

**TERRESTRIAL PLANT SPECIES SPECIALIST
ASSESSMENT:
WAHLENBERGIA ASPARAGOIDES WITHIN THE DAISY
SOLAR PV FACILITY**



PRODUCED FOR SAVANNAH ENVIRONMENTAL ON BEHALF OF ENERGY TEAM (PTY) LTD



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First Draft – February 2023

NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) AND ENVIRONMENTAL IMPACT REGULATIONS, 2014 (AS AMENDED) – REPORTING REQUIREMENTS FOR SPECIALIST THEMES

GN 1150 of 30 October 2020: Terrestrial Plant Species Specialist Assessment Report (Very High or High Sensitivity)	Section of Report
3.1.1 contact details and relevant experience as well as the SACNASP registration number of the specialist preparing the assessment including a curriculum vitae;	P5
3.1.2 a signed statement of independence by the specialist;	P7
3.1.3 a statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Section 2
3.1.4 a description of the methodology used to undertake the site sensitivity verification, impact assessment and site inspection, including equipment and modelling used where relevant;	Section 2
3.1.5 a description of the mean density of observations/number of sample sites per unit area and the site inspection observations;	Section 2
3.1.6 a description of the assumptions made and any uncertainties or gaps in knowledge or data;	Section 2
3.1.7 details of all SCC found or suspected to occur on site, ensuring sensitive species are appropriately reported;	Section 2
3.1.8 the online database name, hyperlink and record accession numbers for disseminated evidence of SCC found within the study area;	Section 3.3
3.1.9 the location of areas not suitable for development and to be avoided during construction where relevant;	Section 3
3.1.10 a discussion on the cumulative impacts;	Section 3, Section 5
3.1.11 impact management actions and impact management outcomes proposed	Section 3, Section 5
3.1.12 a reasoned opinion, based on the findings of the specialist assessment, regarding the acceptability or not of the development and if the development should receive approval or not, related to the specific theme being considered, and any conditions to which the opinion is subjected if relevant; and	Section 6
3.1.13 a motivation must be provided if there were any development footprints identified as per paragraph 2.2.12 above [of GN 1150 of 30 October 2020] that were identified as having “low” or “medium” terrestrial animal species sensitivity and were not considered appropriate.	Section 2.4

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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>	Ecological Solutions for People & the Environment
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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.

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- 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.

Specialist Ecological Studies in the Vicinity of the Current Site

- Zonnequa WEF. Savannah Environmental 2018.
- Komas WEF. Savannah Environmental 2018
- Kap Vley Wind Energy Facility near Kleinsee. CSIR, 2018.
- Gromis WEF. CSIR, 2020
- Komas WEF. CSIR, 2020
- Eskom Kleinsee 300MW WEF. Savannah Environmental, 2012.
- Project Blue Wind and Solar Energy Facility, Near Kleinsee. Savannah Environmental, 2012.
- G7 Richtersveld Wind Farm. Environmental Resources Management (ERM), 2011.

SPECIALIST DECLARATION

I, ..Simon Todd....., as the appointed independent specialist, in terms of the 2014 EIA Regulations, hereby declare that I:

- I act as the independent specialist in this application;
- I 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;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- 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 have no vested interest in the proposed activity proceeding;
- 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;
- I have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- I have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- all the particulars furnished by me in this specialist input/study 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:  _____

Name of Specialist: ____Simon Todd_____

Date: ____25 February 2023_____

1 INTRODUCTION

Energy Team (Pty) Ltd is proposing the development of a solar photovoltaic (PV) facility with a contracted capacity of up to 360MW on a site located approximately 20km west of the town of Komaggas, and 24km southeast of Kleinsee. The solar PV development will be known as the Daisy Solar PV Facility and would be located within Focus Area 8 of the Renewable Energy Development Zones (REDZ), which is known as the Springbok REDZ, and within the Northern Corridor of the Strategic Transmission Corridors. Savannah Environmental are conducting the required Basic Assessment process and 3Foxes Biodiversity Solutions has been appointed on behalf of Energy Team (Pty) Ltd to undertake a terrestrial biodiversity assessment of the proposed project in terms of the Environmental Impact Assessment Regulations, 2014, as amended, including the Gazetted specialist protocols (GN R 320 and GN R 1150 of 2020).

The DFFE Screening Tool indicates that the Daisy PV Facility development area is mapped as Medium Sensitivity due to the possible presence of several plant species of concern. In addition to the species identified by the Screening Tool, the field assessment confirmed the presence of several other plant SCC on the site, one of which is *Wahlenbergia asparagoides*, which is classified as Near Threatened. In terms of the regulations, a Terrestrial Plant Species Assessment is required for *Wahlenbergia asparagoides* within the Daisy PV Facility. To these ends, this Plant Species Assessment for *Wahlenbergia asparagoides* within the Daisy PV Facility, addresses the potential impacts of the proposed wind farm on *Wahlenbergia asparagoides* and must be included in the BA for the development and any mitigation and monitoring measures as identified, must be incorporated into the EMP for the development.

1.1 SCOPE OF STUDY

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. The results of the Site Verification are provided in another report, but of relevance to the current study is that while the DFFE Screening Tool did not identify *Wahlenbergia asparagoides* as a species of concern for the site, this species was confirmed during the Site Verification, with the result that the site is considered High Sensitivity for this species. In terms of the Regulations, a Terrestrial Plant Species Impact Assessment is required when a site is confirmed as being of high or very high sensitivity for a sensitive plant species. In terms of the guidelines and minimum requirements, the Terrestrial Plant Species Impact Assessment should meet the following terms of reference:

2.1 The assessment must be undertaken by a specialist registered with the South African Council for Natural Scientific Professions (SACNASP), within a field of practice relevant to the taxonomic groups (“taxa”) for which the assessment is being undertaken.

