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**A PROTECTED PLANT RESCUE AND PROTECTION  
PLAN FOR THE PROPOSED RENEWABLE ENERGY  
GENERATION PROJECT ON THE FARM RHODES 269,  
NORTHERN CAPE PROVINCE**

**EOH**

Prepared for: **Miko Energy (Pty) Ltd**

Prepared by: **Exigo**

# A PROTECTED PLANT RESCUE AND PROTECTION PLAN FOR THE PROPOSED RENEWABLE ENERGY GENERATION PROJECT ON THE FARM RHODES 269, NORTHERN CAPE PROVINCE

## ECOLOGICAL REPORT

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February 2016

**Conducted on behalf of:**

Miko Energy (Pty) Ltd

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## REPORT DISTRIBUTION LIST

Name	Institution
	Miko Energy (Pty) Ltd
Ms. E. Grobler	AGES Limpopo

## DOCUMENT HISTORY

Date	Version	Status
April 2016	2.0	Final
September 2014	1.0	Draft 1

**Rhodes 2 Solar Park Plant Rescue & Protection Plan**

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## Rhodes 2 Solar Park Plant Rescue & Protection Plan

### 1 ASSIGNMENT

Exigo3 was appointed by AGES Limpopo to compile a plant rescue and protection plan for the proposed establishment of a solar energy generation facility on the farm Rhodes 269, Kuruman RD, Joe Morolong Local Municipality, John Taolo Gaetsewe District Municipality, Northern Cape Province.

The assignment is interpreted as follows: Compile a management plan to be implemented as guidelines by the Environmental Control Officer (ECO) for the rescue and protection of rare and endemic plant species occurring on the proposed development site. The study will be done according to guidelines stipulated by the Department of Environmental Affairs (DEA) and legislation pertaining to the protection of plants in the Northern Cape Province.

#### 1.1 INFORMATION SOURCES

The following information sources were obtained:

1. National and provincial legislation was evaluated in order to provide lists of any plant or animal species that have protected status. The most important legislation is the following:
  - a. National Environmental Management: Biodiversity Act (Act No 10 of 2004)
  - b. National Forest Act;
  - c. Northern Cape Nature Conservation Act, No. 9 of 2009;
  - d. CITES: Convention on the Trade in Endangered Species of Wild Fauna and Flora.
2. All relevant maps through Geographical Information Systems (GIS) mapping, and information (previous studies and environmental databases) on the rare and protected plants of the site concerned;
3. Requirements regarding the management plan as requested by DEAT;
4. Information on the micro-habitat level was obtained through obtaining a first-hand perspective from the ecological study compiled by Henning (2014) was also utilized for this study;

#### 1.2 REGULATIONS GOVERNING THIS REPORT

##### 1.2.1 National Environmental Management Act Regulation 543 Section 32

This report has been prepared in terms of Regulation 32 of the National Environmental Management Act (No. 107 of 1998) Regulations GN 33306 GNR 543 for environmental impact assessment. Regulation 33 states that a specialist report must contain:

1. An application or the EAP managing an application may appoint a person to carry out a specialist study or specialized process.

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2. The person referred to in sub-regulation 1 must comply with the requirements of regulation 17 (General requirements for EAPs or a person compiling a specialist report or undertaking a specialized process).
3. A specialist report or a report on a specialized process prepared in terms of these regulations must contain:
  - a. Details of
    - i. The person who prepared the report; and Letter of Appointment
    - ii. The expertise of that person to carry out the specialist study or specialized process.
  - b. A declaration that the person is independent in a form as may be specified by the competent authority;
  - c. An indication of the scope of, and purpose for which, the report was prepared;
  - d. A description of the methodology adopted in preparing the report or carrying out the specialized process;
  - e. A description of any assumptions made and any uncertainties or gaps in knowledge;
  - f. A description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives, on the environment;
  - g. Recommendations in respect of any mitigation measures that should be considered by the applicant and competent authority;
  - h. A description of any consultation process that was undertaken during the course of carrying out the study;
  - i. A summary and copies of any comments that were received during any consultation process;
  - j. Any other information requested by the competent authority.

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### 1.3 TERMS OF REFERENCE

#### 1.3.1 Objectives

1. List the plant species of conservation concern in the study area.
2. Describe the management principles and specific methodology on the plant rescue and protection on the proposed development site. It includes plant rescue methods (relocation, seed collection or taking vegetative cuttings), but primarily focuses on plant relocation procedures (root preparation and excavation, lifting and backfill requirements), and the installation of marker stakes, tree guards, weed mats and mulch around relocated plants.

