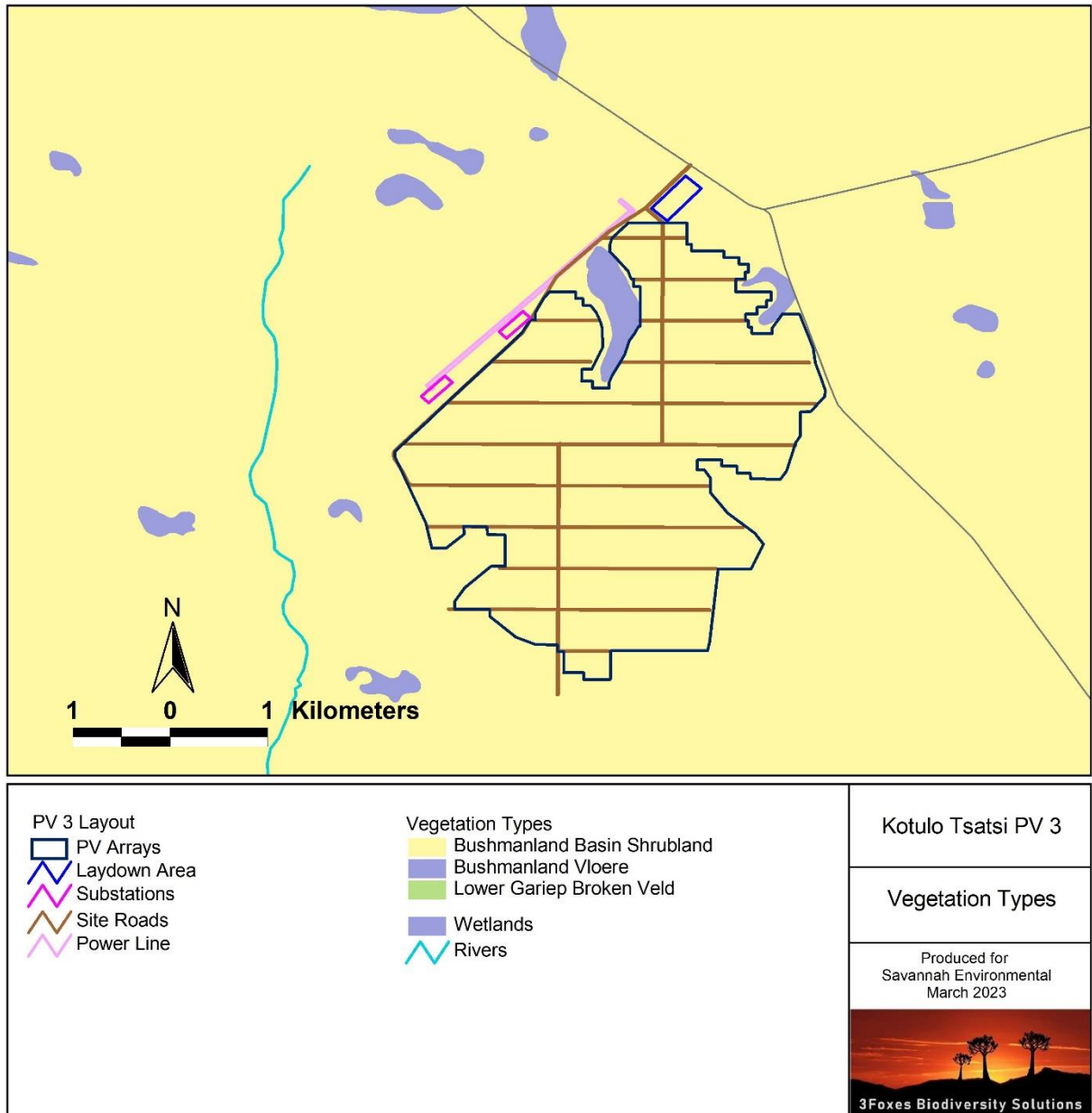


Figure 2. Vegetation map of the Kotulo Tsatsi PV 3 Facility project area, showing that the site falls within the Bushmanland Basin Shrubland vegetation type, with some pans present that represent the Bushmanland Vloere vegetation type.



Figure 3. Typical open plains within the Kotulo Tsatsi PV 3 site representing the Bushmanland Basin Shrubland vegetation type.



Figure 4. There are pans in the vicinity of the PV 3 footprint which correspond with the Bushmanland Vloere vegetation type. These areas are considered unsuitable for PV development.