2.2 The assessment must be undertaken within the study area.

2.3 The Terrestrial Plant Species Impact Assessment must be undertaken in accordance with the Species Environmental Assessment Guideline and must:

2.3.1 Identify the SCC which were found, observed or are likely to occur within the study area;

2.3.2 provide evidence (photographs) of each SCC found or observed within the study area, which must be disseminated by the specialist to a recognized online database facility immediately after the site inspection has been performed (prior to preparing the report contemplated in paragraph 3);

2.3.3 identify the distribution, location, viability and detailed description of population size of the SCC identified within the study area;

2.3.4 identify the nature and the extent of the potential impact of the proposed development to the population of the SCC located within the study area;

2.3.5 determine the importance of the conservation of the population of the SCC identified within the study area, based on information available in national and international databases including the IUCN Red List of Threatened Species, South African Red List of Species, and/or other relevant databases;

2.3.6 determine the potential impact of the proposed development on the habitat of the SCC located within the study area;

2.3.7 include a review of relevant literature on the population size of the SCC, the conservation interventions as well as any national or provincial species management plans for the SCC. This review must provide information on the need to conserve the SCC and indicate whether the development is compliant with the applicable species management plans and if not, a motivation for the deviation;

2.3.8 identify any dynamic ecological processes occurring within the broader landscape, that might be disrupted by the development and result in negative impact on the identified SCC, for example, fires in fire-prone systems;

2.3.9 identify any potential impact on ecological connectivity within the broader landscape, and resulting impacts on the identified SCC and its long-term viability;

- 2.3.10 determine buffer distances as per the Species Environmental Assessment Guidelines used for the population of each SCC; and
- 2.3.11 discuss the presence or likelihood of additional SCC including threatened species not identified by the screening tool, Data Deficient or Near Threatened Species, as well as any undescribed species; and
- 2.3.12 identify any alternative development footprints within the preferred development site which would be of “low” sensitivity” or “medium” sensitivity as identified by the screening tool and verified through the site sensitivity verification.

3. The findings of the Terrestrial Plant Species Impact Assessment must be written up in a Terrestrial Plant Species Assessment Report.

3.1 This report must include as a minimum the following information:

- 3.1.1 contact details and relevant experience as well as the SACNASP registration number of the specialist preparing the assessment including a curriculum vitae;
- 3.1.2 a signed statement of independence by the specialist;
- 3.1.3 a statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;
- 3.1.4 a description of the methodology used to undertake the site sensitivity verification and impact assessment and site inspection, including equipment and modelling used where relevant;
- 3.1.5 a description of the assumptions made and any uncertainties or gaps in knowledge or data;
- 3.1.6 a description of the mean density of observations/number of samples sites per unit area of site inspection observations;
- 3.1.7 details of all SCC found or suspected to occur on site, ensuring sensitive species are appropriately reported;
- 3.1.8 the online database name, hyperlink and record accession numbers for disseminated evidence of SCC found within the study area;
- 3.1.9 the location of areas not suitable for development and to be avoided during construction where relevant;
- 3.1.10 a discussion on the cumulative impacts;

- 3.1.11 impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr);
- 3.1.12 a reasoned opinion, based on the findings of the specialist assessment, regarding the acceptability or not, of the development related to the specific theme considered, and if the development should receive approval or not, related to the specific theme being considered, and any conditions to which the opinion is subjected if relevant; and
- 3.1.13 a motivation must be provided if there were any development footprints identified as per paragraph 2.12 above that were identified as having “low” or “medium” terrestrial plant species sensitivity and were not considered appropriate.
- 3.2 A signed copy of the assessment must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.

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

1.2 PROJECT DESCRIPTION

The Daisy Solar PV Facility site is located approximately 20km west of the town of Komaggas, and 24km southeast of Kleinsee, within the Nama Khoi Local Municipality and the Namakwa District Municipality, Northern Cape. The infrastructure associated with the 360MW solar PV facility will include:

- Solar PV array comprising PV modules and mounting structures
- Inverters and transformers
- Low voltage cabling between the PV modules to the inverters
- 33kV cabling between the project components and the facility substation
- 132kV onsite facility substation
- 132kV power line to connect to the grid at Zonnequa Collector Substation within a 300m wide and approximately 3.5km long corridor.
- Battery Energy Storage System (BESS)
- Site offices and maintenance buildings, including workshop areas for maintenance and storage
- Laydown areas
- Site access and internal roads.

The layout of the Daisy PV Project is illustrated in Figure 1 below.

