ENVIRONMENTAL BASIC ASSESSMENT PROCESS
DRAFT BASIC ASSESSMENT REPORT

PROPOSED DIDA SOLAR ENERGY FACILITY, NORTHERN CAPE

DEA Ref No: 14/12/16/3/3/1/529

DRAFT FOR PUBLIC REVIEW
26 April 2012 – 28 May 2012

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environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

	(For official use only)
File Reference Number:	
Application Number:	
Date Received:	

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

Kindly note that:

1. This basic assessment report is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.

2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.

3. Where applicable tick the boxes that are applicable in the report.

4. An incomplete report may be returned to the applicant for revision.

5. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.

6. This report must be handed in at offices of the relevant competent authority as determined by each authority.

7. No faxed or e-mailed reports will be accepted.

8. The report must be compiled by an independent environmental assessment practitioner.

9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.

10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.

PROJECT DETAILS

DEA Reference No.	:	14/12/16/3/3/1/529
Title	:	Environmental Basic Assessment Process Draft Basic Assessment Report: Proposed establishment of the Dida Solar Energy Facility near Noupoort, Northern Cape
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When used as a reference this report should be cited as: Savannah Environmental (2012) Draft Basic Assessment Report: Proposed establishment of the Dida Solar Energy Facility near Noupoort, Northern Cape.

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SUMMARY AND OVERVIEW OF THE PROPOSED PROJECT

Dida Solar Energy (Pty) Ltd is proposing the development of a Photovoltaic (PV) Solar Energy Facility on a site located approximately 26 km north of Noupoort (Northern Cape Province). The project is referred to as the **Dida Solar Energy Facility**. Another project by the same developer is proposed adjacent to Dida Solar Energy Facility. Separate Basic Assessment reports have been prepared for these two solar energy facilities. However, a single public involvement process being undertaken as the sites are adjacent to one another. ***This draft Basic Assessment Report only deals with the Dida Solar Energy Facility. The Amandla Welanga Solar Energy Facility is dealt with in a separate Basic Assessment Report (DEA Ref. No: 14/12/16/3/3/1/530)[1].***

A broader area of approximately 1015 ha is being considered within which the Photovoltaic (PV) facility (i.e. the Dida Solar Energy Facility) is to be constructed. The facility will be established over an area of less than 20 ha. The Dida PV Facility is proposed on Portion 3 of the Farm Rietfontein 140. A locality map showing the extent of the site is illustrated in **Figure 1.**

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

The proposed facility would have a generating capacity of up to 20MW and would comprise:

» Arrays of photovoltaic panels;
» Cabling between the project components, to be lain underground where practical;
» Invertors and transformers (which make up the substation)
» An overhead 66 kV power distribution power line feeding into the Eskom electricity network at Fontein Substation, which is located on the adjacent Amandla Welanga site;
» Internal access roads; and
» Workshop area for maintenance and storage.

The layout of the PV panels and associated infrastructure (access road, power line and substation are shown in Figure 2).

[1] This report is also available for public review from the 26 April – 28 May 2012.