#### 1.3.2 Limitations and assumptions

- In order to obtain a comprehensive understanding of the dynamics of protected plant rescue and protection plan, surveys and monitoring should ideally be replicated over several seasons and over a number of years. However, due to project time constraints such long-term studies are not feasible;
- The large study area did not allow for the finer level of assessment that can be obtained in smaller study areas. Therefore, data collection in this study relied heavily on data from representative sections, as well as general observations, generic data and a desktop analysis;

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### 2 INTRODUCTION

Plants are the backbone of life on Earth. Today, however, plant communities around the world are under threat. Scientists estimate that at least 100,000 plants are threatened with extinction--that's more than one-third the total known species of plants on the planet.

The main threats to plants today are habitat destruction, invasive species, and over collection. The loss of a plant species can have devastating effects on ecosystems as a whole, as other species lose their sources of food and shelter. Additionally, plants play a crucial role in stabilising soils and help prevent erosion.

While the situation is critical, efforts are underway around the globe to halt the loss of plant diversity. International treaties such as the Convention on Biological Diversity are setting goals and targets for conservation worldwide. More specifically, the Global Strategy for Plant Conservation (GSPC) has laid out 16 outcome-oriented targets to be achieved by 2010. The GSPC recognizes the important role that education can play in conservation programmes. Target 14 of the GSPC calls for the "importance of plant diversity and the need for its conservation incorporated into communication, educational and public-awareness programmes."

There are two main ways to conserve biodiversity. These are termed *ex situ* (i.e. out of the natural habitat) and *in situ* (within the natural habitat). Populations of plant species are much easier than animals to maintain artificially. They need less care and their requirements for particular habitat conditions can be provided more readily. It is also much easier to breed and propagate plant species in captivity. This management plan focus specifically on the rescue and protection of plant species on the site for the proposed development of a solar plant.



## Rhodes 2 Solar Park Plant Rescue & Protection Plan

### 3 STUDY AREA

#### 3.1 LOCATION AND DESCRIPTION OF ACTIVITY

The project entails the development of a Photovoltaic (PV) Power Plant and is located on the farm Rhodes 269, Joe Morolong Local Municipality, John Taolo Gaetsewe District Municipality, Northern Cape Province (Figure 1).

The proposed project is situated directly north of the town of Hotazel and 50 kilometers to the North of the town of Kathu, with the footprint planned to the east and west of Eskom's "Hotazel - Heuningvlei" 132 kV power line.

The solar project is called RHODES 2 SOLAR PARK and it envisages the establishment of a Photovoltaic (PV) Power Plant having a maximum generating capacity up to 120 MW.

The PV power plant will have a footprint (fenced area) up to 250 ha, within a study area of 1380 ha in extent.

The Rhodes 2 Solar Park will deliver the electrical energy to the "Hotazel - Heuningvlei" 132 kV power line (preferred connection solution). The Eskom's power line will loop in and out of the 132 kV busbar of the new on-site substation, via two new sections of 132 kV.

Access to the Rhodes 2 Solar Park will be from a local upgraded farm road diverted of the regional road R31, which runs parallel to the eastern boundary of the property.

The chosen site is suitable for the installation of a photovoltaic (PV) power plant. It is appropriate morphologically (flat terrain) and regarding the favourable radiation conditions. The available radiation allows a high rate of electric energy production, as a combination of latitude-longitude and climatic conditions.

The aerial image of the site is indicated in figure 2. The footprint of the PV plant layout is planned in the central section of the site.