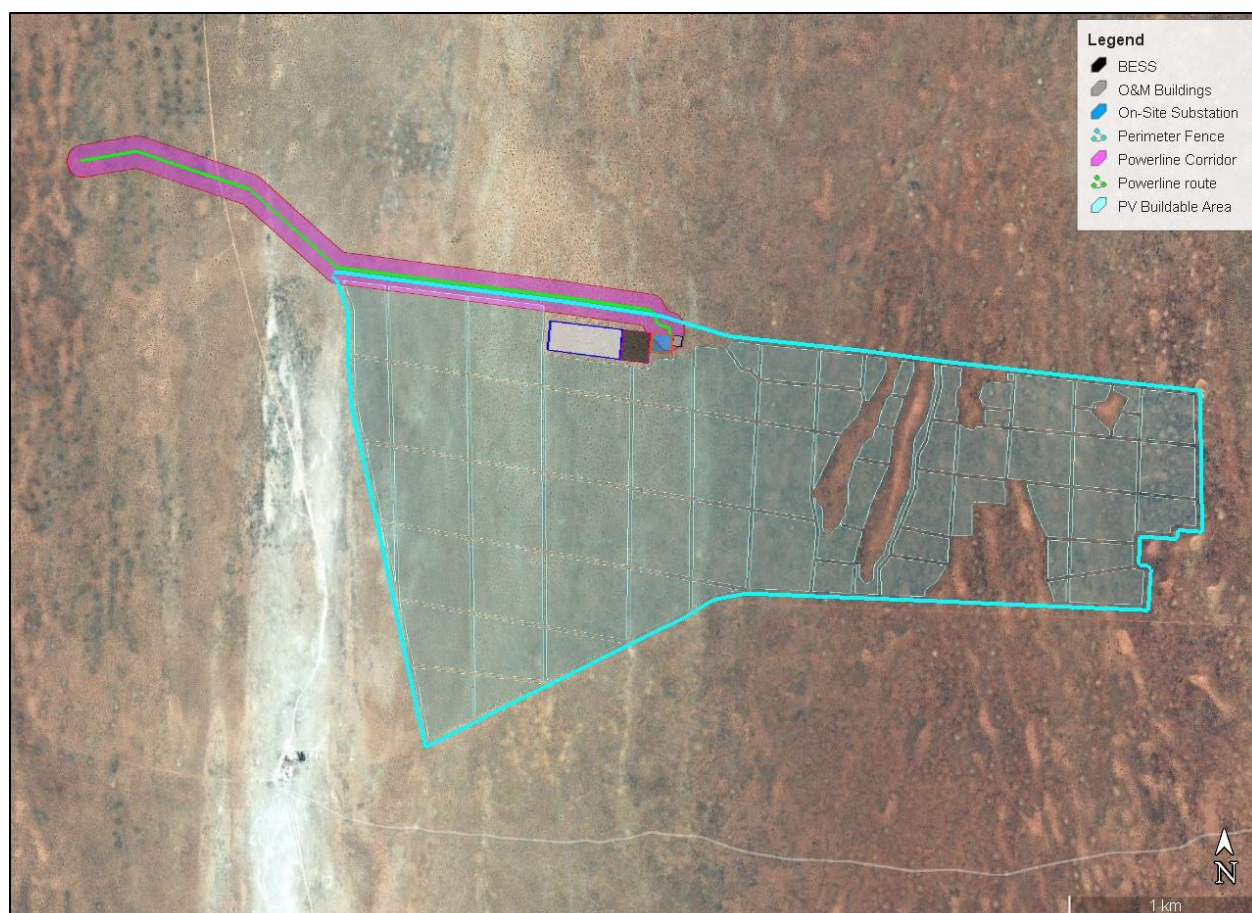


Figure 1. Satellite image showing the location of the proposed Daisy PV Facility and grid connection.

2 METHODOLOGY

2.1 SITE VISITS & FIELD ASSESSMENT DATES

The site was sampled twice for the current assessment. An initial field assessment took place on the 19th of November 2021 and then a follow-up more extensive field assessment took place from 21-23 September 2022. During the initial field assessment, it was past the typical wet season and the conditions were relatively dry. However, despite that, there were numerous species of annuals and perennials in flower at the time, suggesting some late rains that had stimulated some species to persist well past the typical end of the wet season. During the second field assessment, conditions were considered near-optimal for the field assessment with the vegetation in a green and growing condition with many species in flower. The overall amount of rain for the season was however low, with the result that some annuals and geophytes were likely suppressed to some degree by the drier conditions. In terms of actual sampling, regular transects were walked across

the PV footprint area, amounting to a sampling track within the development footprint of over 20km (**Figure 2**).



Figure 2. Sampling track that was walked within the Daisy PV Facility in order to identify and sample plant species of concern, including *Wahlenbergia asparagoides*.

2.2 LIMITATIONS & ASSUMPTIONS

A number of limitations and assumptions are inherent in the study including the following:

- The density of *W.asparagoides* varies within the site and while the site has been well-covered, the estimate of the overall number of individuals affected should be considered to represent a rough estimate and would have broad confidence limits. However, as the site is typical for the area and does not include any features or habitats that were observed to be of particular importance for this species, it can also be considered typical of the area with the result that the number of individuals affected can be seen to be less important than the overall extent of habitat loss.
- While the field assessment took place following a prolonged drought that had clearly negatively impacted the abundance of some shrub species, *W.asparagoides* did not appear to be particularly affected. As a result, the abundance of this species at the time of sampling is considered representative of the typical abundance of this species within the site.

- The assessment is based on the layout as provided by the developer and any changes to the layout in these areas would potentially change the impact on this species. As such, the assessment is specific to this layout.

2.3 DFFE SITE VERIFICATION

Government Notice No. 320, dated 20 March 2020, includes the requirement that an Initial Site Sensitivity Verification Report must be produced for a development footprint. The outcomes of the Site Verification Report determine the level of assessment required for the site. The Site Verification results are included in the Site Sensitivity Verification Study for the site and confirmed the presence of *Wahlenbergia asparagoides* within the site. Based on the confirmed presence of *Wahlenbergia asparagoides* as well as several other plant SCC within the site, the site is considered High Sensitivity for the Plant Species Theme and confirms the need and requirement for a Plant Species Assessment for each of the confirmed plant SCC present.