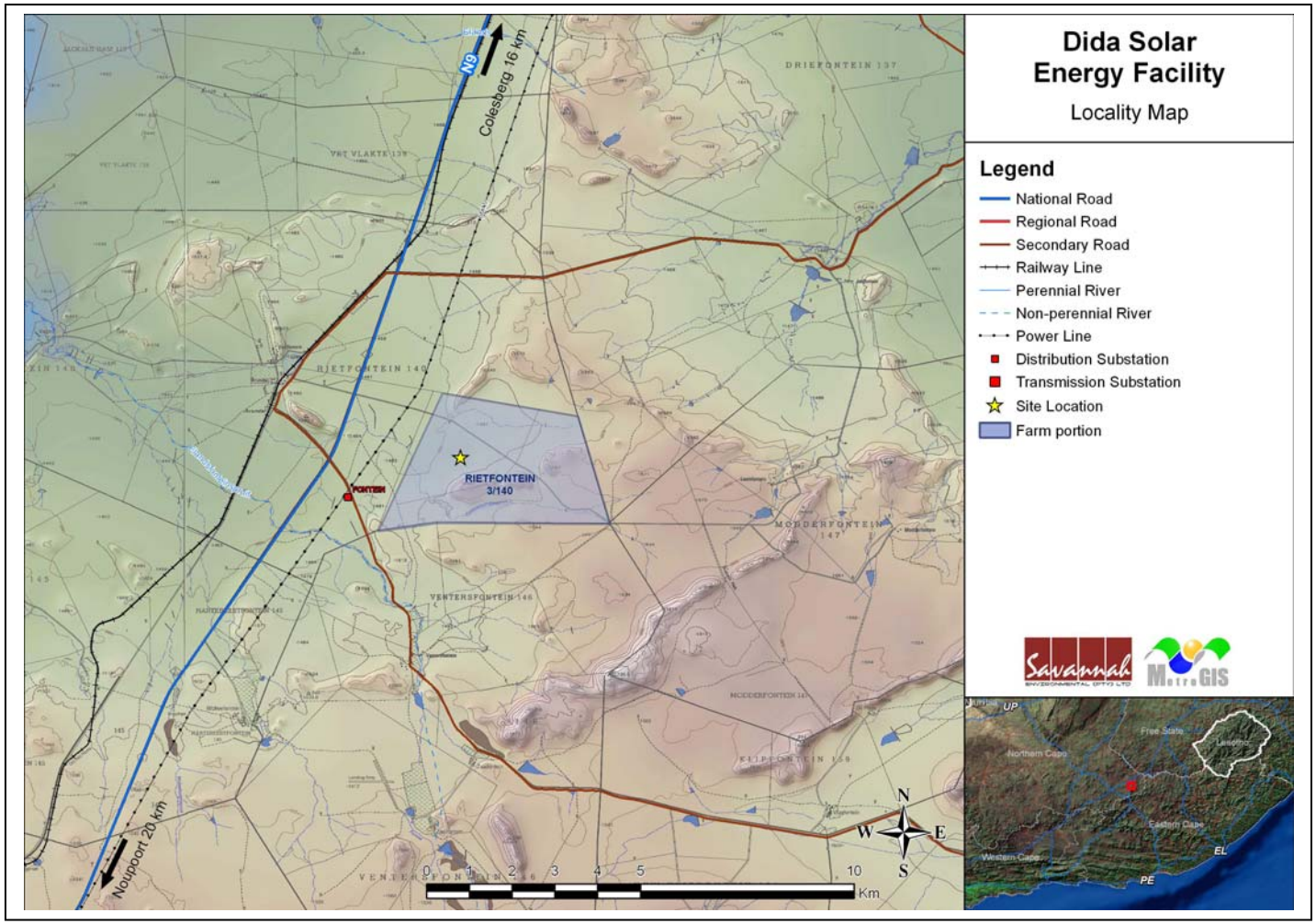

Figure 1: Locality map showing the Dida Solar Energy facility on Portion 3 of Farm Rietfontein140.

