

**ENVIRONMENTAL IMPACT ASSESSMENT PROCESS  
FINAL BASIC ASSESSMENT REPORT**

**PROPOSED ALLEMANS FONTEIN SOLAR ENERGY FACILITY NEAR  
NOUPOORT, NORTHERN CAPE PROVINCE**

**(DEA REF No: 14/12/16/3/3/1/730)**

**FINAL BASIC ASSESSMENT REPORT  
FOR SUBMISSION TO DEA  
JANUARY 2013**

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# BASIC ASSESSMENT REPORT



## 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.

### 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. This report format is current as of **1 September 2012**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. 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.
4. Where applicable **tick** the boxes that are applicable in the report.
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7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. 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.

## BASIC ASSESSMENT REPORT

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12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.
14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included on the electronic copy of the report submitted to the competent authority.

## PROJECT DETAILS

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<b>DEA Reference No.</b>	:	14/12/16/3/3/1/730
<b>Title</b>	:	Environmental Assessment Process Final Basic Assessment Report for the Proposed Allemans Fontein Solar Energy Facility near Noupoort, Northern Cape Province
<b>Authors</b>	:	Savannah Environmental Lusani Rathanya Ravisha Ajodhapersadh Karen Jodas
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<b>Client</b>	:	Allemans Fontein Solar Energy (Pty) Ltd
<b>Report Status</b>	:	Final Basic Assessment Report for submission to Department of Environmental Affairs
<b>Review Period</b>	:	18 January 2013

When used as a reference this report should be cited as: Savannah Environmental (2012) Final Basic Assessment Report: Proposed Allemans Fontein Solar Energy Facility near Noupoort, Northern Cape Province.

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## **INVITATION TO COMMENT ON THE DRAFT BASIC ASSESSMENT REPORT**

The **Draft Basic Assessment Report** was made available for public review at the following place, which lie in the vicinity of the proposed project area from 30 November 2012- 17 January 2013:

- » Noupoot Public Library
- » The report was also made available for download on: [www.savannahsa.com](http://www.savannahsa.com)



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## SUMMARY AND OVERVIEW OF THE PROPOSED PROJECT

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Due to the exploitation of and large scale reliance on non-renewable resources and the potential subsequent impacts on climate, there is increasing pressure globally to increase the share of renewable energy generation. 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, require refurbishment, or have been recently returned to service (re-commissioned) at great expense (i.e. the Camden, Komati, and Grootvlei Power Stations).

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 or CPV technology). The proposed project is to contribute towards this goal for renewable energy.

The purpose of the proposed Allemans Fontein Solar facility is to sell the electricity generated 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, as well as providing the opportunity for the South African Government to introduce renewable energy into the power generation technology mix within the country, as per the aims of the Integrated Resource Plan (IRP) for the period 2010 – 2030.

Allemans Fontein Solar Energy (Pty) Ltd has identified a site for consideration and evaluation through a Basic Environmental Assessment process. In terms of the Environmental Impact Assessment (EIA) Regulations published in terms of Section 24(5) of the National Environmental Management Act (NEMA, Act No. 107 of 1998), Allemans Fontein Solar Energy (Pty) requires authorisation from the National Department of

Environmental Affairs (DEA) (in consultation with the Northern Cape Department of Environmental and Nature Conservation (NC-DENC)-for the construction and operation of the proposed Allemans Fontein Solar Energy Facility Project. This project has been registered with the National DEA under application Reference Number **14/12/16/3/3/1/730**. 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 this proposed project. This is due to the fact that the facility development area covers an area of less than 20 hectares and will have the generation capacity of the facility of up to 20 MW. In order to obtain authorisation, comprehensive and independent environmental studies must be undertaken in accordance with the EIA Regulations.

Allemans Fontein Solar Energy (Pty) Ltd has appointed Savannah Environmental as the independent environmental consultants to undertake the required Basic Assessment and to identify and assess all the potential environmental impacts associated with the proposed project and propose appropriate mitigation and management measures in an Environmental Management Programme (EMP). As part of these environmental studies, I&APs have been actively involved through the public involvement process.

## 1.1 Summary of the Proposed Development

Allemans Fontein Solar Energy (Pty) Ltd is proposing the establishment of a commercial solar energy facility near Noupoot, Northern Cape (Fig. 1). The purpose of the facility is to generate electricity from a renewable resource (i.e. sun) to provide power to the national electricity grid. The proposed development site is located within the Umsobomvu Local Municipality, approximately 20 km west of Noupoot town, Northern Cape.

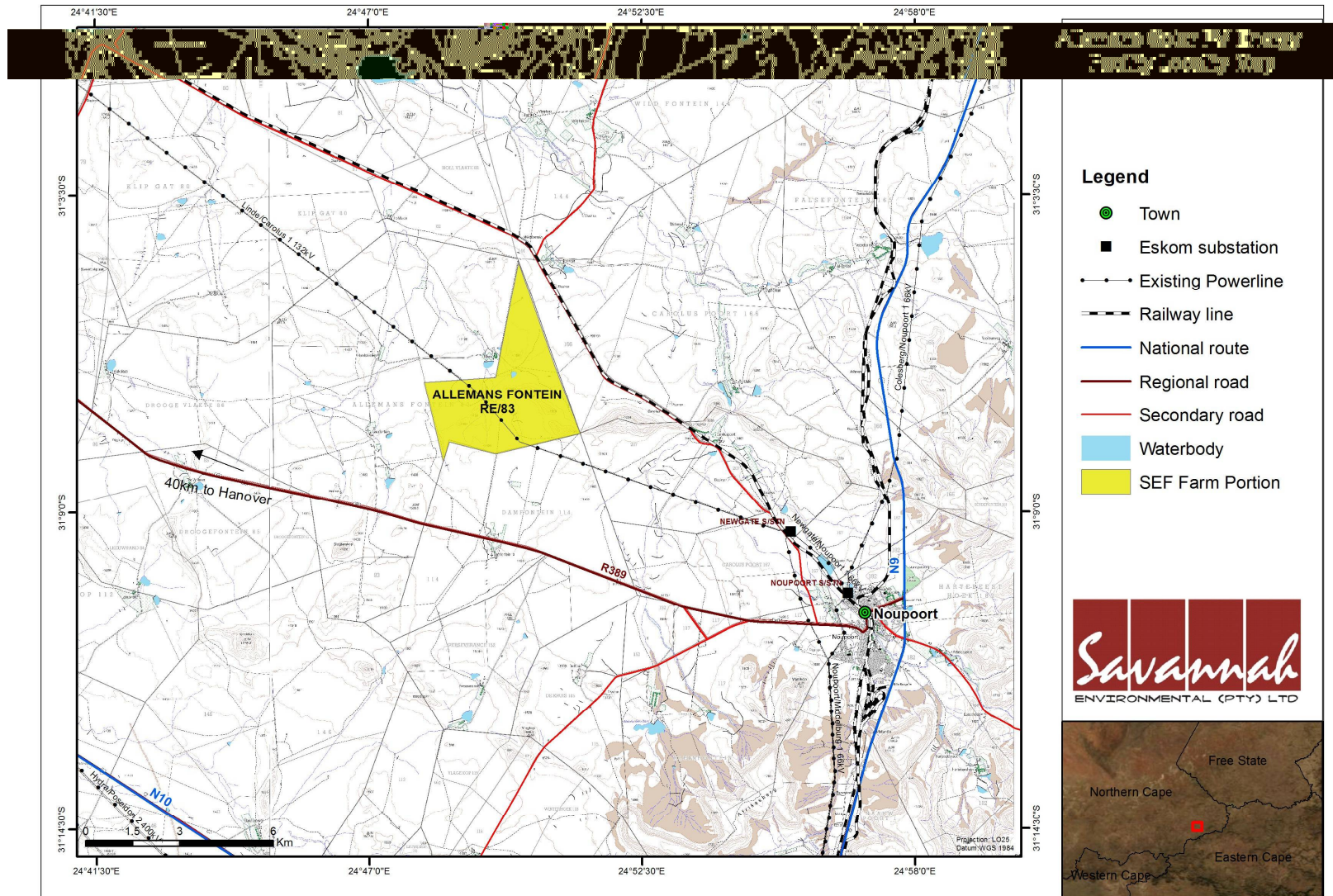
The site is proposed to accommodate PV panels and associated infrastructure which is required for such a facility, including:

- » Arrays of photovoltaic (PV) panels with a capacity of 20 MW;
- » Cabling between the project components, to be laid underground where practical;
- » A new 66kV/132kV overhead power line of ~ 1156m to connect the solar facility to the new TSE Substation located north east of the site (located on Portion 8 of Farm Damfontein 188), a distance of 1156m from the proposed facility;
- » Power line Internal access roads, fencing and
- » Workshop area for maintenance and storage.

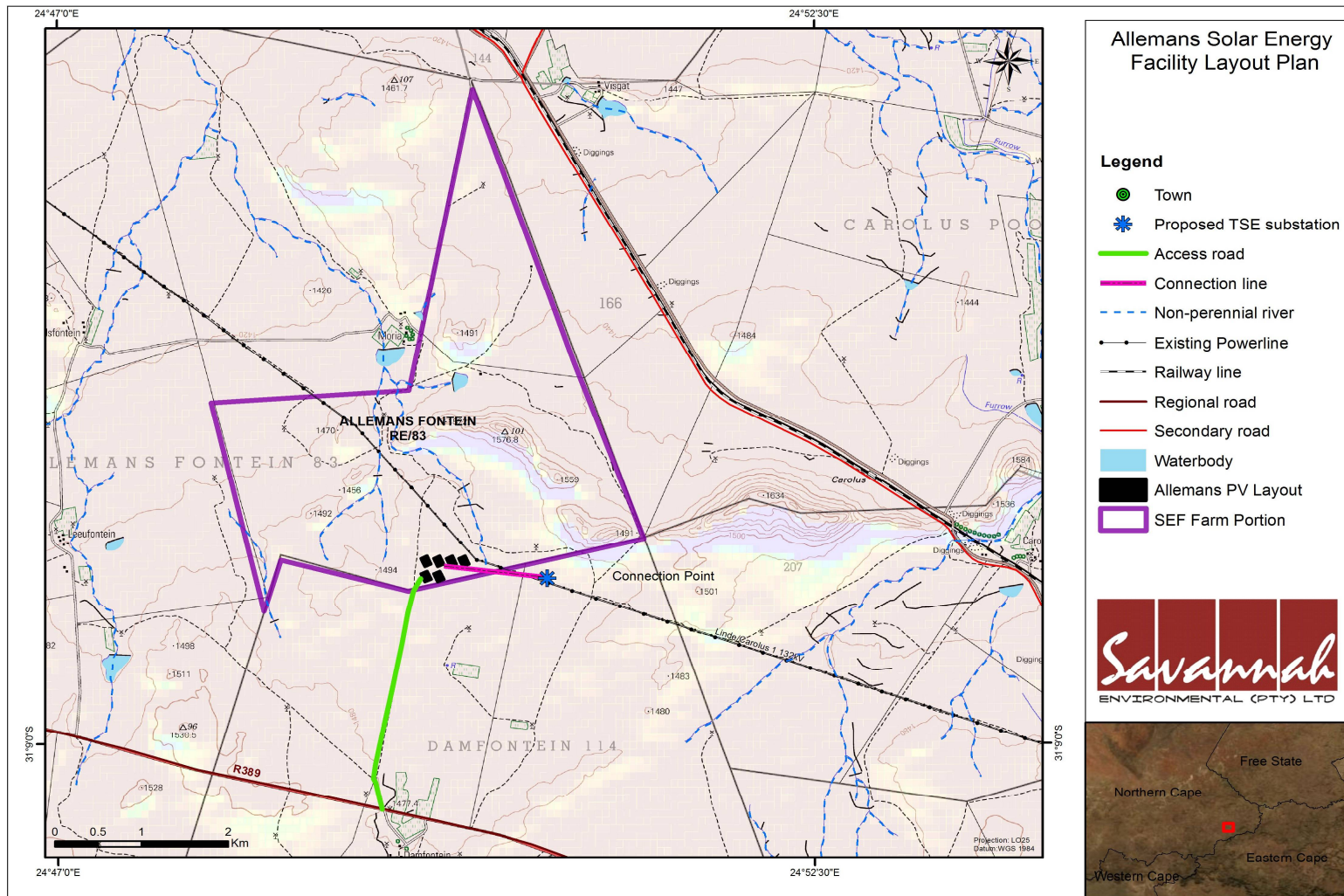
A layout of the proposed PV facility is shown in Figure 2.

The proposed TSE 132 kV – 66 kV step-down Substation is proposed to be located on Portion 8 of the Damfontein Farm 118 in order to connect the Allemans Fontein Solar Energy Facility to the Eskom grid. In addition, the TSE Substation is proposed to allow each of the solar energy facilities proposed in the larger area to connect to the Eskom grid. *A separate basic assessment report is being compiled for the planned substation (referred to as the TSE substation under DEA Ref No: 14/12/16/3/3/1/732).* The developer will build the substation and thereafter hand it over to Eskom (who will then own, operate and maintain the substation). The developer (under separate Special Purpose Vehicles (SPVs) is also proposing four other solar energy facilities on surrounding farm portions. These facilities are being considered within separate Basic Assessment processes under the following applications:

- » Wonderheuwel Solar Energy Facility DEA REF NO.: 14/12/16/3/3/1/731
- » Proposed TSE Distribution Substation DEA REF NO.: 14/12/16/3/3/1/732
- » Carolus Poort Solar Energy Facility DEA REF NO.: 14/12/16/3/3/1/729
- » Damfontein Solar Energy Facility DEA REF NO.: 14/12/16/3/3/1/728.
- » Gilmer Solar Energy Facility DEA REF NO.: 14/12/16/3/3/1/735



**Figure 1:** Locality map for the proposed Allemans Fontein Solar Energy Facility, near Noupoort.



**Figure 2:** Map showing the Layout for the Allemans Fontein Solar Energy Facility

## 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 DEA as the competent authority, in consultation with DENC, 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 (14/12/16/3/3/1/730).

