

**TERRESTRIAL PLANT SPECIES SPECIALIST  
ASSESSMENT:  
HELICHRYSUM TRICOSTATUM 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**

<b>GN 1150 of 30 October 2020: Terrestrial Plant Species Specialist Assessment Report (Very High or High Sensitivity)</b>	<b>Section of Report</b>
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

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 <p><b>3Foxes Biodiversity Solutions</b>  <b>ECOLOGICAL SPECIALIST SERVICES</b>          Assessment/Management/Research</p>	<p>Simon Todd Pr.Sci.Nat          Director &amp; Principle Scientist          C: 082 3326502  <a href="mailto:Simon.Todd@3foxes.co.za">Simon.Todd@3foxes.co.za</a></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 located approximately 20km west of the town of Komaggas, and 24km southeast of Kleinzee. 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 *Helichrysum tricostatum*, which is classified as Near Threatened. In terms of the regulations, a Terrestrial Plant Species Assessment is required for *Helichrysum tricostatum* within the Daisy PV Facility. To these ends, this Plant Species Assessment for *Helichrysum tricostatum* within the Daisy PV Facility, addresses the potential impacts of the proposed wind farm on *Helichrysum tricostatum* and must be included in the BA for the development and any mitigation and monitoring measures as identified, must be incorporated into the EMPr 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 *Helichrysum tricostatum* 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:



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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.

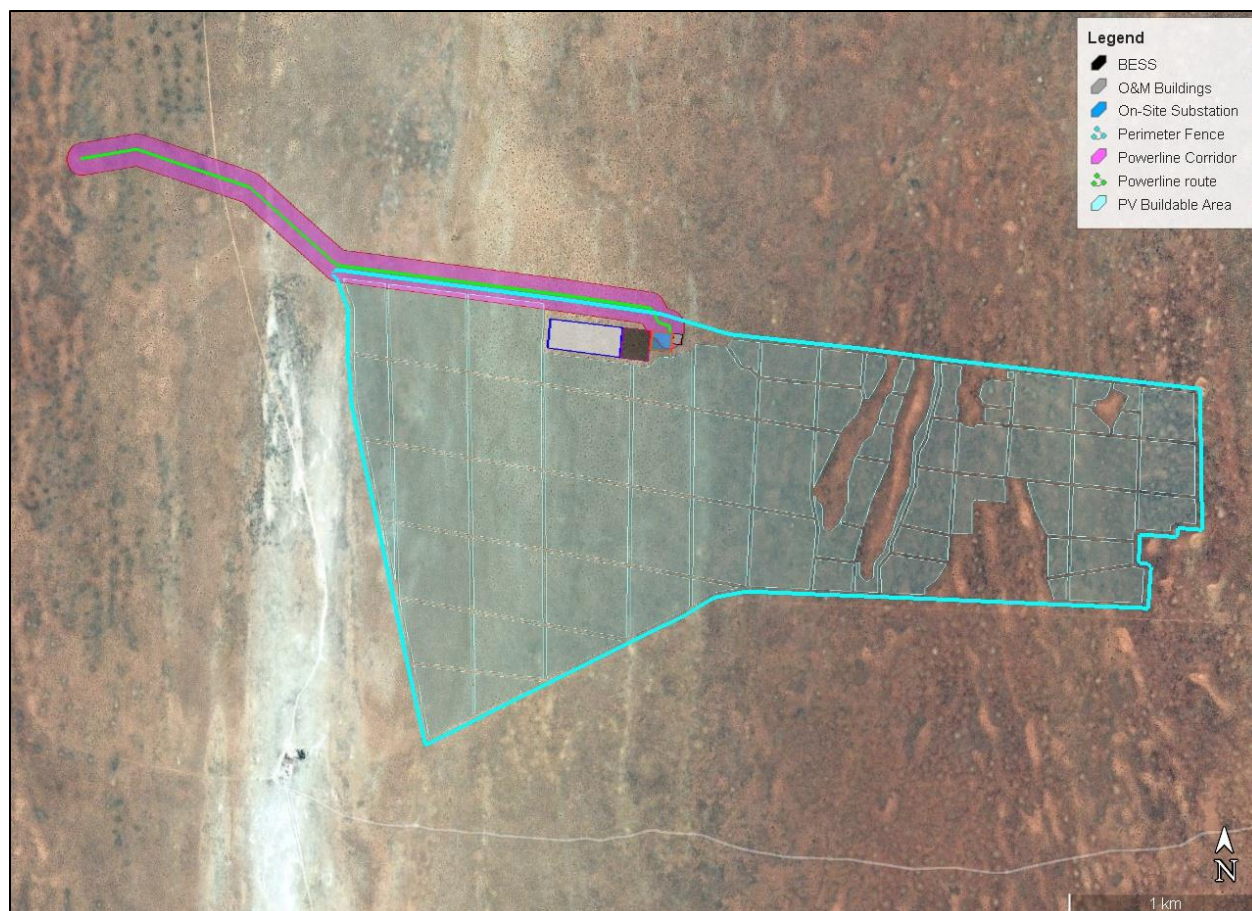
These Terms of Reference and reporting requirements are achieved in this study and report.