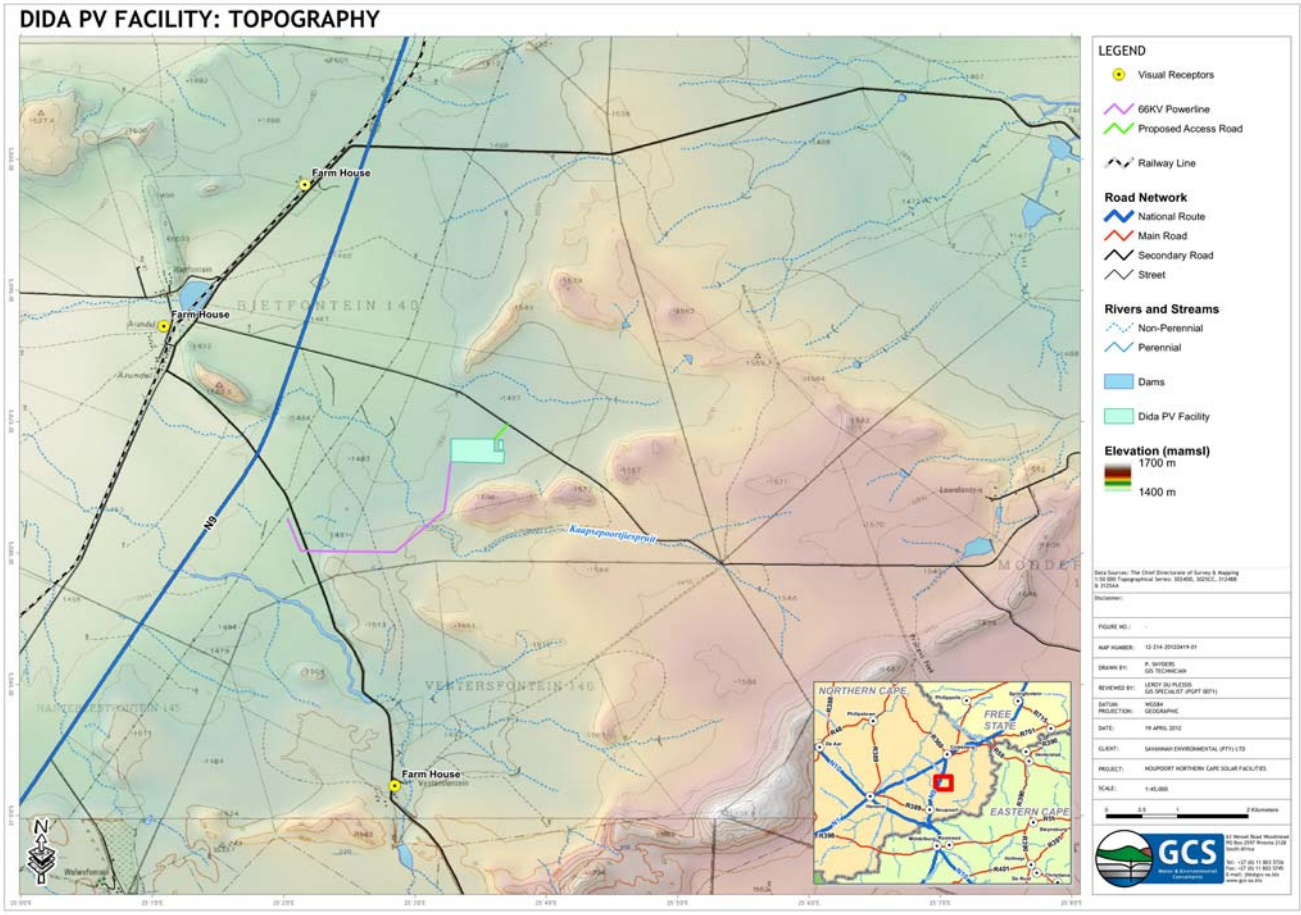

Figure 2: Topographical Map showing the layout of the proposed facility and associated infrastructure on the Portion 3 of Farm Rietfontein 140

1.1. Rationale for the Development of the Proposed Facility

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

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

1.2. Requirement for an Environmental Impact Assessment Process

In terms of the EIA Regulations of June 2010 published in terms of Section 24(5) of the National Environmental Management Act (NEMA, Act No. 107 of 1998), authorisation is required from the National Department of Environmental Affairs (DEA) as the competent authority, in consultation with the Northern Cape Department of Environment and Nature Conservation (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 14/12/16/3/3/1/529.

The following listed activities are applicable:

Relevant Notice	Activity Number	Description of the Listed Activity	Relevance
GN 544, 18 June 2010	1	The construction of facilities or infrastructure for the generation of electricity where: i. The electricity output is more than 10 MW but less than 20 MW; or ~~ii. The output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 ha.~~	The proposed facility will have a generation capacity of up to 20 MW and will be constructed over an area of 19.6 hectares.
GN 544, 18 June 2010	10	The construction of facilities or infrastructure for the transmission and distribution of electricity: i. Outside urban areas or industrial complexes with a capacity of more than 33 kV but less than 275 kV; or ~~ii. Inside urban areas or industrial complexes with a capacity of 275 kV or more.~~	The facility will require the construction of a 66 kV overhead power line that will connect to the Fontein Substation which is located on the adjacent Amandla site.
GN 544, 18 June 2010	18	The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock or more than 5 cubic metres from: i. A watercourse; ~~ii. The sea;~~ ~~iii. The seashore;~~ ~~iv. The littoral active zone, an estuary or a distance of 100 metres inland of the highwater mark of the sea or an estuary, whichever distance is the greater but excluding where such infilling, depositing , dredging, excavation, removal or moving;~~ ~~a. Is for maintenance~~	The development of the 66 kV power line will require the excavation, removal or moving of soil from a watercourse, as the power line will cross a drainage line that is located on the site