6.2 Listed Plant Species

According to the DFFE Screening Tool, there are no plant species of concern that are known to occur in the immediate vicinity of the Kotulo Tsatsi PV 3 footprint area. No plant species of concern were observed during the field assessment, with the result that the sensitivity of the site can be confirmed to be low. There are however several provincially protected species present on the site including all *Aloe* species present, all *Amaryllidaceae*, all *Asclepiadaceae*, all *Iridaceae*, all *Mesembryanthemaceae* and any other species as listed in the Northern Cape Nature Conservation Act 9 of 2009. These species would require a permit to destroy or translocate should the project commence to construction.

7. PROPOSED MITIGATION ACTIONS

The following avoidance and mitigation measures should be included in the EMPr for the Kotulo Tsatsi PV 3 Facility in order to avoid, reduce and manage impacts on vegetation and plant species:

- Develop and implement alien vegetation, soil erosion, revegetation and rehabilitation management plans based on the site attributes and environmental constraints. This can be developed post-authorisation once the project is certain to go ahead.
- Ensure that all vegetation-related preconstruction permits have been obtained, and surveys and walk-throughs have been conducted prior to the commencement of construction activity.
- Preconstruction walk-through of the final development footprint to check the final footprint areas and access road routes to verify that sensitive habitats are being avoided as much as possible and also provide certainty as to the zero expected impact on plant SCC.
- Annual rehabilitation activities in line with the Generic EMPr requirements (for example, any erosion problems observed on-site should be rectified as soon as possible using appropriate revegetation and erosion control works).

The following Monitoring and management actions should be included in the EMPr:

- Ensure that all vegetation-related preconstruction permits, surveys and walk-throughs have been conducted prior to the commencement of construction activity.
- Monitoring of vegetation clearing during construction by the EO to ensure that any protected plant within the development footprint area are translocated to safety where necessary.
- Annual monitoring of runoff and erosion from the site roads and PV areas into the adjacent veld to ensure that the hardened surfaces and roads are not generating a lot of runoff that is impacting adjacent natural areas. There should be follow-up erosion control and alien vegetation clearing where required.

7.1 Cumulative Impacts

Cumulative impacts associated with the Kotulo Tsatsi PV 3 Facility are assessed in the Terrestrial Biodiversity Compliance Statement and are not assessed in detail here. From a plant species and vegetation perspective, the Kotulo Tsatsi PV 3 Facility would have very low impact on plant SCC and the affected vegetation types have been little-impacted by renewable energy development to date. As a result, the contribution of the Kotulo Tsatsi PV 3 Facility towards cumulative impact on plant SCC and vegetation is considered acceptable.

8. COMPARATIVE ASSESSMENT OF ALTERNATIVES

There are no alternatives to be considered with regards to the PV facility.

8.1 No-Go Alternative

Under the no-go alternative, the current landuse 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 landuse 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 wind energy facility.

9. CONCLUSION

- This compliance statement is applicable to the Kotulo Tsatsi PV 3 Facility development with specific reference to the layout as provided for the assessment.
- The vegetation of the site is mapped under the VegMap as Bushmanland Basin Shrubland with some Bushmanland Vloere in close proximity to the development footprint. There are no threatened vegetation types present within the site or nearby.
- No plant species of concern (SCC), were observed within the site despite extensive walked transects across the site. As such, the Kotulo Tsatsi PV 3 Facility site is confirmed as Low Sensitivity for the Plant Species Theme.

9.1 Impact Statement

The footprint of the Kotulo Tsatsi PV 3 Facility is restricted to low sensitivity areas with no observed plant species of conservation concern present. As such, from a plant species perspective there are no reasons to oppose the Kotulo Tsatsi PV 3 Facility.

10. ANNEX 1. LIST OF PLANT SPECIES

List of plant species which are known to occur in the vicinity of the Kotulo Tsatsi PV 3 site according to the SANBI SIBIS database. Species observed at the site are highlighted in bold. Listed and protected species that were observed at the site are highlighted in red.