## **1.2 PROJECT DESCRIPTION**

The Daisy Solar PV Facility site is located 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 *Helichrysum tricostatum*.

## 2.2 LIMITATIONS & ASSUMPTIONS

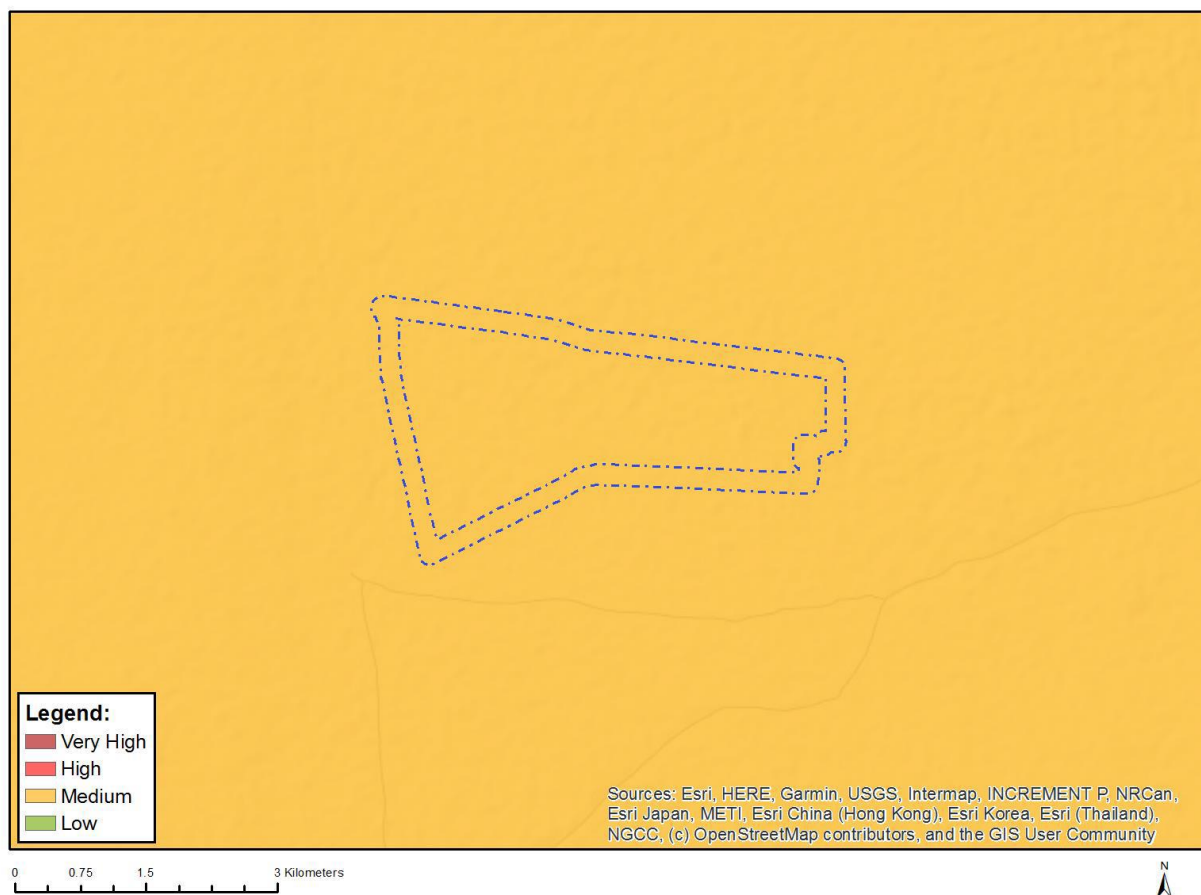
A number of limitations and assumptions are inherent in the study including the following:

