

ENVIRONMENTAL IMPACT ASSESSMENT  
PROCESS  
DRAFT BASIC ASSESSMENT REPORT

**PROPOSED RODICON SOLAR ENERGY  
FACILITY, EASTERN CAPE**

DEA Ref No: 14/12/16/3/3/1/538

Public Review Period: 8 May 2012 - 6 June 2012

DRAFT FOR PUBLIC REVIEW

MAY 2012

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## environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

(For official use only)

**File Reference Number:**

**Application Number:**

**Date Received:**


Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2010, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

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**Kindly note that:**

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
3. Where applicable **tick** the boxes that are applicable in the report.
4. An incomplete report may be returned to the applicant for revision.
5. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
6. This report must be handed in at offices of the relevant competent authority as determined by each authority.
7. No faxed or e-mailed reports will be accepted.
8. The report must be compiled by an independent environmental assessment practitioner.
9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.

## PROJECT DETAILS

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<b>DEA Reference No.</b>	: 14/12/16/3/3/1/538
<b>Title</b>	: Environmental Basic Assessment Process Draft Basic Assessment Report: Proposed development of the Rodicon Solar Energy Facility near Middleburg, Northern Cape
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<b>Client</b>	: Rodicon Trading and Investment (Pty) Ltd
<b>Report Status</b>	: Draft Basic Assessment Report for public review
<b>Review Date</b>	: 8 May 2012 to 6 June 2012

**When used as a reference this report should be cited as:** Savannah Environmental (2012) Final Basic Assessment Report: Proposed establishment of the Rodicon Solar Energy Facility near Middleburg Northern Cape.

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## SUMMARY AND OVERVIEW OF THE PROPOSED PROJECT CHAPTER 1

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**Rodicon** Trading and Investments (Pty) Ltd proposes to develop a Solar Energy Facility for the purpose of generating up to **5 Megawatts** (MW) of electricity. The aforementioned development is herein after referred to as the "**Rodicon Solar Energy Facility**"

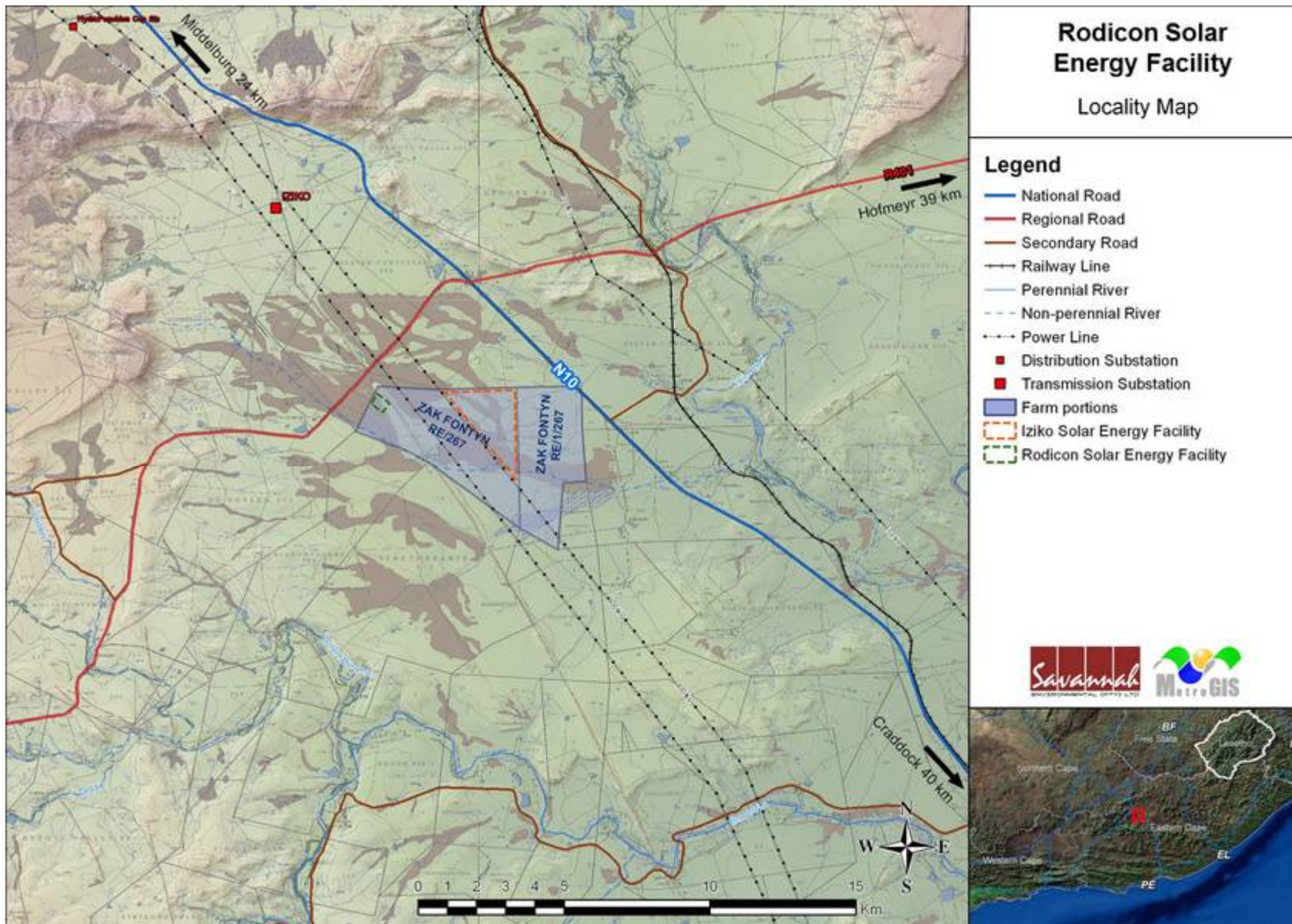
The Rodicon Solar Energy Facility is proposed on the remainder of the farm Zak Fontyn 267, which is approximately 40 kilometres (km) north east of Middleburg in the Eastern Cape (refer to **Figure 1**). The proposed site is accessed off the R401 which intersects the N10 towards Cradock.

The aim of the Rodicon facility is to sell the electricity to Eskom as part of the Renewable Energy Independent Power Producers (IPP) Procurement Programme. The IPP Procurement Programme has been introduced by the Department of Energy (DoE) to promote the development of renewable power generation facilities by IPPs. Selling of electricity according to the IPP Procurement Programme has the advantage of giving developers long-term stability and predictability.

The facility is expected to require an area of less than 20 ha within which the following infrastructure will be established (refer to **Figure 2**).

- » Photovoltaic solar panels with a generating capacity of up to 5 MW;
- » Foundations to support the PV panels;
- » Cabling between the project components, to be laid underground where practical;
- » A switching station
- » a new overhead power line to connect to the Genoegsaam Substation, or alternatively the Genoegsaam power line.
- » Internal access roads; and
- » Workshop area for maintenance and storage.

Furthermore the applicant in a separate application for environmental authorisation also proposes to develop a second solar energy facility on the same farm portion (as indicated in **Figure 1** below). This facility would be referred to as the Iziko Solar Energy Facility and aims to generate up to 75MW of electricity. A separate application for environmental authorisation has been submitted for this project (which requires a full scoping/EIA process, under DEA reference no 14/12/16/3/3/2/318).



**Figure 1:** Locality map showing the proposed Rodicon development area as indicated in green



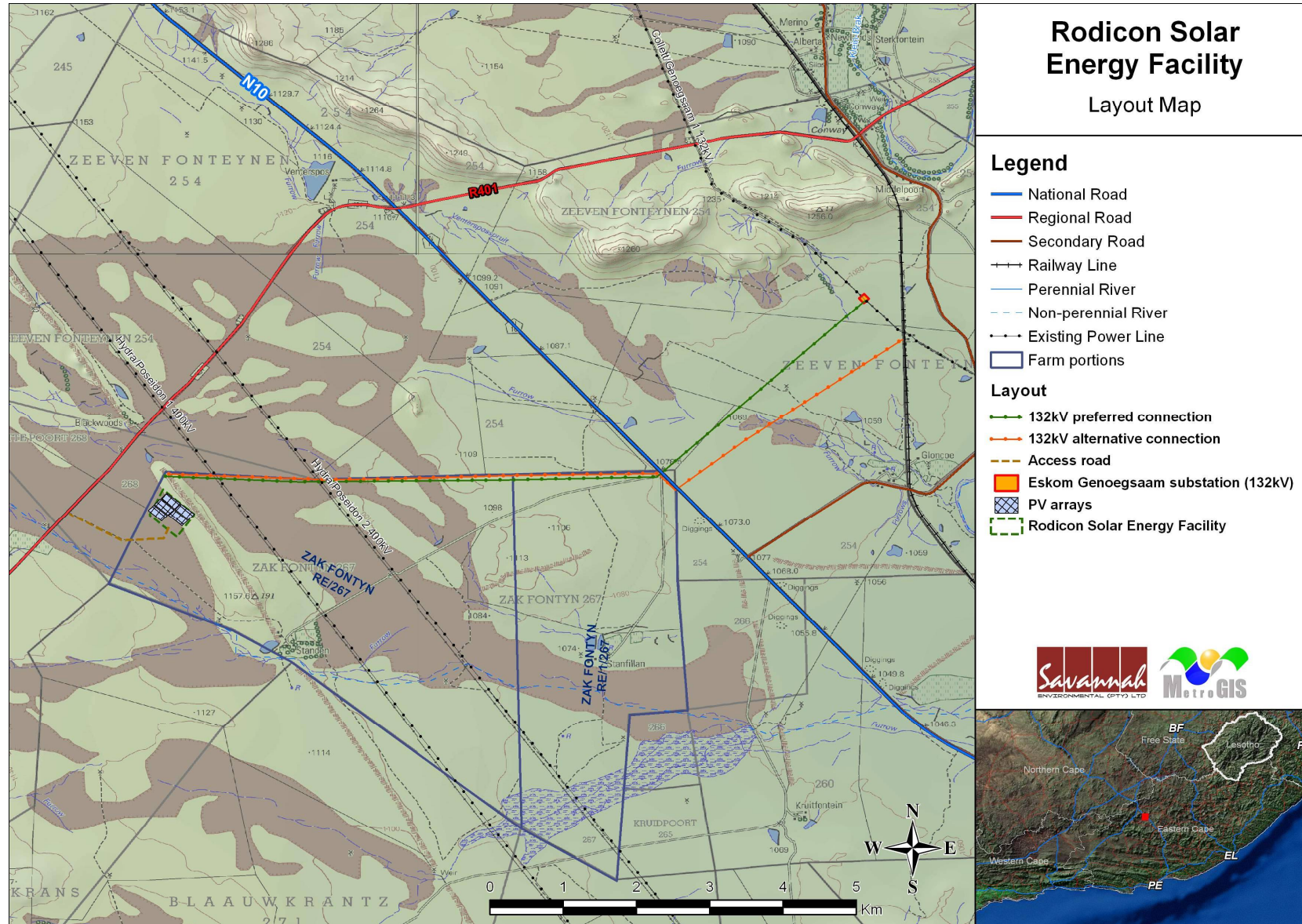


Figure 2: Map showing the layout of the proposed for the Rodicon Solar Energy Facility with the alternative power line options indicated in green and orange

## 1.1. Rationale for the Development of the Proposed Facility

There is increasing pressure globally to increase the share of renewable energy generation due to the exploitation of and large scale reliance on non-renewable resources, and the potential subsequent impacts on climate. South Africa currently depends on fossil fuels for the supply of approximately 90% of its primary energy needs. With economic development over the next several decades resulting in an ever increasing demand for energy, there is some uncertainty as to the availability of economically extractable coal reserves for future use. Furthermore, several of South Africa's power stations are nearing the end of their economic life which is coupled with the expense of the recommissioning of older power stations (i.e. Camden, Komati, and Grootvlei which is expected to cost in the region of R20 billion to return on line).

The current electricity imbalances in South Africa highlight the significant role that renewable energy can play in terms of power supplementation. Given that renewables can generally be deployed in a decentralised manner close to consumers, they offer the opportunity for improving grid strength and supply quality, while reducing expensive transmission and distribution losses. At present, South Africa is some way off from exploiting the diverse gains from renewable energy and from achieving a considerable market share in the industry. In order to meet the long-term goal of a sustainable renewable energy industry, a target of 17.8 GW of renewables by 2030 has been set by the Department of Energy (DoE) within the Integrated Resource Plan (IRP) 2010 and incorporated in the IPP Procurement Programme. This energy will be produced from various renewable energy technologies including solar energy facilities (i.e. such as PV technology).

The proposed Rodicon Facility will contribute to the local electricity grid, as well as to the target for renewable energy as detailed in the IRP. In addition, the implementation of the proposed project will provide both economic stimulus to the local economy through the construction process and employment for the operational phase of the facility.

Furthermore the Integrated Development Plan (IDP) for the Local Inxuba Yethemba Municipality (2011) strongly highlights that the electrical infrastructure within the local municipality requires serious and urgent attention as the municipality is currently unable to meet the increasing current demands. According to the IDP, Cradock is currently experiencing serious power supply shortcomings due to limited capacity levels. This is happening at a time when the area is experiencing an influx of people wanting to invest and local developers wanting to develop the area. The Rodicon Facility proposes to alleviate some of

the electricity challenges within the municipality in order to facilitate growth within the local municipality.