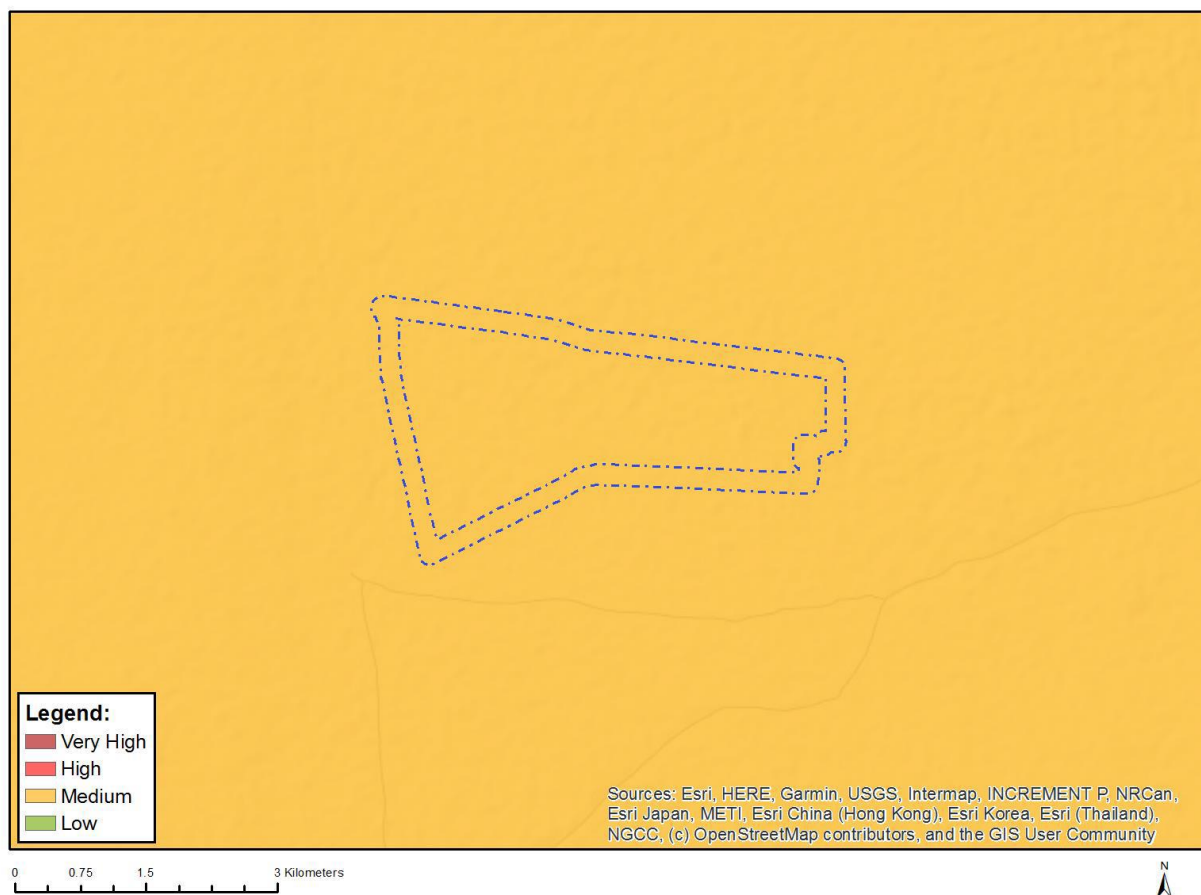


Figure 3. Plant Species Theme sensitivity for the Daisy PV Facility, showing that the tool classifies the site as considered Medium sensitivity, but due to the confirmed presence of *Wahlenbergia asparagoides* as well as other plant SCC it should be classified as High sensitivity.

3 WAHLENBERGIA ASPARAGOIDES ASSESSMENT

3.1 WAHLENBERGIA ASPARAGOIDES SPECIES ACCOUNT

There is not a lot of information regarding *Wahlenbergia asparagoides* available for interpretation or to inform the current study. This species is not considered by SANBI to be a Sensitive Species and the red-listing provides very little information on the overall abundance and density of this species. A reason for this is likely the inconspicuous nature of this species which likely results in it frequently being overlooked in the field.

According to the SANBI Species page for *Wahlenbergia asparagoides*, this species is restricted to the Western and Northern Cape from Lutzville to Port Nolloth (Figure 4), where it occurs in Sandveld in acid-alkaline sand ecotones. The EOO is 11275 km² and it is known from between 10-11 locations. This sandveld endemic is threatened by past and present mining of heavy mineral sands along the West Coast and potential expansion in the future. Further it is threatened by agricultural activities of crop cultivation. *Wahlenbergia asparagoides* is classified as Vulnerable under criteria B1b (ii,iii).

An example of *Wahlenbergia asparagoides* from the site have been uploaded to iNaturalist and can be viewed at the following link:

- <https://www.inaturalist.org/observations/151079721>



Figure 4. Distribution range for *Wahlenbergia asparagoides* according to the SANBI species page for *Wahlenbergia asparagoides*.

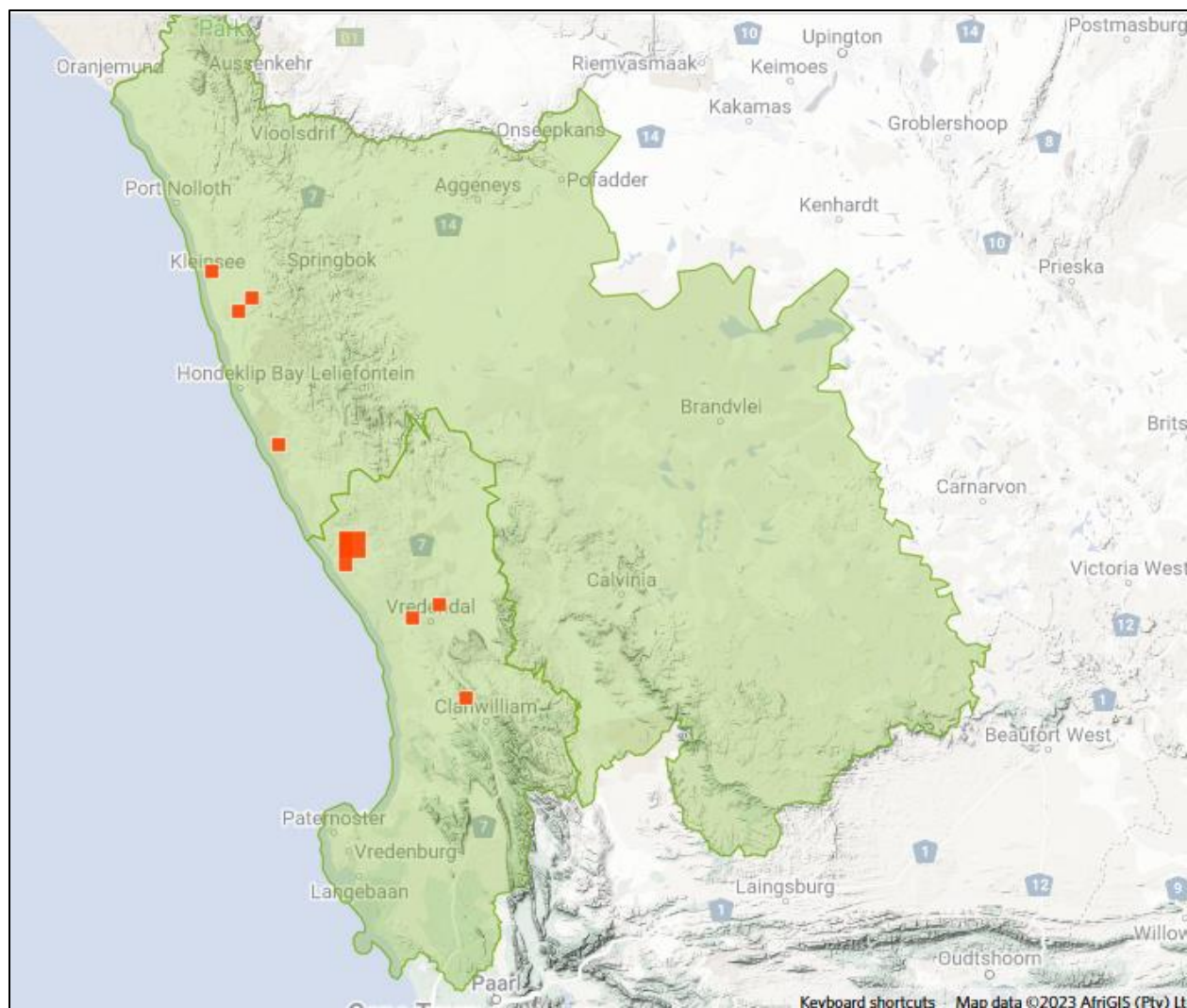


Figure 5. Distribution of records of *Wahlenbergia asparagoides* from iNaturalist as at March 2023.