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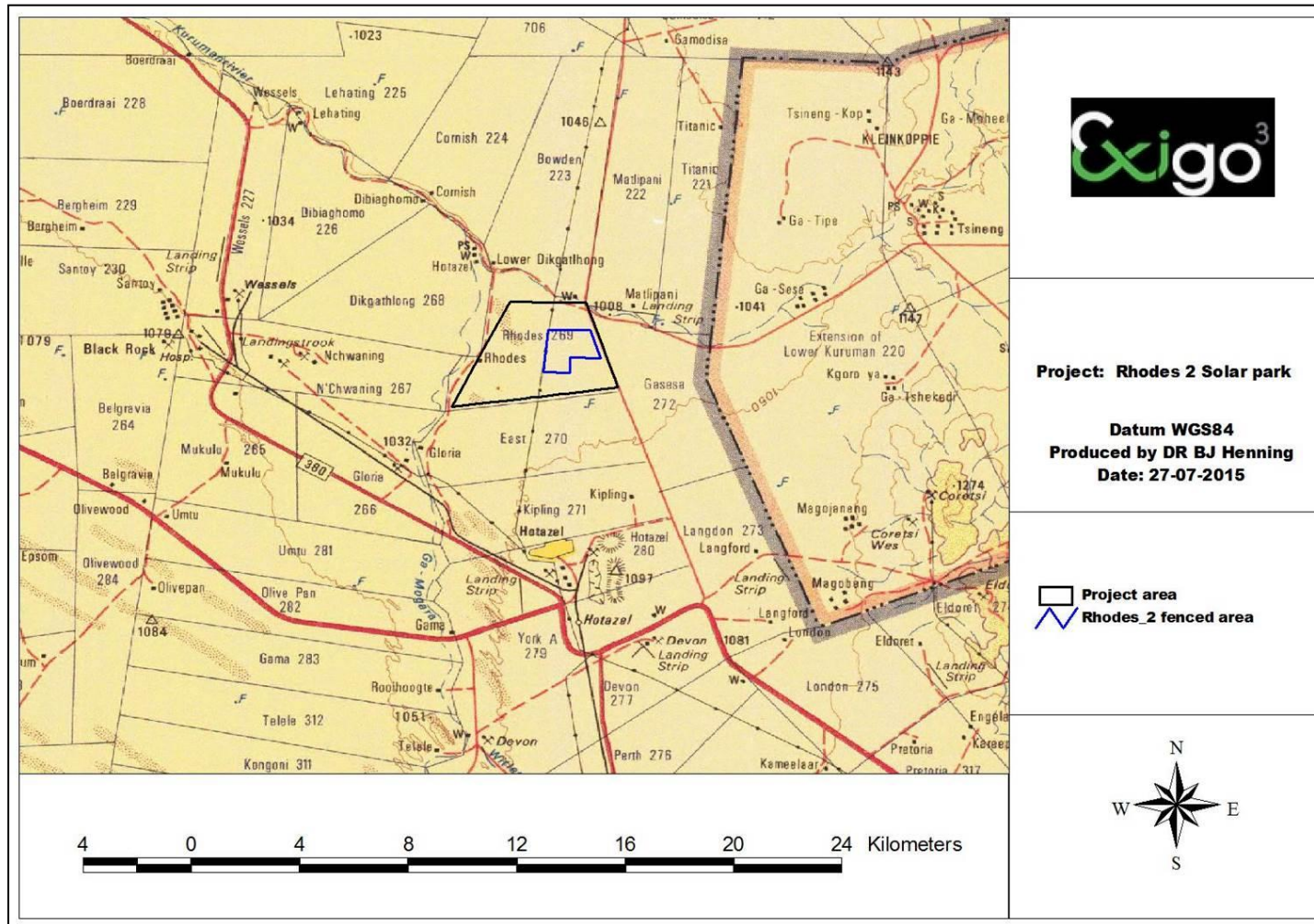