Family	Species	Family	Species
Acanthaceae	<i>Acanthopsis disperma</i>	Acanthaceae	<i>Acanthopsis hoffmannseggiana</i>
Acanthaceae	<i>Barleria rigida</i>	Acanthaceae	<i>Blepharis mitrata</i>
Acanthaceae	<i>Monechma divaricatum</i>	Acanthaceae	<i>Monechma incanum</i>
Acanthaceae	<i>Monechma spartioides</i>	Aizoaceae	<i>Aizoon canariense</i>
Aizoaceae	<i>Aizoon schellenbergii</i>	Aizoaceae	<i>Galenia africana</i>
Aizoaceae	<i>Galenia sarcophylla</i>	Aizoaceae	<i>Tetragonia arbuscula</i>
Aizoaceae	<i>Trianthema parvifolia</i> var. <i>parvifolia</i>	Amaranthaceae	<i>Amaranthus praetermissus</i>
Amaranthaceae	<i>Sericocoma avolans</i>	Amaranthaceae	<i>Sericocoma pungens</i>
Anacardiaceae	<i>Rhus lancea</i>	Anacardiaceae	<i>Searsia lancea</i>
Apocynaceae	<i>Fockea sinuata</i>	Apocynaceae	<i>Gomphocarpus fruticosus</i> subsp. <i>fruticosus</i>
Apocynaceae	<i>Hoodia gordonii</i>	Apocynaceae	<i>Sarcostemma viminale</i> subsp. <i>viminale</i>
Asparagaceae	<i>Asparagus glaucus</i>	Asparagaceae	<i>Asparagus retrofractus</i>
Asphodelaceae	<i>Aloe claviflora</i>	Asphodelaceae	<i>Aloe striata</i> subsp. <i>karasbergensis</i>
Asphodelaceae	<i>Aloe variegata</i>	Asteraceae	<i>Amellus strigosus</i> subsp. <i>pseudoscabridus</i>
Asteraceae	<i>Berkheya annectens</i>	Asteraceae	<i>Berkheya pinnatifida</i> subsp. <i>pinnatifida</i>
Asteraceae	<i>Dicoma capensis</i>	Asteraceae	<i>Dimorphotheca polyptera</i>
Asteraceae	<i>Eriocephalus microphyllus</i> var. <i>pubescens</i>	Asteraceae	<i>Eriocephalus pauperrimus</i>
Asteraceae	<i>Eriocephalus spinescens</i>	Asteraceae	<i>Felicia clavipilosa</i> subsp. <i>clavipilosa</i>
Asteraceae	<i>Felicia hyssopifolia</i>	Asteraceae	<i>Foveolina dichotoma</i>
Asteraceae	<i>Gazania krebsiana</i> subsp. <i>arctotoides</i>	Asteraceae	<i>Gazania lichtensteinii</i>
Asteraceae	<i>Helichrysum herniarioides</i>	Asteraceae	<i>Kleinia longiflora</i>
Asteraceae	<i>Laggera decurrens</i>	Asteraceae	<i>Myxopappus acutilobus</i>
Asteraceae	<i>Osteospermum armatum</i>	Asteraceae	<i>Osteospermum pinnatum</i> var. <i>pinnatum</i>
Asteraceae	<i>Pegolettia retrofracta</i>	Asteraceae	<i>Pentzia globosa</i>
Asteraceae	<i>Pentzia lanata</i>	Asteraceae	<i>Pentzia pinnatisecta</i>
Asteraceae	<i>Pentzia spinescens</i>	Asteraceae	<i>Pteronia inflexa</i>
Asteraceae	<i>Pteronia leucoclada</i>	Asteraceae	<i>Pteronia mucronata</i>
Asteraceae	<i>Pteronia sordida</i>	Asteraceae	<i>Rosenia glandulosa</i>
Asteraceae	<i>Rosenia humilis</i>	Asteraceae	<i>Senecio angustifolius</i>
Asteraceae	<i>Senecio niveus</i>	Asteraceae	<i>Senecio piptocoma</i>
Asteraceae	<i>Tripteris sinuata</i> var. <i>linearis</i>	Asteraceae	<i>Tripteris sinuata</i> var. <i>sinuata</i>
Asteraceae	<i>Ursinia nana</i> subsp. <i>nana</i>	Asteraceae	<i>Geigeria filifolia</i>
Asteraceae	<i>Pentzia cf incana</i>	Bignoniaceae	<i>Rhigozum trichotomum</i>
Brassicaceae	<i>Heliophila trifurca</i>	Brassicaceae	<i>Lepidium desertorum</i>
Capparaceae	<i>Cadaba aphylla</i>	Chenopodiaceae	<i>Bassia salsoloides</i>