Relevant Notice & Activity number	Description of the Listed Activity	Applicability to the proposed project
GN 544, 18 JUNE 2010	1	<p>The construction of facilities or infrastructure for the generation of infrastructure for the generation of electricity where;</p> <p>i. the electricity output is more than 10 megawatts but less than 20 megawatts; or</p> <p>ii. The output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare.</p> <p><b>The proposed facility will have a generation capacity of ~ 20 MW and will be constructed over an area larger than 1 ha.</b></p>
GN 544, 18 JUNE 2010	10	<p>The construction of facilities or infrastructure for the transmission and distribution of electricity-</p> <p>(i)outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts;</p> <p><b>The facility will require the construction of a 66kV/132kV overhead distribution power line, which will connect to the new TSE substation (to be located on the same Farm Damfontein 8/114, a separate application has been submitted for the substation).</b></p>
GN 544, 18 JUNE 2010	22	<p>The construction of a road, outside urban areas;</p> <p>(i)with a reserve wider than 13.5 meters</p> <p><b>The facility will require the upgrade of the existing road and construction of new access</b></p>

		<b>roads within the site.</b>
GN 544, 18 JUNE 2010	23	<p>The transformation of undeveloped, vacant or derelict land to-</p> <p>(ii)residential, retail, commercial, recreational, industrial or institutional use, outside an urban area and where the total area to be transformed is bigger than 1 hectare but less than 20 hectares.</p> <p><b>The solar energy facility will involve transforming agricultural land-use to industrial land-use of an area outside an urban area and where the total area to be transformed is larger than 1 hectare but less than 20 hectares.</b></p>
GN 546, 18 JUNE 2010	14(a)(i)	<p>The clearance of an area of 5 hectares or more of vegetation 75% or more of the vegetation cover constitutes indigenous vegetation</p> <p><b>The site is approx. 20ha and constitutes natural vegetation which will be cleared.</b></p>

### **1.3 Details of an Environmental Assessment Practitioner and Expertise to conduct the Basic Assessment Process**

Savannah Environmental has been appointed as the independent environmental consultant, to undertake the Environmental Basic Assessment to identify and assess the potential environmental impacts associated with the proposed facility. Neither savannah Environmental nor any of its specialist sub-consultants on this project are subsidiaries of or are affiliated to Allemans Fontein Solar Energy (Pty) Ltd. In addition, Savannah Environmental does not have any interest in secondary developments that may arise out of the authorisation of the proposed project.

Savannah Environmental is a specialist environmental consulting company providing holistic environmental management services, including environmental impact assessment and planning to ensure compliance and evaluate the risk of development and the development and implementation of environmental management tools. 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 Savannah Environmental team has considerable experience in environmental impact assessments and environmental management, and have been actively involved in undertaking environmental studies, for a wide variety of projects throughout South Africa, including those associated with electricity generation.

The EAP's from Savannah Environmental who are responsible for this project are:

- » *Karen Jodas* is a registered Professional Natural Scientist and holds a Master of Science degree. She has 14 years of experience consulting in the environmental field. Her key focus is on strategic environmental assessment and advice; management and co-ordination of environmental projects, which includes integration of environmental studies and environmental processes into larger engineering-based projects and ensuring compliance to legislation and guidelines; compliance reporting; the identification of environmental management solutions and mitigation/risk minimising measures; and strategy and guideline development. She is currently responsible for the project management of EIAs for several renewable energy projects across the country.
- » *Ravisha Ajodhapersadh*, the co-author of this report, holds an Honours Bachelor of Science degree in Environmental Management and has 4 years' experience in environmental management. She has undertaken EIAs for other proposed solar energy facilities in South Africa and has been involved in other projects in this area.
- » *Lusani Rathanya* - the principle author of this report holds an Honours Bachelor degree in Environmental Management and Analysis. Her key focus is on environmental impact assessments, public waste and water, environmental management plans and programmes, as well as mapping for a variety of environmental projects. She is currently the responsible EAP for several renewable energy projects EIAs across the country.
- » *Gabrielle Wood* - the public participation consultant for this project, hold an Honours Bachelor degree in Anthropology and has 5 years' experience in Public Participation and Social consultancy including professional execution of public participation consulting for a variety of projects as well as managing and coordinating public participation processes for Environmental Impact Assessments (EIA).

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 numerous solar energy facilities.

Curricula vitae for the Savannah Environmental project team consultants are included in **Appendix H**.

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

- » Ecology: Marianne Strohbach (of Savannah Environmental)



- » Soil & Agricultural Potential: Louis Di Pisani (of Eduplan cc)
- » Heritage resources: Celeste Booth (of the Albany Museum)
- » Visual: Johan Claassen (of Zone Land Solutions)
- » Palaeontology: Francois Durand (of Skarab cc)
- » Jon Smallie (Wildskies Ecological Services)

Specialist's declaration of interest and CVs are included in the **Appendix I**.

## SECTION A: ACTIVITY INFORMATION

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

	NO ✓
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If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

### 1. PROJECT DESCRIPTION

#### a) Describe the project associated with the listed activities applied for

The project is located within the Umsobomvu Local municipality in the Northern Cape. The Solar Energy Facility is proposed to be located on the Farm Allemans Fontein No. 83 which is situated approximately 20 km west of Noupoort. The site is accessed directly from the R389 via existing entrance and gravel farm access road via the existing farm road from R389 road.

The site is proposed to accommodate PV panels and associated infrastructure including:

- » Arrays of photovoltaic (PV) panels with a capacity of 20 MW;
- » Cabling between the project components, to be lain underground where practical;
- » A new 66kV/132kV overhead power line of ~ 1156m to connect the solar facility to the new TSE Substation located north west, a distance of 1156m from the facility;
- » Power line Internal access roads, fencing and
- » Workshop area for maintenance and storage.

#### **Activities to be undertaken during the Construction phase of the PV Facility:**

In order to construct the proposed PV solar energy facility and associated infrastructure, a series of activities will need to be undertaken. The construction process is discussed in more detail below.

#### **a) Conduct Surveys**

Prior to initiating construction, a number of surveys will be required including, but not limited to, a geotechnical survey, site survey and road servitudes.

#### **b) Establishment of Access Roads to the Site**

Access to the site (directly from the R389 via existing entrance and gravel farm access road) will be required. Existing road on the farm portion will be used and upgraded where necessary (little to no clearing will be required. Within the site itself, access will

be required to the individual facility components for construction purposes (and later limited access for maintenance). Upgrade of access roads within the site will be required and new access roads will be required. Access track construction would normally comprise of compacted rock-fill with a layer of higher quality surfacing stone on top. The strength and durability properties of the rock strata at the proposed site are not known at this stage; this will need to be assessed via a geotechnical study to be conducted by the project proponent. Depending on the results of these studies, it may be possible, in some areas, to strip off the existing vegetation and ground surface and level the exposed formation to form an access track surface. The final layout of the access roads will be determined following the identification of site related sensitivities.

**c) Undertake Site Preparation**

Site preparation activities will include clearance of vegetation at the footprint of each support structure, if required. Vegetation will be kept undisturbed as far as possible in and between the support structures. These activities will require the stripping of topsoil which will need to be stockpiled, backfilled and/or spread on site.

**d) Transport of Components and Equipment to Site**

The components and equipment required for the construction of the proposed facility will be brought to site in sections by means of national and provincial roads and then proposed internal access road. Some of the components (i.e. transformer) may be defined as abnormal loads in terms of the Road Traffic Act (Act No. 29 of 1989)<sup>1</sup> by virtue of the dimensional limitations (i.e. weight).

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 upgrade of the substation and site preparation.

**e) Establishment of Laydown Areas on Site**

Laydown and storage areas will be required for the typical construction equipment which will be required on site, and within the development footprint.

**f) Erect PV Cells**

The PV cells will be arranged in arrays. The frames will be fixed onto the ground with the use of concrete / rammed into the ground, depending on the soil conditions, depending on the soil conditions at the site. This will make the installation of the plant less invasive for the territory and facilitate the decommissioning at the end of its

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<sup>1</sup> A permit will be required for the transportation of these abnormal loads on public roads.

production cycle. The height of the PV panel structure will be up to 4 m.

Inverters will be installed to facilitate the connection between the solar energy facility and the Eskom electricity grid via the new Substation. The position of the inverters within the footprint of the broader site will be informed by the final positioning of the PV components.

***g) Establishment of Ancillary Infrastructure (Power line and office)***

Ancillary infrastructure includes an overhead power line feeding into the Eskom electricity network via the new Substation (TSE Substation) workshop, storage areas as well as a temporary contractor's equipment camp.

The establishment of the above ancillary infrastructure will require the clearing of vegetation and levelling of the development site and the excavation of foundations prior to construction. A laydown area for building materials and equipment associated with these buildings will also be required.

***h) Undertake Site Rehabilitation***

Once construction is completed and once all construction equipment is removed, the site must be rehabilitated where practical and reasonable. On full commissioning of the facility, any access points to the site which are not required during the operational phase must be closed and rehabilitated.

**Activities to be undertaken during the Operational Phase of the PV Facility**

The electricity that is generated from the PV panels will be stepped up through the on-site inverters and feed into the TSE Substation which will be located on a nearby farm, via an overhead power line.

It is anticipated that a full-time security, maintenance and control room staff will be required on site. Each component within the solar energy facility will be operational except under circumstances of mechanical breakdown, unfavourable weather conditions or maintenance activities. Maintenance activities for the PV plant will include cleaning of the PV Panel's (using water), trimming of vegetation (underneath the panels) and maintenance of the infrastructure. Water will be required for construction and cleaning the PV panels, as and when needed to remove dust that may collect on the panels. Approximately 21 -43.25 m<sup>3</sup>/wash cycle, 1-2 times per annum will be required during operations for cleaning the PV panels. Allemans Fontein Solar Energy (Pty) Ltd is looking into purchasing water from Umsobomvu Local Municipality to supply water for the cleaning of the panels over the life of the solar park or the use of on-site bore holes (if sufficient water available).

**Activities to be undertaken during the Decommissioning Phase of the PV Facility**

The solar energy facility is expected to have a lifespan of more than 20 years (with maintenance) and the power plant infrastructure would only be decommissioned once it has reached the end of its economic life. If economically feasible/desirable the decommissioning activities would comprise the disassembly and replacement of the individual components with more appropriate technology/ infrastructure available at that time. However, if not deemed so, then the facility would be completely decommissioned which would include the following decommissioning activities.

**a) Site Preparation**

Site preparation activities will include confirming the integrity of the access to the site to accommodate the required equipment (e.g. lay down areas) and the mobilisation of decommissioning equipment.

**b) Disassemble Components**

The components would be disassembled, and reused and recycled (where possible), or disposed of in accordance with regulatory requirements.

**c) Rehabilitation**

Disturbed area (where infrastructure has been removed) will be rehabilitated, if required, depending on the future land-use of the facility.

**b) Provide a detailed description of the listed activities associated with the project as applied for**

<b>Listed activity as described in GN R.544, 545 and 546</b>	<b>Description of project activity</b>
GN 544, 18 JUNE 2010: 1(i)  The construction of facilities or infrastructure for the generation of electricity where: i. the electricity output is more than 10 megawatts but less than 20 megawatts;	<i>Construction of a Photovoltaic Solar Energy Facility with a maximum generating capacity of up to 20MW in an area covering approximately 20 ha. Inverters, Step-Up transformers, reticulation cables, medium voltage connection and protection equipment and mounting structures are ancillary infrastructure for this facility.</i>
GN 544, 18 JUNE 2010: 10 (i)  The construction of facilities or infrastructure for the transmission and distribution of electricity: i. Outside urban areas or industrial	<i>The construction of a 66kV/132kV overhead power line from the solar facility to the Eskom electricity grid.</i>

<p>complexes with a capacity of more than 33 but less than 275 kilovolts;</p>	
<p>GN 544, 18 JUNE 2010: 22</p>	<p><i>The facility will require the expansion of existing roads and construction of new access roads within the site.</i></p>
<p>GN 544, 18 JUNE 2010: 23</p> <p>The transformation of undeveloped, vacant or derelict land to:</p> <p>i. Residential, retails, commercial, recreational, industrial, or institutional use, outside an urban area, and where the total area to be transformed is bigger than 1 hectare but less than 20 hectares.</p>	<p><i>The solar energy facility will involve transforming agricultural land-use to industrial land-use of an area outside an urban area and where the total area to be transformed is bigger than 1 hectare but less than 20 hectares. The area to be developed for the solar facility will be less than 20 hectares but more than 1 hectare.</i></p>
<p>GN 546, 18 JUNE 2010: 14(a)(i)</p> <p>The clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation</p> <p>i. All areas outside urban areas.</p>	<p><i>The site may constitute natural vegetation that will be cleared for construction of the PV panels and associated infrastructure.</i></p>

## 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 as required by Regulation 22(2)(h) of GN R.543. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) 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 is 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.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

**a) Site alternatives**

<b>Alternative 1 (preferred alternative)</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
<p>A site alternative refers to the identification of more than one potential site which may be suitable for the establishment of a proposed facility. However, the nature of the site required for renewable energy generation projects often means that assessment of the site alternative is not possible. This site has been selected based on the following preferences:</p> <ul style="list-style-type: none"> <li>» The solar resource (i.e. the daily normal irradiance for the Noupoort town is 7.21 KW/h);</li> <li>Site access (i.e. the site is accessed directly from the R389 via existing entrance and gravel farm access road.</li> <li>» Site slope and topography (i.e. the proposed site for the placement of the PV panels is flat with no hills/mountains in the immediate vicinity that would cause shading issues or the need for excessive earthworks); and</li> <li>» Access to the national electricity grid for power evacuation (i.e. 66 kV line will convey the power from the PV units, through the transformers, to the switchgear and directly to the new TSE Substation).</li> </ul> <p>As such, no site alternatives have been proposed for the establishment of the proposed solar energy facility.</p>	31.127522	24.82878

Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

In the case of linear activities:

**Alternative:**

**Latitude (S):**

**Longitude (E):**

Alternative S1 (preferred) (Power line)

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

31749.91	244948.32
31752.59	245010.48
31754.24	245032.55

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 250 meters along the route for each alternative alignment.

**See Appendix J1.**

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A.

**b) Lay-out alternatives**

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Design and Layout alternatives were not assessed during the compilation of the DBAR. However, due to	31.127533	24.82878



<p>findings of the DBAR the initial layout was revised based on environmental sensitivities as indicated by the ecologist. The revised layout (see appendix <b>Figure 2</b>) is therefore the recommended site layout alternative. The revised layout does not require further assessment as the changes are still within the initial footprint assessed during the Basic Assessment process and the potential impacts of the facility based on both layouts is the same.</p>		
<b>Alternative 2</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
<b>Alternative 3</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)

**c) Technology alternatives**

<p><b>Alternative 1 (preferred alternative)</b></p>
<p>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.</p>
<p>No activity alternatives were assessed because the site has been identified by Allemans Fontein Solar Energy is 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).</p>
<p>Wind energy installations were not considered as a feasible and reasonable alternative as the proposed developmental area does not have the required wind resource.</p>
<p>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.</p>

Therefore, a PV facility is considered by Allemans Fontein Solar Energy to be the only feasible activity for the proposed site.