## 1.2. Requirement for an Environmental Impact Assessment Process

In terms of the EIA Regulations published in terms of Section 24(5) of the National Environmental Management Act (NEMA, Act No. 107 of 1998), authorisation is required from the National Department of Environmental Affairs (DEA) as the competent authority, in consultation with the Eastern Cape Department of Economic Development and Environment Affairs (DEDEA), for the establishment of the proposed solar energy facility. In terms of sections 24 and 24D of NEMA, as read with the EIA Regulations of GN R543 – R546, a Basic Assessment process is required to be undertaken for the proposed project. The project has been registered with the National Department of Environmental Affairs as the competent authority under application reference number **14/12/16/3/3/1/538**.

Relevant Notice	Activity Number	Description of the Listed Activity	Relevance
GN 544, 18 June 2010	1	The construction of facilities or infrastructure for the generation of electricity where: i. <del>The electricity output is more than 10 MW but less than 20 MW;</del> or ii. The output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 ha.	The proposed facility will have a generation capacity of ~ 5 MW and will be constructed over an area larger than 1 ha.
GN 544, 18 June 2010	10	The construction of facilities or infrastructure for the transmission and distribution of electricity: i. Outside urban areas or industrial complexes with a capacity of more than 33 kV but less than 275 kV; or ii. <del>Inside urban areas or industrial complexes with a capacity of 275 kV or more.</del>	The facility will require the construction of a distribution power line.

GN 544, 18 June 2010	23	<p>The transformation of undeveloped, vacant or derelict land to:</p> <p>i. <del>Residential, retails, commercial, recreational, industrial, or institutional use, inside an urban area, and where the total area to be transformed is 5 ah or more but less than 20 ha, or;</del></p> <p>ii. Residential, retails, commercial, recreational, industrial, or institutional use, outside an urban area, and where the total area to be transformed is bigger than 1 ha but less than 20 ha.</p>	<p>The proposed project development site is outside an urban area and is currently undeveloped. The land will be transformed to industrial use over an area of less than 20 ha.</p> <p>The developer is proposing to use the special rezoning applicable to renewable energy facilities as proposed by government.</p>
GN 546, 18 June 2010	13(c)ii	The clearance of an area of 1 ha or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation.	An area of 1 ha or more of indigenous vegetation cover may need to be cleared.

### 1.3. Details of the Environmental Assessment Practitioner

Savannah Environmental was contracted by Rodicon Trading and Investments (Pty) Ltd as the independent environmental assessment practitioners (EAP) to undertake the Basic Assessment process for the proposed solar energy facility. Neither Savannah Environmental, nor any of its specialist sub-consultants on this project are subsidiaries of, or are affiliated to Rodicon Solar Energy. Furthermore, Savannah Environmental does not have any interests in secondary developments that may arise out of the authorisation of the proposed project.

Savannah Environmental is a specialist environmental consultancy which provides a holistic environmental management service, including environmental assessment and planning to ensure compliance with relevant environmental legislation. Savannah Environmental benefits from the pooled resources, diverse skills and experience in the environmental field held by its team that has been actively involved in undertaking environmental studies for a wide variety of projects throughout South Africa and neighbouring countries. Strong competencies have been developed in project management of environmental processes, as well as strategic environmental assessment and compliance advice,

and the assessment of environmental impacts, the identification of environmental management solutions and mitigation/risk minimising measures.

The proposed project team members from Savannah Environmental include:

- » *Karen Jodas* who will be the project manager responsible for planning, programming, and overseeing of the EIA process. Karen has 15 years of experience in conducting EIAs and in EIA project management.
- » *Sanusha Govender* who will be the EAP responsible for preparation of the EIA reports and assessment of environmental aspects. Sanusha has 6 years of experience in the environmental field and has been involved with the EIA Process for multiple solar energy facilities, particularly in the Northern Cape.

Savannah Environmental has gained extensive knowledge and experience on potential environmental impacts associated with electricity generation projects through their involvement in related EIA processes. Savannah Environmental has completed the EIA process and received environmental authorisations for the numerous solar energy facilities.

In order to adequately identify and assess potential environmental impacts, several specialist sub consultants have been appointed to conduct specialist studies, as required.

## SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?  **NO** ✓

If YES, please complete the form entitled "Details of specialist and declaration of interest for appointment of a specialist for each specialist thus appointed:  
Any specialist reports must be contained in Appendix D.

### 1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail<sup>1</sup>:

**The Activity:** Rodicon Trading and Investments (Pty) Ltd proposes to develop a photovoltaic (PV) solar energy facility in order to generate up to 5 MW of electricity. This development is to be known as the **Rodicon Solar Energy Facility**.

**Property Description:** The site proposed for Rodicon Solar Energy Facility is located on the remainder of the farm Zak Fontyn 267 which is approximately 40 kilometres (km) north east of Middleburg in the Eastern Cape. The proposed site falls under the jurisdiction of the Chris Hani District Municipality and the Inxuba Yethemba Local Municipality. The surrounding area is sparsely populated with predominant commercial cattle farming throughout the region.

A broader study area of approximately 20 ha is being considered within which the facility is to be constructed, although the actual development footprint of the proposed facility would be smaller in extent (refer to **Appendix C**). Therefore, the PV panels and the associated infrastructure can be appropriately placed within the boundaries of the broader site to avoid areas identified as environmentally sensitive or technically difficult areas for construction of such a facility.

**Proposed Infrastructure to be constructed:** The PV facility will comprise of the following infrastructure:

- » **Photovoltaic solar panels** with a generating capacity of up to 5 MW.
- » **Switching station:** A single switch will be constructed and will link to either the Genoegsaam Substation or the Genoegsaam 132 kV power line which forms part of the Eskom grid. The switching station will have a footprint of 20m x 40m.
- » **Power Line:** A 132 kV Power Line connecting the Rodicon Facility to the Eskom Grid.
- » **Inverters:** Which are required to convert the electricity from direct current to alternating current which can be evacuated into the National Eskom grid.
- » **Support structures:** To mount the PV panels.
- » **Cabling:** between the project components, where practical some cabling will be

<sup>1</sup> Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description.

underground.

- » **Access roads:** Internal gravel access roads will be constructed within the site for maintenance purposes. An access road off the R401 to the facility would need to be constructed (~1km in length)
- » **Workshop area** for maintenance and storage.

**Technical Description of the how the Rodicon Solar Energy Facility will produce electricity:** The Facility will use the energy from the sun to generate electricity through a process known as the Photovoltaic Effect. This is achieved using a photovoltaic cell to capture the sun's energy as detailed below.

- » **Photovoltaic Cells:** An individual photovoltaic cell is made of silicone which acts as a semiconductor (refer to Figure 2.3. The cell absorbs solar radiation which energises the electrons inside the cells and produces electricity. Individual PV cells are linked and placed behind a protective glass sheet to form a photovoltaic panel. A single cell is sufficient to power a small device such as an emergency telephone, however to produce 5 MW of power, the proposed facility will require numerous cells arranged in multiples/arrays which will be fixed to a support structure (refer to Figure 3).



**Figure 3:** Figures showing a typical PV cell and an array of PV panels, where each panel is generally up to 3 m high.

The energy captured will exist in the form of direct current which will then be directed to the invertors which will convert the direct current to alternative current which can then be evacuated to into the National Eskom Grid.

In order to construct the proposed facility and its associated infrastructure, a series of activities will need to be undertaken during the design, pre-construction construction, operation, and decommissioning phases which are briefly discussed below.

### **Construction Phase**

The construction phase will entail a series of activities including:

**Conduct Surveys:** Prior to initiating construction, a number of surveys will be required including, but not limited to confirmation of the micro-siting footprint (i.e. the precise location of the PV panels and the plant's associated infrastructure) and a geotechnical survey. Geotechnical surveys are executed by geotechnical engineers and geologists to

acquire information regarding the physical characteristics of soil and rocks underlying a proposed site. The purpose is to design earthworks and foundations for structures and to execute earthwork repairs necessitated due to changes in the subsurface environment.

*Establishment of Access Roads:* The identified farm portion for the proposed facility can be accessed off a tarred road (R401) that links the N10 and the R61. A new access road will be required to be constructed in order to access the site from the R401. Internal access roads will be required to access the individual components within the facility during construction and operation.

*Undertake Site Preparation:* Site preparation activities will include the levelling of the site where the terrain is undulating. Rocks may also be removed as well as other structures that may be obstacles. Existing vegetation will need to be removed where this occurs within the development footprint. The site is mostly covered with commonly occurring grasses with several bare patches where there is little to no vegetation. The area does have a marked presence of dwarf shrubs throughout the site (refer to the site photos in **Appendix B**).

*Transport of Components and Construction Equipment to Site:* The components for the proposed facility will be transported to site, in sections, by road. Some of the switching station components may be defined as abnormal loads in terms of the Road Traffic Act (Act No. 29 of 1989)<sup>2</sup> by virtue of the dimensional limitations (i.e. length and weight). The typical civil engineering construction equipment will need to be brought to the site (e.g. excavators, trucks, graders, compaction equipment, cement trucks, etc.) as well as components required for the establishment of the switching station and power line.

*Establishment of Construction Equipment Camps:* Once the required equipment has been transported to site, a dedicated construction equipment camp will need to be established within the developmental footprint. The purpose of this camp is to confine activities and storage of equipment to one designated area to limit the potential ecological impacts associated with this phase of the project. The laydown area will be used for assembly purposes and the general placement/storage of construction equipment. The storage of fuel for the on-site construction vehicles and equipment will need to be secured in a temporary bunded facility so to prevent the possibility of leakages and soil contamination.

*Establishment of the PV Panels:* The PV panels will be constructed in individual 'strings' each with its own dedicated inverter. The rationale behind this layout is that if one 'string' should require maintenance or should it break down, then the generation capabilities of the whole facility will not be compromised. Each 'string' will be sited a certain distance away from each other so as to prevent shadows falling in an easterly direction from shading adjacent panels.

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<sup>2</sup> A permit will be required for the transportation of these abnormal loads on public roads.



The PV panels will be mounted via steel structures which will be attached to uprights which are stabilised by concrete foundations where necessary. The angle of the panels will be tilted at 25° from the horizontal plane, facing north and may be adjusted to optimise for summer or winter solar radiation characteristics and for daily movement of the sun east to west.

The panel foundation holes will be excavated to a depth of less than 200 cm. The concrete foundations where necessary will be poured and then be left for up to a week to cure. Aggregate and cement to be transported from the closest centre to the development. The installation of the underground cables will require the excavation of trenches of approximately 40 cm – 100 cm deep within which they can then be laid.

### **Operational Phase**

The electricity that is generated from the PV panels will be stepped up through the on-site inverters and transformers. Thereafter the power will be evacuated from the facility via a distributing power line either to loop in and out of the Eskom Genoegsaam Power line or the Eskom Genoegsaam substation.

The proposed operational phase is expected to run for a period of approximately 25 + years with plant maintenance. It is anticipated that during this time a full time security, maintenance, supervision and monitoring teams will be required on site. Maintenance activities will include *inter alia*, replacement and cleaning of the panels (using pressurised air). The photovoltaic plant will be operational during daylight hours only. However, it will not be operational under circumstances of mechanical breakdown, extreme weather conditions or maintenance activities.

### **Decommissioning Phase**

Depending on the economics of the development following the operational period, the plant will either be decommissioned or the operational phase will be extended. If it is deemed financially viable to continue, existing components would be disassembled and replaced with more appropriate technology/infrastructure available at that time. However, if the decision is made to decommission the facility the following activities will form part of the project scope.

#### **Site Preparation**

Site preparation activities will include confirming the integrity of the access to the site to accommodate the required decommissioning equipment.

#### **Disassemble and Replace Existing Components**

The components of the plant will be disassembled and removed. Thereafter they will be reused and recycled (where possible) or disposed of in accordance with regulatory requirements

## 2. FEASIBLE AND REASONABLE ALTERNATIVES

**"Alternatives,"** in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to -

- (a) The property on which or location where it is proposed to undertake the activity;
- (b) The type of activity to be undertaken;
- (c) The design or layout of the activity;
- (d) The technology to be used in the activity;
- (e) The operational aspects of the activity; and
- (f) The option of not implementing the activity.

Describe alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes etc.) or both are appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

**Paragraphs 3 – 13 below should be completed for each alternative.**

**Information below is applicable to all alternative options except where it is clearly indicated that it does not apply.**

- |   |
|---|
| <p>a) <b>The property on which or location where it is proposed to undertake the activity:</b> No site alternatives were proposed for this project as the placement of a solar facility is strongly dependent on several factors including climatic conditions, relief and orography, grid connection, the extent of the site, as well as availability/appropriateness of the site. This site has been identified by Rodicon Trading and Investment as being highly desirable from a technical perspective for the establishment of a photovoltaic plant as per the following technical, logistical and environmental reasons:</p> <ul style="list-style-type: none"><li>» <b>Climatic conditions:</b> The economic viability of a photovoltaic plant is directly dependent on the annual direct solar irradiation values. A study of available radiation data shows that the proposed site is uniformly irradiated by the sun hence suitable for PV technology.</li><li>» <b>Topography:</b> A level surface area is preferred for the installation of PV panels. This reduces the need for extensive earthworks associated with the levelling of a site, thereby minimising environmental impacts.</li><li>» <b>Environmentally suitable:</b> The site is dominated by common grasses and has several barren patches. The site is not considered to be of significant</li></ul> |
|---|

environmental sensitivity, and the land use is compatible with the proposed PV plant.

- » **Land availability and accessibility:** Land use is compatible with that of a PV plant. The site is also easily accessible from a tarred road (R401) which turns off the N10, which is a primary corridor that links Middleburg and Cradock. A short 1km access road will be constructed to link the R401 to the proposed facility. An access gate to the site is currently located along the R401. The site is therefore appropriately located for easy transport of components and equipment as well as labour movement to and from the site.

b) **The type of activity to be undertaken:** No activity alternatives were assessed because the site has been identified by Rodicon Trading and Investments as being highly desirable for the establishment of a photovoltaic plant and not any other development or renewable technologies such as wind or concentrated solar power (CSP).