Figure 1 Regional Locality Map

Rhodes 2 Solar Park Plant Rescue & Protection Plan

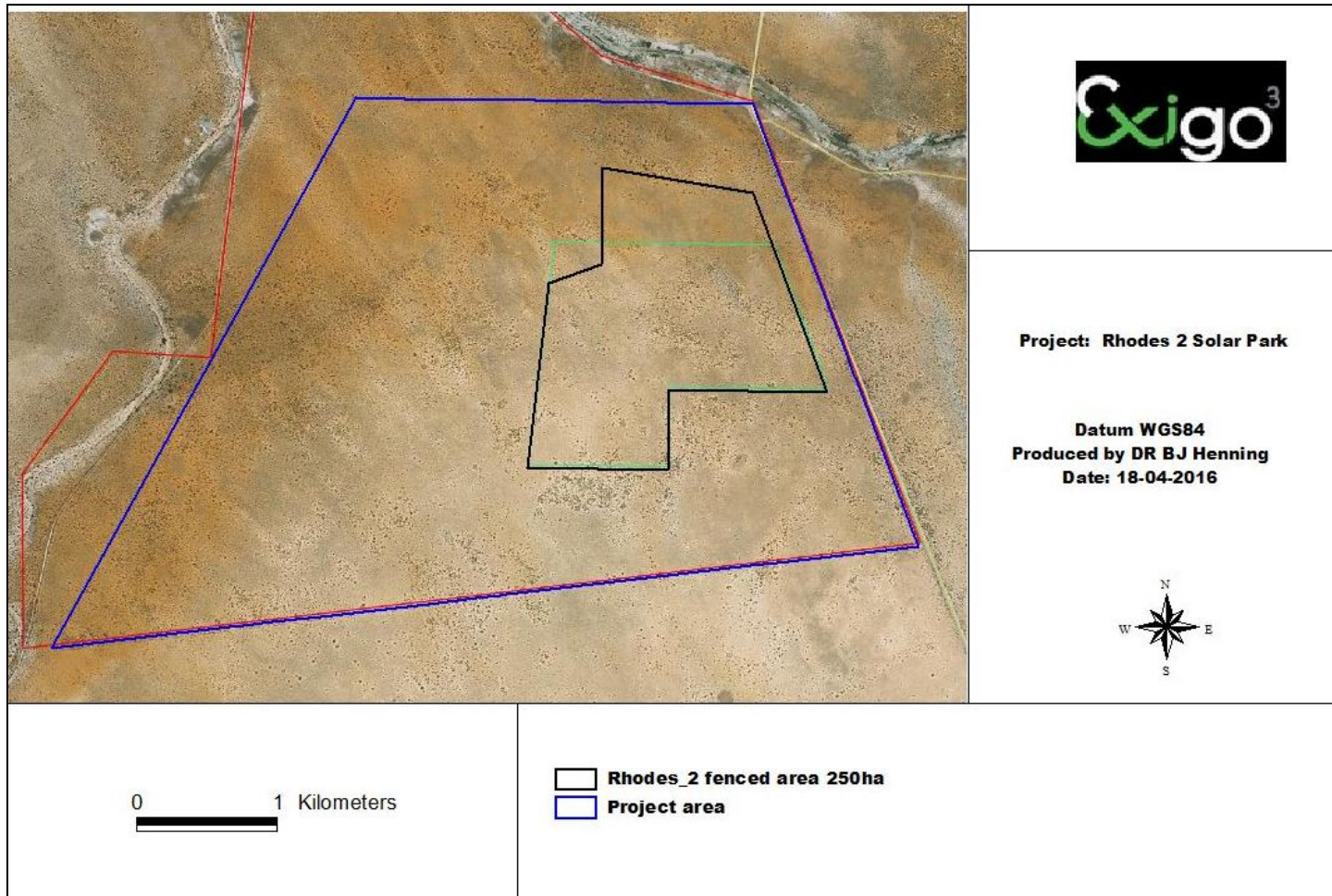


Figure 2 Aerial Image Map

Rhodes 2 Solar Park Plant Rescue & Protection Plan

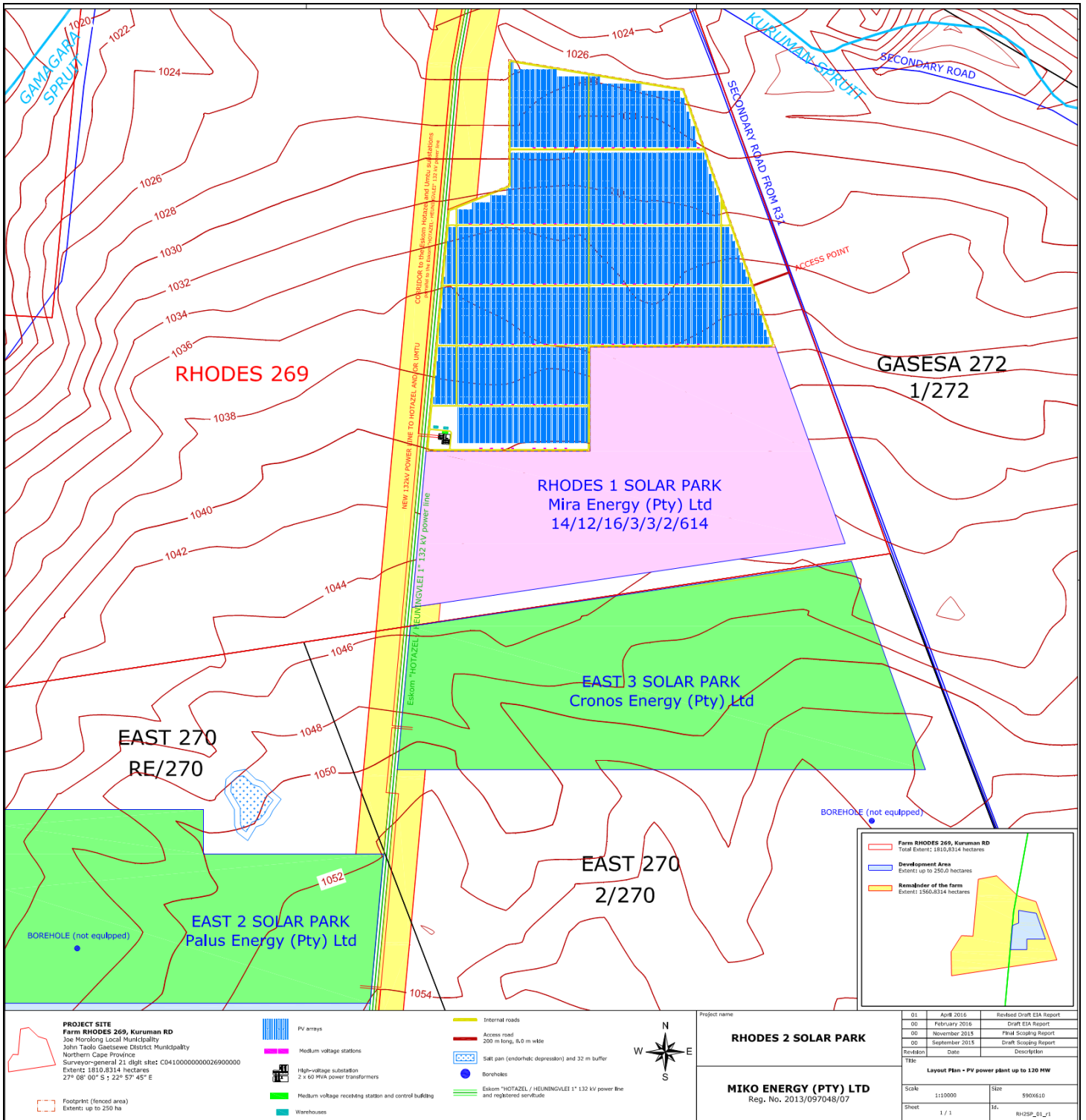


Figure 3. Layout Map Alternative 1

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### 4 PROTECTED AND THREATENED PLANT SPECIES OF THE STUDY AREA

The following lists and recommendation regarding threatened and protected plant species on the proposed development site has been adapted from the ecological report for the EIA conducted by Henning (2014). A plant species lists previously recorded for the study area according to the SIBIS database of SANBI are included in Appendix A.

#### 4.1 Plant species of concern

There are two types of species of concern for the site under investigation, (i) those listed by conservation authorities as being on a Red List and are therefore considered to be at risk of extinction, and (ii) those listed as protected according to National and/or Provincial legislation.

##### 4.1.1 Red List plant species

A list of red data plant species previously recorded in the study area in which the proposed development is planned was obtained from the Plants of Southern Africa (POSA) database of SANBI. There are various categories for Red Data Book species, such as 'Endangered', 'Vulnerable', 'Rare' and 'Near threatened' as listed in the Red Data List of Southern African Plants (Hilton-Taylor 1996). No red data species exist according to the SANBI data base for the grid square 2722BB and no other potential red data species was observed during the surveys.