Alternative 2

Alternative 3

**d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives) N/A**

**Alternative 1 (preferred alternative)**

Description:

***Operating Alternatives***

This refers to the manner in which a proposed facility would function. For example, should a wind energy facility prove problematic for avifauna during migrating periods, an operating alternative of switching off certain turbines during those times could be proposed. No operating alternatives would be applicable to the proposed solar energy facility as there are no feasible means of alternative operation for a facility of this nature.

Alternative 2

Alternative 3

**e) No-go alternative**

This option is assessed as the "no go alternative" in this Basic Assessment Report.

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

### 3. PHYSICAL SIZE OF THE ACTIVITY

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

**Alternative:**

Alternative A1<sup>2</sup> (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

**Size of the activity:**

190 000 m <sup>2</sup>
m <sup>2</sup>
m <sup>2</sup>

or, for linear activities:

**Alternative:**

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

**Length of the activity:**

1156 m
m
m

**b) Indicate the size of the alternative sites or servitudes (within which the above footprints will occur) N/A**

**Alternative:**

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

**Size of the site/servitude:**

30m servitude (power line)
m <sup>2</sup>
m <sup>2</sup>

### 4. SITE ACCESS

Does ready access to the site exist?

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

YES ✓	
m	

<sup>2</sup> "Alternative A.." refer to activity, process, technology or other alternatives.

Describe the type of access road planned:

The site is accessible via existing gravel farm road from R389 road. This existing road on the farm portion will be used and upgraded where necessary.

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.

## 5. 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 accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s);
- 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).

An A3 Locality Map is attached as **Appendix A**.

## 6. LAYOUT/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:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

A detailed plan (s) for each alternative activity is attached as **Appendix A**.

## 7. SENSITIVITY MAP

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- 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 infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in **Appendix A**.

A sensitivity map covering areas 100m of the site is attached in **Appendix A**.

## 8. 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 report. 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. Annotated photographs are included in **Appendix B**.

## 9. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of at least 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 which represents a realistic image of the planned solar energy facility is attached within **Appendix C**.

## 10. ACTIVITY MOTIVATION

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

<b>1. Is the activity permitted in terms of the property's existing land use rights?</b>		NO ✓	Please explain
The site is zoned agricultural. An application will be required to be made to change the land use rights to accommodate the solar energy facility			
<b>2. Will the activity be in line with the following?</b>			
<b>(a) Provincial Spatial Development Framework (PSDF)</b>		YES ✓	Please explain
The Northern Cape Province Spatial Development Framework (NCPSDF) makes reference to the need to ensure the availability of inexpensive energy. The section notes that in order to promote economic growth in the Northern Cape the availability of electricity to key industrial users at critical localities at rates that enhance the competitiveness of their industries must be ensured. At the same time, the development of new sources of energy through the promotion of the adoption of energy applications that display a synergy with the province's natural resource endowments must be encouraged. In this regard the NCPSDF notes "the development of energy sources such as solar energy, the natural gas fields, bio-fuels, etc., could be some of the means by which new economic opportunity and activity is generated in the Northern Cape". The NCPSDF also highlights the importance of close co-operation between the public and private sectors in order for the economic development potential of the Northern Cape to be realised.			
<b>(b) Urban edge / Edge of Built environment for the area</b>		NO ✓	Please explain
The site is ~15 north-west of the urban edge related to the town of Noupoort. The site is proposed outside an urban area. The Farm Allemans Fontein is currently utilised for farming (grazing of livestock). Addition of a PV Facility on the Farm Allemans Fontein will not significantly alter the urban edge of Noupoort or the Umsobomvu Local Municipality, as the current farming activities will continue on areas of the Farm which			

<p>will not be occupied by infrastructure for the solar energy facility. Therefore the project compatible with the farming activities in a rural area which is outside the urban edge of the Umsobomvu Local Municipality.</p>		
<p><b>(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).</b></p>		<p>NO ✓ Please explain</p>
<p>The main IDP and SDP objective of the Pixley ka Seme District Municipality is to provide access to electricity to all households in the district by 2014. To achieve this, the district aims at fast-tracking the delivery of free basic electricity and co-ordinate the maintenance and upgrading of existing electricity infrastructure. The construction of the proposed PV solar panels will be meeting the objective.</p>		
<p><b>(d) Approved Structure Plan of the Municipality</b></p>	<p>YES ✓</p>	<p>Please explain</p>
<p>The municipality aims at ensuring that all citizens have access to basic services such as electricity, and this project will be addressing such issues in the local municipality.</p>		
<p><b>(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)</b></p>		<p>NO ✓ Please explain</p>
<p>The Municipality does not have an EMF, however an Integrated Environmental Management Programme was compiled by the District Municipality to ensure that land use decision making must be taken with adequate environmental resource information is available in other to ensure sustainable and appropriate environmental management to the benefit of its residents. One of the set goals for the Plan is ensuring that all environmental issues are appropriately addressed.</p> <p>Renewable energy projects such the proposed Allemans Fontein Solar Energy project will contribute to clean energy generation as a sustainable resource and holds huge benefits for the local region and the country as a whole. Renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future, the project aims on achieving the set goals for the Plan through addressing all possible environmental issues associated with the development and address measure to mitigate environmental issues.</p>		

<b>(f) Any other Plans (e.g. Guide Plan) N/A</b>			Please explain
<b>3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?</b>	YES ✓		Please explain
<p>The main IDP and SDP objective of the Pixley ka Seme District Municipality is to provide access to electricity to all households in the district by 2014. To achieve this, the district aims at fast-tracking the delivery of free basic electricity and co-ordinate the maintenance and upgrading of existing electricity infrastructure. The construction of the proposed PV solar panels will be meeting the objective.</p>			
<b>4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)</b>	YES ✓		Please explain
<p>The evacuation of additional power into the Eskom grid will serve to improve the stability of the grid for the immediate area, assist the government in achieving the goal of 17GW renewable energy as part of the electricity generation technology mix by 2030, and assist in the reduction in the need to mine non-renewable resources such as coal for conventional power generation.</p> <p>The proposed activity is not a necessarily a societal priority for the community; however the development will benefit the local community through jobs creation, skills development opportunities and training which will in turn reduce poverty level that the area is currently facing; strengthen electricity supply for the area.</p>			
<b>5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</b>		NO ✓	Please explain
<p>No, services are not adequate i.e. the two nearest substations will not be able to accommodate this project together with the other four solar projects proposed in the same vicinity. The applicant plans on construction 132 kV – 66 kV step-down Substation in order to connect the Allemans Fontein Solar Energy Facility to the Eskom grid. In addition, the proposed TSE Substation will allow each of the solar energy facilities proposed in the larger area to connect to the Eskom grid. The developer will</p>			



<p>build the substation and thereafter hand it over to Eskom (who will then own, operate and maintain the substation).</p>		
<p><b>6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</b></p>	<p>NO ✓</p>	<p>Please explain</p>
<p>The proposed project is to be developed by a private developer (i.e. Allemans Fontein Solar Energy) and not the municipality. It therefore does not fall within the infrastructure planning of the municipality. The project will not have any implications for the municipality but assist them in their infrastructural planning priorities through the increasing electricity capacity.</p>		
<p><b>7. Is this project part of a national programme to address an issue of national concern or importance?</b></p>	<p>YES ✓</p>	<p>Please explain</p>
<p>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 or CPV technology). The proposed project is to contribute towards this goal through generation of renewable energy.</p>		
<p><b>8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)</b></p>	<p>YES ✓</p>	<p>Please explain</p>
<p><i>Site access</i>                  The site can be accessed easily via existing access roads from R389 road.</p> <p><i>Climatic Conditions</i>                  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. In addition, compared to other areas in the country with similar irradiation, the site experiences moderate temperatures which are suitable for PV technology.</p>		

<p><i>Gradient</i></p> <p>A level surface area (i.e. with a minimal gradient in the region of 1%) is preferred for the installation of PV panels and specifically for PV technologies (Fluri, 2009). This reduces the need for extensive earthworks associated with the levelling of a site, thereby minimising environmental impacts. The proposed area for the proposed PV plant is generally on a flat location with slopes less than 5 degrees.</p> <p><i>Grid Connection</i></p> <p>The proposed facility is in a close proximity (approx. 950 m) to the proposed TSE substation, the new substation will have enough capacity to accommodate the proposed PV Solar plant facility.</p>			
<p><b>9. Is the development the best practicable environmental option for this land/site?</b></p>	<p>YES ✓</p>		<p>Please explain</p>
<p>The proposed activity which will occupy an area less than 20 ha will represent a change in land use and land form to what is currently the status quo. However the proposed development is for proposed PV solar energy; this is a renewable energy project, which is the best practicable environmental option for the type of land since the proposed development can allow the current land-use to continue on the rest of the farm portion (i.e. the rest of the land which is not utilised for the facility).</p>			
<p><b>10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?</b></p>	<p>YES ✓</p>		<p>Please explain</p>
<p>» This basic assessment report identified that no environmental fatal flaws are associated with the project. The potential negative impacts for the project include:</p> <ul style="list-style-type: none"> <li>○ Clearing of natural vegetation for the proposed footprint area, increasing the potential for soil erosion, deterioration of the biotic, abiotic and economic properties of soil, and the long-term loss of natural vegetation;</li> <li>○ Possible destruction of stone artefact occurrences and scatters. That are scattered over the extent of the proposed Allemans Fontein Solar Energy Facility area and within the existing site access that is proposed to be used as the access road for the project.</li> </ul> <p>» Most of these impacts can be managed and mitigated as outlined in the Impact Assessment and Environmental Management Programme. Below are some of the benefits associated with the development:</p> <ul style="list-style-type: none"> <li>○ 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.</li> <li>○ 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.</li> </ul>			

<ul style="list-style-type: none"> <li>○ Employment creation: The sale, development, installation, maintenance, and management of renewable energy facilities have significant potential for job creation in South Africa.</li> <li>○ Acceptability to society: Renewable energy offers a number of tangible benefits to society including reduced pollution concerns, improved human, and ecosystem health.</li> <li>○ Support to a new industry sector: The development of renewable energy offers the opportunity to establish a new industry within the South African economy.</li> <li>○ 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.</li> </ul> <p>The negative impacts referred to above could also result from activities associated with the current land use. This is not true of the positive impacts. It is considered reasonable that the benefits of the proposed land use/development will outweigh the negative impacts.</p>			
<b>11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?</b>	YES ✓		Please explain
<p>There are similar developments being proposed in the Umsobomvu Local Municipality which have received environmental authorisations; however no solar projects have been developed yet in the area. It is considered that the precedent for the development of renewable energy projects in this area and within this Municipality has already been set, and local support has been shown by landowners, and the Municipality.</p>			
<b>12. Will any person's rights be negatively affected by the proposed activity/ies?</b>		NO ✓	Please explain
<p>The proposed project will be taking place in a privately owned land and will not in any way infringe on any person's rights.</p>			
<b>13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?</b>		NO ✓	Please explain
<p>The site is ~15 north-west of the urban edge related to the town of Noupoort. The site is proposed outside an urban area. The Farm Allemans Fontein is currently utilised for farming (grazing of livestock). Addition of a PV Facility on the Farm Allemans Fontein will not significantly alter the urban edge of Noupoort or the Umsobomvu Local Municipality, as the current farming activities will continue on areas of the Farm which will not be occupied by infrastructure for the solar energy facility. Therefore the project compatible with the farming activities in a rural area which is outside the urban edge of the Umsobomvu Local Municipality.</p>			
<b>14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?</b>	YES ✓		Please explain
<p>One of the 17 Strategic Integrated Project (SIPS) is to address issues of electricity infrastructure, unemployment and climate change. The proposed project will be</p>			

addressing these issues.	
<b>15. What will the benefits be to society in general and to the local communities?</b>	Please explain
Job opportunities, albeit limited, will be created during the construction and operation of the proposed facility. In addition, local and regional economic benefits would be realised through the additional revenue generated as a result of the proposed project (through direct and indirect job opportunities, local spend, local procurement, etc.).	
<b>16. Any other need and desirability considerations related to the proposed activity?</b>	Please explain
The area is in need of infrastructure which will benefit the municipal economy.	
<b>17. How does the project fit into the National Development Plan for 2030?</b>	Please explain
One of the National Development Plan for 2030 is the transition to low carbon energy through speeding up and expanding renewable energy. This project will fit into this vision since it aims on increasing electricity supply through carbon-free methods.	
<b>18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.</b>	
The general objectives of Integrated Environmental Management have been taken into account for this Basic Assessment report by means of identifying, predicting and evaluating the actual and potential impacts on the environment, socio-economic conditions and cultural heritage component. The risks, consequences, alternatives as well as options for mitigation of activities have also been considered with a view to minimise negative impacts, maximise benefits, and promote compliance with the principles of environmental management.	
<b>19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.</b>	
<p>The principle of environmental management as set out in section of NEMA states that:</p> <ul style="list-style-type: none"> <li>» Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably;</li> <li>» Development must be sustainable socially (people), environmentally (planet) and economically (prosperity);and</li> <li>» Sustainable development requires the consideration of all the relevant factors,</li> </ul> <p>These principles have been taken into account for this Basic Assessment report by means of identifying, predicting and evaluating the actual and potential impacts on the environment, socio-economic conditions and cultural heritage component. The risks, consequences, alternatives as well as options for mitigation of activities have also been considered with a view to minimise negative impacts, maximise benefits, and promote compliance with the principles of environmental management.</p>	