- The density of *H.tricostatum* within the site is low 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, *H.tricostatum* 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 *Helichrysum tricostatum* within the site. Based on the confirmed presence of *Helichrysum tricostatum* 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 *Helichrysum tricostatum* as well as other plant SCC it should be classified as High sensitivity.

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### 3 **HELICHRYSUM TRICOSTATUM ASSESSMENT**

#### 3.1 **HELICHRYSUM TRICOSTATUM SPECIES ACCOUNT**

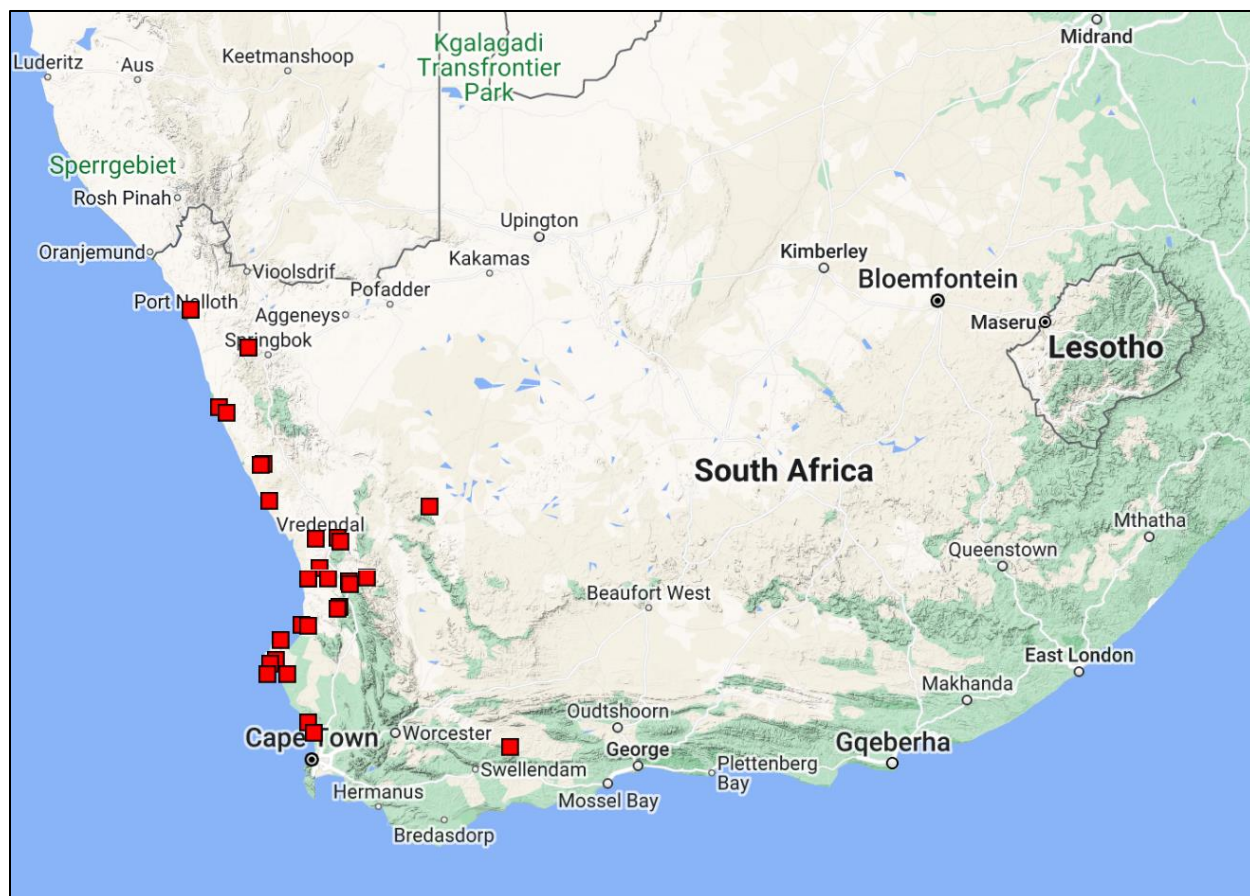
There is not a lot of information regarding *Helichrysum tricostatum* available for interpretation or to inform the current study. This species is not considered by SANBI to be a Sensitive Species and the red-listing provides very little information on the overall abundance and density of this species. 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 *Helichrysum tricostatum*, this species is restricted to the Western and Northern Cape from Bokbaai to Namaqualand, where it occurs in Sandveld on sandy flats. The EOO is 14 000 km<sup>2</sup> and it is known from between 15-20 locations. It is currently declining due to severe, ongoing habitat loss to potato cultivation and coastal housing developments. In addition, there is a continuing decline in the northern parts of its range due to livestock grazing. It is however considered locally common within suitable habitat. *Helichrysum tricostatum* is classified as Near Threatened under criteria B1ab(i,ii,iii,iv,v).