##### 4.1.2 Endemic or near-endemic species

These species are classified according to the species' restricted distribution. For the purposes of this assessment this refers to species which are largely restricted to the GWC and should also be protected. Table 1 indicate two species classified as endemic or near-endemic in the study area.

**Table 1. Plant species endemic or near-endemic to the Griqualand West Centre of endemism, in the study area**

Species	Status
<i>Searsia tridactyla</i>	Endemic
<i>Tarchonanthus obovatus</i>	Near Endemic

However, as the site falls within the Griqualand West Centre of Endemism the following endemics can also occur within the area:

Tall shrubs: *Lebeckia macrantha*, *Nuxia gracilis*

Low shrubs: *Blepharis marginata*, *Putterlickia saxatalis*, *Tarchonanthus obovatus*

Succulent shrubs: *Euphorbia wilmaniae*, *Prepodesma orpenii*

Graminoids: *Digitaria polyphylla*, *Panicum kalaharensense*

Herbs: *Corchorus pinnatipartitus*, *Helichrysum arenicola*

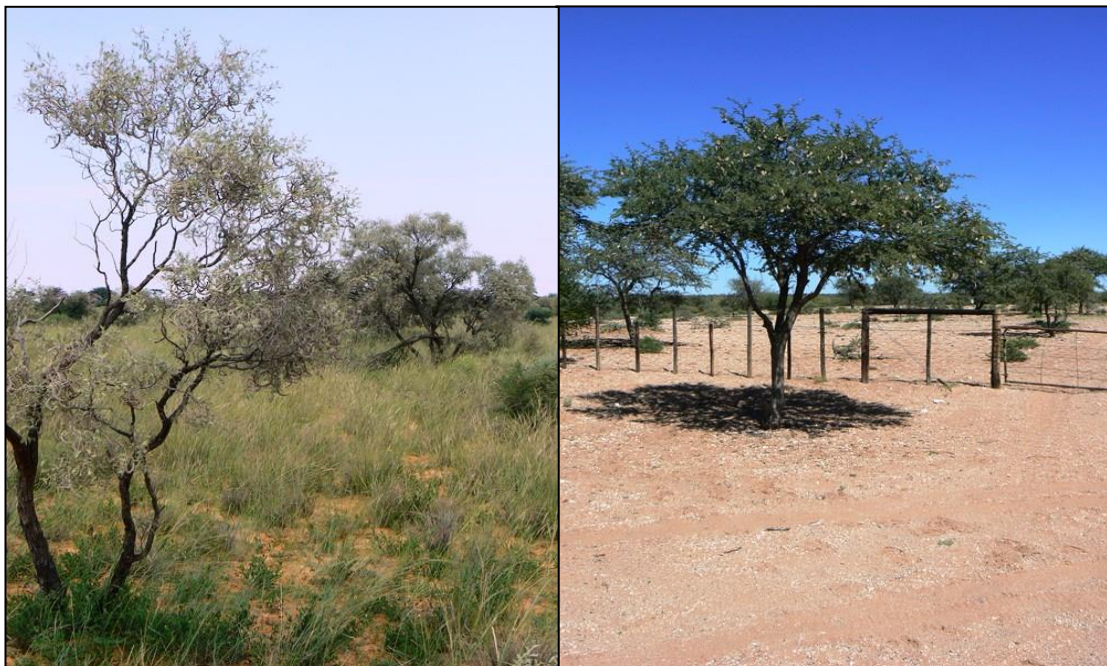
Succulent herb: *Orbea knobelii*

These species' habitat is mainly found on rocky areas and around drainage channels at the edge of dense scrub. No individuals of these plants were observed during the surveys.