		~~purposes undertaken in accordance with a management plan agreed to by the relevant environmental authority; or~~ ~~b. Occurs behind the development setback line.~~	
GN 544, 18 June 2010	23	The transformation of undeveloped, vacant or derelict land to: ~~i. Residential, retails, commercial, recreational, industrial, or institutional use, inside an urban area, and where the total area to be transformed is 5 ah or more but less than 20 ha, or;~~ ii. Residential, retails, commercial, recreational, industrial, or institutional use, outside an urban area, and where the total area to be transformed is bigger than 1 ha but less than 20 ha.	The proposed project development site is outside an urban area and is currently undeveloped. Land will be transformed to industrial use over an area of 19.6 hectares. The developer proposes to use the special rezoning applicable to renewable energy facilities as proposed by government.
GN 546, 18 June 2010	13(c)ii	The clearance of an area of 1 ha or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation.	An area of 1 ha or more of indigenous vegetation cover will be cleared for the construction of the access road and power line.

1.3. Details of the Environmental Assessment Practitioner

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

Savannah Environmental is a specialist environmental consultancy which provides a holistic environmental management service, including environmental

assessment and planning to ensure compliance with relevant environmental legislation. Savannah Environmental benefits from the pooled resources, diverse skills and experience in the environmental field held by its team that has been actively involved in undertaking environmental studies for a wide variety of projects throughout South Africa and neighbouring countries. Strong competencies have been developed in project management of environmental processes, as well as strategic environmental assessment and compliance advice, and the assessment of environmental impacts, the identification of environmental management solutions and mitigation/risk minimising measures.

The proposed project team members from Savannah Environmental include:

» *Karen Jodas* who will be the project manager responsible for planning, programming, and overseeing of the EIA process. Karen has 15 years experience in conducting EIAs and in EIA project management.
» *Marinus Boon* who will be the EAP responsible for preparation of the EIA reports and assessment of environmental aspects. Marinus has Bachelor of Science degree in Environmental Management and has 4 years' experience in the environmental field and the impacts of construction on the environment.
» 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.

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

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

SECTION A: ACTIVITY INFORMATION

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

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

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail[2]:

Dida Solar Energy (Pty) Ltd is proposing the development of the Dida Solar Energy Facility, on a site located approximately 26 km north of Noupoort (Northern Cape Province). The project is proposed on Portion 3 of Farm Rietfontein 140. The electricity generation capacity of the facility will be 15.898 MW.

Infrastructure associated with the proposed PV facility will include:

» Arrays of photovoltaic panels will be required for 20 MW);
» Mounting structures to support the PV panels;
» Cabling between the project components, to be lain underground where practical;
» Invertors;
» Building a 66 kV overhead power line (up to 3.2 km in length) to connect into the existing Fontein substation which is located on the Amandla Welanga site;
» Internal access roads; and
» Office building / workshop.

These components of the PV Facility is discussed in more detail below:

» **Photovoltaic panels**: A photovoltaic (PV) cell is made of silicone which acts as a semiconductor used to produce the photovoltaic effect. Individual PV cells are linked and placed behind a protective glass sheet to form a photovoltaic panel.
» **The Support Structure:** The PV panels will be fixed to a support structure set at an angle so to receive the maximum amount of solar radiation. The angle of the panel is dependent on the latitude of the proposed facility and the angles may be adjusted to optimise for summer or winter solar radiation characteristics.
» **Cables** between the PV panels: Underground cables from the arrays of panels will feed into the invertors.
» **Inverters:** The photovoltaic effect produces electricity in direct current. Therefore an inverter must be used to change it to alternating current. Approximately 16 inverters will be required for the 20 MW facility.
» One 66kV **overhead power line** (3.2 km in length).
» Internal access **roads** (between 3 – 4m wide, 300m).
» **Office** / Workshop: The workshop area (0.1 ha, 13-20m long, 6-12m wide, 3m

[2] Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description.

high) will be used for storage and employees during the operational life of the facility.