## **11. 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:

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
<b>National Legislation</b>			
National Environmental Management Act (Act No 107 of 1998)	<p>The Basic Assessment Regulations have been promulgated in terms of Chapter 5 of the Act. Listed activities which may not commence without an environmental authorisation are identified within these Regulations.</p> <p>In terms of S24(1) of NEMA, the potential impact on the environment associated with these listed activities must be assessed and reported on to the competent authority charged by NEMA with granting of the relevant environmental authorisation.</p> <p>In terms of GN R543, R544, R545 and R546 of 18 June 2010, a Basic Assessment Process is required to be undertaken for the proposed project.</p>	<p>Department of Environmental Affairs – competent authority</p> <p>Department of Environmental and Nature Conservation (DENC)- commenting authority</p>	<p>The listed activities triggered by the proposed solar energy facility have been identified and assessed in the Basic Assessment Process being undertaken. This Basic Assessment Report will be submitted to the competent and commenting authority in support of the application for authorisation.</p>
National Environmental Management Act (Act No 107 of 1998)	<p>In terms of the Duty of Care Provision in S28(1) the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to ensure that any pollution or degradation of the environment associated with this project is avoided, stopped or minimised.</p> <p>In terms of NEMA, it has become the legal duty of a project proponent to consider a project holistically, and to consider the cumulative effect of a variety of impacts.</p>	<p>Department of Environmental Affairs</p>	<p>While no permitting or licensing requirements arise directly by virtue of the proposed project, this section has found application during the Basic Assessment Process through the consideration of potential impacts (cumulative, direct, and indirect). It will continue to apply throughout the life</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
<p>Environment Conservation Act (Act No 73 of 1989)</p>	<p>National Noise Control Regulations (GN R154 dated 10 January 1992)</p>	<p>Department of Environmental Affairs                       Department of Environmental and Nature Conservation (DENC)-                       Local Authorities</p>	<p>cycle of the project.</p> <p>Noise impacts are expected to be associated with the construction phase of the project and are not likely to present a significant intrusion to the local community. Therefore is no requirement for a noise permit in terms of the legislation.</p> <p>On-site activities should be limited to 6:00am - 6:00pm, Monday – Saturday (excluding public holidays).</p> <p>Should activities need to be undertaken outside of these times, the surrounding communities will need to be notified and appropriate approval will be obtained from DEA and the Local Municipality.</p>
<p>National Water Act (Act No 36 of 1998)</p>	<p>Water uses under S21 of the Act must be licensed, unless such water use falls into one of the categories listed in S22 of the Act or falls under the general</p>	<p>Department of Water Affairs</p>	<p>A water use license (WUL) is required to be obtained if wetlands or drainage</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>authorisation (and then registration of the water use is required).</p> <p>Consumptive water uses may include the taking of water from a water resource - Sections 21a and b.</p> <p>Non-consumptive water uses may include impeding or diverting of flow in a water course - Section 21c; and altering of bed, banks or characteristics of a watercourse - Section 21i.</p>	<p>Provincial Department of Water Affairs</p>	<p>lines are impacted on, or if infrastructure lies within 500m of such features. Pans occur on the project site, but outside of the development footprint.</p> <p>Should water be abstracted from ground water/ a borehole on site for use within the facility, a water use license may be required.</p>
<p>Minerals and Petroleum Resources Development Act (Act No 28 of 2002)</p>	<p>A mining permit or mining right may be required where a mineral in question is to be mined (e.g. materials from a borrow pit) in accordance with the provisions of the Act.</p> <p>Requirements for Environmental Management Programmes and Environmental Management Plans are set out in S39 of the Act.</p> <p>S53 Department of Mineral Resources: Approval from the Department of Mineral Resources (DMR) may be required to use land surface contrary to the objects of the Act in terms of section 53 of the Mineral and Petroleum Resources Development Act, (Act No 28 of 2002): In terms of the Act approval from the Minister of Mineral Resources is required to ensure that proposed activities do not sterilise a mineral resources that might</p>	<p>Department of Mineral Resources</p>	<p>As no borrow pits are expected to be required for the construction of the facility, no mining permit or right is required to be obtained.</p> <p>A Section 53 application will be submitted the Northern Cape DMR office.</p>



Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
National Environmental Management: Air Quality Act (Act No 39 of 2004)	occur on site.  Measures in respect of dust control (S32) - no regulations promulgated yet.  Measures to control noise (S34) - no regulations promulgated yet.	Department of Environmental Affairs	No permitting or licensing requirements arise from this legislation.  The Act provides that an air quality officer may require any person to submit an atmospheric impact report if there is reasonable suspicion that the person has failed to comply with the Act.
National Heritage Resources Act (Act No 25 of 1999)	<ul style="list-style-type: none"> <li>» Stipulates assessment criteria and categories of heritage resources according to their significance (S7).</li> <li>» Provides for the protection of all archaeological and paleontological sites, and meteorites (S35).</li> <li>» Provides for the conservation and care of cemeteries and graves by SAHRA where this is not the responsibility of any other authority (S36).</li> <li>» Lists activities which require developers any person who intends to undertake to notify the responsible heritage resources authority and furnish it with details regarding the location, nature, and extent of the proposed development (S38).</li> <li>» Requires the compilation of a Conservation Management Plan as well as a permit from SAHRA for the presentation of archaeological sites as part of</li> </ul>	South African Heritage Resources Agency	An HIA and PIA has been undertaken as part of the Basic Assessment Process to identify heritage sites.(See Appendix D2)

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
National Environmental Management: Biodiversity Act (Act No 10 of 2004)	tourism attraction (S44). » Provides for the MEC/Minister to identify any process or activity in such a listed ecosystem as a threatening process (S53) » A list of threatened and protected species has been published in terms of S 56(1) - Government Gazette 29657. » Three government notices have been published, i.e. GN R 150 (Commencement of Threatened and Protected Species Regulations, 2007), GN R 151 (Lists of critically endangered, vulnerable and protected species) and GN R 152 (Threatened or Protected Species Regulations). » Provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), and vulnerable (VU) or protected. The first national list of threatened terrestrial ecosystems has been gazetted, together with supporting information on the listing process including the purpose and rationale for listing ecosystems, the criteria used to identify listed ecosystems, the implications of listing ecosystems, and summary statistics and national maps of listed ecosystems (National Environmental Management: Biodiversity Act: National list of ecosystems that are threatened and in need of protection, (G 34809, GN 1002), 9 December 2011). » This Act also regulates alien and invader species.	Department of Environmental Affairs	As the applicant will not carry out any restricted activity, as is defined in S1 of the Act, no permit is required to be obtained in this regard.  Specialist flora and fauna studies have been undertaken as part of the Basic Assessment Process. As such the potentially occurrence of critically endangered, endangered, vulnerable, and protected species and the potential for them to be affected has been considered.

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<ul style="list-style-type: none"> <li>» Under this Act, a permit would be required for any activity which is of a nature that may negatively impact on the survival of a listed protected species.</li> </ul>		
<p>Conservation of Agricultural Resources Act (Act No 43 of 1983)</p>	<ul style="list-style-type: none"> <li>» Prohibition of the spreading of weeds (S5)</li> <li>» Classification of categories of weeds &amp; invader plants (Regulation 15 of GN R1048) &amp; restrictions in terms of where these species may occur.</li> <li>» Requirement &amp; methods to implement control measures for alien and invasive plant species (Regulation 15E of GN R1048).</li> </ul>	<p>Department of Agriculture</p>	<p>This Act will find application throughout the life cycle of the project. In this regard, soil erosion prevention and soil conservation strategies must be developed and implemented. In addition, a weed control and management plan must be implemented.</p> <p>The permission of agricultural authorities will be required if the Project requires the draining of vleis, marshes or water sponges on land outside urban areas.</p>
<p>National Forests Act (Act No. 84 of 1998)</p>	<p>According to this act, the Minister has declared a tree, group of trees, woodland or a species of trees as protected. The prohibitions provide that 'no person may cut, damage, disturb, destroy or remove any protected tree, or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by</p>	<p>National Department of Forestry</p>	<p>They are no protected trees in the study area.</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
National Veld and Forest Fire Act (Act 101 of 1998)	<p>the Minister’.</p> <p>In terms of S12 the applicant must ensure that the firebreak is wide and long enough to have a reasonable chance of preventing the fire from spreading, not causing erosion, and is reasonably free of inflammable material.</p> <p>In terms of S17, the applicant must have such equipment, protective clothing, and trained personnel for extinguishing fires.</p>	Department of Agriculture, Forestry and Fisheries (DAFF)	While no permitting or licensing requirements arise from this legislation, this act will find application during the construction and operational phase of the project.
Hazardous Substances Act (Act No 15 of 1973)	<p>This Act regulates the control of substances that may cause injury, or ill health, or death due to their toxic, corrosive, irritant, strongly sensitising or inflammable nature or the generation of pressure thereby in certain instances and for the control of certain electronic products. To provide for the rating of such substances or products in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, modification, disposal or dumping of such substances and products.</p> <p>Group I and II: Any substance or mixture of a substance that might by reason of its toxic, corrosive etc., nature or because it generates pressure through decomposition, heat or other means, cause extreme risk of injury etc., can be declared as Group I or Group II substance</p> <p>Group IV: any electronic product; and</p>	Department of Health	It is necessary to identify and list all the Group I, II, III, and IV hazardous substances that may be on the site and in what operational context they are used, stored or handled. If applicable, a license is required to be obtained from the Department of Health.

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	Group V: any radioactive material. The use, conveyance, or storage of any hazardous substance (such as distillate fuel) is prohibited without an appropriate license being in force.		
Development Facilitation Act (Act No 67 of 1995)	Provides for the overall framework and administrative structures for planning throughout the Republic.  S (2 - 4) provides general principles for land development and conflict resolution.	Local Municipality	The applicant must submit a land development application in the prescribed manner and form as provided for in the Act. A land development applicant who wishes to establish a land development area must comply with procedures set out in the Act.
Subdivision of Agricultural Land Act (Act No 70 of 1970)	Details land subdivision requirements and procedures. Applies for subdivision of all agricultural land in the province	Department of Agriculture	Subdivision will have to be in place prior to any subdivision approval in terms of S24 and S17 of the Act.
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)	The Minister may by notice in the <i>Gazette</i> publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment.  The Minister may amend the list by –  » Adding other waste management activities to the list. » Removing waste management activities from the	National Department of Water and Environmental Affairs  Provincial Department of Environmental Affairs (general waste)	As no waste disposal site is to be associated with the proposed project, no permit is required in this regard.  Waste handling, storage and disposal during construction and operation

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>list.</p> <ul style="list-style-type: none"> <li>» Making other changes to the particulars on the list.</li> </ul> <p>In terms of the Regulations published in terms of this Act (GN 718), A Basic Assessment or Environmental Impact Assessment is required to be undertaken for identified listed activities.</p> <p>Any person who stores waste must at least take steps, unless otherwise provided by this Act, to ensure that:</p> <ul style="list-style-type: none"> <li>» The containers in which any waste is stored, are intact and not corroded or in</li> <li>» Any other way rendered unfit for the safe storage of waste.</li> <li>» Adequate measures are taken to prevent accidental spillage or leaking.</li> <li>» The waste cannot be blown away.</li> <li>» Nuisances such as odour, visual impacts and breeding of vectors do not arise; and</li> <li>» Pollution of the environment and harm to health are prevented.</li> </ul>		<p>is required to be undertaken in accordance with the requirements of the Act, as detailed in the EMP (refer to Appendix G).</p> <p>The volumes of waste to be generated and stored on the site during construction and operation of the facility will not require a waste license (provided these remain below the prescribed thresholds).</p>
<p>National Road Traffic Act (Act No 93 of 1996)</p>	<ul style="list-style-type: none"> <li>» The technical recommendations for highways (TRH 11): "Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads" outline the rules and conditions which apply to the transport of abnormal loads and vehicles on public roads and the detailed procedures to be followed in applying for</li> </ul>	<ul style="list-style-type: none"> <li>» South African National Roads Agency Limited (national roads)</li> <li>» Provincial Department of Transport</li> </ul>	<p>An abnormal load/vehicle permit may be required to transport the various components to site for construction. These include route clearances and permits will be</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>exemption permits are described and discussed.</p> <ul style="list-style-type: none"> <li>» Legal axle load limits and the restrictions imposed on abnormally heavy loads are discussed in relation to the damaging effect on road pavements, bridges, and culverts.</li> <li>» The general conditions, limitations, and escort requirements for abnormally dimensioned loads and vehicles are also discussed and reference is made to speed restrictions, power/mass ratio, mass distribution, and general operating conditions for abnormal loads and vehicles. Provision is also made for the granting of permits for all other exemptions from the requirements of the National Road Traffic Act and the relevant Regulations.</li> </ul>		<p>required for vehicles carrying abnormally heavy or abnormally dimensioned loads.</p> <p>Transport vehicles exceeding the dimensional limitations (length) of 22m. Depending on the trailer configuration and height when loaded, some of the power station components may not meet specified dimensional limitations (height and width).</p>
Promotion of Access to Information Act (Act No 2 of 2000)	All requests for access to information held by state or private body are provided for in the Act under S11.	Department of Environmental Affairs	No permitting or licensing requirements.
Promotion of Administrative Justice Act (Act No 3 of 2000)	<p>In terms of S3 the government is required to act lawfully and take procedurally fair, reasonable, and rational decisions.</p> <p>Interested and affected parties have a right to be heard.</p>	Department of Environmental Affairs	No permitting or licensing requirements.
<b>Provincial Legislation</b>			
Northern Cape Nature Conservation Act, Act No. 9 of 2009	This Act provides for the sustainable utilisation of wild animals, aquatic biota and plants; provides for the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora;	Provincial Department of Environmental Affairs	Permitting or licensing requirements arise from this legislation for the proposed activities to be

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>provides for offences and penalties for contravention of the Act; provides for the appointment of nature conservators to implement the provisions of the Act; and provides for the issuing of permits and other authorisations. Amongst other regulations, the following may apply to the current project:</p> <ul style="list-style-type: none"> <li>» Boundary fences may not be altered in such a way as to prevent wild animals from freely moving onto or off of a property;</li> <li>» Aquatic habitats may not be destroyed or damaged;</li> <li>» The owner of land upon which an invasive species is found (plant or animal) must take the necessary steps to eradicate or destroy such species.</li> <li>» The Act provides lists of protected species for the Province.</li> </ul>		<p>undertaken for the proposed project as there are a succulent plants species on the proposed development site. A permit is required to remove the plants.</p>



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

### a) Solid waste management

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

<b>YES</b> ✓	
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If YES, what estimated quantity will be produced per month? 

± 4m <sup>3</sup>
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± 4m<sup>3</sup> of solid construction waste consisting mainly of vegetation, spoil material from clearing activities and metal and cabling off cuts. Therefore minimal quantities of packaging materials for the various components, excess concrete spillage and excess building materials will be produced on site during the construction phase. The quantity would be readily handled by contractors on site.