Figure 6. Typical example of *Wahlenbergia asparagoides* from the site.

3.2 HABITAT ASSESSMENT

The walk-through of the site found a total of 577 individuals of *Wahlenbergia asparagoides* within the search track (**Figure 7**). When extrapolated to the whole of the site, this translates to an estimated population of 6000-7000 *Wahlenbergia asparagoides* plants within the site. Given the VU status of this species, this seems like a large number of individuals that would be lost to the development. However, the habitat on-site is typical for the area and work on other nearby projects such as Kap Vlei Wind Farm suggests that the density of species within the site is not

exceptional and that this species is common in the area. This is considered in further detail in the following sections.

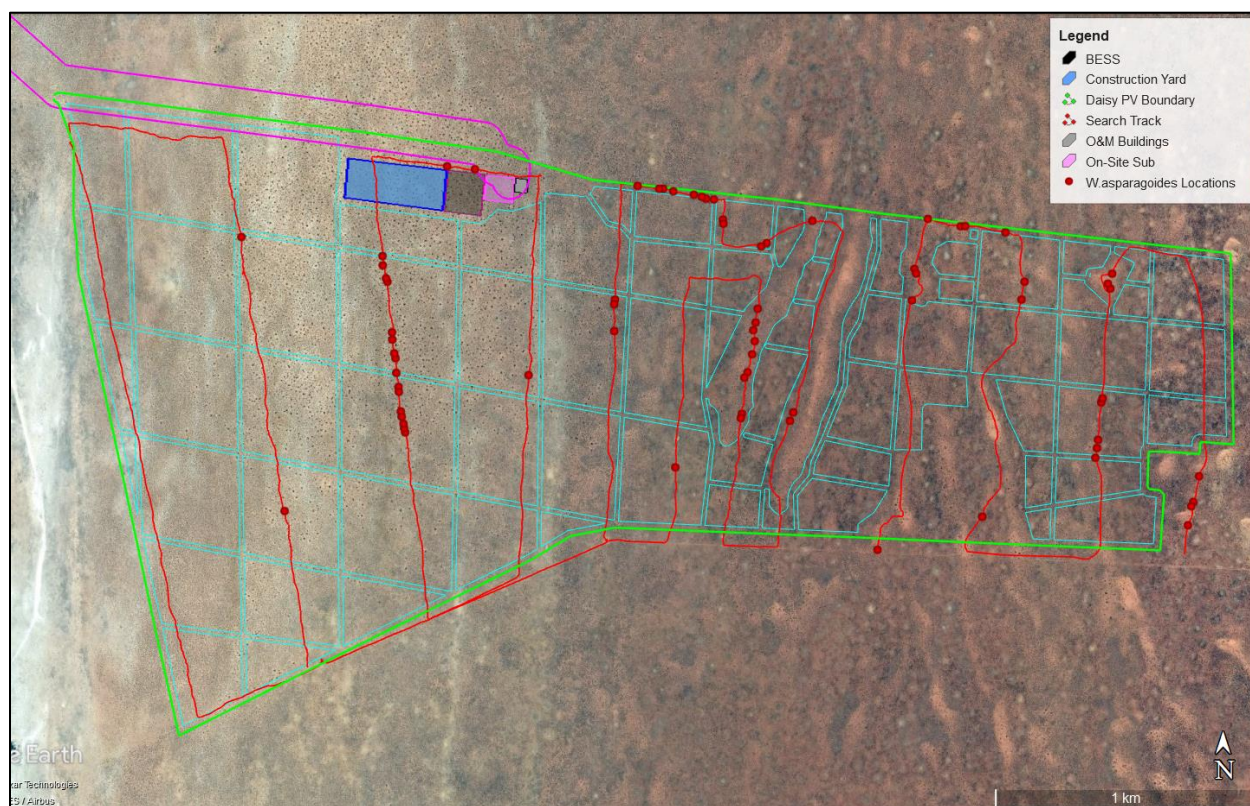


Figure 7. Search track of over 20km and associated localities of *W. asparagoides* within the Daisy Solar PV Facility.

3.3 WAHLENBERGIA ASPARAGOIDES SPATIAL ASSESSMENT

Although it is difficult to estimate the local and regional population size, the impact of the current development can be considered relative to the affected dune field, which is relatively easily delimited and represents an ecologically relevant unit for assessment. The footprint of the Daisy PV development would be approximately 600 ha and the dune field is approximately 12 000 ha (Figure 8). As such, the development would result in the loss of 5% of the dune field and all things being equal, approximately 5% of the local population of *Wahlenbergia asparagoides*. While this is considered to represent a locally significant impact, the overall local population is not likely to be compromised by the loss of 5% of the available habitat. In addition, the affected dune field is one of many in the area and likely represents less than 5% of the overall extent of occurrence, with the result that the overall impact on the whole population can be estimated at less than 0.25% of the global population.