A summary of the technical specification of the PV Facility is shown below.

PV Technology	**poly-crystalline**
Installed capacity	~16 MW
Panel Dimensions	1.67 x 1m (230Wp)
Number of Panels	69 120
Number of inverters	16
Main Transformer capacity	9 x 1.6 MVA
Final Height of installed panels from ground level	3-4 m
Height of inverters	2.5 m
Height of Transformers	2.5 m
Height of Buildings	3 m
Height of Fencing	2 m
Total area used for the plant	**~19.54 Hectares**

The PV panels are designed to operate continuously for more than 20 years, unattended and with low maintenance. An image of a PV facility is shown in **Figure 3**:

Figure 3: Illustration of a photovoltaic solar energy facility

1.2 Construction of a 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, a site survey and, survey of substation site and road servitudes.

b) Establishment of Access Roads to the Site

Access to the site (directly from the N9 onto gravel farm access roads) 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. A 300m access road to connect to the existing farm road north-west of the facility is proposed. 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. 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)[3] 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 and Construct Substation & Inverters

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

[3] A permit will be required for the transportation of these abnormal loads on public roads.

Inverters will be installed to facilitate the connection between the solar energy facility and the Eskom electricity grid via the Fontein substation (which is located on the site). The position of the inverters is shown in Figure 2.

g) Establishment of Ancillary Infrastructure (Power line, on site substation and office)

Ancillary infrastructure includes an overhead power line feeding into the Eskom electricity network via the Fontein Substation, workshop, storage areas as well as a temporary contractor's equipment camp. The proposed grid connection is an overhead power line to connect to the existing Fontein Substation which is located 3.2 km away on the neighbouring farm portion. *Note that the final grid connection will depend on Eskom.*

A 66kV overhead power line will be erected to connect the facility to the Fontein substation which is located south-east of the facility. The length of the power line will be 3.2 km. The following route is proposed: from the facility it will follow a route 180m south from the south-western corner of the facility, where after it will turn south west for 80 m. In this section it will cross the water course which form part of the channel of the Kaapsepoortjiespruit. The power line will turn west for 270m where after it will turn north westfor 80 m to connect to the 66kV Fontein substation.

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.

1.3 Operation Phase

The electricity that is generated from the PV panels will be stepped up through the on-site inverters and feed into the Eskom Fontein Substation which is located 3.2 km away on the neighbouring farm portion, 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 m3/wash cycle, 1-2 times per annum will be required during operations for cleaning the PV panels. Dida Solar Energy is looking into purchasing water from the Umsombuvo 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).

1.4 Decommissioning Phase

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 eland-use of the facility.

2. FEASIBLE AND REASONABLE ALTERNATIVES

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

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

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

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

Site Alternative

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 site alternatives is not possible. This specific site has been selected based on the following preferences:

» The solar resource (i.e. the Daily Direct Normal Irradiance for the town of Noupoort is 7.21 kw/h);
» Site access (i.e. the site is easily accessible from the N9 to Noupoort, and then via a secondary gravel road which passes the Fontein Substation);
» Site slope and topography; (i.e. the site proposed 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
» Access to the national electricity grid for power evacuation (i.e overhead power line will convey the power from the PV units, through the transformers, to the switchgear and directly to the Fontein Substation) across a distance of approximately 3.2 km.

As such, no site alternatives have been proposed for the establishment of the proposed solar energy facility.

Activity Alternative

Very few technological options exist in as far as PV technologies are concerned; those that are available are usually differentiated by weather and temperature conditions that prevail – so that optimality is obtained by the final choice. The impacts of any of the PV technology choices are the same. Therefore, the choice of technology does not affect the environmental impact of the proposed development. The construction, operation and decommissioning of the facility will also be the same irrespective of the technology chosen. Therefore, no alternatives were assessed in this regard.

Layout Alternatives

The layout has considered environmental sensitivities. As such the preliminary layout has avoided these areas as far as possible.

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.

3. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy.

The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

List alternative sites, if applicable.