- » Wind energy installations were not considered as a feasible and reasonable alternative as the proposed developmental area does not have the required wind resource.
- » CSP installations were not considered as a feasible and reasonable alternative as they require a large amount of water for cooling, unlike PV where water is only required for cleaning purposes (considering the fact that the site is in an arid area.). PV is also relatively easier to construct as opposed to CSP.

Therefore, a PV facility is considered by Rodicon Trading and Investments to be the only feasible activity for the proposed site.

c) **The design or layout of the activity:**

- » Design and Layout alternatives for the solar facility were assessed during the compilation of the Draft BAR. Specifically Two (2) alternatives connecting the facility to the Eskom Grid is currently been assessed through this Basic Assessment Process. As such, alternating current generated at the Rodicon Solar Energy Facility will be evacuated via a distribution power line. There are two alternative options proposed for the alignment and connection of this proposed power line. (Refer to **Figure 2** above.)

**Option 1:** Proposes the construction of a distribution power line to connect the Rodicon Solar Energy Facility directly to Eskom's Genoegsaam Substation which forms part of the Eskom grid. Refer to Figure 2, option 1 is indicated in Orange.

**Option 2:** Proposes the construction of a distribution power line to connect (turn in and out of) the Rodicon Solar Energy Facility to Eskom's 132kV Genoegsaam 132kV power line, which forms part of the Eskom grid. This option will include the construction of a switching station positioned between the existing Genoegsaam 132kV line and the new proposed distribution power line. The switch station will have a footprint of approximately 20m X 40m.

Refer to **Figure 2**, option 2 is indicated in Green.

- d) **The technology to be used in the activity:** Very few technological options exist in as far as PV technologies are concerned; those that are available are usually differentiated by weather and temperature conditions that prevail – so that optimality is obtained by the final choice. The impacts of any of the PV technology choices are the same. Therefore, the choice of technology does not affect the environmental impact of the proposed development. The construction, operation and decommissioning of the facility will also be the same irrespective of the technology chosen. Therefore, no alternatives were assessed in this regard.
- e) **The operational aspects of the activity:** No operational alternatives were assessed as no feasible and reasonable operational alternatives were identified.
- f) **The option of not implementing the activity:** This option is assessed as the “no go alternative” in this Basic Assessment Report.

### 3. ACTIVITY POSITION

**Note: Paragraph 3 is applicable to all alternative layout options**

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

List alternative sites, if applicable.

**Alternative:**

**Latitude (S):**

**Longitude (E):**

Alternative S1<sup>3</sup>

<b>31°</b>	<b>46' 54. 55</b>	<b>25°</b>	<b>13' 10. 82</b>

Alternative S2 (if any)

Alternative S3 (if any)

**In the case of linear activities:**

**Alternative:**

**Latitude (S):**

**Longitude (E):**

Alternative S1 (preferred or only route alternative)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity


Alternative S2 (if any)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity


Alternative S3 (if any)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity


For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250m along the route for each alternative alignment.

<sup>3</sup> "Alternative S." refers to site alternatives

**4. PHYSICAL SIZE OF THE ACTIVITY**

Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

**Alternative:**

Alternative A1<sup>4</sup> (There is only one site proposed for the Rodicon Solar Energy Facility)

Alternative A2 (if any)

Alternative A3 (if any)

**Size of the activity:**

~200 000 m <sup>2</sup>
m <sup>2</sup>
m <sup>2</sup>

Or, for linear activities:

Alternative:

Alternative A1

Alternative A2 (if any)

Alternative A3 (if any)

m
m
m

Indicate the size of the alternative sites or servitudes (**within which** the above footprints will occur):

**Alternative:**

Alternative A1 (**Option 1: Power Line Servitude from the Rodicon Facility to the Eskom Genoegsaam substation**)

Alternative A2 (**Option 2: Power Line Servitude from the Rodicon Facility to the Eskom Genoegsaam Power Line**)

**Size of the site/servitude:**

~32000 m <sup>2</sup>
~32000 m <sup>2</sup>

**5. SITE ACCESS**

Does ready access to the site exist?

No	<input checked="" type="checkbox"/>
1km	<input type="checkbox"/>

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

An access road (~1Km) to the site will be constructed off the R401 which is a tarred regional road. The R401 is located west of the N10.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site (refer to **Appendix C**).

<sup>4</sup> "Alternative A." refers to activity, process, technology or other alternatives.

## 6. SITE OR ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- 6.1 The scale of the plan which must be at least a scale of 1:500;
- 6.2 The property boundaries and numbers of all the properties within 50 metres of the site;
- 6.3 The current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- 6.4 The exact position of each element of the application as well as any other structures on the site;
- 6.5 The position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
- 6.6 All trees and shrubs taller than 1.8 metres;
- 6.7 Walls and fencing including details of the height and construction material;
- 6.8 Servitudes indicating the purpose of the servitude;
- 6.9 Sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
  - Rivers;
  - The 1:100 year flood line (where available or where it is required by DWA);
  - Ridges;
  - Cultural and historical features;
  - Areas with indigenous vegetation (even if it is degraded or invested with alien species);
- 6.10 For gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
- 6.11 The positions from where photographs of the site were taken.

A detailed site/route plan has been included in **Appendix A**.

## 7. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this form. It must be supplemented with additional photographs of relevant features on the site, *if applicable*.

Colour photographs have been taken from the centre of the proposed site in the eight major compass directions, refer to **Appendix B**.

**8. FACILITY ILLUSTRATION**

A detailed illustration of the activity must be provided at a scale of 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

A facility illustration is attached within **Appendix C**.

**9. ACTIVITY MOTIVATION**

**9(a) Socio-economic value of the activity**

What is the expected capital value of the activity on completion?	R100 Million
What is the expected yearly income that will be generated by or as a result of the activity?	R18 million/year
Will the activity contribute to service infrastructure?	<b>YES</b> ✓
Is the activity a public amenity?	<b>NO</b> ✓
How many new employment opportunities will be created in the development phase of the activity?	90
What is the expected value of the employment opportunities during the development phase?	This will become known after an initial total price has been calculated for the project.
What percentage of this will accrue to previously disadvantaged individuals?	The developer will, as far as possible, ensure maximum opportunities are given to the local community to participate in the construction phase
How many permanent new employment opportunities will be created during the operational phase of the activity?	30
What is the expected current value of the employment opportunities during the first 10 years?	R16 Million
What percentage of this will accrue to previously disadvantaged individuals?	75%



### 9(b) Need and desirability of the activity

Motivate and explain the need and desirability of the activity (including demand for the activity):

<b>NEED:</b>			
1.	Was the relevant provincial planning department involved in the application?	YES✓	
2.	Does the proposed land use fall within the relevant provincial planning framework?	YES✓	
3.	If the answer to questions 1 and / or 2 was NO, please provide further motivation / explanation:		

<b>DESIRABILITY:</b>			
1.	Does the proposed land use / development fit the surrounding area?	YES✓	
2.	Does the proposed land use / development conform to the relevant structure plans, SDF, and planning visions for the area?	YES✓	
3.	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	YES✓	
4.	If the answer to any of the questions 1 - 3 was NO, please provide further motivation / explanation:		
5.	Will the proposed land use / development impact on the sense of place?		NO✓
6.	Will the proposed land use / development set a precedent?		NO✓
7.	Will any person's rights be affected by the proposed land use / development?		NO✓
8.	Will the proposed land use / development compromise the "urban edge"?		NO✓
9.	If the answer to any of the question 5 - 8 was YES, please provide further motivation / explanation.		

<b>BENEFITS:</b>			
1.	Will the land use / development have any benefits for society in general?	YES✓	
2.	Explain: <b>The evacuation of additional power into the Eskom grid will serve to increase the country's energy mix and the stability of the grid for the immediate area.</b>		
3.	Will the land use / development have any benefits for the local communities where it will be located?	YES✓	
4.	Explain: <b>Job opportunities will be created during the construction (i.e. 90) and operation (i.e. 30 permanent) of the proposed facility.</b>		

## 10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

**Title of legislation, policy or Administering authority:** **Date:**  
**guideline:**

National Environmental Management Act (Act No. 107 of 1998)	» National Department of Environmental Affairs » Eastern Cape Province: Department of Economic Development and Environmental affairs (DEDEA).	1998
National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	» National Department of Environmental Affairs	2004
National Environmental Management: Waste Act (Act No. 59 of 2008)	» National Department of Water Affairs » Eastern Cape Province: Department of Economic Development and Environmental affairs (DEDEA)	2008
National Water Act (Act No. 36 of 1998)	» National Department of Water Affairs » Eastern Cape Department of Water Affairs	1998
Environment Conservation Act (Act No. 73 of 1989)	» National Department of Environmental Affairs » Eastern Cape Province: Department of Economic Development and Environmental affairs (DEDEA)	1989
Minerals and Petroleum Resources Development Act (Act No. 28 of 2002)	» Department of Minerals and Energy	2002
National Heritage Resources Act (Act No. 25 of 1999)	» South African Heritage Resources Agency	1999
National Forests Act (Act No. 84 of 1998)	» National Department of Agriculture, Fisheries and Forestry	1998
National Veld and Forest Fire Act (Act 101 of 1998)	» Department of Forestry	1998
Government Notice No. 1477 of 2009: Draft National List of Threatened Ecosystems	» Provincial Department of Environmental Affairs	2009

Subdivision of Agricultural Land Act (Act No. 70 of 1970)	» National Department of Agriculture	1970
Conservation of Agricultural Resources Act (Act 43 of 1983)	» National Department of Agriculture	1983
Hazardous Substances Act (Act No. 15 of 1973)	» Department of Health	1973
National Road Traffic Act (Act No 93 of 1996)	» South African National Roads Agency Limited (national roads) » Provincial Department of Transport	1996
Development Facilitation Act (Act No 67 of 1995)	» Local and District Municipality	1995
Promotion of Access to Information Act (Act No. 2 of 2000)	» National Department of Environmental Affairs	2000
Promotion of Administrative Justice Act (Act No. 3 of 2000)	» National Department of Environmental Affairs	2000
<b>Guideline Documents</b>		
Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads	» Provincial Department of Transport	
<b>Provincial Planning</b>		
Land Use Planning Ordinance 15 of 1985	» Details land subdivision and rezoning requirements and procedures	1985
<b>Policies and White Papers</b>		
The White Paper on the Energy Policy of the Republic of South Africa (December 1998)	» N/A	1998
The White Paper on Renewable Energy (November 2003)	» N/A	2003
The White Paper on the Energy Policy of the Republic of South Africa (December 1998)	» N/A	N/A
<b>Miscellaneous</b>		
Inxuba Yethemba Local Municipality	» IDP	2011 - 2012

## 11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

### 11(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

**YES** ✓

If yes, what estimated quantity will be produced per month?

Packaging materials for the various components, excess concrete spillage and excess building materials will be produced on site during the construction phase.

How will the construction solid waste be disposed of (describe)?

The construction waste will be comprised mainly of spoil material from cleaning activities as well as metal and cabling offcuts. Non-recyclable waste will be trucked to the nearest registered landfill site.

Where will the construction solid waste be disposed of (describe)?

In order to comply with legal requirements should there be excess solid construction waste after recycling options have been exhausted, the waste will be trucked to the nearest registered landfill site.

Will the activity produce solid waste during its operational phase?

**NO** ✓

If yes, what estimated quantity will be produced per month?

m<sup>3</sup>

How will the solid waste be disposed of (describe)?

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?

**NO** ✓

If yes, inform the competent authority and request a change to an application for scoping and EIA.

Is the activity that is being applied for a solid waste handling or treatment facility?	[REDACTED]	<b>NO</b> ✓
---	------------	-------------

If yes, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

**11(b) Liquid effluent**

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	[REDACTED]	<b>NO</b> ✓
--	------------	-------------

If yes, what estimated quantity will be produced per month?

m <sup>3</sup>	
----------------	--

Will the activity produce any effluent that will be treated and/or disposed of on site?	[REDACTED]	<b>NO</b> ✓
---	------------	-------------

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?	[REDACTED]	<b>NO</b> ✓
---	------------	-------------

If yes, provide the particulars of the facility:

Facility name:			
Contact person:			
Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

--

**11(c) Emissions into the atmosphere**

Will the activity release emissions into the atmosphere?	[REDACTED]	<b>NO</b> ✓
If yes, is it controlled by any legislation of any sphere of government?		

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the emissions in terms of type and concentration:

Solar energy installations operate by converting solar energy into electricity. This is characterised as a non-consumptive use of a natural resource and consumes no fuel for its continuing operation. Solar power produces an insignificant quantity of greenhouse gases over its lifecycle as compared to conventional coal-fired power stations. The operational phase of a solar facility does not produce carbon dioxide, sulphur dioxide, mercury, particulates, or any other type of air pollution.

**11(d) Generation of noise**

Will the activity generate noise?

<b>NO</b> ✓

If yes, is it controlled by any legislation of any sphere of government?

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the noise in terms of type and level:

**12. WATER USE**

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(s)

<b>Municipal</b> ✓	Water board	<b>Groundwater</b> ✓	River, stream, dam or lake	Other	The activity will not use water
--------------------	-------------	----------------------	----------------------------	-------	---------------------------------

Water will be used to clean the PV panels and a minimal amount for the ablution facilities on site. Water will be extracted from a borehole on site. The annual extraction once in commercial operation will be approximately 3,000 m<sup>3</sup> per annum. A small water filter and purification plant will be located near the well head. The panel-cleaning vehicle will collect water at this point.