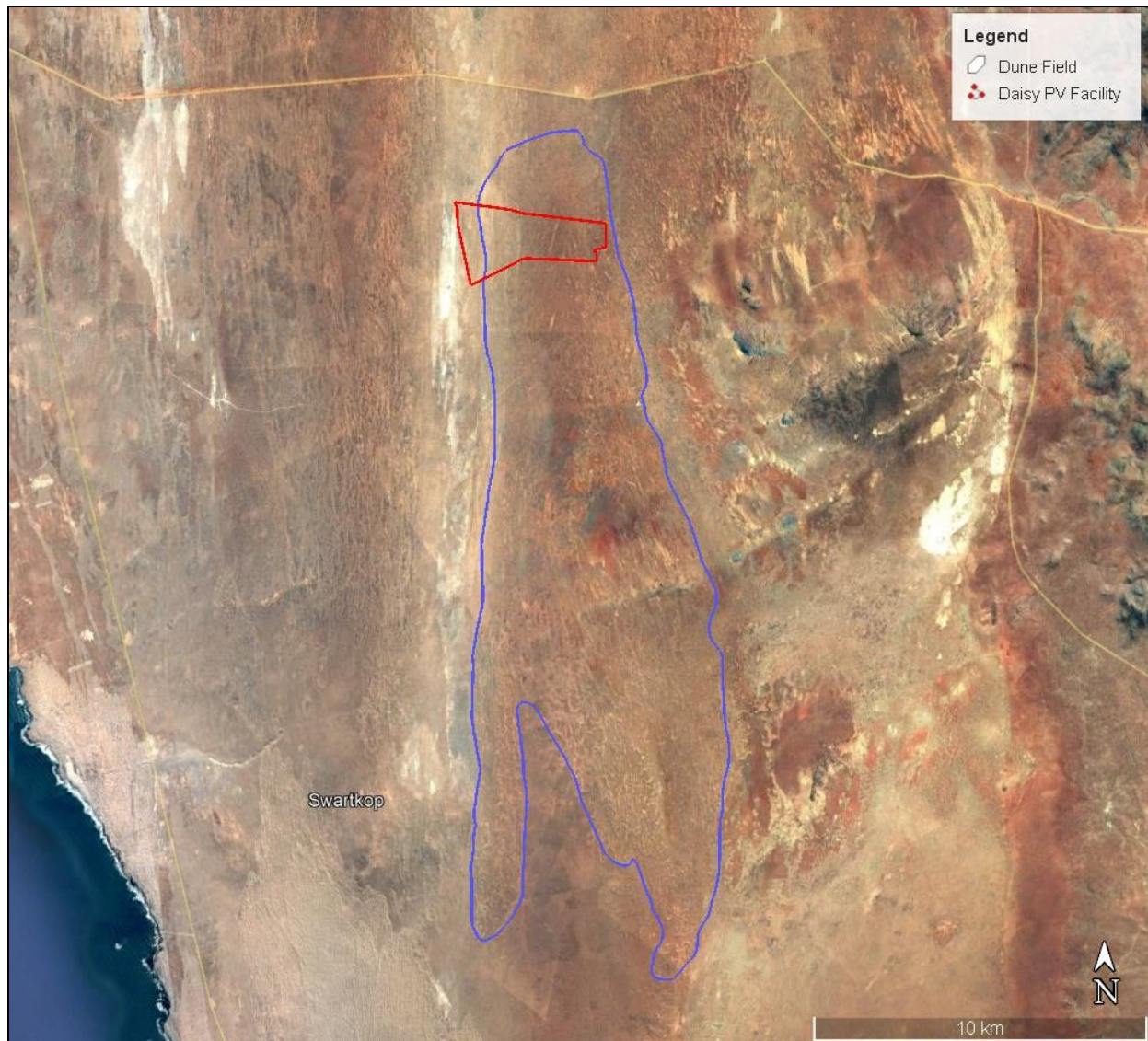


Figure 8. The location of the Daisy Solar PV Facility in relation to the affected dune field, which is considered to represent an ecologically meaningful context in which to assess the impact of the development on *Wahlenbergia asparagoides*.

In terms of cumulative impact, there are several approved wind energy facilities in the immediate area that would contribute towards cumulative impact on *W.asparagoides*. This would include the Namas, Zonnequa, Komas and Kap Vlei WEFs, which would each have a development footprint of less than 100ha each. *Wahlenbergia asparagoides* can be confirmed present within each of these facilities, with the result that there would potentially be a significant impact on this species should all these facilities be built. The contribution of the current Daisy Solar PV Facility at 600ha is therefore considered significant and is similar to the total footprint of all other developments combined. The assessment of cumulative impacts on *W.asparagoides* is however

hampered by the paucity of knowledge on the abundance and distribution of this species. It appears that this species is more common and widespread than previously considered and it is likely that the conservation status of *W.asparagoides* may have been somewhat overstated. However, this is speculation based on a relatively limited area and additional sampling specifically for this species would be necessary to confirm the distribution and abundance with sufficient confidence to inform any changes to the current VU status of this species.

3.4 SITE ECOLOGICAL IMPORTANCE

The Terrestrial Plant Species Protocols require specialists to identify:

- identify the distribution, location, viability and detailed description of population size of the SCC identified within the study area;
- identify the nature and the extent of the potential impact of the proposed development to the population of the SCC located within the study area;
- determine the importance of the conservation of the population of the SCC identified within the study area, based on information available in national and international databases including the IUCN Red List of Threatened Species, South African Red List of Species, and/or other relevant databases;
- determine the potential impact of the proposed development on the habitat of the SCC located within the study area

In order to spatially identify the different areas of importance for a species for a proposed development site and to facilitate transparent and comparable reporting of the potential impacts of development, a standardised metric for identifying site-based ecological importance for species, in relation to a proposed project with a specific footprint/ project areas of influence (PAOI) and suite of anticipated activities. It allows for rapid spatial inspection and evaluation of impacts of proposed developments within the context of on-site habitats and Species of Conservation Concern (SCC), and also facilitates integration of inputs from different specialist studies. This process is necessary because the screening tool evaluates 'environmental sensitivity' at a larger scale than that of a proposed development site and frequently includes modelled data that require field verification. This assessment relies on the data collected during the necessary specialist surveys to provide a current evaluation of the on-site habitat conditions. This assessment does not replace the output of the screening tool but is more specific to the proposed development footprint/PAOI and proposed project activities. Where the site-specific assessment produces lower or higher Site Ecological Importance (SEI) classification than the 'environmental sensitivity' output of the screening tool for that particular site, it is the responsibility of the specialist to provide a clear and defensible justification for the difference.

The SEI is considered to be a function of the biodiversity importance (BI) of the receptor (e.g., species of conservation concern, the vegetation/fauna community or habitat type present on the site) and its resilience to impacts (receptor resilience [RR]) as follows:

- $SEI = BI + RR$

BI in turn is a function of conservation importance (CI) and the functional integrity (FI) of the receptor as follows:

- $BI = CI + FI$

Given the IUCN status of the *Wahlenbergia asparagoides* (VU) and the relatively large extent of occurrence as well as the large size of the extended population which includes the site, the **Conservation Importance** (CI) of *Wahlenbergia asparagoides* habitat within the site is considered to be **Medium**. As there is not a large amount of transformation between the areas of confirmed habitat, the areas of intact habitat are considered to have a **High Functional Integrity**. As the CI importance is Medium and FI is High, the BI of the site is considered to be Medium. These areas are considered to have a Low resilience. Thus, the overall **SEI for the site is considered to be High (Error! Reference source not found.)**. The larger dunes within the site, where *Wahlenbergia asparagoides* is usually concentrated and which are considered more vulnerable to disturbance are considered to have Very Low receptor resilience and hence the overall SEI for these areas is considered to be Very High. These are considered to represent no-go areas and have been avoided by the development. The SEI map of the site is illustrated below in **Figure 9**.