Alternative:	**Latitude (S):**		**Longitude (E):**	
Alternative S1[4]	30°	57'13.72"	25°	3'27.02"
Alternative S2 (if any)				
Alternative S3 (if any)				

In the case of linear activities:

The co-ordinates for the 66 kV power line are provided below

Dida Power line:	**Latitude (S):**		**Longitude (E):**	
• Starting point of the activity	30°	57.308'	25°	3.277'
• Additional point of the activity 1	30°	57.682'	25°	3.223'
• Additional point of the activity 2	30°	57.992'	25°	2.849'
• Additional point of the activity 3	30°	57.980'	25°	2.134'
• End point of the activity	30°	57.747'	25°	2.032'

Alternative S2 (if any)

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

Alternative S3 (if any)

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

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

4. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:	**Size of the activity:**
Alternative A1[5]	~196 000 m^2
Alternative A2 (if any)	m^2
Alternative A3 (if any)	m^2

[4] "Alternative S." refers to site alternatives

[5] "Alternative A." refers to activity, process, technology or other alternatives.

Or, for linear activities:

Alternative:	
Alternative A1	m
Alternative A2 (if any)	m
Alternative A3 (if any)	m

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

Alternative:	**Size of the site/servitude:**
Alternative A1	m^2
Alternative A2 (if any)	m^2
Alternative A3 (if any)	m^2

5. SITE ACCESS

Does ready access to the site exist?	**YES✓**
If NO, what is the distance over which a new access road will be built	m

Describe the type of access road planned:

The access road will be from the N9 along the already existing dirt road leading to Arundel and Bosberg, and to the Eskom Fontein Substation. A new access road of 300m will be constructed from the existing gravel road.

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

6. SITE OR ROUTE PLAN

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

The site or route plans must indicate the following:

6.1 The scale of the plan which must be at least a scale of 1:500;
6.2 The property boundaries and numbers of all the properties within 50 metres of the site;
6.3 The current land use as well as the land use zoning of each of the properties adjoining the site or sites;
6.4 The exact position of each element of the application as well as any other structures on the site;
6.5 The position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
6.6 All trees and shrubs taller than 1.8 metres;
6.7 Walls and fencing including details of the height and construction material;
6.8 Servitudes indicating the purpose of the servitude;

6.9 Sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):

- Rivers;
- The 1:100 year flood line (where available or where it is required by DWA);
- Ridges;
- Cultural and historical features;
- Areas with indigenous vegetation (even if it is degraded or invested with alien species);

6.10 For gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and

6.11 The positions from where photographs of the site were taken.

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

7. SITE PHOTOGRAPHS

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

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

8. FACILITY ILLUSTRATION

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

A facility illustration which represents a realistic image of the planned solar energy facility is attached within **Appendix C**.

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	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 phase of the activity?	60-80	

What is the expected value of the employment opportunities during the development phase?	This will become known after an initial total price has been calculated for the project.
What percentage of this will accrue to previously disadvantaged individuals?	The developer will, as far as possible, ensure maximum opportunities are given to the local community to participate in the construction phase
How many permanent new employment opportunities will be created during the operational phase of the activity?	Two
What is the expected current value of the employment opportunities during the first 10 years?	40000
What percentage of this will accrue to previously disadvantaged individuals?	75%

9(b) Need and desirability of the activity

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

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

DESIRABILITY:			
1.	Does the proposed land use / development fit the surrounding area?	**YES✓**	[redacted]
2.	Does the proposed land use / development conform to the relevant structure plans, SDF, and planning visions for the area?	**YES✓**	[redacted]
3.	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	**YES✓**	[redacted]
4.	If the answer to any of the questions 1 - 3 was NO, please provide further motivation / explanation:		
5.	Will the proposed land use / development impact on the sense of place?	[redacted]	**NO✓**
6.	Will the proposed land use / development set a precedent?	[redacted]	**NO✓**

7.	Will any person's rights be affected by the proposed land use / development?		**NO✓**
8.	Will the proposed land use / development compromise the "urban edge"?		**NO✓**
9.	If the answer to any of the question 5 - 8 was YES, please provide further motivation / explanation.		