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

<b>250m<sup>3</sup></b>
<b>YES</b> ✓

Does the activity require a water use permit from the Department of Water Affairs?

If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted.

### **13. ENERGY EFFICIENCY**

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

Not applicable. The installation itself is a renewable/alternative energy project.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

This is not applicable, as the installation itself is a renewable/alternative energy project.



**SECTION B: SITE/AREA/PROPERTY DESCRIPTION**

Important notes:

For linear activities (pipelines, etc.) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section C and indicate the area, which is covered by each copy No. on the Site Plan.

Section C Copy No. (e.g. A):

1. Paragraphs 1 - 6 below must be completed for each alternative.

2. Has a specialist been consulted to assist with the completion of this section? 

YES✓	<input type="checkbox"/>
------	--------------------------

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed.

All specialist reports must be contained in **Appendix D**.

Property description/physical address: 

The Remainder of the farm 267 Zak Fontein
---

(Farm name, portion etc.) Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application.

In instances where there is more than one town or district involved, please attach a list of towns or districts to this application.

Current land-use zoning: 

Agricultural
--------------

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to , to this application.

Is a change of land-use or a consent use application required? 

YES✓	<input type="checkbox"/>
------	--------------------------

Must a building plan be submitted to the local authority? 

<input type="checkbox"/>	YES✓
--------------------------	------

Locality map: An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.) The map must indicate the following:

- An indication of the project site position as well as the positions of the alternative sites, if any;
- Road access from all major roads in the area;
- Road names or numbers of all major roads as well as the roads that provide access to the site(s);
- All roads within a 1km radius of the site or alternative sites; and
- A north arrow;
- A legend; and
- Locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

The locality map has been included and attached as **Appendix A**:

**1. GRADIENT OF THE SITE**

Indicate the general gradient of the site.

**Alternative S1:**

<b>Flat✓</b>	1:50 -	1:20 -	1:15 -	1:10 -	1:7,5 -	Steeper than 1:5
	1:20	1:15	1:10	1:7,5	1:5	

Alternative S2 (if any):

Flat	1:50 -	1:20 -	1:15 -	1:10 -	1:7,5 -	Steeper than 1:5
	1:20	1:15	1:10	1:7,5	1:5	

Alternative S3 (if any):

Flat	1:50 -	1:20 -	1:15 -	1:10 -	1:7,5 -	Steeper than 1:5
	1:20	1:15	1:10	1:7,5	1:5	

**2. LOCATION IN LANDSCAPE**

Indicate the landform(s) that best describes the site:

**Alternative S1:**

- 2.1 Ridgeline
- 2.2 Plateau
- 2.3 Side slope of hill/mountain
- 2.4 Closed valley
- 2.5 Open valley

**2.6 Plain**

- 2.7 Undulating plain / low hills
- 2.8 Dune
- 2.9 Seafront

**3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE**

Is the site(s) located on any of the following (tick the appropriate boxes)?

	<b>Alternative S1:</b>	<b>Alternative S2 (if any):</b>		<b>Alternative S3 (if any):</b>	
Shallow water table (less than 1.5m deep).	<input type="checkbox"/> <b>NO</b> ✓	YES	NO	YES	NO
Dolomite, sinkhole, or doline areas.	<input type="checkbox"/> <b>NO</b> ✓	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies).	<input type="checkbox"/> <b>NO</b> ✓	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil.	<input type="checkbox"/> <b>NO</b> ✓	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water).	<input type="checkbox"/> <b>NO</b> ✓	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%).	<input type="checkbox"/> <b>NO</b> ✓	YES	NO	YES	NO
Any other unstable soil or geological feature.	<input type="checkbox"/> <b>NO</b> ✓	YES	NO	YES	NO
An area sensitive to erosion.	<input checked="" type="checkbox"/> <b>YES</b>	YES	NO	YES	NO

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. (Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted).

#### 4. GROUNDCOVER

Indicate the types of groundcover present on the site:

The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

##### Alternative S1:

Natural veld - good condition <sup>E</sup>	<b>Natural veld with scattered aliens<sup>E✓</sup></b>	Natural veld with heavy alien infestation <sup>E</sup>	Veld dominated by alien species <sup>E</sup>	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

If any of the boxes marked with an "E" is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn't have the necessary expertise.

Dr. Gretel Van Rooyen from Ecotrust cc was appointed to undertake an ecological study for the proposed facility. The Ecological Assessment is included in Appendix D1.

#### 5. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that does currently occur within a 500 m radius of the site and give description of how this influences the application or may be impacted upon by the application:

##### 5.1 Natural area ✓

- 5.2 Low density residential
- 5.3 Medium density residential
- 5.4 High density residential
- 5.5 Informal residential<sup>A</sup>
- 5.6 Retail commercial and warehousing
- 5.7 Light industrial
- 5.8 Medium industrial<sup>AN</sup>
- 5.9 Heavy industrial<sup>AN</sup>
- 5.10 Power station
- 5.11 Office/consulting room
- 5.12 Military or police base/station/compound
- 5.13 Spoil heap or slimes dam<sup>A</sup>
- 5.14 Quarry, sand, or borrow pit
- 5.15 Dam or reservoir
- 5.16 Hospital/medical centre
- 5.17 School
- 5.18 Tertiary education facility
- 5.19 Church
- 5.20 Old age home
- 5.21 Sewage treatment plant<sup>A</sup>

- 5.22 Train station or shunting yard <sup>N</sup>
- 5.23 Railway line <sup>N</sup>
- 5.24 Major road (4 lanes or more) <sup>N</sup>
- 5.25 Airport <sup>N</sup>
- 5.26 Harbour
- 5.27 Sport facilities
- 5.28 Golf course
- 5.29 Polo fields
- 5.30 Filling station <sup>H</sup>
- 5.31 Landfill or waste treatment site
- 5.32 Plantation

**5.33 Agriculture ✓ (Grazing)**

- 5.34 River, stream or wetland
- 5.35 Nature conservation area
- 5.36 Mountain, koppie or ridge
- 5.37 Museum
- 5.38 Historical building
- 5.39 Protected Area
- 5.40 Graveyard
- 5.41 Archaeological site
- 5.42 Other land uses (describe)

If any of the boxes marked with an "N" are ticked, how will this impact / be impacted upon by the proposed activity?

If any of the boxes marked with an "AN" are ticked, how will this impact / be impacted upon by the proposed activity?

If YES, specify and explain:

If YES, specify:

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity.

If YES, specify and explain:

If YES, specify:

**6. CULTURAL/HISTORICAL FEATURES**

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including

**YES** ✓

Archaeological or palaeontological sites, on or close (within 20m) to the site?

**NO** ✓

If YES, explain:

If uncertain, conduct a specialist investigation by a recognised specialist in the field to establish whether there is such a feature(s) present on or close to the site.

Briefly explain the findings of the specialist:

The specialist noted a variety of Middle Stone Age (MSA) and a few Later Stone Age (LSA) stone artefacts distributed throughout the site. The stone artefacts were observed and documented on the large exposed surface areas. No other organic or material cultural remains were documented in association with the stone artefacts. The stone artefact occurrences and scatters are considered as having a medium cultural significance.

The stone artefact occurrences and scatters has been allocated a heritage grading of Grade III (NHRA 25 of 1999) being worthy of conservation by local authorities. However for Grade III sites, the applicable mitigation measures would allow the development activities to continue. Refer to **Figure 4 below** which indicates the positions of the heritage features found on site.



**Figure 4:** Close-up aerial view of the proposed area for the Rodicon Solar Energy Facility showing the tracks walked and the locations of identified heritage remains.

Will any building or structure older than 60 years be affected in any way?

**NO**✓

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

**NO**✓

If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.

## **SECTION C: PUBLIC PARTICIPATION**

### **1. ADVERTISEMENTS AND NOTICES**

- » A2 site notices were placed on the boundary fence of the project development site (i.e., at gates along existing access roads).
- » A4 site notices were also placed at the Middleburg Municipality and the Middleburg Spar. A stakeholder letter was distributed to the database which included key stakeholders and organs of state relevant to the proposed project. The stakeholder letters served to announce the proposed project. An advert was placed in the Die Burger on the **08 May 2012** to advertise the Basic Assessment process, the availability of the draft Basic Assessment Report and to invite I&APs to the public meeting to be held on the **16 May 2012**.

Refer to **Appendix E** for the advertisements, site notice, and letters to stakeholders.

### **2. CONTENT OF ADVERTISEMENTS AND NOTICES**

The contents of the notices and adverts were in accordance with the following requirements:

- (a) Indicate the details of the application which is subjected to public participation; and
- (b) State –
  - (i) That the application has been submitted to the competent authority in terms of these Regulations, as the case may be;
  - (ii) Whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental Authorisation;
  - (iii) The nature and location of the activity to which the application relates;
  - (iv) Where further information on the application or activity can be obtained; and
  - (iv) The manner in which and the person to whom representations in respect of the application may be made.

### **3. PLACEMENT OF ADVERTISEMENTS AND NOTICES**

Where the proposed activity may have impacts that extend beyond the municipal area where it is located, a notice must be placed in at least one provincial newspaper or national newspaper, indicating that an application will be submitted to the competent authority in terms of these regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made, unless a notice has been placed in any Gazette that is published specifically for the purpose of providing notice to the public of applications made in terms of the EIA regulations.

Advertisements and notices must make provision for all alternatives.



The proposed installation is unlikely to result in any direct impacts that extend beyond the municipal area where it is located. As such it was only deemed necessary to advertise in one newspaper.

The advertisement to be placed will detail:

- The Basic Assessment process
- The nature and location of the proposed project
- Where further information on the proposed activity could be obtained and the manner in which representations on the application could be undertaken.
- The availability of the draft Basic Assessment Report for public review.
- An Invitation for I&APs to attend the Public Meeting on the **16 May 2012**.

Copies of the advertisement to be placed in the Die Burger are included within **Appendix E**. The Final BAR will include proof of the placed advertisement placed.

#### **4. DETERMINATION OF APPROPRIATE MEASURES**

The practitioner must ensure that the public participation is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

The use of a stakeholder database, stakeholder letters, advertisements, site notices, focus group meetings, and a public meeting (to be held on the 16 May 2012) was deemed adequate for the involvement of the public in the process.

#### **5. COMMENTS AND RESPONSE REPORT**

The practitioner must record all comments and respond to each comment of the public before the application is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to this application. The comments and response report must be attached under Appendix E.

All comments received, as well as responses provided have been captured and recorded within the Comments and Response Report. To date no comments have been received, any comments received will be included in the Final BAR.

#### **6. AUTHORITY PARTICIPATION**

Please note that a complete list of all organs of state and or any other applicable authority with their contact details must be appended to the basic assessment report or scoping report, whichever is applicable.

Authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input.

Authorities were informed of the Basic Assessment process through the submission of a stakeholder letter, these included, but was not limited to:

- » DEDEA
- » Inxuba Yethemba Local Municipality
- » Chris Hani District Municipality
- » Department of Agriculture, Fisheries and Forestry
- » National Department of Agriculture
- » Provincial Department of Water Affairs
- » South African National Roads Agency Limited
- » Northern Cape Department of Roads and Public Works
- » Northern Cape Department of Economic Development
- » South African Civil Aviation Authority
- » South African Heritage Resources Agency
- » Heritage Authority

List of authorities from whom comments have been received:

No written correspondence has been received from the notified authorities.

## 7. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for linear activities, or where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable.

Potentially affected stakeholders have been identified and consulted regarding the proposed project, including, inter alia:

- » Neighbouring landowners.
- » Parastatals and conservation authorities.
- » Members of the public.

A stakeholder database is attached in Appendix E

A stakeholder database of is attached in Appendix E.

Has any comment been received from stakeholders?

**NO** ✓

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

All comments received, as well as responses provided will be captured and recorded within the Comments and Response Report. There are no comments to date.

## **SECTION D: IMPACT ASSESSMENT**

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2010, and should consider applicable official guidelines. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

### **1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES**

List the main issues raised by interested and affected parties.

No comments have been received at this stage. However, all issues, comments, and/or concerns that will be raised will be captured and recorded within the Comments and Response Report to be attached in the Final Basic Assessment Report.

Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached to this report as Annexure E):

All comments received will be included in the Final Basic Assessment Report. Comments have not yet been received from authorities to date.

### **2. IMPACTS THAT MAY RESULT FROM THE PLANNING, DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING, AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES**

List the potential direct, indirect and cumulative property / activity / design / technology / operational alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed.

#### **2.1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN PHASE**

##### **Alternative (preferred alternative)**

No impacts are anticipated that may result from the planning and design phase of the proposed development.

## 2.2. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE

Potential impacts associated with the construction of the proposed project are discussed below. The following methodology was used in assessing impacts related to the proposed development. All impacts are assessed according to the following criteria:

- » The **nature**, a description of what causes the effect, what will be affected, and how it will be affected.
- » The **extent**, wherein it is indicated whether the impact will be local (limited to the immediate area or site of development), regional, national or international. A score of between 1 and 5 is assigned as appropriate (with a score of 1 being low and a score of 5 being high).
- » The **duration**, wherein it is indicated whether:
  - \* The lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
  - \* The lifetime of the impact will be of a short duration (2–5 years) - assigned a score of 2;
  - \* Medium-term (5–15 years) – assigned a score of 3;
  - \* Long term (> 15 years) - assigned a score of 4; or;
  - \* Permanent - assigned a score of 5.
- » The **magnitude**, quantified on a scale from 0–10, where a score is assigned:
  - \* 0 is small and will have no effect on the environment;
  - \* 2 is minor and will not result in an impact on processes;
  - \* 4 is low and will cause a slight impact on processes;
  - \* 6 is moderate and will result in processes continuing but in a modified way;
  - \* 8 is high (processes are altered to the extent that they temporarily cease); and
  - \* 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- » The **probability** of occurrence, which describes the likelihood of the impact actually occurring. Probability is estimated on a scale, and a score assigned:
  - \* Assigned a score of 1–5, where 1 is very improbable (probably will not happen);
  - \* Assigned a score of 2 is improbable (some possibility, but low likelihood);
  - \* Assigned a score of 3 is probable (distinct possibility);
  - \* Assigned a score of 4 is highly probable (most likely); and
  - \* Assigned a score of 5 is definite (impact will occur regardless of any prevention measures).
- » The **significance**, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high.
- » The **status**, which is described as either positive, negative or neutral.
- » The degree to which the impact can be reversed.
- » The degree to which the impact may cause irreplaceable loss of resources.
- » The degree to which the impact can be mitigated.