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### 4.1.3 Protected trees

The National Forest Act (no.84 of 1998: National Forest Act, 1998) provides a list of tree species that are considered important in a South African perspective as a result of scarcity, high utilization, common value, etc. In terms of the National Forest Act of 1998, these tree species may not be cut, disturbed, damaged, destroyed and their products may not be possessed, collected, removed, transported, exported, donated, purchased or sold – except under license granted by DAFF (or a delegated authority). Obtaining relevant permits are therefore required prior to any impact on these individuals. Taking cognizance of the data obtained from the field surveys, the following tree species occur in the area namely *Acacia haematoxylon* (Grey camel thorn, Photograph 1) and *Acacia erioloba* (Camel thorn, Photograph 1). A licence application should therefore be submitted to DAFF before any of these trees can be removed during construction.



**Photograph 1. *Acacia haematoxylon* (left) and *Acacia erioloba* (right) are protected tree species that occurs on site**

### 4.1.4 Other protected species

Plant species are also protected according to the Northern Cape Nature Conservation Act (NCNCA), No. 9 of 2009. According to this Act, no person may pick, import, export, transport, possess, cultivate or trade in a specimen of a specially protected or protected plant species. The Appendices to the Act provide an extensive list of species that are protected, comprising a significant component of the flora expected to occur on site. Communication with Provincial authorities indicates that a permit is required for all these species, if they are expected to be affected by the proposed project.

**After a detailed survey was conducted during March 2014, no protected plant was found on site.**

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### 5 PLANT RESCUE AND PROTECTION PLAN FOR THE THREATENED AND PROTECTED PLANTS OF THE SITE

Plant material that is to be “rescued” must be potted up into bags utilising local soil obtained from the topsoil obtained from the construction site or larger area. Adequate root systems per plant material type must be carefully excavated and retained in order for plant material to remain viable. Search and Rescue activities would include the removal of grass clumps, smaller transplantable shrubs and trees and endangered species such as geophytes and succulents should be placed into bags using local soil.

Should the ECO require that plants be cleared for the proposed construction of the solar facility, the following rescue and conservation strategy for the relevant plant species should apply:

- General principles:
  - Vegetation removal must be limited to the PV plant construction site;
  - Vegetation to be removed as it becomes necessary rather than removal of all vegetation throughout the site in one step;
  - Materials should not be delivered to the site prematurely which could result in additional areas being cleared or affected;
  - No vegetation to be used for firewood;
  - Gathering of firewood, fruit, muti plants, or any other natural material onsite or in areas adjacent to the site is prohibited unless with prior approval of the ECO;
  - Only vegetation within the footprint area must be removed;
  - Vegetation removal must be phased in order to reduce impact of construction;
  - Construction site office and laydown areas must be clearly demarcated and no encroachment must occur beyond demarcated areas.
  - All natural areas impacted during construction must be rehabilitated with locally indigenous plant species.
  - A buffer zone should be established in areas where construction will not take place to ensure that construction activities do not extend into these areas. These areas include drainage channels and rocky outcrops in the study area;
  - Construction areas must be well demarcated and these areas strictly adhered to;
  - The use of pesticides and herbicides in the study area must be discouraged as these impacts on important pollinator species of indigenous vegetation;
  - Soils must be kept free of petrochemical solutions that may be kept on site during construction. Spillage can result in a loss of soil functionality thus limiting the re-establishment of flora;

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- Harvesting of seeds from specimens to be used in the ex situ nursery and future rehabilitation. The ecologist shall determine when seed is mature and ready for collecting, and shall collect, extract, clean and label the seed. Seed shall be labelled to indicate the plant species name, date of collection, weight of seed and place of collection. The seed shall be stored in air-tight containers at a constant temperature, away from direct light. Seed shall be provided to the principal of the ex situ nursery;
- Prior to plants being cleared from the work site, the ecologist shall take vegetative cuttings from the individual plants that can reproduce vegetatively. The ecologist shall determine when to take the cuttings and the best type to take (e.g. young growth, mature material). Cuttings shall be labelled with plant species name, date and place of collection, and stored in moist paper in a cool place prior to planting. Vegetative cuttings shall be provided to the nursery;
- Intact removal of protected species under permit. Permits should be obtained from the Northern Cape Department of Environmental Affairs and Nature Conservation where protected flora is to be disturbed or relocated. Options to be considered for the above-mentioned red data specimens:
  - Suitable translocation areas: e.g. protected areas in the larger area;
  - Translocation to suitable areas earmarked for public open spaces, restoration and rehabilitation, both on and off-site;
  - Use of removed plants in an indigenous nursery for future restoration and rehabilitation programs;
  - Translocation to other areas suitable for survival of the removed specimens;
  - Proper habitat suitability assessments before reintroductions to reduce the risk of mortalities in both source and destination populations.
  - Plant relocation procedures are described in detail in Appendix B of this report and involve the following:
    - Timing of relocation;
    - Weed control;
    - Root preparation;
    - Preparation of planting holes;
    - Root excavation techniques;
    - Lifting technique;
    - Backfill;
    - Soil additives;
    - Watering Basin;
    - Initial Watering;
    - Initial Fertiliser.