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

It is anticipated that construction waste will be comprised mainly of spoil material from cleaning activities as well as metal and cabling off-cuts. Non-recyclable waste will be trucked to the nearest registered waste disposal facility for appropriate disposal.

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 waste disposal facility for appropriate disposal.

Will the activity produce solid waste during its operational phase? 

	<b>NO</b> ✓
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If YES, what estimated quantity will be produced per month? 

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

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

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

Waste that does not feed into the municipal stream will be transported to the nearest landfill site.

*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 NEM:WA?  NO ✓

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

Is the activity that is being applied for a solid waste handling or treatment facility?  NO ✓

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. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

**b) Liquid effluent**

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?  NO ✓

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?  NO ✓

*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?  NO ✓

If YES, provide the particulars of the facility:

<b>Facility name:</b>			
<b>Contact person:</b>			
<b>Postal address:</b>			
<b>Postal code:</b>			
<b>Telephone:</b>		<b>Cell:</b>	
<b>E-mail:</b>		<b>Fax:</b>	

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

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**c) Emissions into the atmosphere**

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?

	NO ✓

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

If YES, the applicant must 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 pollution.
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**d) Waste permit**

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?

	NO ✓
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If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

**e) Generation of noise**

Will the activity generate noise?

	NO ✓

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:

Minimal noise will be made during construction phase by moving vehicles; this is not regarded as significant noise source/ impact and will most likely not constitute a "disturbing noise".
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### 13. WATER USE

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

<b>Municipal</b> ✓	Water board	Groundwater	River, stream, dam or lake	Other	The activity will not use water
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*Water will be used to clean the PV panels twice per annum every three months, or more frequently if deemed necessary. Water will be trucked in (i.e. likely from Umsobomvu Local Municipality) and high pressure hoses will be used to clean the panels. It is estimated that for every cleaning session 13 tankers of water will be required (i.e. where each tanker is assumed to hold 30 000 l).*

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:

Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?

	NO ✓

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

### 14. ENERGY EFFICIENCY

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

The activity will use very little of the energy it produces and is in itself an activity that is proposed to generate electricity from a cleaner alternative energy source (i.e. solar radiation).

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

The purpose of a PV installation is to utilise an alternative energy source (i.e. solar radiation) for the production of electricity. Therefore it is not required to consider any additional alternative energy sources.

**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 B and indicate the area, which is covered by each copy No. on the Site Plan.

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

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

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

YES ✓	
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If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

<b>Property description/physical address:</b>	<b>Province</b>	Northern Cape Province
	<b>District Municipality</b>	Pixley ka Seme District Municipality
	<b>Local Municipality</b>	Umsobomvu Local Municipality
	<b>Ward Number(s)</b>	Ward 2
	<b>Farm name and number</b>	The remaining extent of farm Allemans Fontein
	<b>Portion number</b>	83
	<b>SG Code</b>	C03000000000008300000

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

<b>Current land-use zoning as per local municipality IDP/records:</b>	Agriculture, used for grazing of livestock
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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	
✓	

**1. GRADIENT OF THE SITE**

Indicate the general gradient of the site.

**Alternative S1:**

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 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:

2.1 Ridgeline			2.4 Closed valley		2.7 Undulating plain / low hills	
2.2 Plateau			2.5 Open valley		2.8 Dune	
2.3 Side slope of hill/mountain			<b>2.6 Plain</b>		2.9 Seafront	


✓

✓

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

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

	<b>Alternative S1:</b>		<b>Alternative S2 (if any):</b>		<b>Alternative S3 (if any):</b>	
Shallow water table (less than 1.5m deep)		NO ✓				
Dolomite, sinkhole or doline areas		NO ✓				
Seasonally wet soils (often close to water bodies)		NO ✓				
Unstable rocky slopes or steep slopes with loose soil		NO ✓				

Dispersive soils (soils that dissolve in water)	<input type="checkbox"/>	NO ✓	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soils with high clay content (clay fraction more than 40%)	YES ✓	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any other unstable soil or geological feature	<input type="checkbox"/>	NO ✓	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
An area sensitive to erosion	YES ✓	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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).

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.

Three vegetation units could be identified:

- » Unit 1: The *Diospyros austro-africana* – *Stipagrostis obtusa* open shrublands occur on small rocky outcrops and ridges with a variable slope (sensitivity high), and are part of the Besemkaree Koppies Shrublands, and occasionally merge into the Tarkastad Montane Shrubland.
- » Unit 2: The *Ruschia intricata* – *Tragus koelerioides* dwarf shrublands cover large tracts of the study area – primarily on gently undulating plains with shallow soils, and are referred to by local farmers as 'randjiesveld' (sensitivity medium-low), and overall part of the Eastern Upper Karoo vegetation.
- » Unit 3: The *Lycium cinereum* – *Eragrostis bicolor* grasslands are situated in the

depressions east of the study area (sensitivity medium-high). These are also part of the Eastern Upper Karoo vegetation. Runoff and associated sediment and nutrients from surrounding plains accumulate here, resulting in nutrient enriched, clay-rich soils that can hold larger volumes of moisture after rains and generally support a denser grass layer. During periods of drought, however, topsoils may become excessively dry and the herb layer may recede significantly to exposes large bare patches. These areas are important as grazing areas to the livestock farmers of the region.

## 5. SURFACE WATER

Indicate the surface water present on and or adjacent to the site and alternative sites?

Perennial River		NO ✓	
Non-Perennial River	YES ✓		
Permanent Wetland		NO ✓	
Seasonal Wetland		NO ✓	
Artificial Wetland		NO ✓	
Estuarine / Lagoonal wetland		NO ✓	

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

Drainage lines occur in the proposed site but do fall within the development area of the PV panels.

## 6. LAND USE CHARACTER OF SURROUNDING AREA

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

<b>Natural area ✓</b>	Dam or reservoir	Polo fields
Low density residential	Hospital/medical centre	Filling station <sup>PH</sup>
Medium density residential	School	Landfill or waste treatment



		site
High density residential	Tertiary education facility	Plantation
Informal residential <sup>A</sup>	Church	<b>Agriculture ✓</b>
Retail commercial & warehousing	Old age home	River, stream or wetland
Light industrial	Sewage treatment plant <sup>A</sup>	Nature conservation area
Medium industrial <sup>AN</sup>	Train station or shunting yard <sup>N</sup>	Mountain, koppie or ridge
Heavy industrial <sup>AN</sup>	Railway line <sup>N</sup>	Museum
Power station	Major road (4 lanes or more) <sup>N</sup>	Historical building
Office/consulting room	Airport <sup>N</sup>	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam <sup>A</sup>	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	<b>Other:</b>

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? Specify and explain:

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

Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan)		<b>NO ✓</b>
Core area of a protected area?		<b>NO ✓</b>
Buffer area of a protected area?		<b>NO ✓</b>
Planned expansion area of an existing protected area?		<b>NO ✓</b>
Existing offset area associated with a previous Environmental Authorisation?		<b>NO ✓</b>
Buffer area of the SKA?		<b>NO ✓</b>

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

## 7. 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 Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain:

YES ✓	

The heritage specialist concluded that there are Surface scatters of Middle Stone Age stone artefacts were observed within the proposed solar energy facility area and were found to be distributed over the extent of the proposed development area. It is unlikely that the stone artefact surface scatters that occur on the exposed surface areas are positioned *in situ*, however, stone artefacts may occur between 50 – 80 cm below the surface.

The sites (AL S1-1 –AL S1-6) that were documented along the western side and between the roads that cuts through proposed development may be less disturbed by natural, human, and animal influences. These sites showed evidence of stone knapping and manufacture debris and must be protected as to avoid negative impact.

The specialist heritage report contained in **Appendix D** provides further details.

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

The palaeontologist concluded that the area is characterised by fossiliferous mudstones and sandstones. Several dolerite sills and dykes occur in the region and are often found capping hills and forming ridges. Dolerite, being of igneous origin, is devoid of fossils. In addition fossils are usually absent in the sedimentary rocks immediately adjacent to the dolerite intrusions. There is no palaeontological concern in the instances where the proposed construction is situated on dolerite, which seems to be the case for the Allemans Fontein site.

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

	NO ✓
	NO ✓

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

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

## **8. SOCIO-ECONOMIC CHARACTER**

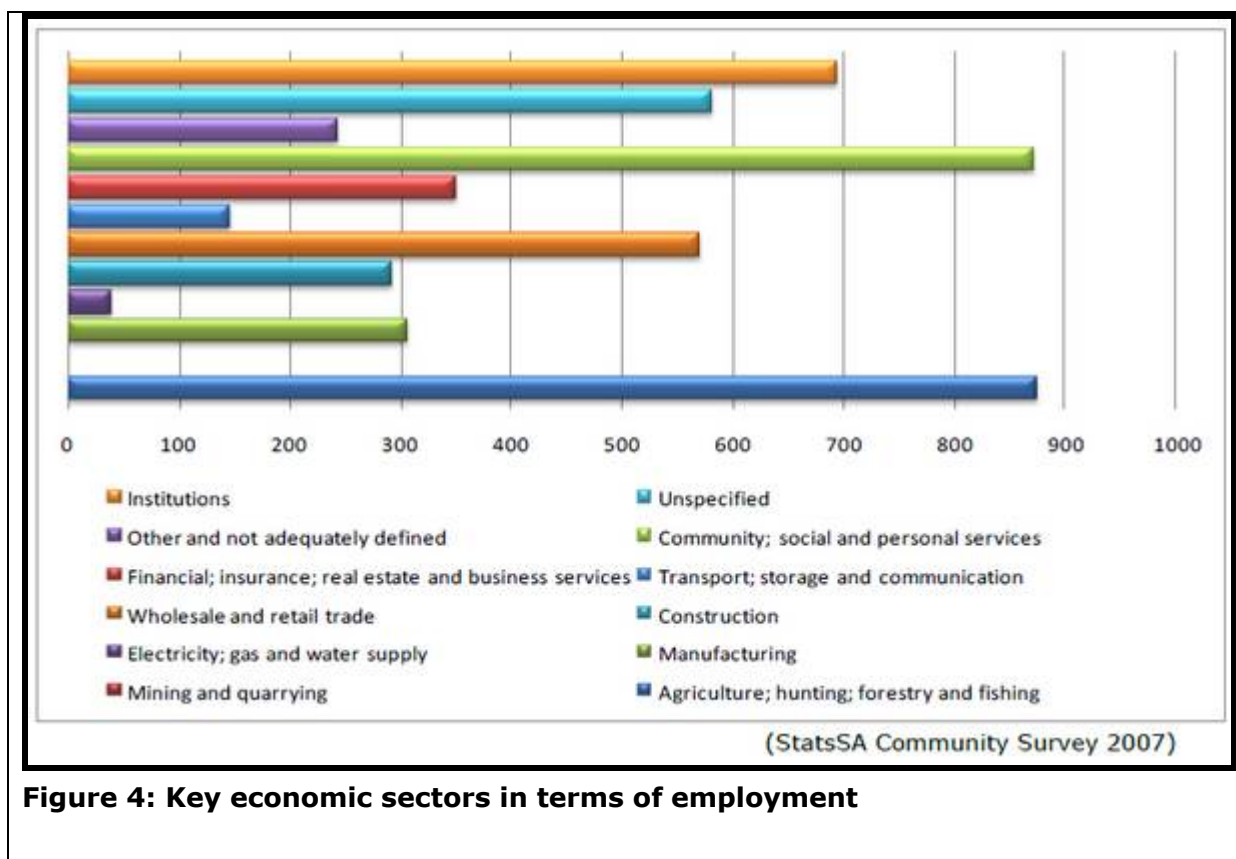
### **a) Local Municipality**

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

#### ***Level of unemployment:***

In 2001 the level of unemployment in the Umsobomvu (UM) LM was 31.12%, which decreased to 25% in 2007. The IDP indicates however, that unemployment is more than 30% in most of the areas and people survive on subsistence farming, pension/welfare payments and labour intensive jobs. The UM IDP notes the level of unemployment the high unemployment rate has serious repercussions on the ability of the residents of Umsobomvu to pay for service and meet their daily needs.

The agricultural sector is the most important sector in terms of employment, followed by the community, social and personal services including government associations and institutions (Figure 3.4). The IDP also notes that there are a large number of pensioners and retired people are in the urban areas.



**Figure 4: Key economic sectors in terms of employment**

***Economic profile of local municipality:***

The Umsobomvu Local municipality is characterised by the following:

- » High levels of poverty and low levels of education
- » Declining economy that is largely on sheep farming
- » An economy that was too dependent on Spoornet in Noupoort, which has since declined because of the withdrawal of Spoornet
- » Promising growth in tourism in Colesberg Area.
- » Rapid population growth in Colesberg because of the migration from other parts of the municipal are, which puts a heavy burden on the infrastructure.

***Level of education:***

In terms of education levels 15.1 % of the population had no education at all, while 71.3% have primary or secondary education. Those with higher educational qualification accounted for 3.7 % of the population. These figures indicate an increase in all categories since 1996, except for the no schooling category, which decreased by 4.9 % indicating a higher percentage of people attending school. In general there has been an improvement in the educational qualifications of the labour force that has a secondary and tertiary education. This would appear to be result of an increase in access to education since 1994, particular, amongst new entrants to the labour force.

**b) Socio-economic value of the activity**

What is the expected capital value of the activity on completion?	R390 million	
What is the expected yearly income that will be generated by or as a result of the activity?	R54 million/ year	
Will the activity contribute to service infrastructure?	YES ✓	
Is the activity a public amenity?		NO ✓
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	60-80	
What is the expected value of the employment opportunities during the development and construction 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?	Two	
What is the expected current value of the employment opportunities during the first 10 years?	40 000	
What percentage of this will accrue to previously disadvantaged individuals?	75%	

**9. BIODIVERSITY**

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult <http://bgis.sanbi.org> or [BGIShelp@sanbi.org](mailto:BGIShelp@sanbi.org). Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

Refer to Figure 3 in **Appendix D1**

a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)

Systematic Biodiversity		Planning	If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Category			
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA) ✓ No Natural Area Remaining (NNR)	

b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural		
<b>Near Natural (includes areas with low to moderate level of alien invasive plants) ✓</b>	<b>98%</b>	Relatively good condition
Degraded (includes areas heavily invaded by alien plants)	%	
<b>Transformed (includes cultivation, dams, urban, plantation, roads, etc) ✓</b>	<b>2%</b>	Cultivation, roads, homestead

**c) Complete the table to indicate:**

- (i) the type of vegetation, including its ecosystem status, present on the site; and
- (ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		Aquatic Ecosystems					
<b>Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)</b>	Critical	<b>Wetland (including rivers, depressions, channelled and unchannelled wetlands, flats, seeps pans, and artificial wetlands)</b>	Estuary			Coastline	
	Endangered						
	Vulnerable						
	<b>Least Threatened</b> ✓						
		<b>YES</b> ✓				<b>NO</b> ✓	<b>NO</b> ✓

**d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)**

The study area is covered by the Eastern Upper Karoo as described by Mucina and Rutherford (2006), bordering on Tarkastad Montane Shrubland on the north-eastern periphery, and with small patches of Besemkaree Koppies Shrublands (too small to have been mapped at the scale of the maps of Mucina and Rutherford 2006) within the study area.