The **significance** is determined by combining the criteria in the following formula:

$S = (E+D+M) P$ ; where

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance** weightings for each potential impact are as follows:

- » **< 30 points:** Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- » **30-60 points:** Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- » **> 60 points:** High (i.e. where the impact must have an influence on the decision process to develop in the area).

### **Impacts on Ecology**

**Overview of the ecology on the proposed site:** The study site falls into the Eastern Upper Karoo vegetation type but the Tarkastad Montane Shrubland, Karoo Escarpment Grassland and Southern Karoo Riviere (Mucina & Rutherford, 2006) are also found in the vicinity of the proposed site for the Rodicon Solar Energy facility. All four vegetation types have a Least Threatened status with between 1 and 3% transformed. The field survey revealed that four plant communities could be differentiated on site and another community on the dolerite ridge next to the site. Community 4, the *Eriocephalus ericoides* — *Sporobolus fimbriatus* mixed grassland, is situated on the slopes of the dolerite ridge in the east of the site and is the only section of the site which is regarded as sensitive. The communities on the flat terrain are not rated as sensitive and most of the plant species occurring within these communities are common for the region. Refer below to **Figure 4** which illustrates the plant communities located on the site.



**Figure 5: Plant Communities found on the site proposed for the Rodicon Solar Energy Facility**

Species lists generated for the 3125CC quarter degree grid for plant and animal species were supplemented with data from other relevant sources including Red Data and CITES lists. These lists indicated that various species of conservation significance occurred in this quarter degree grid. No protected trees were encountered on the site, and the only TOPS listed plant species/CITES II listed plant species was an *Euphorbia* sp. (*Euphorbia* cf. *rectirama*). Animal species that could potentially occur on the Rodicon Solar Energy site with a threatened Red Data status or CITES listing included: black-footed cat (VU, CITES II), African wild cat (CITES II), white-tailed mouse (EN), leopard (NT, CITES I), aardwolf (CITES III), blue crane (VU, CITES II), tawny eagle (CITES II), Verreaux's eagle

(CITES II), black stork (CITES II), black harrier (VU), blue bustard (NT), lesser kestrel (CITES II), rock kestrel (CITES II), greater kestrel (CITES II), martial eagle (NT) and secretary bird (VU).

The proposed Rodicon Solar Energy site does not fall within a protected area and the status of the vegetation type in which it is contained is Least Threatened. In general, the proposed solar facility site is not located in a highly sensitive area since the vegetation and habitat of the site is representative of the larger surrounding environment.

**Environmental Aspect: The removal of vegetation and soil during construction**  
**Environmental Impact: Potential Loss of vegetation**

The construction of the panel foundations and the workshop area will lead to a direct loss of vegetation. Removal of vegetation and the associated loss of habitat impacts on all plant species, i.e. the common, endemic and Red Data species. However, the footprint of the proposed development in relation to the surrounding environment is small.

In addition, no protected trees, or threatened plant species were found at the proposed Rodicon site as such this supports an overall minimal impact on the vegetation.

The ecological report however does highlight, a number of plant species with Red Data status occurring on a quarter portion of the site. Overall, the development of the site will not have a major effect on the functioning and processes in the vegetation in the region, because the vegetation type in which it is located (Eastern Upper Karoo) is a very large unit.

	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Long-term (4)	Medium-term (3)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Probability</b>	Definite (5)	Highly probable (4)
<b>Significance (S = E+D+M)*P</b>	<b>Medium (55)</b>	<b>Medium (32)</b>
<b>Status (positive, neutral or negative)</b>	Negative	Negative
<b>Reversibility</b>	Partially reversible	Partially reversible
<b>Irreplaceable loss of resources?</b>	Partially irreplaceable	Partially irreplaceable
<b>Can impacts be mitigated?</b>	Low degree	

**Mitigation:**

Development should be contained within the proposed footprint of the solar facility and unnecessary disturbance adjacent to the site should be avoided. The denuded and disturbed site should be re-vegetated with indigenous species as soon as possible.

**Cumulative impacts:**

Additional infrastructure development, for example, new power lines; the spread of alien invaders due to loss of natural vegetation; and increased water runoff leading to



erosion will exacerbate the negative impact of the development on the vegetation and will lead to a loss of habitat for indigenous fauna and flora.

**Residual impacts:**

Despite mitigation measures some loss of the vegetation will occur. However, because the vegetation type is so large overall impact on the vegetation type will be small.

**Environmental Aspect: The removal of vegetation and soil, disturbance by workmen on site and the introduction of alien invasive species due to the movement of people on and off site during construction.**

**Environmental Impact: The exponential spread of alien invasive species.**

Declared invasive plant species are found in the environment surrounding the proposed solar facility site such as *Datura* spp., *Xanthium spinosum* and *Cirsium vulgare*. Other species include, for example, *Salsola kali*, *Amaranthus* spp. and *Chenopodium* spp. The removal of the natural vegetation on the site and the associated disturbance of natural habitats during construction of the facility provide an ideal opportunity for declared invasive species to establish. Species listed in the Conservation of Agricultural Resources Act as Category 1 & 2 species will have to be controlled during the construction phase to limit their establishment and spread during the operational phase.

	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent (E)</b>	Site & surrounds (2)	Site & surrounds (2)
<b>Duration (D)</b>	Long-term (4)	Medium-term (3)
<b>Magnitude (M)</b>	Moderate (6)	Low (4)
<b>Probability (P)</b>	Highly probable (4)	Probable (3)
<b>Significance (S = E+D+M)*P</b>	<b>Medium (48)</b>	<b>Low (27)</b>
<b>Status (positive, neutral or negative)</b>	Negative	Negative
<b>Reversibility</b>	Reversible	Reversible
<b>Irreplaceable loss of resources?</b>	Low degree	Low degree
<b>Can impacts be mitigated?</b>	High degree	

**Mitigation:**

Development should be restricted to the proposed solar facility site and the disturbance to the surrounding vegetation be kept to a minimum.  
 Rehabilitate disturbed areas as soon as possible following construction of the facility.  
 Establish a monitoring program for the early detection and control of alien invasive plant species.

**Cumulative impacts:**

The establishment of alien invasive plant species could lead to their spread into the surrounding natural vegetation and onto neighbouring properties. Their presence may also slow down the recovery of the natural vegetation.

**Residual impacts:** Low residual impact if the declared alien invasive species are controlled.

<p><b>Environmental Aspects: The construction of solar panels and infrastructure on the ground space and the presence construction workers resulting in a disturbance to the natural environment.</b></p> <p><b>Environmental Impact: Loss of habitat, Habitat Fragmentation, Ground Disturbance and the interruption of natural migration.</b></p> <p>Impacts on the fauna populations relate to a loss of habitat and disturbance during the construction phase. Since the surrounding environment contains the same habitat, the fauna is expected to move into these surrounding areas during construction. Because the loss of habitat at the base is permanent no return of animal species is likely during the operational phase.</p>		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent (E)</b>	Local (1)	Local (1)
<b>Duration (D)</b>	Permanent (5)	Long-term (4)
<b>Magnitude (M)</b>	Moderate (6)	Low (4)
<b>Probability (P)</b>	Definite (5)	Highly probable (4)
<b>Significance (S = E+D+M)*P</b>	<b>Medium (60)</b>	<b>Medium (36)</b>
<b>Status (positive, neutral or negative)</b>	Negative	Negative
<b>Reversibility</b>	Partially reversible	Partially reversible
<b>Irreplaceable loss of resources?</b>	Partially irreplaceable	Partially irreplaceable
<b>Can impacts be mitigated?</b>	Low degree	
<p><b>Mitigation:</b>                  Limit disturbance to the proposed solar facility site and ensure that minimum disturbance takes place in the surrounding area.                  Rehabilitate disturbed areas as soon as possible following construction of the facility.</p>		
<p><b>Cumulative impacts:</b>                  Loss and/or disturbance of the natural vegetation/habitat and an increase in declared weedy and alien invasive species could have a significantly negative impact on the faunal component.</p>		
<p><b>Residual impacts:</b>                  Residual impacts depend on the intensity and permanence of the disturbance and the rate at which the natural vegetation returns. The degree to which the faunal component returns to the site will largely depend on the success of the re-vegetation of the site.</p>		

<p><b>Environmental Aspect:</b> All construction activities (e.g. land preparation, construction of infrastructure, movement of machinery and people on site) near the drainage zone.</p> <p><b>Environmental Impact:</b> Erosion and change of runoff patterns.</p> <p>Care should be taken to prevent any impact of the proposed development on the drainage line to the west and south of the Rodicon site. Drainage lines to the east of the dolerite ridge will not be impacted by the site. This will imply that measures need to be implemented to prevent erosion from occurring where the vegetation has been removed for the construction of the panels.</p>		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent (E)</b>	Local (1)	Local (1)
<b>Duration (D)</b>	Medium-term (3)	Medium-term (3)
<b>Magnitude (M)</b>	Low (4)	Low (4)
<b>Probability (P)</b>	Probable (3)	Improbable (2)
<b>Significance (S = E+D+M)*P</b>	<b>Medium (24)</b>	<b>Low (16)</b>
<b>Status (positive, neutral or negative)</b>	Negative	Negative
<b>Reversibility</b>	Partially irreversible	High degree
<b>Irreplaceable loss of resources?</b>	Partially irreplaceable	Low degree
<b>Can impacts be mitigated?</b>	High degree	
<p><b>Mitigation:</b> Water runoff from the proposed site should be controlled to limit erosion damage to the surrounding areas, including the drainage lines. Ground water usage in the vicinity of the development should be limited as not to decrease water that should migrate to the drainage lines.</p>		
<p><b>Cumulative impacts:</b> Soil erosion resulting from the changed/developed area will exacerbate the pressure on the hydrological processes in the region.</p>		
<p><b>Residual impacts:</b> None, if mitigation takes place to limit/nullify the impact on the drainage lines.</p>		

<p><b>Environmental Aspect:</b> All construction activities associated with the power line option 2 (e.g. Land Preparation, construction of infrastructure, movement of machinery and people on site).</p> <p><b>Environmental Impact:</b> Loss of vegetation</p> <p><b>Nature: Impact of the construction phases of the connection power line and switch on the natural vegetation.</b></p>		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent (E)</b>	Local (2)	Local (1)
<b>Duration (D)</b>	Permanent (5)	Permanent (5)
<b>Magnitude (M)</b>	Low (4)	Minor (1)
<b>Probability (P)</b>	Definite (5)	Highly probable (4)
<b>Significance (S = E+D+M)*P</b>	<b>Medium (55)</b>	<b>Low (28)</b>

<b>E+D+M)*P</b>		
<b>Status (positive, neutral or negative)</b>	Negative	Negative
<b>Reversibility</b>	Irreversible	Irreversible
<b>Irreplaceable loss of resources?</b>	Irreplaceable	Irreplaceable
<b>Can impacts be mitigated?</b>	Low degree	
<p><b>Mitigation:</b> Development should be contained in the proposed footprint of the pylons and switch and unnecessary disturbance adjacent to the site be avoided. Power line should be placed with caution to avoid sensitive areas as far as possible and minimum damage should occur along the route of the power line during the construction phase. Switch should be placed with caution and minimum disturbance should occur during construction. No development or disturbance of the vegetation on the dolerite ridge or the drainage lines should occur.</p>		
<p><b>Cumulative impacts:</b> Additional infrastructure development, for example, access roads; the spread of alien invasive species due to loss of natural vegetation; and increased water runoff leading to erosion will exacerbate the impact and lead to a further loss of habitat for indigenous fauna and flora.</p>		
<p><b>Residual impacts:</b> Despite mitigation measures, the loss of vegetation at the switch site and pylon footprints will be permanent. However, because the vegetation type is so large overall loss will be small.</p>		

<p><b>Environmental Aspect:</b> All construction activities associated with the power line option 2 (e.g. Land Preparation, construction of infrastructure, movement of machinery and people on site) on the spread of declared weeds and alien invasive plant species.</p>		
<p><b>Environmental Impact:</b> Loss of vegetation</p>		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent (E)</b>	Site & surrounds (2)	Site & surrounds (2)
<b>Duration (D)</b>	Long-term (4)	Long-term (4)
<b>Magnitude (M)</b>	Moderate (6)	Minor (2)
<b>Probability (P)</b>	Highly probable (4)	Probable (3)
<b>Significance (S = E+D+M)*P</b>	<b>Medium (48)</b>	<b>Low (24)</b>
<b>Status (positive, neutral or negative)</b>	Negative	Negative
<b>Reversibility</b>	Reversible	Reversible
<b>Irreplaceable loss of resources?</b>	Low degree	Low degree
<b>Can impacts be mitigated?</b>	High degree	
<p><b>Mitigation:</b></p>		