In terms of the species assessment guidelines, the implications for the High SEI rating for the site indicates that the following general measures are considered appropriate for areas of Sensitive Species Habitat - “*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.*”

In terms of the avoidance implemented, the larger dune systems within the site have been avoided, which has been partially effective at reducing the impact of the development on *Wahlenbergia asparagoides*. Within the site, this has reduced the potential impact of the development on *Wahlenbergia asparagoides* by an estimated 32%, or when translated to individuals affected by up 2000 individuals.

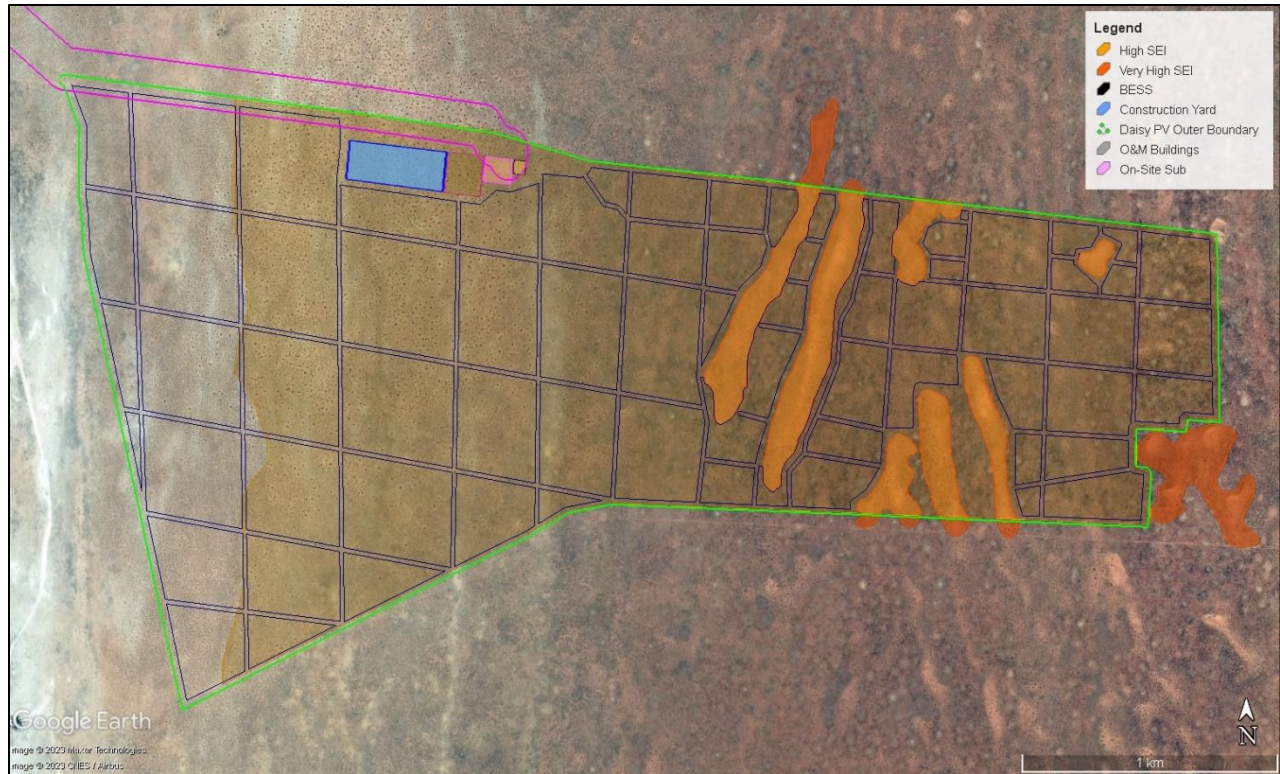


Figure 9. The Site Ecological Importance (SEI) of the Daisy Solar PV Facility for *Wahlenbergia asparagoides*.

4 IMPACTS AND ISSUES IDENTIFICATION

4.1 IDENTIFICATION OF POTENTIAL IMPACTS

The development of the Daisy PV Facility would result in a number of potential impacts on *Wahlenbergia asparagoides* during the construction and operational phases of the development. During construction, the major impact would be habitat loss and destruction of individuals, while during operation, active disturbance would be minimal, but there would still be some risk due to wind erosion and sand movement as a result of previous disturbance in the area caused by the construction activities. The following impacts are identified as the major impacts that are likely to be associated with the development of the Daisy PV Facility on *Wahlenbergia asparagoides*.

Impact 1. Construction-Phase Impact on the *Wahlenbergia asparagoides*

The construction of the facility is likely to lead to the loss of the majority of vegetation within the facility footprint, which would include all individuals of *W.asparagoides* present. This would lead to the loss of these individuals from the local population and the loss of development footprint from the available habitat for this species.

Impact 2. Operational-Phase Impact on *Wahlenbergia asparagoides*

During operation, impacts would be relatively low, however there is some risk that the disturbance created during construction would lead to wind erosion and degradation of adjacent areas into the operational phase. The area is exposed to high winds and wind erosion of the loose sands is a common problem following disturbance and specific mitigation will be required to ensure that the disturbed areas do not initiate wind erosion points.

Impact 3. Cumulative impacts on the *Wahlenbergia asparagoides*

The development would contribute towards cumulative impacts on *W.asparagoides* as a result of habitat loss, and illegal collection. There are a number of approved wind energy facilities in the area, all of which include areas with confirmed presence of *W.asparagoides*, with the result that cumulative impacts on this species are a potential concern.

5 ASSESSMENT OF IMPACTS ON WAHLENBERGIA ASPARAGOIDES

An assessment of the likely significance of the impacts identified above is made below for the impacts of the Daisy Solar PV Facility on *Wahlenbergia asparagoides*.