## 6 REFERENCES

GERMISHUIZEN, G., MEYER, N.L., STEENKAMP, Y and KEITH, M. (eds.) (2006). A checklist of South African plants. Southern African Botanical Diversity Network Report No. 41, SABONET, Pretoria.

Henning B. 2014. Specialist ecological study for the proposed Rhodes 2 Solar Park. Exigo Sustainability (Pty) Ltd.

IUCN (2001). IUCN Red Data List categories and criteria: Version 3.1. IUCN Species Survival Commission: Gland, Switzerland.

MUCINA, L., RUTHERFORD, M.C., PALMER, A.R., MILTON, S.J., SCOTT, L., VAN DER MERWE, B., HOARE, D.B., BEZUIDENHOUT, H., VLOK, J.H.J., EUSTON-BROWN, D.I.W., POWRIE, L.W. & DOLD, A.P. 2006. Nama-Karoo Biome. In: Mucina, L. & Rutherford, M.C. (eds.) The vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. South African National Biodiversity Institute, Pretoria.

MUELLER-DOMBOIS, D. AND ELLENBERG, H. 1974. Aims and methods of vegetation ecology. Wiley, New York.

RUTHERFORD, M.C. & WESTFALL, R.H. (1994). Biomes of southern Africa: an objective categorization. Memoirs of the Botanical Survey of South Africa No. 63.

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### APPENDIX A. PLANT SPECIES LISTS FOR SITE

Tree & shrub species	Grass species	Dwarf shrubs, Forbs, succulents & geophytes
<i>Acacia erioloba</i>	<i>Aristida congesta</i>	<i>Acanthosicyos naudinianus</i>
<i>Acacia haematoxylon</i>	<i>Aristida meridionalis</i>	<i>Argemone ochroleuca</i>
<i>Acacia hebeclada</i>	<i>Digitaria eriantha</i>	<i>Bulbostylis hispidula</i>
<i>Acacia mellifera</i>	<i>Enneapogon cenchroides</i>	<i>Chrysocoma obtusata</i>
<i>Gewia bicolor</i>	<i>Enneapogon desvauxii</i>	<i>Citrullis lanatus</i>
<i>Terminalia sericea</i>	<i>Eragrostis echinocloidea</i>	<i>Cleome angustifolia</i>
<i>Ziziphus mucronata</i>	<i>Eragrostis pallens</i>	<i>Convolvulus sagittatus</i>
<i>Grewia flava</i>	<i>Melinis repens</i>	<i>Crotalaria orientalis</i>
	<i>Panicum coloratum</i>	<i>Cucumis zeyheri</i>
	<i>Schmidtia kalaharensis</i>	<i>Cyperus obtusiflorus</i>
	<i>Stipagrostis amabilis</i>	<i>Dicerocarum eriocarpum</i>
	<i>Stipagrostis hirtigluma</i>	<i>Elephanthorhiza elephanthina</i>
	<i>Stipagrostis obtusa</i>	<i>Giseckia africana</i>
	<i>Tragus racemosus</i>	<i>Heliotropium ciliatum</i>
		<i>Hermestaedtia fleckii</i>
		<i>Hirpicium echninus</i>
		<i>Indigofera alternans</i>
		<i>Indigofera charlieriana</i>
		<i>Ipomoea magnusiana</i>
		<i>Kedrostis africana</i>
		<i>Kohautia caespitosa</i>
		<i>Limeum argute-carinatum</i>
		<i>Limeum viscosum</i>
		<i>Momordica balsamina</i>
		<i>Monechma genistifolium</i>
		<i>Oxygonum delagoense</i>
		<i>Pavonia burchelli</i>
		<i>Pergularia daemia</i>
		<i>Polygala spp.</i>
		<i>Pupalia lapaceae</i>
		<i>Senecio eenii</i>
		<i>Senna italic</i>
		<i>Sesamum triphyllum</i>
		<i>Sida cordifolia</i>
		<i>Tribulis terrestris</i>
		<i>Verbesina encelioides</i>
		<i>Walafrida saxatilis</i>
		<i>Xenostegia tridentate</i>

## APPENDIX B. PLANT RELOCATION PROCEDURES

### 1. Timing

- If practical plants can be moved in autumn or winter when their growth rate is slowest and the soil is moist.