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

- <https://inaturalist.ca/observations/151844231>

SANBI does not provide a distribution map of this species with the species record and there are no records on the iNaturalist database apart from the above record. However, interrogating the Braams Database (<http://posa.sanbi.org/sanbi/Explore>) a distribution map can be created as below (Figure 4), However, this should be interpreted with caution as some these records are likely to be erroneous.



**Figure 4.** Distribution of records of *Helichrysum tricostatum* from the SANBI POSA database.

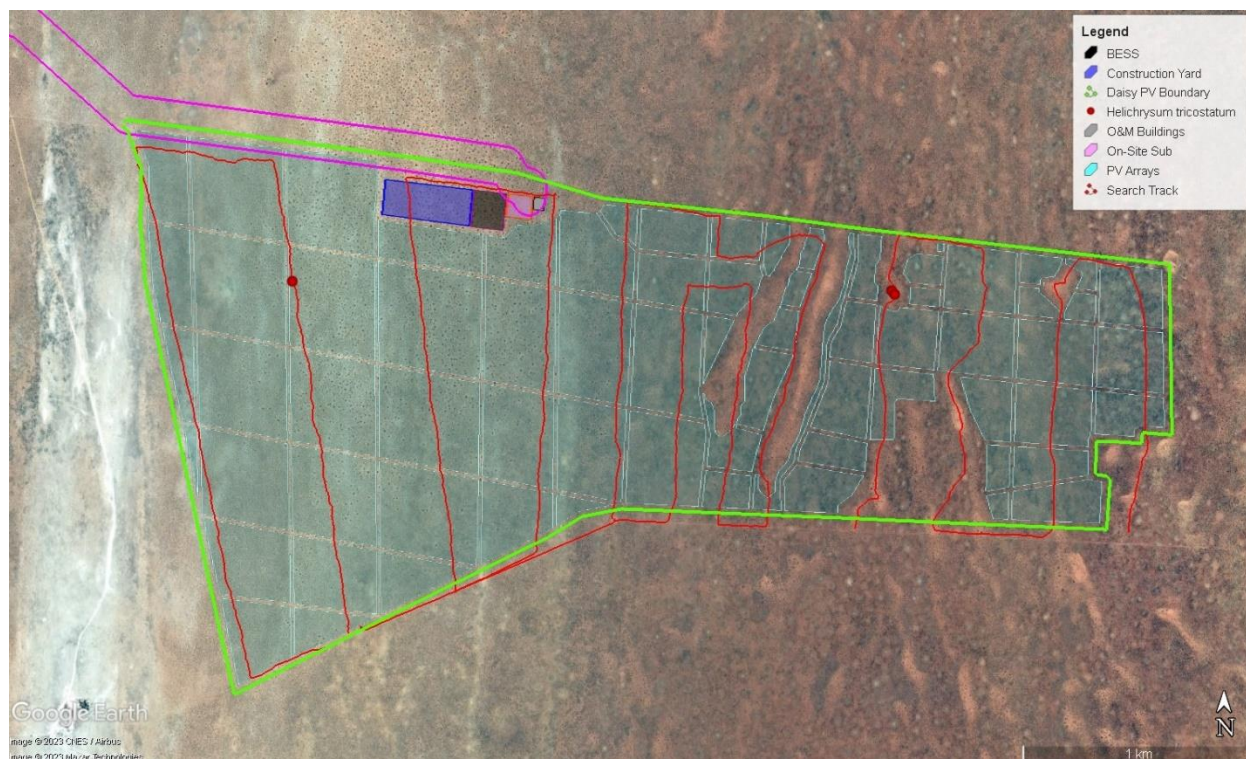




**Figure 5.** Typical example of *Helichrysum tricostatum* from the site.

### 3.2 HABITAT ASSESSMENT

The walk-through of the Daisy Solar PV site found only three individuals of *Helichrysum tricostatum* within the search track (**Figure 6**). When extrapolated to the whole of the site, this translates to an estimated population of 35 *Helichrysum tricostatum* plants within the site. Given that this species is relatively common in some areas, this is not a large number of individuals. The consultant has observed this species on several of the adjacent wind farms including Kap Vley, Zonnequa, Namas and Gromis WEFs. As a result, this species appears to be relatively widespread in the area. In addition, two of the three locations for this species are from the dune areas that have been excluded from the development footprint. This species tends to be more common on the dunes, with the result that of the individuals within the site, a significant proportion are likely to be avoided as the dunes are considered no-go areas for the PV arrays.



**Figure 6.** Search track of over 20km and associated localities of *H.tricostatum* within the Daisy Solar PV Facility.

### 3.3 *HELICHRYSUM TRICOSTATUM* SPATIAL ASSESSMENT

Although it is difficult to estimate the local and regional population size given the lack of reliable estimates on the population size, the low number of individuals within the development footprint suggests that the site can't be considered to represent an important local or regional population centre for this species. *Helichrysum tricostatum* is relatively widespread and reportedly relatively common within suitable habitat suggesting that the total number of individuals of this species is likely to be relatively large. Observations from the site as well as the adjacent wind farms indicate that *Helichrysum tricostatum* is more common in dune habitats and areas with loose soil than on the typical flatter plains. Within the site, two of the three locations were from within the dunes that have been excluded from the development footprint. As such, it is likely that approximately two-thirds of the individuals within the site are likely to be within the areas that have been excluded from the development footprint. As such, the impact of the development on *Helichrysum tricostatum* is likely to be low.