5.1 CONSTRUCTION PHASE IMPACT ON WAHLENBERGIA ASPARAGOIDES

Impact Nature: Construction phase habitat loss and destruction of individuals within the development footprint.		
	Without Mitigation	With Mitigation
Extent	Local (1)	Local (1)
Duration	Long-term (4)	Long-term (4)
Magnitude	High (4)	Moderate (3)
Probability	Certain (5)	Certain (5)
Significance	Medium (45)	Medium (40)
Status	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources	Yes	Yes
Can impacts be mitigated?	The loss of individuals cannot be fully mitigated the habitat loss associated with the project is largely unavoidable.	
Mitigation	<ul style="list-style-type: none"> • Preconstruction walk-through of the development footprint to demarcate no-go areas in the field and provide a reliable estimate of the number of <i>W.asparagoides</i> affected for permitting. • Access control onto the site during construction. 	

	<ul style="list-style-type: none"> Monitoring of construction activities to ensure that personnel remain within the demarcate development footprint. All no-go areas and dune areas should be clearly demarcated in the field with construction tape and appropriate signage to indicate no-go status of these areas.
Residual Risks	There is likely to be some disturbance of individual close to the development footprint due to wind erosion and dust.

5.2 OPERATIONAL PHASE IMPACTS ON WAHLENBERGIA ASPARAGOIDES

Impact Nature: Degradation of habitat due to wind erosion and sand movement		
	Without Mitigation	With Mitigation
Extent	Local (1)	Local (1)
Duration	Long-term (4)	Long-term (4)
Magnitude	Moderate (3)	Minor (2)
Probability	Highly Probable (4)	Probable (3)
Significance	Medium (32)	Low (24)
Status	Negative	Negative
Reversibility	Low	High
Irreplaceable loss of resources	Yes	No
Can impacts be mitigated?	To a large degree, but some residual risk of poaching likely remains.	
Mitigation	<ul style="list-style-type: none"> Site access control and monitoring of personnel on site to ensure that people remain within the operational areas of the wind farm. Monitoring of the populations of <i>Wahlenbergia asparagoides</i> on the excluded portions within the development area to ascertain the impact of long-term livestock exclusion from these areas. 	
Residual Risks	Although residual risks are low, there is some residual risk of degradation	

5.3 CUMULATIVE IMPACT ON WAHLENBERGIA ASPARAGOIDES

Impact Nature: The development of the Daisy PV Facility will contribute towards cumulative impacts on <i>Wahlenbergia asparagoides</i> due to habitat loss.		
	Overall impact of the proposed project considered in isolation	Cumulative impact of the project and other projects in the area
Extent	Local (1)	Local (2)
Duration	Long-term (4)	Long-term (4)

Magnitude	Moderate (3)	Medium (4)
Probability	Probable (3)	Highly Probable (4)
Significance	Low (24)	Medium (40)
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources	No	No
Can impacts be mitigated?	No, habitat loss cannot be avoided.	
Mitigation	<ul style="list-style-type: none"> Monitoring of populations of <i>Wahlenbergia asparagoides</i> to ascertain more accurate estimates of population dynamics, density and distribution. 	
Residual Risks	There would be minor residual risk of negative cumulative impact.	

6 CONCLUSION & RECOMMENDATIONS

Wahlenbergia asparagoides was confirmed present within the Daisy PV Facility site and occurs across most of the site except the far western side of the site. The population size within the PV Facility footprint is estimated at between 6000-7000 individuals. As there is very little published information available to inform the assessment, it is difficult to assess the importance of the site based on existing distribution and abundance data. However, based on knowledge of the area and the presence of *W.asparagoides* within the development footprint of the majority of other developments in the area, this species appears to be relatively common and widespread in the area. Based on a delineation of the affected dune field, which is considered to represent an ecologically meaningful context in which to assess the impact of the development on *W.asparagoides*, the development would result in the loss of approximately 5% of the individuals within the affected dune field. However, this is one of numerous similar dune fields in the area and it is estimated that this represents less than 5% of the area of occupancy of this species with the result that the development would result in the loss of less than 0.25% of the global population of this species. Based on this assessment, the impact of the development of the Daisy Solar PV Facility on *W.asparagoides* is considered acceptable and would not compromise the local or regional population of this species.

There are a number of other approved developments in the area, in particular the Namas, Zonnequa, Komas and Kap Vlei wind farms which are all in close proximity to the current site and all also have confirmed presence of *W.asparagoides*. As a result, there would be moderate cumulative impact on this species in the area, should all these developments be built. As the footprint of all these wind farms is approximately 100ha each, the contribution of the Daisy PV

facility at 600ha is considered significant. The assessment of cumulative impacts on *W.asparagoides* is however hampered by the paucity of knowledge on the abundance and distribution of this species. In order to partly rectify this the following monitoring of *W.asparagoides* is recommended for the Daisy Solar PV Facility and should be included in the EMPr and RoD for the development:

- There should be a monitoring programme established at construction and continued into the operational phase for the lifetime of the facility with the following parameters and outcomes:
 - The populations of *W.asparagoides* on the dunes that have been excluded from development but which are within the boundaries of the PV facility should be monitored.
 - These should be compared to a matched population outside but adjacent to the facility.
 - There should be a baseline assessment of *W.asparagoides* density and size class distribution within 2 years of construction, both inside and outside the facility.
 - There should be regular monitoring at least every five years of the above populations in a manner matched to the baseline assessment and which would allow for changes in the population density and dynamics to be detected and compared.
 - There should be no livestock grazing within the PV facility.

Impact Statement

Wahlenbergia asparagoides is common within the Daisy PV Facility site and is a common species in the wider area. Although the development would result in the loss of approximately 5% of the local population this is estimated to represent less than 0.25% of the global population. The development is therefore considered unlikely to compromise the local or regional population of this species. With the implementation of the recommended monitoring, the impact of the Daisy PV Facility on *W.asparagoides* is considered acceptable.

7 REFERENCES

- 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.
- Helme, N.A., Koopman, R. & van der Colff, D. 2015. *Wahlenbergia asparagoides* (Adamson) Lammers. National Assessment: Red List of South African Plants version 2020.1. Accessed on 2023/03/10