### 2. Weed Control

- Refer to the Alien Invasive Management Plan compiled for the weed control requirements.
- The areas where plants are to be relocated shall be eradicated of weeds before replanting commences. Any existing vegetative growth shall be slashed to a height of 1m;

### 3. Root Preparation

- If nominated, the ECO shall undertake root pruning in advance of relocating. The ECO shall cut the roots at the margins of the root ball, and shall allow the plant to 'adjust' whilst still in situ. For large plants (trees and shrubs) root cutting shall occur progressively commencing at least 4-8 weeks prior to the plant being dug from the ground. A section of the margin of the root ball shall be cut each week during the period leading up to the plant being relocated.

### 4. Preparation of Planting Holes

- Planting holes shall be prepared before the plant to be relocated is dug up. As far as practicable, topsoil and subsoil shall be kept separate when preparing planting holes. The ECO shall remove from site any unsuitable material brought to the surface during excavation.
- The hole shall be at least twice the diameter of the root ball and no deeper than the height of the proposed root ball. If the depth of the hole exceeds the root ball height, compacted soil shall be added to the hole to prevent settling after transplanting. Sides of the hole shall be sloped and roughened to create an irregular surface that will facilitate root penetration.

### 5. Root Excavation Technique

- Before any excavation is carried out, the ECO shall thoroughly water the plants to be relocated and shall mark the proposed root ball size on the ground. In general, the root ball diameter for larger plants (trees and shrubs) should be 10 mm for every 1 mm of trunk diameter, measured at 300 mm above the ground.
- For tussock grasses and other strap leaf plants the root ball shall generally be twice the diameter of the base of the tussock.
- Spade Dug
  - Plants shall be dug from the ground using a spade. Beyond the edge of the root ball, a sharp spade shall be driven into the ground, cutting all the way around the plant. Soil taken with the plants shall extend a minimum of 100mm beyond the root ball to

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- minimise disturbance and/or root damage. Any exposed roots shall be pruned flush with the face of the root ball using sharp secateurs or loppers, ensuring the root ball is not loosened.
  - If necessary, the root ball shall be wrapped in natural fibre (e.g. hessian) to prevent soil being lost during relocation. Once the ball is securely wrapped and tied, the plant shall be undercut. (Small plants may not need to be wrapped, especially if the soil is moist and holds together).
  - A spade shall be used to excavate roots in situations where the use of other machinery would cause undue damage to the remaining vegetation.
  - This method is most suitable for relocating individual small plants or clumps of bulbous, grass or sedge species.
- Mini Excavator/Backhoe/Skid Steer Loader Excavated
  - Plants shall be dug from the ground using a mini excavator, backhoe or skid steer loader. Soil taken with the plants shall extend a minimum of 150 mm beyond the root ball to minimise disturbance and/or root damage. Any exposed roots shall be pruned flush with the face of the root ball using sharp secateurs or loppers, ensuring the root ball is not loosened.
  - If necessary, the root ball shall be wrapped in natural fibre (e.g. hessian) to prevent soil being lost during relocation. Once the ball is securely wrapped and tied, the plant shall be undercut. (Small plants may not need to be wrapped especially if the soil is moist and holds together).
  - This root excavation method shall only be used for sites that are sparsely vegetated and where the machinery will not cause undue damage to the remaining vegetation.

### 6. Lifting Technique

- Plants shall be lifted from their existing location and immediately placed in the pre-prepared planting holes;
- For small plants, the root ball shall be lifted from the hole by hand or by using a sling attached to a small machine;
- Lifting of plants shall be carried out or supervised by a qualified and/or suitably experienced horticulturist and crane/machine operator;
- Appropriate lifting equipment shall be used;
- Suitable slings shall be attached around a balance point of the plant to provide a support system around the root ball. When a sling is attached to the plant, padding and protection is required to reduce possible damage. Plants shall not be lifted by the trunk alone. A qualified crane/machine operator shall determine the support system to be used.

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### 7. Backfill

- Once the plant has been placed in the hole it shall be backfilled with site topsoil and lightly consolidated. The plant shall be set at a height such that the surface of root ball is at the same level as the surrounding soil surface.
- Only topsoil free from perennial weeds, stones, debris, clods of subsoil or other deleterious material may be used as backfill for planting. Topsoil stockpiled from the removal site also may be used as backfill.
- Where in the opinion of the Superintendent excavated material is unsuitable for backfill, imported soil shall be used. Imported soil shall be matched as closely as practicable to the existing site soil. Organic matter shall not be added to the backfill material.

### 8. Soil Additives

- Water Retention Agents
  - Water retention agents (i.e. AquaBoost AG, Alcosorb Water Crystals) shall be applied in accordance with the manufacturer's instructions and recommended rates. The watering regime during the maintenance period shall be closely monitored to ensure over watering does not occur.

### 9. Initial Watering

- Immediately following planting, each plant shall be watered with a volume of clean potable water.

### 10. Initial Fertiliser

Aquasol, Thrive or Maxicrop shall be applied at the manufacturer's recommended rates once per month, for 6 months.