In terms of cumulative impact, there are several approved wind energy facilities in the immediate area that would contribute towards cumulative impact on *H.tricostatum*. This would include the

Gromis, Namas, Zonnequa, Komas and Kap Vlei WEFs, which would each have a development footprint of less than 100ha each. *Helichrysum tricostatum* can be confirmed present within each of these facilities, with the result that there would potentially be cumulative impact on this species should all these facilities be built. However, this species tends to occur at a low density and the association with dune habitats also means that the areas where it is most common are usually avoided by these developments. As such, the combined threat to this species from renewable energy development in the area is considered low.

### 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:

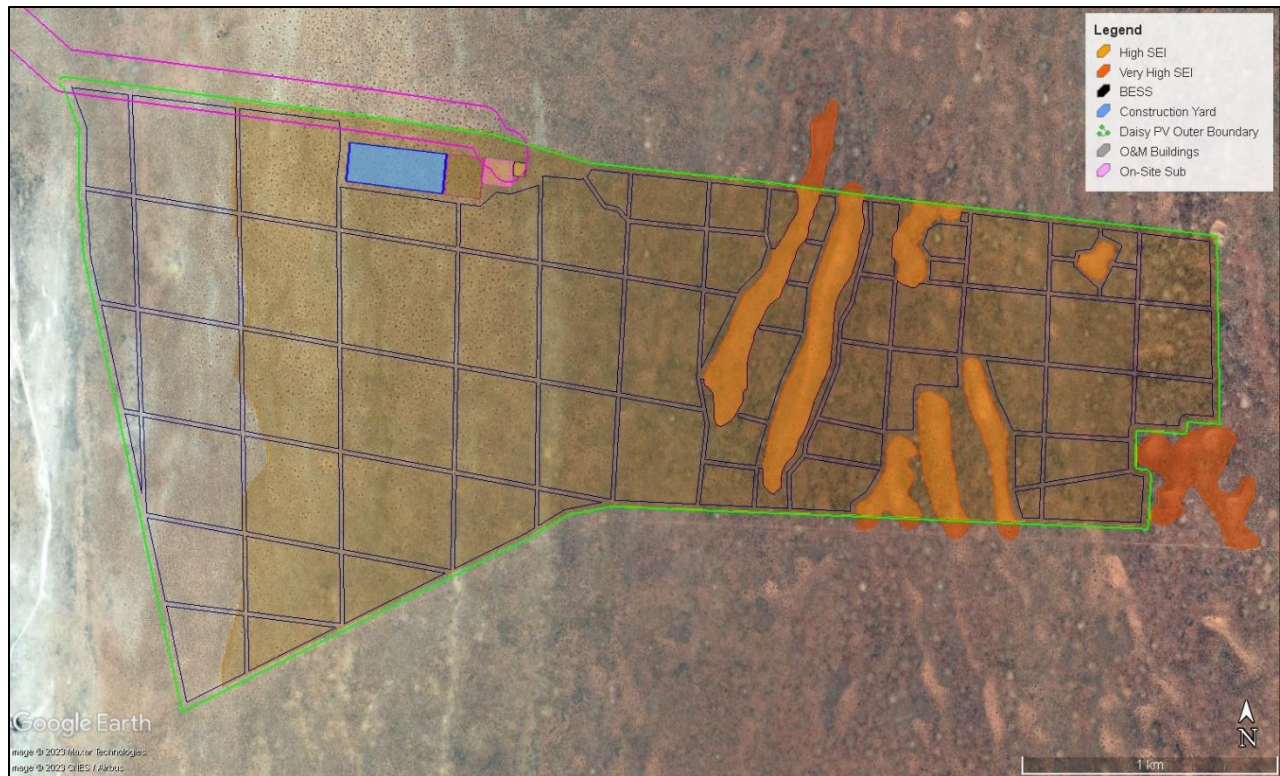
- $BI = CI + FI$

Given the IUCN status of the *Helichrysum tricostatum* (NT), the low number of individuals affected and the relatively large distribution range, the **Conservation Importance** (CI) of *Helichrysum tricostatum* 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 receptor resilience and hence, the overall **SEI for the site is considered to be High (Error! Reference source not found.)**. The larger dunes within the site, where *Helichrysum tricostatum* 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 7**.