Eastern Karoo Vegetation, in general, is a harsh environment of limited grazing potential, even more so in areas such as the study site where annual rainfall is below 200 mm and hence it is understandable that, from an economic point of view, possibilities of increasing economic returns on this piece of land are desirable.

Vegetation of the study area is, typical of the Karoo, dominated by 'bossieveld' consisting of low woody, sometimes spiny dwarf shrubs (often referred to as subshrubs). The dominant species are mostly a combination of *Phymaspermum parvifolium*, *Pentzia incana*, *Eriocephalus ericoides*, and the grass *Eragrostis lehmanniana*. On the slightly undulating plains the vegetation structure and density is relatively uniform. Towards the drainage lines, erosion becomes more prominent and vegetation is patchier, with clumps of higher shrubs being present, but large bare patches developing during periods of drought.

Vegetation here has slow and fast dynamics: the slow dynamics are caused by selective or excessive use by livestock, causing a gradual change from the more palatable 'bossies' to a dominance of more unpalatable, spiny low shrubs. The faster dynamics will happen over a period of one to several years and is driven by rainfall and

associated temperatures – the vegetation component that can drastically change from one season to the next consists of forbs – of which very few were present at the time of study – and grasses.

Three vegetation units could be identified:

- » Unit 1: The *Diospyros austro-africana* – *Stipagrostis obtusa* open shrublands occur on small rocky outcrops and ridges with a variable slope (sensitivity high), and are part of the Besemkaree Koppies Shrublands, and occasionally merge into the Tarkastad Montane Shrubland.
- » Unit 2: The *Ruschia intricata* – *Tragus koelerioides* dwarf shrublands cover large tracts of the study area – primarily on gently undulating plains with shallow soils, and are referred to by local farmers as 'randjiesveld' (sensitivity medium-low), and overall part of the Eastern Upper Karoo vegetation.
- » Unit 3: The *Lycium cinereum* – *Eragrostis bicolor* grasslands are situated in the depressions east of the study area (sensitivity medium-high). These are also part of the Eastern Upper Karoo vegetation. Runoff and associated sediment and nutrients from surrounding plains accumulate here, resulting in nutrient enriched, clay-rich soils that can hold larger volumes of moisture after rains and generally support a denser grass layer. During periods of drought, however, topsoils may become excessively dry and the herb layer may recede significantly to exposes large bare patches. These areas are important as grazing areas to the livestock farmers of the region.

The three vegetation units identified on the study area are not unique occurrences, but part of a much larger distribution of similar habitats. The vegetation survey was carried out prior to significant rains. During the time of study the majority of shrubby species was in flower and could thus be identified, but the herbaceous layer was still very poorly developed and a higher species diversity than currently recorded is expected within the study area. A detailed walk-through of the proposed footprint of the development during a period of maximum vegetation growth will thus be imperative to ensure that possibly rare and endangered species that could not be observed during this study can be either avoided or relocated.

Several plants thus far encountered on the study site are protected according to the Northern Cape Conservation Act (9 of 2009). The Conservation Authorities of the Northern Cape need to be contacted regarding any permit regulations that need to be followed regarding the above species. It is preferable that whenever any of the species need to be removed, they be replanted whenever feasible (succulents and geophytes) to sites nearby in the same type of habitat, but remaining on the same land portion.

No vertebrate fauna (avifauna excluded) of conservation concern were observed on the site during the survey. However, several bird species of conservation concern do occur in the area, most notably the Blue Crane, which was assessed in an avifaunal study. It



is expected that such animals, if present, will move off the site during construction and return once construction activities have ceased. Development will, however, not impact on the survival or breeding of amphibians, reptiles and mammals present on the site.

## SECTION C: PUBLIC PARTICIPATION

### 1. ADVERTISEMENT AND NOTICE

<b>Publication name</b>	Volksblad and De Aar Echo	
<b>Date published</b>	26 October 2012 and 02 November 2012 (Project announcement) 09 November 2012 (announcement of availability of DBAR and Public Open Day)	
<b>Site notice position</b>	<b>Latitude</b>	<b>Longitude</b>
	-31.15673	24.81955
<b>Date placed</b>	29/10/2012	

Include proof of the placement of the relevant advertisements and notices in **Appendix E1**.

### 2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 54(2)(e) and 54(7) of GN R.543.

The public consultation process has included the publishing of notices regarding the proposed project as well as the distribution of notification letters to identify I & APs. Affected and neighbouring landowners were consulted through one-on-one consultation sessions and via telephone. A public open day was held within the study area during the review period of the draft Basic Assessment report in order to provide feedback regarding the findings of the study; this was advertised in the local and regional press. All identifies I & APs were invited to attend. All identified I & APs will be invited to attend.

Key stakeholders (other than organs of state) identified in terms of Regulation 54(2)(b) of GN R.543:

<b>Title, Name and Surname</b>	<b>Affiliation/ key stakeholder status</b>	<b>Contact details (tel number or e-mail address)</b>
Christiaan Philippus	Adjacent Landowner	
Jim De Villiers	Adjacent Land Owner	
Handre Nieuwoudt	Impacted Land Owner	
Hendrikus Visser	Adjacent Land Owner	
Henk Du Toit	Adjacent Land Owner	
Andries Keun	Adjacent Land Owner	

Jim De Villiers	Adjacent Land Owner	
Anita Geldenhuis	Adjacent Landowner	
Septimus Van Dyk	Adjacent Landowner	
Fauntleroy Gillmer	Adjacent Land Owner	
Jim De Villiers	Adjacent Land Owner	
Dykie De Villiers	Adjacent Land Owner	
Colin Bowes	Adjacent Land Owner	
Jim De Villiers	Adjacent Land Owner	
Pieter Langenhoven	Adjacent Landowner	
Pam Barret	I&AP	
Suzanne Erasmus	I&AP	

Include proof that the key stakeholder received written notification of the proposed activities as **Appendix E2**. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

### 3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
SKA assessed the project location of the proposed site and determined that it is of a low risk to the SKA infrastructure because the solar energy project is more than 100 km away from the SKA project infrastructure.	Comment noted, no response required
Department of Agriculture, Forestry & Fisheries commented that the report states that there are no protected trees on-site but the ecological report states that there are protected plant species	There are no protected trees rather there are protected plant species mainly succulents and necessary permits will be applied for with the Department of Agriculture, Forestry and Fisheries.
BirdLife South Africa commented that the proposed solar farm and associated infrastructure have the potential to cause significant habitat loss, displacement and possibly mortality of avifauna	An avifaunal report for sola project near Noupoort has been conducted. The report was submitted to BirdLife. Additional comment from BirdLife is awaited.

<p>The general community of Noupoort were concerned about job prospects which the development of the solar energy facility would bring to the area.</p>	<p>The project will create employment opportunities. Approximately 60-80 jobs will be created per project during the construction phase. Twenty permanent jobs would be created during the operational phase.</p>
<p>Umsobomvu Local Municipality queried whether the proposed substation would still be constructed regardless of all the various Terra-Solar projects being developed.</p>	<p>The alternative would be to connect to the existing power line. This would, however, depend on the grid capacity and Eskom. Detailed grid integration studies are being undertaken by the developer. It is possible, that the Newgate substation to accommodate all 5 projects, therefore a new substation is proposed. At this point the aim is to secure the land for development of the substation and obtain Environmental Authorisation, in the event that is required, this is also dependent on Eskom's input.</p>

#### 4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR 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 the Final BAR as **Appendix E3**.

## 5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Title	Contact person (Name and Surname)	Tel No	Fax No	e-mail
Council for Scientific and Industrial Research	Mr.	Paul Lochner	021-888-2486		plochner@csir.co.za
Department of Agriculture, Forestry & Fisheries	Ms	Thoko Buthelezi	012-319-7634		thokob@daff.gov.za
Department of Agriculture, Forestry & Fisheries	Ms	Jacoline Mans	054-338-5909	054-334-0030	jacolinema@daff.gov.za
Department of Energy	M	The Director: Northern Cape	053-807-1752	086-562-7065	
Department of Energy		DDG: Programmes and Projects	012-406-7568		
Department of Mineral Resources	Mr	Ntsundeni Ravhugoni	053-807-1700	053-830-0827	Ntsundeni.Ravhugoni@dmr.gov.za
Department of Rural Development and Land Reform	Ms	Debbie Khan	012-312-9490	012-323-6072	dkhan@ruraldevelopment.gov.za
Department of Water Affairs	Mr	A Abrahams		053-831-4534	abrahamsa@dwa.gov.za
Department of Water Affairs	Ms.	Tocky Ngobeni	012-336-7488		ngobenit@dwa.gov.za
Eskom	Mr.	John Geeringh	011-516-7233	086-661-4064	john.geeringh@eskom.co.za
Eskom	Mr.	Andrea van Gensen	051-404-2040		andrea.vangensen@eskom.co.za
Northern Cape Department of Agriculture, Land Reform & Rural Development	Mr.	Ali Diteme	053-838-9106	053-832-4328	aditeme@agri.ncape.gov.za
Northern Cape Department of Environment and Nature Conservation	Ms.	J Mutyorauta	053-807-7431		jmutyorauta@ncpg.gov.za
Northern Cape Department of Environment and Nature Conservation	Mr	Denver van Heerden	053-807-7305	053-807-7367	jriddles@ncpg.gov.za

Northern Cape Department of Environment and Nature Conservation	Ms	Christene Pienaar	053-807-7437	053-807-7416	
Northern Cape Department of Roads and Public Works	Ms	Kholikile Nogwili	053-838-2109	053-838-2117	lucindavanwyk@ncp.gov.za
Northern Cape Department of Roads and Public Works	Mr.	Kenneth Markman	053-631-1355	053-631-1357	kenneth.markman@vodamail.co.za
Northern Cape Provincial Heritage Resources Agency	Mr.	Andrew Timothy	053-831-2537	053-833-1435	ratha.timothy@gmail.com
Northern Cape Rock Art Trust (NCRA) McGregor Museum	Ms.	David Morris	053-839-2706	053-842-1433	dmorris@inext.co.za
Pixely Ka Seme District Municipality	Mr.	Simphiwe Naude	053-631-0891	053-631-0891	
Pixely Ka Seme District Municipality	Mr.	Maccollan Jack	053-631-0891	053-631-2529	mackjack@vodamail.com
Pixely Ka Seme District Municipality	Mr.	Sandisile Madayo	053-632-9100	052-631-0105	pixley@telkomsa.net
South African Civil Aviation Authority	Mr.	Chris Isherwood	011-545-1028	011-545-1282	isherwoodc@caa.co.za
South African Heritage Resources Agency (SAHRA)	Mr.	Kathryn Smuts	021-462-4502	021-462-4509	ksmuts@sahra.org.za
South African Heritage Resources Agency (SAHRA)	Ms	Mariagrazia Galimberti	021-462-4502	021-462-4509	mgalimberti@sahra.org.za
South African National Parks	Mr.	Peter Novellie	012-426-5066		peter.novellie@sanparks.org
South African National Parks	Mr.	Paul Daphne	012-426-5066	012-343-2832	pauld@sanparks.org
South African National Roads Agency Limited	Ms.	Rene de Kock	021-957-4607	021-946-1630	Dekockr@nra.co.za
South African National Roads Agency Limited	Ms.	Colene Runkel		021-946-1630	runkelc@nra.co.za
Square Kilometre Array (SKA): South Africa	Dr.	Adrian Tiplady	011-442-2434		atiplady@ska.ac.za
Transnet	Mr.	Krishna Reddy	011-308-1065	011-308-2638	krishna.reddy@transnet.net
Umsobomvu Local Municipality	Mr.	Mzawandile Toto	049-843-1056	049-843-1947	mzwandiletoto@gmail.com
Umsobomvu Local Municipality	Mr.	MA Sestile	049-843-1165	049-843-1165	ma.sestile@webmai

					l.co.za
Umsobomvu Local Municipality	Mr.	Manne Rossouw	051-753-0574	051-753-0574	manne@umsobomvumun.co.za
Umsobomvu Local Municipality	Mr.	Ben Malherbe	051-753-0777	051-753-0574	faith@umsobomvumun.co.za
Umsobomvu Local Municipality	Cllr	Annie Fritz	049-843-1219		
Umsobomvu Local Municipality	Cllr	Amos China Mpela	051-753-0777	051-753-1918	
Wildlife and Environment Society of South Africa (WESSA)	Ms	Suzanne Erasmus	053-839-2717	053-842-1433	wessanc@yahoo.com

Include proof that the Authorities and Organs of State received written notification of the proposed activities as **Appendix E4**.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

## 6. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for any activities (linear or other) 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. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

**See Appendix E5**

A list of registered I&APs must be included as **Appendix E5**.

Copies of any correspondence and minutes of any meetings held must be included in **Appendix E6**.



**SECTION D: IMPACT ASSESSMENT**

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

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

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts 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. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A (2) of this report.