Chenopodiaceae	<i>Chenopodium glaucum</i>	Chenopodiaceae	<i>Chenopodium murale</i> var. <i>murale</i>
Chenopodiaceae	<i>Chenopodium schraderianum</i>	Chenopodiaceae	<i>Salsola aellenii</i>
Chenopodiaceae	<i>Salsola namibica</i>	Chenopodiaceae	<i>Salsola tuberculata</i>
Colchicaceae	<i>Ornithoglossum viride</i>	Convolvulaceae	<i>Convolvulus sagittatus</i>
Cucurbitaceae	<i>Citrullus lanatus</i>	Cucurbitaceae	<i>Cucumis africanus</i>
Ebenaceae	<i>Diospyros pallens</i>	Euphorbiaceae	<i>Euphorbia fusca</i>
Euphorbiaceae	<i>Euphorbia inaequilatera</i> var. <i>inaequilatera</i>	Euphorbiaceae	<i>Euphorbia rudis</i>
Euphorbiaceae	<i>Euphorbia spinea</i>	Fabaceae	<i>Acacia karroo</i>
Fabaceae	<i>Cullen tomentosum</i>	Fabaceae	<i>Cyamopsis serrata</i>
Fabaceae	<i>Hoffmannseggia lactea</i>	Fabaceae	<i>Indigostrum argyraeum</i>
Fabaceae	<i>Indigofera alternans</i> var. <i>alternans</i>	Fabaceae	<i>Lotononis marlothii</i>
Fabaceae	<i>Lotononis platycarpa</i>	Fabaceae	<i>Medicago laciniata</i> var. <i>laciniata</i>
Fabaceae	<i>Melolobium microphyllum</i>	Fabaceae	<i>Parkinsonia africana</i>
Fabaceae	<i>Xerocladia viridiramis</i>	Fabaceae	<i>Prosopis glandulosa</i>
		Fabaceae	<i>Sutherlandia frutescens</i>
Geraniaceae	<i>Monsonia luederitziana</i>	Geraniaceae	<i>Monsonia umbellata</i>
Geraniaceae	<i>Pelargonium minimum</i>	Geraniaceae	<i>Sarcocaulon patersonii</i>
Geraniaceae	<i>Sarcocaulon salmoniflorum</i>	Gisekiaceae	<i>Gisekia africana</i> var. <i>africana</i>
Gisekiaceae	<i>Gisekia pharnacioides</i> var. <i>pharnacioides</i>	Hyacinthaceae	<i>Dipcadi gracillimum</i>
Hyacinthaceae	<i>Ornithogalum unifolium</i> var. <i>unifolium</i>	Hyacinthaceae	<i>Ledebouria cf ovatifolia</i>
Iridaceae	<i>Moraea speciosa</i>	Lamiaceae	<i>Salvia verbenaca</i>
Lophiocarpaceae	<i>Lophiocarpus polystachyus</i>	Loranthaceae	<i>Septulina glauca</i>
Malvaceae	<i>Althaea ludwigii</i>	Malvaceae	<i>Hermannia abrotanoides</i>
Malvaceae	<i>Hermannia spinosa</i>	Malvaceae	<i>Hermannia vestita</i>
Malvaceae	<i>Malva aegyptia</i>	Malvaceae	<i>Radyera urens</i>
Malvaceae	<i>Malva parviflora</i>	Mesembryanthemaceae	<i>Brownanthus ciliatus</i> subsp. <i>ciliatus</i>
Mesembryanthemaceae	<i>Drosanthemum cymiferum</i>	Mesembryanthemaceae	<i>Drosanthemum</i> sp.
Mesembryanthemaceae	<i>Mesembryanthemum articulatum</i>	Mesembryanthemaceae	<i>Mesembryanthemum crystallinum</i>
Mesembryanthemaceae	<i>Mesembryanthemum geniculiflorum</i>	Mesembryanthemaceae	<i>Mesembryanthemum nitidum</i>
Mesembryanthemaceae	<i>Mesembryanthemum nodiflorum</i>	Mesembryanthemaceae	<i>Mesembryanthemum stenandrum</i>
Mesembryanthemaceae	<i>Mesembryanthemum tetragonum</i>	Mesembryanthemaceae	<i>Ruschia ferox</i>
Mesembryanthemaceae	<i>Ruschia kenhardtensis</i>	Mesembryanthemaceae	<i>Ruschia spinosa</i>
Mesembryanthemaceae	<i>Ruschia vulvaria</i>	Molluginaceae	<i>Limeum aethiopicum</i> var. <i>lanceolatum</i>
Molluginaceae	<i>Limeum aethiopicum</i> subsp. <i>aethiopicum</i> var. <i>aethiopicum</i>	Molluginaceae	<i>Limeum africanum</i> subsp. <i>africanum</i>
Molluginaceae	<i>Limeum rhombifolium</i>	Molluginaceae	<i>Mollugo cerviana</i> var. <i>cerviana</i>
Nyctaginaceae	<i>Boerhavia repens</i> subsp. <i>repens</i>	Nyctaginaceae	<i>Phaeoptilum spinosum</i>
Oxalidaceae	<i>Oxalis lawsonii</i>	Oxalidaceae	<i>Oxalis cf beneprotecta</i>
Papaveraceae	<i>Argemone mexicana</i> forma <i>mexicana</i>	Pedalaceae	<i>Sesamum capense</i>
Plumbaginaceae	<i>Dyerophytum africanum</i>	Poaceae	<i>Aristida adscensionis</i>
Poaceae	<i>Aristida congesta</i> subsp. <i>barbicollis</i>	Poaceae	<i>Cenchrus ciliaris</i>
Poaceae	<i>Chloris virgata</i>	Poaceae	<i>Dichanthium annulatum</i> var. <i>papillosum</i>