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 is likely to be largely effective at reducing the impact of the development on *Helichrysum tricostatum* to a low level.





**Figure 7.** The Site Ecological Importance (SEI) of the Daisy Solar PV Facility for *Helichrysum tricostatum*.

## 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 *Helichrysum tricostatum* 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 *Helichrysum tricostatum*.

#### **Impact 1. Construction-Phase Impact on *Helichrysum tricostatum***

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 *H.tricostatum* 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 *Helichrysum tricostatum***

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 *Helichrysum tricostatum***

The development would contribute towards cumulative impacts on *H.tricostatum* 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 *H.tricostatum*, with the result that cumulative impacts on this species are a potential concern.

## **5 ASSESSMENT OF IMPACTS ON *HELICHRYSUM TRICOSTATUM***

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

### **5.1 CONSTRUCTION PHASE IMPACT ON *HELICHRYSUM TRICOSTATUM***

<b>Impact Nature:</b> Construction phase habitat loss and destruction of individuals within the development footprint.		
	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Low (2)	Low (2)
<b>Probability</b>	Certain (5)	Highly likely (4)
<b>Significance</b>	Medium (35)	Low (28)
<b>Status</b>	Negative	Negative
<b>Reversibility</b>	Low	Low
<b>Irreplaceable loss of resources</b>	Yes	Yes
<b>Can impacts be mitigated?</b>	The loss of individuals cannot be fully mitigated the habitat loss associated with the project is largely unavoidable.	
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>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>H.tricostatum</i> affected for permitting.</li> <li>Access control onto the site during construction.</li> </ul>	

	<ul style="list-style-type: none"> <li>Monitoring of construction activities to ensure that personnel remain within the demarcate development footprint.</li> <li>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.</li> </ul>
<b>Residual Risks</b>	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 *HELICHRYSUM TRICOSTATUM*

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

## 5.3 CUMULATIVE IMPACT ON *HELICHRYSUM TRICOSTATUM*

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

<b>Magnitude</b>	Low (2)	Medium (3)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	Low (21)	Low (27)
<b>Status</b>	Negative	Negative
<b>Reversibility</b>	Moderate	Moderate
<b>Irreplaceable loss of resources</b>	No	No
<b>Can impacts be mitigated?</b>	No, habitat loss cannot be avoided.	
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>Monitoring of populations of <i>Helichrysum tricostatum</i> to ascertain more accurate estimates of population dynamics, density and distribution.</li> </ul>	
<b>Residual Risks</b>	There would be minor residual risk of negative cumulative impact.	

## 6 CONCLUSION & RECOMMENDATIONS

*Helichrysum tricostatum* was confirmed present within the Daisy PV Facility site at a low density. The population size within the PV Facility footprint is estimated at 35 individuals, which based on the species account and known distribution does not represent a large number of individuals relative to the overall population size. In addition, it is likely that the majority of *Helichrysum tricostatum* plants within the site are located within the dune habitat which has been excluded from the development footprint. Based on this assessment, the impact of the development of the Daisy Solar PV Facility on *H.tricostatum* is therefore considered acceptable and would not compromise the local or regional population of this species.

The following monitoring of *H.tricostatum* is recommended for the Daisy Solar PV Facility and should be included in the EMP 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 *H.tricostatum* 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 *H.tricostatum* 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*

The development of the Daisy Solar PV Facility is 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 *H.tricostatum* is considered low and 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.
- Raimondo, D. & Turner, R.C. 2007. *Helichrysum tricostatum* (Thunb.) Less. National Assessment: Red List of South African Plants version 2020.1.