Activity	Impact summary	Significance	Proposed mitigation
<b>Alternative 1 (preferred alternative)</b>			
Construction of PV array, access roads and associated infrastructure.	<p><b>Direct impacts:</b></p> <p><b>Ecology</b></p> <ul style="list-style-type: none"> <li>» Loss of vegetation, increase in runoff and erosion through upgrading of access road.</li> <li>» Loss of vegetation and living soil crusts, loss of and alteration of microhabitats, altered vegetation cover, altered distribution of rainfall and resultant runoff patterns, increase in runoff and</li> </ul>	Medium-Low	<ul style="list-style-type: none"> <li>» Make use of existing tracks as far as possible</li> <li>» Ensure an adequate plant search and rescue program prior to commencement of activity</li> <li>» Minimise area affected, especially during construction</li> <li>» Use topsoils removed for redistribution outside the lowest borders of the development to stop erosion off the cleared areas</li> </ul>

Activity	Impact summary	Significance	Proposed mitigation
	<p>accelerated erosion during construction and operation of PV panels.</p> <ul style="list-style-type: none"> <li>» Loss of vegetation, loss of micro-habitat, increase in runoff and erosion, window of opportunity for the establishment of alien invasive species, absence of living soil crusts, altered topsoil characteristics with low moisture infiltration capacity and increased runoff during fencing area of the area.</li> <li>» Loss of vegetation, increase in runoff and erosion during the construction of power line to substation.</li> <li>» Potential collision and electrocution of the blue cranes species found in the area with overhead power line.</li> </ul>		<ul style="list-style-type: none"> <li>» Remove and collect all succulent and bulbous plants from cleared areas and transplant onto the newly redistributed topsoils</li> <li>» Ensure bird-friendly tower designs are implemented to minimise the risk of electrocutions. Fit overhead power lines with appropriate flappers to increase the visibility thereof to avifauna. Notes of electrocution and collision events must be sent to a qualified Ornithologist for the recommendation of further mitigation measures if necessary.</li> <li>» Install bird diverters on the power line.</li> </ul>
	<p><b>Indirect impacts:</b></p> <ul style="list-style-type: none"> <li>» Ecological degradation/loss of and ecological integrity.</li> </ul>	Medium	<ul style="list-style-type: none"> <li>» Prevent pollution of the environment;</li> <li>» Re-establish vegetation where possible and in so doing increasing habitat capabilities;</li> <li>» Implement an invasive/exotic species eradication programme.</li> </ul>
	<p><b>Cumulative impacts:</b></p> <ul style="list-style-type: none"> <li>» Possible erosion of areas lower than the access road, possible contamination of lower-lying drainage lines due to oil or other spillage.</li> </ul>	Low-Medium	<ul style="list-style-type: none"> <li>» Cumulative impacts of developments on population viability of species can be reduced significantly if new developments are kept as close as possible to existing developed areas or, where such is not possible, different</li> </ul>

Activity	Impact summary	Significance	Proposed mitigation
	<ul style="list-style-type: none"> <li>» Possible spread and establishment of alien invasive species</li> <li>» Possible excessive fragmentation and thus reduction of core habitats that may negatively influence species population viability.</li> </ul>		<p>sections of a development be kept as close together as possible. Thus new power lines should follow routes of existing servitudes if such exist, renewable energy facilities should be constructed as close as possible to existing infrastructure or substations, and if several developments are planned within close proximity, these developments should be situated as close together as possible, not scattered throughout the landscape.</p>
Placement of solar panels; underground cabling; overhead power line; additional internal access roads, and the workshop area	<p><b>Direct impacts:</b>  <b>Heritage Impacts</b></p> <ul style="list-style-type: none"> <li>» The destruction stone artefact occurrences and scatters.</li> </ul>	Medium	<ul style="list-style-type: none"> <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 and/or the South African Heritage Resources Agency (SAHRA) 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>
	<p><b>Indirect impacts:</b></p> <ul style="list-style-type: none"> <li>» Irreplaceable loss of archaeological heritage resources.</li> </ul>	Low	Same as above

Activity	Impact summary	Significance	Proposed mitigation
	<p><b>Cumulative impacts:</b></p> <ul style="list-style-type: none"> <li>» Irreplaceable loss of archaeological heritage resources.</li> </ul>	Low	Same as above
<p>Construction and operation of the PV array, access roads and associated infrastructure.</p>	<p><b>Direct impacts:</b></p> <p><b>Visual Impacts</b></p> <ul style="list-style-type: none"> <li>» Potential visual impact on the sensitive receptors in the background. (i.e. within 3km of the facility).</li> <li>» Potential visual impact on the intrinsic value and sense of place of the Noupoort region.</li> <li>» Potential visual impact of artificial lighting as a result of the activity.</li> </ul>	Low	<ul style="list-style-type: none"> <li>» Keep disturbed areas to a minimum.</li> <li>» No clearing of land to take place outside the demarcated footprint.</li> <li>» Institute a planting regime around the boundaries of the project site to shield the PV plant from any potential views onto it from the view corridors. Only indigenous plant species to be introduced and planted in such a manner and location which would not cast shadows on the PV arrays.</li> <li>» Buildings and similar structures must be in keeping with regional planning policy documents, especially the principles of critical regionalism, namely sense of place, sense of history, sense of nature, sense of craft and sense of limits.</li> <li>» Utilise existing roads and tracks to the extent possible. Where new roads are required, they should be two-track gravel roads, maintained to prevent dust and erosion.</li> </ul>
	<p><b>Indirect impacts:</b></p> <ul style="list-style-type: none"> <li>» The proposed infrastructure is of such a nature that the status quo could be regained after decommissioning of the plant.</li> </ul>	Low	Providing that the site is rehabilitated to its current state, the visual impact will also be removed.

Activity	Impact summary	Significance	Proposed mitigation
	<p><b>Cumulative impacts:</b></p> <ul style="list-style-type: none"> <li>» The introduction of the PV plant, coupled with the transmission lines and proposed substation will contribute to an increased cumulative visual impact.</li> </ul>	Medium	Provided that the footprint of the individual sites is not enlarged and their positions remain as planned, the cumulative impact of the proposed activity is regarded to be insignificant.
Construction of the PV array, access roads and associated infrastructure.	<p><b>Direct impacts:</b></p> <p><b>Soil &amp; Agricultural Impacts</b></p> <ul style="list-style-type: none"> <li>» Siltation of watercourses and other natural resources downstream as a result of improper storm water management and soil erosion due to increased and concentrated water run-off</li> <li>» Dust production and dust pollution of grazing plants</li> <li>» Soil erosion on construction sites during and after the construction phase due to decreased vegetation cover and increased water run-off</li> </ul>	Medium-Low	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, techniques 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 stormwater run-off. Rehabilitate construction sites by establishing it with indigenous grasses.
	<p><b>Indirect impacts:</b></p> <p>Limited with the necessary mitigation in place</p>	Low	See mitigation of direct impacts
	<p><b>Cumulative impacts:</b></p> <ul style="list-style-type: none"> <li>» The site is located outside wetland areas, but runoff does accumulate on lower-lying areas where it may remain without draining further after smaller rainfall events. During such time soils of these</li> </ul>	Low	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, techniques should be employed to keep the soil covered by other means, i.e. straw, mulch, erosion control mats, etc., until a healthy

Activity	Impact summary	Significance	Proposed mitigation
	clay-rich valleys become almost marshy and impossible to cross by vehicle, until the soils have dried out again.		plant cover is again established.
<b>Construction phase</b> (Including all related infrastructure such as transmission lines, access roads, office and warehouse components) and <b>Operational phase</b>	<p><b>Direct impacts:</b></p> <p><b>Positive social impacts:</b></p> <ul style="list-style-type: none"> <li>» Creation of employment and business opportunities (Based on information from the developer 2 fulltime and 18 part time employment opportunities for the 20 year life of the project). The operational phase will also create opportunities for skills development and training.</li> <li>» Benefits associated with the establishment of a local community trust;</li> <li>» The establishment of renewable energy infrastructure.</li> </ul> <p><b>Potential negative impacts:</b></p> <ul style="list-style-type: none"> <li>» The visual impacts and associated impact on sense of place</li> <li>» Influx of construction workers employed on the project;</li> <li>» Increased risk of stock theft, poaching and damage to farm infrastructure associated with construction workers;</li> <li>» Increased risk of veld fires associated with construction related activities;</li> <li>» Impact of heavy vehicles, including</li> </ul>	Low	<ul style="list-style-type: none"> <li>» Where possible, Allemans Fontein Solar Energy should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically semi and low-skilled job categories. This will reduce the potential impact that this category of worker could have on local family and social networks;</li> <li>» Maximise the use of local labour for low – semi skilled jobs far as possible.</li> </ul>

Activity	Impact summary	Significance	Proposed mitigation
	damage to roads, safety, noise and dust; » Loss of agricultural land associated with construction related activities.		
	<p><b>Indirect impacts:</b></p> » 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.	Low	The developer should implement a training and skills development programme for locals during the first 5 years of the operational phase. The aim of the programme should be to maximise the number of South African's and locals employed during the operational phase of the project.
	<p><b>Cumulative impacts:</b></p> » The development of additional renewable energy facilities in the region may serve to increase the potential for job creation. » Impacts on family and community relations that may, in some cases, persist for a long period of time. Also in cases where unplanned / unwanted pregnancies occur or members of the community are infected by an STD, specifically HIV and or AIDS, the impacts may be permanent and have long term to permanent cumulative impacts on the affected individuals and/or their families and the community.	Low	» Attention should be given to the extension and improvement of the existing HIV/Aids awareness programmes.

Activity	Impact summary	Significance	Proposed mitigation
During construction, operation and maintenance activities	<p><b>Avifaunal Impacts</b></p> <p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>» Destruction of Blue Crane habitat during construction</li> <li>» Disturbance of Blue Cranes during construction and maintenance</li> <li>» Collision of Blue Cranes with overhead power lines</li> </ul>	Low	<ul style="list-style-type: none"> <li>» Micro siting of infrastructure to avoid sensitive areas. This should be achieved through an avifaunal walk through as part of the site specific EMP. Strict control of machinery, staff and equipment to ensure no unnecessary damage to vegetation</li> </ul>
	<p><b>Indirect impacts:</b></p> <p>Blue Crane species migrating to other areas</p>	Low	<ul style="list-style-type: none"> <li>» Avoid sensitive areas of site as identified in the avifaunal walk through as part of the site specific EMP.</li> <li>» Avoid sensitive areas of site as identified in the avifaunal walk through as part of the site specific EMP.</li> </ul>
	<p><b>Cumulative impacts:</b></p> <p>Could be quite substantial if more projects are built in the same area. Collectively these facilities could remove quite a lot of habitat from the area. However on a landscape level this is still not believed to be significant in this area.</p>	Low-Medium	
<b>Alternative 2</b>			
	<i>Direct impacts:</i>		



Activity	Impact summary	Significance	Proposed mitigation
	<i>Indirect impacts:</i>		
	<i>Cumulative impacts:</i>		
<b>Alternative 3</b>			
	<i>Direct impacts:</i>		
	<i>Indirect impacts:</i>		
	<i>Cumulative impacts:</i>		
<b>No-go option</b>			
Construction, operation and decommissioning phase of the solar energy facility	<p><b>Direct impacts:</b></p> <p>The negative impacts for the project include:</p> <ul style="list-style-type: none"> <li>» Clearing of natural vegetation for the proposed footprint area, increasing the potential for soil erosion, deterioration of the biotic, abiotic and economic properties of soil, and the long-term loss of natural vegetation;</li> <li>» Possible destruction of stone artefact occurrences and scatters. That are scattered over the extent of the proposed Allemans Fontein Solar Energy Facility area and within the existing site access that is proposed to be used as the access road for the project.</li> </ul>	Low	None

Activity	Impact summary	Significance	Proposed mitigation
	<p>The positive impacts for the project include:</p> <ul style="list-style-type: none"> <li>» 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.</li> <li>» 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.</li> <li>» Employment creation: The sale, development, installation, maintenance, and management of renewable energy facilities have significant potential for job creation in South Africa.</li> <li>» Acceptability to society: Renewable energy offers a number of tangible benefits to society including reduced pollution concerns, improved human, and ecosystem health.</li> <li>» Support to a new industry sector: The</li> </ul>		

Activity	Impact summary	Significance	Proposed mitigation
	<p>development of renewable energy offers the opportunity to establish a new industry within the South African economy.</p> <p>» 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.</p> <p>Also referred to as the 'Do nothing' option, this refers to Allemans Fontein Solar Energy (Pty) Ltd not constructing the proposed solar energy facility on the identified site. 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. There are no insurmountable environmental or social constraints that prevent the establishment of the proposed Allemans Fontein Solar Energy Facility; therefore the No-Go option is not supported.</p>		
	<p><b>Indirect impacts:</b>                      The No-Development option would represent</p>	<p>Low</p>	<p>None</p>

Activity	Impact summary	Significance	Proposed mitigation
	a lost opportunity for South Africa to supplement its current energy needs with clean, renewable energy. Given South Africa's position as one of the highest per capita producer of carbon emissions in the world, this would represent a high negative social cost.		
	<b>Cumulative impacts:</b> Contributing to further unemployment and unsustainable ways to produce electricity.	Low	None

A complete impact assessment in terms of Regulation 22(2)(i) of GN R.543 must be included as **Appendix F**.

## 2. 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.

### Alternative A (preferred alternative)

This section provides a summary of the environmental 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 following conclusions can be drawn from the studies undertaken within this Basic Assessment:

- » The overall impacts based on the **ecology** for the proposed development is low. The extent to which vegetation unit 2 and peripheries of vegetation unit 3 will be impacted on is small compared to its overall distribution, thus the planned development will not likely have a significant impact on the overall conservation status of the Eastern Upper Karoo, of which it is part. The site does not fall within critical biodiversity areas (BGIS 2012). Nevertheless, as soils are relatively erodible and vegetation slow to re-establish due to the unpredictability and general low levels of rainfall, due care should be taken to retain a basic functionality of the ecosystem, instead of creating a window of opportunity for degradation, including the establishment of alien invasive species that are up to date absent from the site. The impact of ecology will be of a medium significance. This objective should be achievable by following recommended mitigation measures contained in the EMP (Appendix G).
- » The overall impacts on **soil and agricultural potential** for the proposed site is low. The size of the site is relatively insignificant when compared to the area of the relative homogeneous farming area it represents. The possible loss of grazing capacity is also considered to be negligible. The potential impact on agricultural production and food security as a result of the proposed development of the site is therefore regarded as small. The site is relatively poor in terms of agricultural potential and is suitable for extensive grazing purposes only. The site does not consist of unique agricultural land and its conservation status is regarded as least threatened. The following is relevant:
  - \* No part of the site is currently under cultivation or has been cultivated the last ten years.