<p>Development should be restricted to the switch site and pylon footprint and the disturbance to the surrounding vegetation be kept to a minimum.</p> <p>Rehabilitate disturbed areas as soon as possible following construction of the infrastructure.</p> <p>Establish a monitoring program for the early detection and control of alien invasive plant species.</p>
<p><b>Cumulative impacts:</b></p> <p>The establishment of declared weeds and alien invasive plant species could lead to their spread into the surrounding natural vegetation, especially downstream in drainage lines, and onto neighbouring properties.</p>
<p><b>Residual impacts:</b></p> <p>Low residual impact if the declared weeds and alien invasive species are controlled.</p>

<p><b>Environmental Aspect:</b> All construction activities associated with the power line option 2 (e.g. Land Preparation, construction of infrastructure, movement of machinery and people on site) on fauna</p> <p><b>Environmental Impact:</b> Loss of vegetation</p>		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent (E)</b>	Local (1)	Local (1)
<b>Duration (D)</b>	Permanent (5)	Long-term (4)
<b>Magnitude (M)</b>	Moderate (6)	Low (4)
<b>Probability (P)</b>	Highly probable (4)	Probable (3)
<b>Significance (S = E+D+M)*P</b>	<b>Medium (48)</b>	<b>Low (27)</b>
<b>Status (positive, neutral or negative)</b>	Negative	Negative
<b>Reversibility</b>	Irreversible	Irreversible
<b>Irreplaceable loss of resources?</b>	Irreplaceable	Irreplaceable
<b>Can impacts be mitigated?</b>	Low degree	
<p><b>Mitigation:</b></p> <p>Limit disturbance to the proposed switch and pylon footprint areas and ensure that minimum disturbance takes place in the surrounding area.</p> <p>Power line construction should take fauna into account, especially birds, and important mitigation measures must include 'flappers' to make the power lines more visible to the birds.</p>		
<p><b>Cumulative impacts:</b></p> <p>Loss and/or disturbance of the natural vegetation and an increase in declared weeds and alien invasive species will have a significantly negative impact on the faunal component.</p>		
<p><b>Residual impacts:</b></p> <p>Despite mitigation measures, the loss of vegetation at the substation site will be permanent and the return of faunal elements negligible. Impact of the power lines on the fauna could be successfully mitigated.</p>		

<b>Environmental Aspect:</b> All construction activities associated with the power line option 2 (e.g. Land Preparation, construction of infrastructure, movement of machinery and people on site) on the on the drainage lines.		
<b>Environmental Impact:</b> Loss of vegetation, erosion and change of runoff patterns		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent (E)</b>	Local (3)	Local (1)
<b>Duration (D)</b>	Medium-term (4)	Medium-term (4)
<b>Magnitude (M)</b>	Moderate (6)	Low (4)
<b>Probability (P)</b>	Highly probable (4)	Highly probable (4)
<b>Significance (S = E+D+M)*P</b>	<b>Medium (52)</b>	<b>Medium (36)</b>
<b>Status (positive, neutral or negative)</b>	Negative	Negative
<b>Reversibility</b>	Partially reversible	High degree
<b>Irreplaceable loss of resources?</b>	Partially irreplaceable	Low degree
<b>Can impacts be mitigated?</b>	High degree	
<b>Mitigation:</b> Switch and power line construction should minimally affect the drainage lines if located wisely, however, with the route indicated, drainage lines cannot be avoided. Care needs to be taken to prevent erosion from the footprint areas.		
<b>Cumulative impacts:</b> Soil erosion resulting from the changed/developed area will exacerbate the pressure on the hydrological processes in the region.		
<b>Residual impacts:</b> Minimal, if mitigation takes place to limit/nullify the impact on the drainage lines/wetland.		

<b>Environmental Aspect:</b> All construction activities associated with the power line option 2 (e.g. Land Preparation, construction of infrastructure, movement of machinery and people on site) on natural vegetation.		
<b>Environmental Impact:</b> Loss of vegetation, loss of habitat and invasive alien species.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent (E)</b>	Local (1)	Local (1)
<b>Duration (D)</b>	Permanent (5)	Permanent (5)
<b>Magnitude (M)</b>	Low (2)	Minor (1)
<b>Probability (P)</b>	Definite (5)	Highly probable (4)
<b>Significance (S = E+D+M)*P</b>	<b>Medium (40)</b>	<b>Low (28)</b>
<b>Status (positive, neutral or negative)</b>	Negative	Negative
<b>Reversibility</b>	Irreversible	Irreversible
<b>Irreplaceable loss of resources?</b>	Irreplaceable	Irreplaceable

<b>Can impacts be mitigated?</b>	Low degree	
<b>Mitigation:</b> Development should be contained in the proposed footprint of the pylons and unnecessary disturbance adjacent to the site be avoided. Power line should be placed with caution to avoid sensitive areas as far as possible and minimum damage should occur along the route of the power line during the construction phase. No development or disturbance of the vegetation on the dolerite ridge or the drainage lines should occur.		
<b>Cumulative impacts:</b> Additional infrastructure development, for example, access roads; the spread of alien invasive species due to loss of natural vegetation; and increased water runoff leading to erosion will exacerbate the impact and lead to a further loss of habitat for indigenous fauna and flora.		
<b>Residual impacts:</b> Despite mitigation measures, the loss of vegetation at the pylon footprints will be permanent. However, because the vegetation type is so large overall loss will be small.		

<b>Environmental Aspect:</b> All construction activities associated with the power line option 1 (e.g. Land Preparation, construction of infrastructure, movement of machinery and people on site) on alien invasive plant species. <b>Environmental Impact:</b> Spread of invasive alien species.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent (E)</b>	Site & surrounds (2)	Site & surrounds (1)
<b>Duration (D)</b>	Long-term (4)	Long-term (4)
<b>Magnitude (M)</b>	Moderate (6)	Minor (2)
<b>Probability (P)</b>	Highly probable (4)	Probable (3)
<b>Significance (S = E+D+M)*P</b>	<b>Medium (48)</b>	<b>Low (21)</b>
<b>Status (positive, neutral or negative)</b>	Negative	Negative
<b>Reversibility</b>	Reversible	Reversible
<b>Irreplaceable loss of resources?</b>	Low degree	Low degree
<b>Can impacts be mitigated?</b>	High degree	
<b>Mitigation:</b> Development should be restricted to the pylon footprints and the disturbance to the surrounding vegetation be kept to a minimum. Rehabilitate disturbed areas as soon as possible following construction of the infrastructure. Establish a monitoring program for the early detection and control of alien invasive plant species.		
<b>Cumulative impacts:</b> The establishment of declared weeds and alien invasive plant species could lead to their spread into the surrounding natural vegetation, especially downstream in drainage lines,		

and onto neighbouring properties.

**Residual impacts:**

Low residual impact if the declared weeds and alien invasive species are controlled.

**Environmental Aspect:** All construction activities associated with the power line option 1 (e.g. Land Preparation, construction of infrastructure, movement of machinery and people on site) on fauna

**Environmental Impact:** loss of habitat

	Without mitigation	With mitigation
<b>Extent (E)</b>	Local (1)	Local (1)
<b>Duration (D)</b>	Permanent (5)	Long-term (4)
<b>Magnitude (M)</b>	Moderate (6)	Low (4)
<b>Probability (P)</b>	Highly probable (4)	Probable (3)
<b>Significance (S = E+D+M)*P</b>	<b>Medium (48)</b>	<b>Low (27)</b>
<b>Status (positive, neutral or negative)</b>	Negative	Negative
<b>Reversibility</b>	Irreversible	Irreversible
<b>Irreplaceable loss of resources?</b>	Irreplaceable	Irreplaceable
<b>Can impacts be mitigated?</b>	Low degree	

**Mitigation:**

Limit disturbance to the proposed pylon footprint areas and ensure that minimum disturbance takes place in the surrounding area.

Power line construction should take fauna into account, especially birds, and important mitigation measures must include 'flappers' to make the power lines more visible to the birds.

**Cumulative impacts:**

Loss and/or disturbance of the natural vegetation and an increase in declared weeds and alien invasive species will have a significantly negative impact on the faunal component.

**Residual impacts:**

Despite mitigation measures, the loss of vegetation at the substation site will be permanent and the return of faunal elements negligible. Impact of the power lines on the fauna could be successfully mitigated.

**Environmental Aspect:** All construction activities associated with the power line option 2 (e.g. Land Preparation, construction of infrastructure, movement of machinery and people on site) on natural vegetation.

**Environmental Impact:** Loss of vegetation, loss of habitat and invasive alien species.

	Without mitigation	With mitigation
<b>Extent (E)</b>	Local (2)	Local (1)
<b>Duration (D)</b>	Medium-term (4)	Medium-term (4)
<b>Magnitude (M)</b>	Moderate (6)	Low (4)
<b>Probability (P)</b>	Highly probable (4)	Highly probable (4)
<b>Significance (S = E+D+M)*P</b>	<b>Medium (48)</b>	<b>Medium (36)</b>



<b>E+D+M)*P</b>		
<b>Status (positive, neutral or negative)</b>	Negative	Negative
<b>Reversibility</b>	Partially reversible	High degree
<b>Irreplaceable loss of resources?</b>	Partially irreplaceable	Low degree
<b>Can impacts be mitigated?</b>	High degree	
<b>Mitigation:</b> Power line construction should minimally affect the drainage lines if located wisely. Care needs to be taken to prevent erosion from the footprint areas.		
<b>Cumulative impacts:</b> Soil erosion resulting from the changed/developed area will exacerbate the pressure on the hydrological processes in the region.		
<b>Residual impacts:</b> Minimal, if mitigation takes place to limit/nullify the impact on the drainage lines/wetland.		

***Impacts on Geology, soils, and agricultural potential***

The geology of the area is characterised by mainly Beaufort Group mudstone and sandstone, as well as Dolerite. The B-horizons of the soils are generally prismatic and pedocutaneous with a red to non-red colour, with a medium depth (300mm to 1000mm), are well drained and apedal (without structure). The susceptibility to erosion of the soils is categorised as low to medium

The site is located on an apron sloping from east into a westerly direction. The maximum slope on the site is 1%. The development of False Upper Karoo constitutes the most spectacular of all changes in the vegetation of South Africa and the conversion of 51 800 square km of grassveld into eroded Karoo can only be regarded as a national disaster. This is specifically true about this site. The soil is almost completely denuded of topsoil (possibly due to mainly wind erosion over many years in the distant past) with only the sub-soil layers left and compacted. The current soil condition is categorized as degraded with the loss of top soil. There are no wetland areas (i.e. vleis and pan areas) or watercourses present within the site.

There is no agricultural infrastructure (i.e. silos, irrigation lines, pivot points, etc.) present within the site.

<b>Environmental Aspect: Removal of soil during construction.</b>		
<b>Environmental Impact: Decreased vegetation cover, Erosion and increased water run-off.</b>		
The site currently has limited top soil. The potential impact of the facility would not significantly degrade the area further in terms to the soil quality and agricultural potential.		
	Without mitigation	With mitigation

Extent	Regional (2)	Local (1)
Duration	Medium-term (2)	Very short-term (1)
Magnitude	Minor (2)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	18 (Low)	12 (Low)
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	
<b>Mitigation:</b> Care must be taken with the ground cover during and after construction on the site. If it is not possible to retain a good plant cover during construction, technologies should be employed to keep the soil covered by other means, i.e. straw, mulch, erosion control mats, etc., until a healthy plant cover is again established. Care should also be taken to control and contain storm water run-off.		
<b>Cumulative Impacts:</b> Minimal impact with the necessary mitigation in place.		
<b>Residual Impacts:</b> Minimal impact with the necessary mitigation in place.		

<b>Environmental Aspect: Increased vehicle traffic.</b>		
<b>Environmental Impact: Increased wind erosion due to trampling effect on the top soil by increased vehicle traffic.</b>		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Regional (2)	Local (1)
<b>Duration</b>	Short-term (1)	Very short-term (1)
<b>Magnitude</b>	Minor (2)	Minor (2)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	<b>15 (Low)</b>	<b>12 (Low)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	High
<b>Irreplaceable loss of resources?</b>	Yes	No
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b> Care should be taken to put gravel on access road surfaces to protect the soil against wind erosion, as well as construction sites.		
<b>Cumulative Impacts:</b> Minimal impact with the necessary mitigation in place.		
<b>Residual Impacts:</b> Minimal impact with the necessary mitigation in place.		

<b>Environmental Aspect:</b> The creation of dust during construction activities		
<b>Environmental Impact:</b> Dust pollution		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Regional (2)	Local (1)
<b>Duration</b>	Very short term (1)	Very short-term (1)
<b>Magnitude</b>	Minor (3)	Minor (2)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	<b>18 (Low)</b>	<b>12 (Low)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	High
<b>Irreplaceable loss of resources?</b>	Yes	No
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b> Apply dust control measures, i.e. water spraying.		
<b>Cumulative Impacts:</b> Little with the necessary mitigation in place.		
<b>Residual Impacts:</b> Little with the necessary mitigation in place		

### **Impacts on Heritage Resources**

The proposed site has a variety of mostly Middle Stone Age (MSA) and few Later Stone Age (LSA) stone artefacts distributed throughout the site. The stone artefacts were observed and documented on the large exposed surface areas, within the dense grass vegetation, and on the adjacent rocky outcrop. The stone artefacts comprised mainly patinated and heavily weathered flakes and miscellaneous retouched pieces of varying sizes manufactured on a fine-grained (hornfels and lydianite) raw material, a medium-grained quartzite raw material, and another fine-grained raw material referred to as chert. No other organic or material cultural remains were documented in association with the stone artefacts. The stone artefact occurrences and scatters are considered as having a **medium cultural significance**.