Poaceae	<i>Enneapogon cenchroides</i>	Poaceae	<i>Enneapogon desvauxii</i>
Poaceae	<i>Enneapogon scaber</i>	Poaceae	<i>Eragrostis annulata</i>
Poaceae	<i>Eragrostis bicolor</i>	Poaceae	<i>Eragrostis biflora</i>
Poaceae	<i>Eragrostis nindensis</i>	Poaceae	<i>Eragrostis porosa</i>
Poaceae	<i>Eragrostis procumbens</i>	Poaceae	<i>Fingerhuthia africana</i>
Poaceae	<i>Panicum lanipes</i>	Poaceae	<i>Schismus barbatus</i>
Poaceae	<i>Schmidtia kalahariensis</i>	Poaceae	<i>Setaria verticillata</i>
Poaceae	<i>Stipagrostis anomala</i>	Poaceae	<i>Stipagrostis brevifolia</i>
Poaceae	<i>Stipagrostis ciliata var. capensis</i>	Poaceae	<i>Stipagrostis fastigiata</i>
Poaceae	<i>Stipagrostis namaquensis</i>	Poaceae	<i>Stipagrostis obtusa</i>
Poaceae	<i>Stipagrostis uniplumis var. neesii</i>	Poaceae	<i>Tragus berteronianus</i>
Poaceae	<i>Sporobolus ioclados</i>	Polygalaceae	<i>Polygala seminuda</i>
Polygonaceae	<i>Persicaria decipiens</i>	Rhamnaceae	<i>Ziziphus mucronata subsp. mucronata</i>
Rubiaceae	<i>Kohautia cynanchica</i>	Santalaceae	<i>Thesium lineatum</i>
Scrophulariaceae	<i>Aptosimum elongatum</i>	Scrophulariaceae	<i>Aptosimum lineare var. lineare</i>
Scrophulariaceae	<i>Aptosimum procumbens</i>	Scrophulariaceae	<i>Aptosimum spinescens</i>
Scrophulariaceae	<i>Diascia engleri</i>	Scrophulariaceae	<i>Jamesbrittenia argentea</i>
Scrophulariaceae	<i>Peliostomum leucorrhizum</i>	Scrophulariaceae	<i>Selago pinguicula</i>
Solanaceae	<i>Lycium cinereum</i>	Solanaceae	<i>Lycium oxycarpum</i>
Solanaceae	<i>Solanum capense</i>	Solanaceae	<i>Solanum namaquense</i>
Urticaceae	<i>Forsskaolea candida</i>	Verbenaceae	<i>Chascanum garipense</i>
Verbenaceae	<i>Chascanum pumilum</i>	Zygophyllaceae	<i>Tribulus cristatus</i>
Zygophyllaceae	<i>Tribulus pterophorus</i>	Zygophyllaceae	<i>Tribulus terrestris</i>
Zygophyllaceae	<i>Tribulus zeyheri subsp. zeyheri</i>	Zygophyllaceae	<i>Zygophyllum chrysopteron</i>
Zygophyllaceae	<i>Zygophyllum dregeanum</i>	Zygophyllaceae	<i>Zygophyllum lichtensteinianum</i>
Zygophyllaceae	<i>Zygophyllum simplex</i>		

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