- \* There are no agricultural infrastructure (i.e. silos, irrigation lines, pivot points, channels, feeding structures, grazing camps, animal housing, farm roads, etc.) or any conservation works (i.e. contour banks, waterways, etc.) that will be interfered with.
- \* There are no watercourses or wetlands present on the site.
- \* There are no slopes in excess of 20% on the site.
- » The duplex soils present on the site are susceptible to water erosion. The necessary erosion control measures should be taken (and to be adopted in the EMP) during and after construction of infrastructure and roads in order to protect the soils against water erosion.
- » The overall impacts of the proposed facility on **heritage** resources is low. : surface occurrences of mainly Middle Stone Age (MSA) stone artefacts are distributed over the proposed Allemans Fontein Solar Energy Facility area. The surface scatters increased towards the western side of the proposed solar energy facility area that is situated near to rocky outcrops and koppies adjacent to the proposed development area. The remains of knapping / manufacture sites were documented along this area. No associated archaeological material or organic remains were documented with the stone artefact surface scatters. No other archaeological heritage remains, features or sites were observed within the area proposed for development.
- » The impacts on **palaeontology** is low. the area is characterised by fossiliferous mudstones and sandstones. Several dolerite sills and dykes occur in the region and are often found capping hills and forming ridges. Dolerite, being of igneous origin, is devoid of fossils. In addition fossils are usually absent in the sedimentary rocks immediately adjacent to the dolerite intrusions. There is no palaeontological concern in the instances where the proposed construction is situated on dolerite, which seems to be the case for the Allemans Fontein site.

Care should be given however to constructions such as access routes, construction facilities, substations, pylons and buildings which are not limited to dolerite. Although there is a high improbability that fossils would occur on the Allemans Fontein site where construction is proposed due to the underlying doleritic sills and dykes, the ECO should be aware of the possibility of fossils occurring in the mudrock and sandstone if construction is not limited to the dolerite.

- » The overall **visual impacts** of the PV panels and associated infrastructure is **low**. Due to its remoteness and separation from most sensitive receptors, all but one of the receptors is located in the background of the project. All of the **potential impacts** therefore relate to the *middle-* and *background* zone of visual influence. The visual analysis and assessment from all of these observation points found that the proposed activity is rarely visible from the relevant Observation Points. The results of the Visual Impact Assessment for the proposed Allemans Fontein Solar Energy Facility therefore found that the proposed activity will have a **low** impact from all key Observation Points.

- » The overall **social impact** of the project is likely to be of a predominantly **low significance (positive impact)** with the implementation of appropriate enhancement measures. The project will create employment and business opportunities for locals during both the construction and operational phase of the project. The majority of the potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. However, the impact on individuals who are directly impacted on by construction workers and or job seekers (i.e. contract HIV/ AIDS) was assessed to be of Medium-High negative significance. In addition, due to the low population density of the area and the relatively small size of the labour force the potential risk to local family structures and social networks are regarded as low. The establishment of a Community Trust also creates an opportunity to support local economic development in the area. The proposed development also represents an investment in clean, renewable energy infrastructure, which, given the challenges created by climate change, represents a positive social benefit for society as a whole.
- » The overall impact on **avifauna** is likely to carry **low significance** due to the limited area that is taken up by the facilities and the relative uniformity of the habitat in the broader area. It will be necessary to check for such breeding just prior to the onset of construction. It is recommended that a final avifaunal walk-through be conducted as part of the site specific EMP for the projects.

Based on the findings of the studies undertaken, in terms of environmental constraints and opportunities identified through the Environmental Basic Assessment process, no environmental impacts of high significance, and no fatal flaws were identified to be associated with the establishment of the proposed Allemans Fontein Solar Energy (Pty) Ltd and associated infrastructure.

The significance levels of the majority of identified negative impacts can generally be reduced by implementing the recommended mitigation measures. With reference to the information available at this planning approval stage in the project cycle, the confidence in the environmental assessment undertaken is regarded as acceptable.

Therefore, it is recommended that the project should be authorised. However, a number of issues requiring mitigation have been highlighted in the impact assessment (Appendix F). In response to these potential environmental impacts, environmental specifications for the management of these issues / impacts are detailed within the draft Environmental Management Programme (EMP) included within Appendix G.

**Alternative B: N/A**

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**Alternative C: N/A**

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### **No-go alternative (compulsory)**

The 'do-nothing' alternative is the option of not constructing the Allemans Fontein Solar Energy Facility on the identified site. This alternative would result in no environmental impacts on the site or surrounding area. However, failure to add the proposed electricity to the national grid would most likely result in additional consumption of fossil fuels to achieve the same level of electrical generation at other locations in the country. This is because the electricity demand in South Africa is placing increasing pressure on the country's existing power generation capacity. There is therefore a need for additional electricity generation options to be developed throughout the country.

The support for renewable energy policy is guided by the need to address climate change as well as a rationale that South Africa has a very attractive range of renewable resources, particularly solar and wind and that renewable applications are in fact the least-cost energy service in many cases - and more so when social and environmental costs are taken into account.

The generation of electricity from renewable energy in South Africa offers a number of socio-economic and environmental benefits. These benefits are explored in further detail in the South Africa Renewable Energy Feed-in Tariff (REFIT) Regulatory Guideline published by NERSA (March 2009), and include:

- » *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.
- » *Exploitation of our significant renewable energy resource:* At present, valuable national resources including biomass by-products, solar radiation and solar power remain largely unexploited. The use of these energy flows will strengthen energy security through the development of a diverse energy portfolio.
- » *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.
- » *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.
- » *Climate friendly development:* The uptake of renewable energy offers the



opportunity to address energy needs in an environmentally responsible manner and thereby allows South Africa to contribute towards mitigating climate change through the reduction of greenhouse gas (GHG) emissions. South Africa is estimated to be responsible for ~1% of global GHG emissions and is currently ranked 9<sup>th</sup> worldwide in terms of per capita CO<sub>2</sub> emissions.

- » *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 and climate friendly development.
- » *Support to a new industry sector* - the development of renewable energy offers the opportunity to establish a new industry within the South African economy.

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. In addition the Northern Cape power supply will be deprived of an opportunity to benefit from the additional generated power being evacuated directly into the Provinces' grids. **The 'do nothing alternative is, therefore, not a preferred alternative.**

## SECTION E. RECOMMENDATION OF 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.

There are no insurmountable environmental or social constraints that prevent the establishment of the proposed Allemans Fontein Solar Energy Facility. However, several sensitive areas / features (see **Figure 3**) were identified on the site and ctegroised to have high environmental sensitivity are as follow:

- » Remaining natural vegetation on low rocky ridges and out crops;
- » Drainage areas i.e. water depressions; and
- » Heritage sites

The proposed PV panels and infrastructure have been positioned to avoid the above sensitive areas (and are illustrated in **Figure 3**). The infrastructure is proposed on mainly area of medium-low ecological sensitivity, which is acceptable in terms of avoidance of sensitive environmental features and therefore avoidance of impacts.

The construction of the proposed Allemans Fontein 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:**

- » All relevant practical and reasonable mitigation measures detailed within this report and the specialist reports contained within Appendix D must be implemented.
- » The Final Environmental Management Programme (EMP) as contained within Appendix G of this report should form part of the contract with the Contractors appointed to construct and maintain the proposed solar energy facility, and will be used to ensure compliance with environmental specifications and management measures. The implementation of this EMP for all life cycle phases of the proposed

project is considered to be key in achieving the appropriate environmental management standards as detailed for this project.

- » During construction, unnecessary disturbance to habitats should be strictly controlled and the footprint of the impact should be kept to a minimum.
- » Perennial grasses which occur naturally in the area should be used to stabilise the site after it has been cleared. A mix of fast growing annual and perennial grass species could be used, which could include species such as *Cynodon dactylon* and *Cenchrus ciliaris*, which are readily available and easily established.
- » Disturbed areas should be rehabilitated as soon as possible once construction is complete in an area.
- » An on-going monitoring programme should be established to detect and quantify any alien species.
- » Identify areas of high erosion risk (drainage lines, existing problem areas). Only special works to be undertaken in these areas to be authorised by ECO and Engineer's representative (ER).
- » Access roads to be carefully planned and constructed to minimise the impacted area and prevent unnecessary degradation of soil. Special attention to be given to roads that cross steep slopes (to prevent unnecessary cutting and filling operations).
- » Erosion control measures- run-off control and attenuation on slopes (sand bags, logs), silt fences, stormwater channels and catch-pits, shade nets, soil binding, geofabrics, hydroseeding or mulching over cleared areas.
- » 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 SAHRA so that systematic and professional investigation/ excavation can be undertaken. It is also recommended that a palaeontologist should be appointed do a site visit to determine whether fossils are exposed in the area earmarked for development, prior to construction. This survey would of course be limited to a surface inspection only. In the event of fossils being uncovered during the construction phase, the ECO should photograph and record the position of fossiliferous material.
- » An application for all other permits (e.g. those with respect to protected tree species or protected plant species) must be obtained from 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 Conservation Authorities of the Northern Cape need to be contacted regarding any permit regulations that need to be followed regarding the removal of the above species. It is preferable that whenever any of the species need to be removed, they be replanted whenever feasible (succulents and geophytes) to sites nearby in the same type of habitat, but remaining on the same land portion.
- » Limit construction, maintenance, and inspection activities to dry periods.
- » Develop emergency maintenance operational plan to deal with any event of contamination, pollution, or spillages.
- » 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.
- » Locals should be provided an opportunity to be included in a list of possible local suppliers and service providers.
- » Social benefits in terms of training, skills development and the use of local labour should thus be aspired to. These skills can be transferable to other employment sectors and would result in further sustainable benefits.
- » The Umsobomvu Local Municipality and community representatives and neighbouring property owners should be kept informed of the progress, decisions taken with regards to the development and construction schedules. The establishment of a community Management and Monitoring Committee consisting of key community representatives, and representatives of the Umsobomvu Local Municipality could assist in this regard.
- » Attention should be given to the extension and improvement of the existing HIV/Aids awareness programmes.
- » Compile and implement a detailed waste management plan.
- » Compile and implement a traffic management plan.
- » Compile and implement 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 mitigation measures should also be implemented.

- » Maintenance of erosion control measures (i.e. berms).
- » Ensure bird-friendly tower designs are implemented to minimise the risk of electrocutions. Fit overhead power lines with appropriate flappers to increase the visibility thereof to avifauna. Notes of electrocution and collision events must be sent to a qualified Ornithologist for the recommendation of further mitigation measures if necessary.
- » Install bird diverters on the power line.
- » Development and implementation of a storm water management plan.
- » On-going maintenance of the facility to minimise the potential for visual impacts.
- » On-going monitoring of the site to detect and restrict the spread of alien plant species.
- » Training, skills development and the use of local labour.

Is an EMPr attached?

YES ✓	
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The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

KAREN JODAS  
NAME OF EAP

\_\_\_\_\_  
SIGNATURE OF EAP

\_\_\_\_\_  
DATE

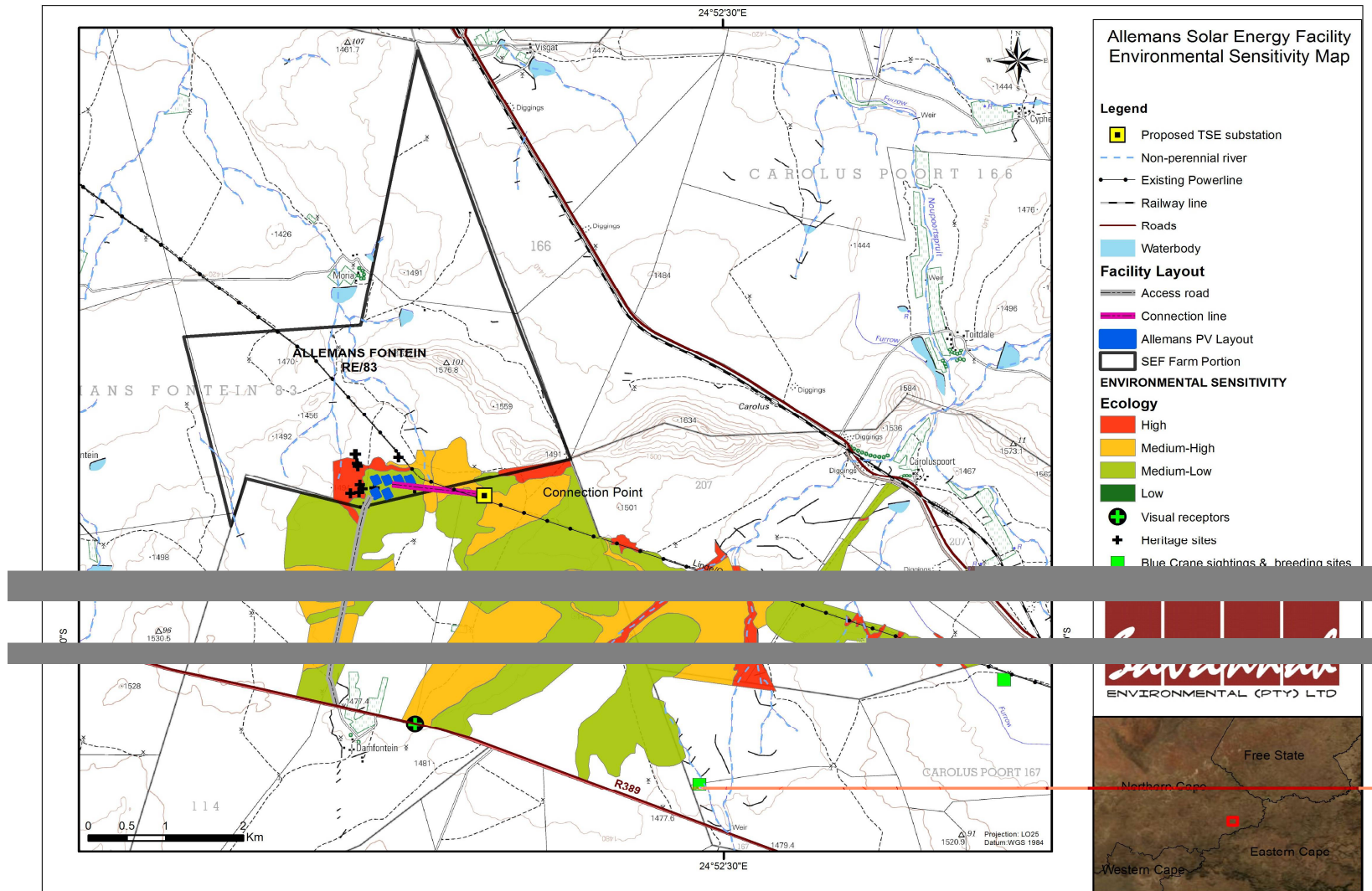


Figure 3: Allemans Fontein Sensitivity map

## **SECTION F: APPENDICES**

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information

» *J1: List of Co-Ordinates for Power Line*