The stone artefact occurrences and scatters has been allocated a heritage grading of **Grade III** (NHRA 25 of 1999) being worthy of conservation by local authorities. However for **Grade III** sites, the applicable mitigation measures would allow the development activities to continue.

<b>Environmental Aspect:</b> Land preparation for the development of the facility.		
<b>Environmental Impact:</b> The destruction of the stone artefact occurrences and scatters.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (2)	Local (1)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Magnitude</b>	Very High (10)	Low (4)
<b>Probability</b>	Highly Probable (4)	Probable (3)
<b>Significance</b>	High (68)	Low (30)
<b>Status (positive or negative)</b>	Negative	Negative

<b>Reversibility</b>	None	Low
<b>Irreplaceable loss of resources?</b>	Yes	Low
<b>Can impacts be mitigated?</b>	Yes	Yes
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>Once the final layout (including the positions of the solar panels; underground cabling; overhead power line; additional internal access roads, and the workshop area) of the proposed Rodicon Solar Energy Facility has been finalised an archaeological ground-truthing should be conducted and further recommendation be made to protect the archaeological heritage within the area proposed for development; and / or</li> <li>A professional archaeologist (with an already authorised collection permit) must be appointed during the various phases of development including vegetation clearing and the excavation activities to monitor and identify possible archaeological material remains and features that may occur below the surface and further make appropriate recommendations on removing and / or protecting the archaeological material remains and features.</li> <li>If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the Albany Museum (046 622 2312) and/or the South African Heritage Resources Agency (SAHRA) (021 642 4502) so that systematic and professional investigation/ excavation can be undertaken.</li> <li>Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.</li> </ul>		
<b>Cumulative impacts:</b> Irreplaceable loss of archaeological heritage resources.		
<b>Residual impacts:</b> Irreplaceable loss of archaeological heritage resources.		

***Impacts on the visual aesthetics during the construction phase***

The visual impact of the proposed facility during the construction period can result from the increase in heavy vehicles utilising the roads to the development site. This may cause, at the very least, a visual nuisance to other road users and land owners in the area. Dust from construction work could also result in potential visual impact.

<b>Environmental Aspect:</b> The development of a multiple arrays of PV panels that is visible from a distance.	
<b>Environmental Impact:</b> Potential visual impact of construction on observers in close proximity to the proposed solar energy facility.	
There will be a noticeable increase in heavy vehicles utilising the roads to the development site that may cause, at the very least, a visual nuisance to other road users and land owners in the area. Dust from construction work could also result in potential visual impact.	
	<b><i>Without mitigation</i></b> <b><i>With mitigation</i></b>

<b>Extent</b>	Local (4)	Local (4)
<b>Duration</b>	Very short term (1)	Very short term (1)
<b>Magnitude</b>	Moderate (6)	Moderate (6)
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Significance</b>	<b>Moderate (33)</b>	<b>Low (22)</b>
<b>Status (positive or negative)</b>	Negative	
<b>Reversibility</b>	Recoverable (3)	
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impact be mitigated?</b>	Yes	
<b>Mitigation measures:</b>		
<p><u>Planning:</u></p> <ul style="list-style-type: none"> <li>» Retain and maintain natural vegetation in all areas outside of the development footprint.</li> </ul> <p><u>Construction:</u></p> <ul style="list-style-type: none"> <li>» Proper planning and management of the construction site.</li> <li>» Ensure that vegetation is not cleared unnecessarily during the construction period.</li> <li>» Rehabilitation of construction areas</li> </ul>		
<b>Cumulative impact:</b>		
» None.		
<b>Residual impact:</b>		
» None.		

### **Impacts on the socio-economic environment**

<b>Nature: Job creation</b>		
Approximately 90 people are expected to be required during the construction phase which is expected to take place over a period of 12 months) of which 30% is estimated to be low skilled, 45% semi-skilled and 25% skilled.		
	<b>Without enhancement</b>	<b>With enhancement</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Very short (2) *	Very short (2) *
<b>Magnitude</b>	Minor (2)	Low (4)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	<b>Low (15)</b>	<b>Low (21)</b>
<b>Status (positive or negative)</b>	Positive	
<b>Reversibility</b>	N/A	
<b>Irreplaceable loss of resources?</b>	N/A	
<b>Can impact be enhanced?</b>	Yes	
<b>Mitigation measures:</b>		
» Maximise the use of local labour for low – semi skilled jobs far as possible.		
<b>Cumulative impact:</b>		
» The development of additional renewable energy facilities in the region may serve to increase the potential for job creation.		

***Residual impact:***

- » Once the construction phase is complete, locals may not be able to find future employment.
- » Alternatively local employed during the construction phase may learn new skills thereby making them more employable in the future.

**No Go Alternative**

Also referred to as the 'Do-nothing' option, this refers to Rodicon Solar Energy not constructing the proposed solar energy facility. In this scenario the potential environmental and social impacts will not occur and the status quo will be maintained. However, should the project not proceed the distributed approach regarding the government target for renewable energy will not be realised. As a result the distributed range of socio-economic and environmental benefits for South Africa would not be realised.

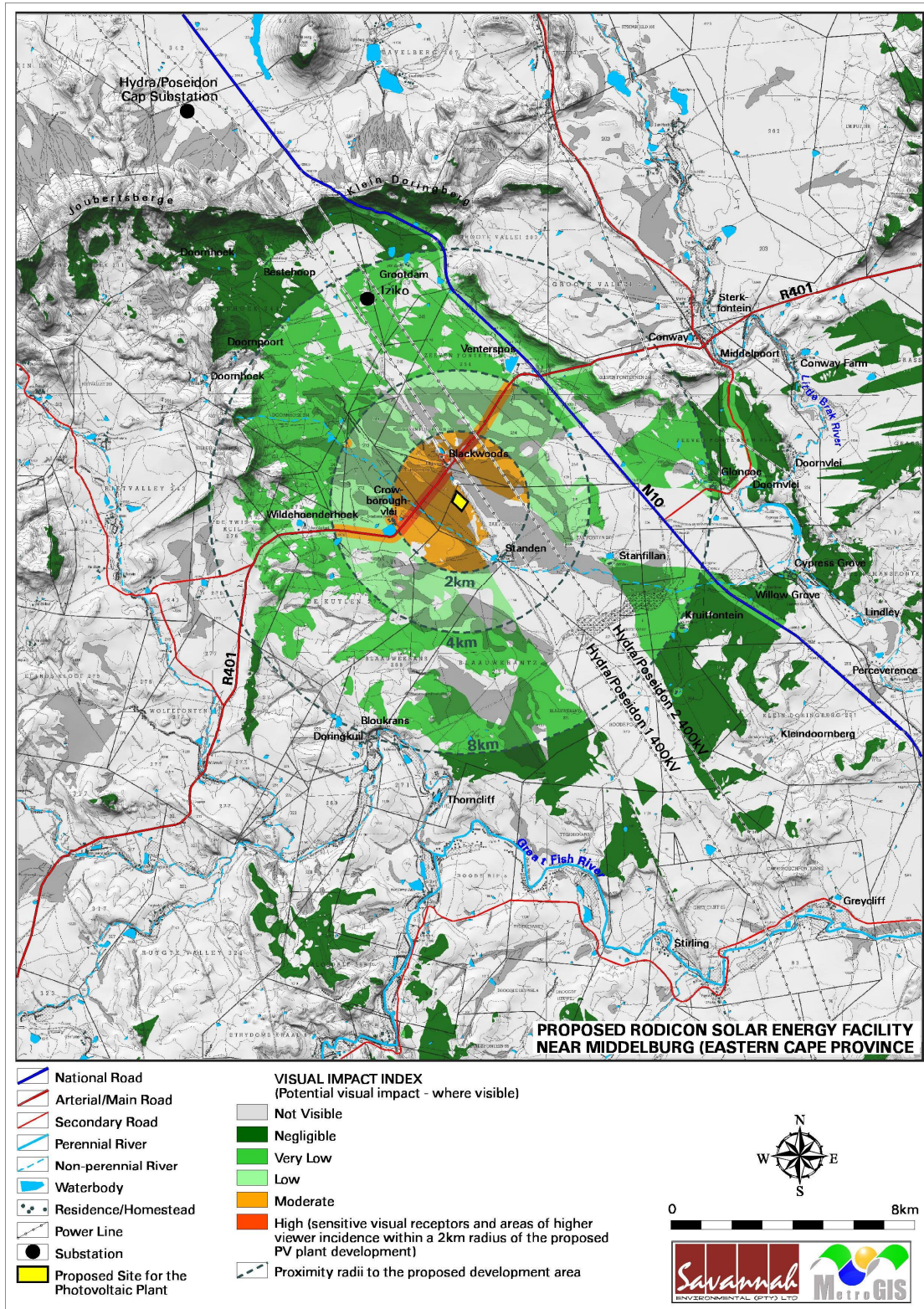
### **2.3. IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE**

#### ***Impacts on the visual aesthetics during the operational phase***

The proposed facility would be visible within an area that incorporates certain sensitive visual receptors. These include users of the N10, the R401 and residents of farming homesteads and settlements.

The potential visual impacts listed below (i.e. post mitigation impacts) are moderate and low, and none are considered to be fatal flaws from a visual perspective. The main considerations in this regard are the small size of the proposed facility, the relatively contained view shed and extent of visual exposure and the very low occurrence of potentially sensitive visual receptors.

It is therefore recommended by the visual specialist that the development of the facility as proposed be supported, subject to the implementation of the recommended mitigation measures. Refer below to the visual impact index.





<b>Environmental Aspect:</b> The location and aesthetic of the proposed development.		
<b>Environmental Impact:</b> Visual impact on users of road in close proximity to the proposed facility.		
	<b>No mitigation</b>	<b>Mitigation considered</b>
<b>Extent</b>	Local (4)	Local (4)
<b>Duration</b>	Long term (4)	Long term (4)
<b>Magnitude</b>	High (8)	High (8)
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Significance</b>	Moderate (48)	Moderate (32)
<b>Status (positive, neutral or negative)</b>	Negative	Negative
<b>Reversibility</b>	Recoverable (3)	Recoverable (3)
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b> Operations: > Maintain the general appearance of the facility as a whole. > Maintenance of roads to avoid erosion and suppress dust.		
<b>Cumulative impacts:</b> The construction of the facility and ancillary infrastructure will increase the cumulative visual impact of industrial type infrastructure within the region. This is relevant in light of the existing 400 kV power lines to the west of the site and the Iziko substation in the north west.		
<b>Residual impacts:</b> The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.		

<b>Environmental Aspect:</b> The location and aesthetic of the proposed development.		
<b>Environmental Impact:</b> Visual impact on residents of homesteads in close proximity to the proposed facility.		
	<b>No mitigation</b>	<b>Mitigation considered</b>
<b>Extent</b>	Local (4)	Local (4)
<b>Duration</b>	Long term (4)	Long term (4)
<b>Magnitude</b>	High (8)	High (8)
<b>Probability</b>	Improbable (2)	V Improbable (1)
<b>Significance</b>	Moderate (32)	Low (16)
<b>Status (positive, neutral or negative)</b>	Negative	Negative
<b>Reversibility</b>	Recoverable (3)	Recoverable (3)
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b> Operations: > Maintain the general appearance of the facility as a whole. > Maintenance of roads to avoid erosion and suppress dust.		
<b>Cumulative impacts:</b> The construction of the SEF and ancillary infrastructure will increase the cumulative visual impact of industrial type infrastructure within the region. This is relevant in light of the existing 400 kV power lines to the west of the site and the Iziko substation in the north west.		

**Residual impacts:**

The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.

**Environmental Aspect:** The location and aesthetic of the proposed development.

**Environmental Impact:** Visual impact on of lighting on visual receptors in close proximity of the proposed facility.

	<b>No mitigation</b>	<b>Mitigation considered</b>
<b>Extent</b>	Local (4)	Local (4)
<b>Duration</b>	Long term (4)	Long term (4)
<b>Magnitude</b>	Moderate (6)	Moderate (6)
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Significance</b>	Moderate (42)	Low (28)
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Recoverable (3)	Recoverable (3)
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes	

**Mitigation:**

**Planning & operation:**

- Shielding the sources of light by physical barriers (walls, vegetation, or the structure itself);
- Limiting mounting heights of lighting fixtures, or alternatively using foot-lights or bollard level lights;
- Making use of minimum lumen or wattage in fixtures;
- Making use of down-lighters, or shielded fixtures;
- Making use of Low Pressure Sodium lighting or other types of low impact lighting.
- Making use of motion detectors on security lighting. This will allow the site to remain in relative darkness, until lighting is required for security or maintenance purposes.

**Cumulative impacts:**

Some existing light impact exists as a result of the Iziko substation I the north west. The development of the proposed SEF will therefore contribute to a cumulative lighting impact within an otherwise rural region.

**Residual impacts:**

The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.

**No Go Alternative**

Also referred to as the 'Do-nothing' option, this refers to Rodicon Solar Energy not operating the proposed PV facility. In this scenario the potential environmental and social impacts will not occur and the status quo will be maintained. However, should the project not proceed, the distributed approach regarding the government target for renewable energy will not be realised. As a result the distributed range of socio-economic and environmental benefits for South Africa would not be realised.

**Impacts on the ecology during operation**

**Environmental Aspect:** The existing infrastructure and maintenance procedures cause further habitat fragmentation and disturbance by workmen on site.

**Environmental Impact:** Spread of alien invasive plant species on site.

	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent (E)</b>	Local (1)	Local (1)
<b>Duration (D)</b>	Long-term (4)	Long-term (4)
<b>Magnitude (M)</b>	Low (4)	Minor (2)

<b>Probability (P)</b>	Definite (5)	Highly probable (4)
<b>Significance (S = E+D+M)*P</b>	<b>Medium (45)</b>	<b>Low (28)</b>
<b>Status (positive, neutral or negative)</b>	Negative	Negative
<b>Reversibility</b>	Partially reversible	Partially reversible
<b>Irreplaceable loss of resources?</b>	Partially irreplaceable	Partially irreplaceable
<b>Can impacts be mitigated?</b>	Low degree	
<b>Mitigation:</b> Disturbance should be contained within the proposed footprint of the solar facility (approximately 20 ha) and unnecessary disturbance adjacent to the site be avoided. Limit traffic and human activities during operation.		
<b>Cumulative impacts:</b> The spread of declared weeds and alien invasive species and increased water runoff leading to erosion will exacerbate the impact and lead to further loss of natural vegetation and habitat for indigenous fauna and flora.		
<b>Residual impacts:</b> Although some of the natural vegetation will return it is highly unlikely that it will contain the full diversity of species present on the site before the construction of the facility. During the operational phase the natural vegetation will have to be managed and large shrub species may be prevented from establishing. If mitigation is successful in restricting disturbance to the site the residual impacts should be low.		

<b>Environmental Aspect:</b> The operational maintenance activities (Migration of people on and off site, cleaning of the PV Panels as necessary)		
<b>Environmental Impact:</b> Loss of faunal habitat		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent (E)</b>	Local (1)	Local (1)
<b>Duration (D)</b>	Long-term (4)	Long-term (4)
<b>Magnitude (M)</b>	Low (4)	Minor (2)
<b>Probability (P)</b>	Highly probable (4)	Probable (3)
<b>Significance (S = E+D+M)*P</b>	<b>Medium (36)</b>	<b>Low (21)</b>
<b>Status (positive, neutral or negative)</b>	Negative	Negative
<b>Reversibility</b>	Partially reversible	Partially reversible
<b>Irreplaceable loss of resources?</b>	Partially irreplaceable	Partially irreplaceable
<b>Can impacts be mitigated?</b>	Low degree	
<b>Mitigation:</b> Limit disturbance to the proposed solar facility site and ensure that minimum disturbance takes place in the surrounding area. Limit human activities and traffic during the operational phase		
<b>Cumulative impacts:</b>		

Disturbance of the surrounding natural vegetation and an increase in declared alien invasive species could have a significantly negative impact on the faunal component.

**Residual impacts:**  
 The degree to which the faunal component returns to the site will largely depend on the success of the re-vegetation of the site and the management of the vegetation during the operational phase.

<b>Environmental Aspect:</b> The operation of the facility near the drainage lines.		
<b>Environmental Impact:</b> Change in runoff patterns and increased erosion		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent (E)</b>	Local (1)	Local (1)
<b>Duration (D)</b>	Medium-term (3)	Medium-term (3)
<b>Magnitude (M)</b>	Low (4)	Minor (2)
<b>Probability (P)</b>	Probable (3)	Improbable (2)
<b>Significance (S = E+D+M)*P</b>	<b>Medium (24)</b>	<b>Low (12)</b>
<b>Status (positive, neutral or negative)</b>	Negative	Negative
<b>Reversibility</b>	Partially reversible	Medium degree
<b>Irreplaceable loss of resources?</b>	Partially irreplaceable	Low degree
<b>Can impacts be mitigated?</b>	High degree	
<b>Mitigation:</b> During the operational phase water runoff from the site should be controlled to limit erosion damage to the surrounding areas, including the drainage lines. Ground water usage in the vicinity of the development should be limited as not to decrease water that should migrate to the drainage lines. Note the minimal water would be abstracted from the ground water for operation of the facility.		
<b>Cumulative impacts:</b> Soil erosion originating from the solar facility will exacerbate the pressure on the hydrological processes in the region.		
<b>Residual impacts:</b> None if mitigation is successful.		

## 2.4. IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING PHASE

### Alternative (preferred alternative)

The impacts during the decommissioning and closure phases will be similar to impacts of the construction phase as discussed above.

### No Go Alternative (Compulsory)

The 'Do nothing' alternative is the option of not decommissioning the proposed solar energy facility at the end of its life span.

At the end of its life span the efficiency of the facility could be reduced such that less electricity is produced. However, the additional electricity that could continue to be

evacuated into the Eskom grid would be beneficial to the area. In addition, implementation of this alternative would mean that job opportunities are not lost.

### 3. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

This section provides a summary of the assessment and conclusions drawn for the proposed solar energy facility. In doing so, it draws on the information gathered as part of the Basic Assessment process and the knowledge gained by the environmental consultants during the course of the process and presents an informed opinion of the environmental impacts associated with the proposed project.

The overall impact on **ecology** is likely to be of **low significance** given the implementation of mitigation measures. Generally, the proposed solar facility site is not located in a highly sensitive area and the vegetation and habitat of the site extends into the surrounding environment. The sensitive community on the slope of the dolerite ridge is avoided by the proposed development. The duplex soils found in the area are highly erodible, therefore if the vegetation is removed or disturbed during construction due care will have to be taken to prevent erosion. It is suggested that a re-vegetation plan is compiled to ensure the return of an indigenous vegetation cover as soon as possible.

From an ecological perspective both the alternative power line routes proposed for the Rodicon Solar Energy Facility are considered to be acceptable from an environmental perspective, and the impacts of low environmental significance. However alternative option 1 is the environmentally preferred option as this alternative connects the Rodicon facility directly to Eskom Genoegeaam Substation whereas Alternative option 2 would require the construction of a switching station to loop in and out of Eskom's Genoegeaam 132KV power line and therefore have a larger environmental footprint. Furthermore option 1 is the technically preferred option when considering engineering and logistical requirements for construction.

The strict adherence to the suggested mitigation measures should limit impacts on the environment and limit the development footprint of the proposed Rodicon solar facility. These mitigating measures will reduce the impact of the development on the natural vegetation and faunal component as well as reduce the impact of declared alien invasive species establishing on disturbed or denuded sites.

The overall impact on **soil and agricultural potential** is likely to be of **low significance** with the implementation of the recommended mitigation measures. The site is too small to contribute significantly to the economy or food security of the area (or the farm on which it is situated upon). Although the site has a low susceptibility to both water and wind erosion, due diligence should still be observed with the implementation of proper control of water and wind erosion measures during the construction phase.

The overall **heritage** impact is likely to be of **moderate significance** with the implementation of mitigation measures. The stone artefact occurrences and scatters were noted on the proposed site and has been allocated a heritage grading of Grade III (NHRA 25 of 1999) being worthy of conservation by local authorities. However for Grade III sites, the applicable mitigation measures would allow the development activities to continue.

No other archaeological sites were identified within the area proposed for development. The proposed focus area for the construction of the solar facility and associated infrastructure is of a medium cultural sensitivity.

A professional archaeologist (with an already authorised collection permit) must be appointed during the various phases of development including vegetation clearing and the excavation activities to monitor and identify possible archaeological material remains and features that may occur below the surface and further make appropriate recommendations on removing and / or protecting the archaeological material remains and features. If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the Albany Museum (046 622 2312) and/or the South African Heritage Resources Agency (SAHRA) (021 642 4502) so that systematic and professional investigation/ excavation can be undertaken. Construction managers/foremen must be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.

The overall visual impact is likely to be of a predominantly **low significance**. The construction and operational phases will have a visual impact on the visual environment especially within, but not limited to the area within 2 km of the proposed facility. The facility has an advantage over other more conventional power generating plants (e.g. coal-fired power stations). The facility utilises a renewable source of energy (considered as an international priority) to generate power and is therefore generally perceived in a more favourable light. It does not emit any harmful by-products or pollutants and is therefore not negatively associated with possible health risks to observers.

The establishment of the facility will have positive benefits as the integration of an additional 5 MW may alleviate the pressure on the local grid to a small extent and would contribute (albeit small) to the national target for renewable energy. Furthermore the Integrated Development Plan (IDP) for the Local Inxuba Yethemba Municipality (2011) strongly highlights that the electrical infrastructure within the local municipality requires serious and urgent attention as the municipality is currently unable to meet the increasing current demands. According to the IDP, Cradock is currently experiencing serious power supply shortcomings due to limited capacity levels. This is happening at a time when the area is experiencing an influx of people wanting to invest and local developers wanting to develop the area.

Therefore, based on the findings of the studies undertaken, in terms of environmental constraints identified through the initial Environmental Basic Assessment process, no environmental fatal flaws were identified with the establishment of the proposed Rodicon Solar Energy Facility and associated infrastructure. Therefore, it is recommended that the

project should be authorised. However, a number of issues requiring mitigation have been highlighted. Environmental specifications for the management of these issues / impacts are detailed within the draft Environmental Management Programme (EMP).

### **No Go Alternative (Compulsory)**

Also referred to as the 'Do nothing' option, this refers to Rodicon Trading and Investment (Pty) Ltd not constructing their proposed solar energy facility on the identified site near Middleburg. In this scenario the potential positive and negative environmental and social impacts as described in this Basic Assessment Report will not occur and the status quo will be maintained. The status quo is of low conservation value currently.

Should the project not proceed, the contribution of up to 5 MW from this project towards the Government target for **renewable energy** will not be realised. As a result the potential local and regional socio-economic and environmental benefits expected to be associated with the proposed project would not be realised. These include:

- » *Increased energy security:* The current electricity crisis in South Africa highlights the significant role that renewable energy can play in terms of power supplementation. In addition, given that renewables can often be deployed in a decentralised manner close to consumers, they offer the opportunity for improving grid strength and supply quality, while reducing expensive transmission and distribution losses. In addition the proposed facility will increase electricity security for the local Inxuba Yethemba local municipality.
- » *Exploitation of our significant renewable energy resource:* At present, valuable national resources including biomass by-products, solar radiation and wind power remain largely unexploited. The use of these energy flows will strengthen energy security through the development of a diverse energy portfolio.
- » *Pollution reduction:* The releases of by-products through the burning of fossil fuels for electricity generation have a particularly hazardous impact on human health and contribute to ecosystem degradation.
- » *Support for international agreements:* The effective deployment of renewable energy provides a tangible means for South Africa to demonstrate its commitment to its international agreements under the Kyoto Protocol, and for cementing its status as a leading player within the international community.
- » *Employment creation:* The sale, development, installation, maintenance, and management of renewable energy facilities have significant potential for job creation in South Africa.
- » *Acceptability to society:* Renewable energy offers a number of tangible benefits to society including reduced pollution concerns, improved human, and ecosystem health.
- » *Support to a new industry sector:* The development of renewable energy offers the opportunity to establish a new industry within the South African economy.

- » *Support to local community:* Since the local community will acquire some ownership in the facility, some of the revenue generated by the facility will be utilised for upliftment of the local community.

Within a policy framework, the development of renewable energy in South Africa is supported by the White Paper on Renewable Energy (November 2003), which has set a target of 10 000 GWh renewable energy contributions to final energy consumption by 2013. The target is to be achieved primarily through the development of solar, biomass, solar and small-scale hydro. The 'Do nothing' alternative will not assist the South African government in addressing climate change, in reaching the set targets for renewable energy, nor will it assist in supplying the increasing electricity demand within the country. The 'Do nothing' alternative is, therefore, not a preferred alternative.



## SECTION E: RECOMMENDATION OF THE PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?

YES

If "NO," indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment):

If "YES," please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

The construction of the proposed solar energy facility should be implemented according to the EMP to adequately mitigate and manage potential impacts associated with construction activities. The construction activities and relevant rehabilitation of disturbed areas should be monitored against the approved EMP, the Environmental Authorisation and all other relevant environmental legislation. Relevant conditions to be adhered to include:

### ***Design, Construction, and Decommissioning Phases:***

The mitigation and management measures previously listed in this Basic Assessment Report should be implemented in order to minimise potential environmental impacts. The following generic mitigation measures should also be implemented.

- » Contractors must be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites. A professional archaeologist must be appointed during construction to monitor various activities including vegetation clearing and excavation activities to monitor and identify possible archaeological material remains and features that may occur below the surface. If concentrations of archaeological heritage material and human remains are uncovered, all work must cease immediately and be reported to the Albany Museum and/or SAHRA so that systematic and professional investigation/ excavation can be undertaken.
- » An application for all permits with respect to protected tree species or protected plant species need to be submitted to the relevant authority prior to the commencement of construction activities.
- » All declared aliens must be identified and managed in accordance with the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983), the implementation of a monitoring programme in this regard is recommended.
- » Before development can continue the regions need to be checked for the presence of bird nesting sites, particularly those of ground nesting species.
- » The site should be inspected for the presence of burrows and areas of high activity for small rodents (e.g. burrows, small animal pathways) and these areas identified and preferably avoided in terms of development.
- » Limit construction, maintenance, and inspection activities to dry periods.
- » Develop emergency maintenance operational plan to deal with any event of

contamination, pollution, or spillages, particularly in riparian areas.

- » If large areas are cleared for the storage of equipment, these could be rehabilitated using arid site rehabilitation techniques such as planting cover crops reseeding with local grasses and shrubs.
- » Compile a detailed waste management plan
- » Compile a storm water management plan.

**Operation Phase:**

The mitigation and management measures previously listed in this Basic Assessment Report should be implemented in order to minimise potential environmental impacts. The following generic mitigation measures should also be implemented.

- » Maintenance of erosion control measures (i.e. berms).
- » Development and implementation of a storm water management plan.

Is an EMPR attached?

YES✓

The EMPR must be attached as **Appendix F**.