BENEFITS:			
1.	Will the land use / development have any benefits for society in general?	**YES✓**	
2.	Explain:		
	The evacuation of additional power into the Eskom grid will serve to increase the country's energy mix and the stability of the grid for the immediate area.		
3.	Will the land use / development have any benefits for the local communities where it will be located?	**YES✓**	
4.	Explain:		
	Job opportunities, albeit limited, will be created during the construction (i.e. 60-80) and operation (i.e. 2 permanent and 18 semi-permanent) of the proposed facility.		

10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline:	**Administering authority**:	**Date**:
National Environmental Management Act (Act No. 107 of 1998)	» National Department of Environmental Affairs » Northern Cape Department of Environment and Nature Conservation Tourism	1998
National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	» National Department of Environmental Affairs	2004
National Environmental Management: Waste Act (Act No. 59 of 2008)	» National Department of Water Affairs » Northern Cape Department of Environment and Nature Conservation	2008
National Water Act (Act No. 36 of 1998)	» National Department of Water Affairs » Northern Cape Department of Water Affairs	1998

Environment Conservation Act (Act No. 73 of 1989)	» National Department of Environmental Affairs » Northern Cape Department of Environment and Nature Conservation » Local Authority	1989
Minerals and Petroleum Resources Development Act (Act No. 28 of 2002)	» Department of Minerals and Energy	2002
National Heritage Resources Act (Act No. 25 of 1999)	» South African Heritage Resources Agency	1999
National Forests Act (Act No. 84 of 1998)	» National Department of Agriculture, Forestry & Fisheries	1998
National Veld and Forest Fire Act (Act 101 of 1998)	» Department of Forestry	1998
Government Notice No. 1477 of 2009: Draft National List of Threatened Ecosystems	» Northern Cape Department of Environment and Nature Conservation.	2009
Subdivision of Agricultural Land Act (Act No. 70 of 1970)	» National Department of Agriculture, Forestry & Fisheries	1970
Hazardous Substances Act (Act No. 15 of 1973)	» Department of Health	1973
National Road Traffic Act (Act No 93 of 1996)	» South African National Roads Agency Limited (national roads) » Provincial Department of Transport	1996
Development Facilitation Act (Act No 67 of 1995)	» Local and District Municipality	1995
Promotion of Access to Information Act (Act No. 2 of 2000)	» National Department of Environmental Affairs	2000
Promotion of Administrative Justice Act (Act No. 3 of 2000)	» National Department of Environmental Affairs	2000
Guideline Documents		
Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads	» Provincial Department of Transport	
Provincial Planning		
Land Use Planning Ordinance 15 of 1985	» Details land subdivision and rezoning requirements and procedures	1985
Policies and White Papers		
The White Paper on the Energy Policy of the Republic of South Africa (December 1998)	» N/A	1998

The White Paper on Renewable Energy (November 2003)	» N/A	2003
The White Paper on the Energy Policy of the Republic of South Africa (December 1998)	» N/A	N/A
Miscellaneous		
Pixley Ka Seme District Municipality	» IDP	2009 - 2012

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	**YES✓**
If yes, what estimated quantity will be produced per month?	Packaging materials for the various components, excess concrete spillage and excess building materials will be produced on site during the construction phase.

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

Waste bins/skips will be place on site to collect the waste materials and these will be disposed of on a weekly/monthly basis dependent on quantities.

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

Reputable waste disposal companies will be used to dispose of the waste. These companies will be audited to ensure they dispose of waste effectively and legally.

Will the activity produce solid waste during its operational phase?	[redacted] NO✓
If yes, what estimated quantity will be produced per month?	m^3

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

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

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

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?	[redacted] NO✓

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

Is the activity that is being applied for a solid waste handling or treatment facility?	[redacted] 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.

11(b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	[redacted] NO ✓
If yes, what estimated quantity will be produced per month?	m^3
Will the activity produce any effluent that will be treated and/or disposed of on site?	[redacted] 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?	[redacted] NO ✓

If yes, provide the particulars of the facility:

Facility name:	
Contact person:	

Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	

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

11(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere? **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 emissions in terms of type and concentration:

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

11(d) Generation of noise

Will the activity generate noise? **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:

12. WATER USE

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

Municipal✓	Water board	Groundwater	River, stream, dam or lake	Other	The activity will not use water

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 Noupoort) 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 permit from the Department of Water Affairs?	**NO✓**

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

13. ENERGY EFFICIENCY

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

Not applicable.

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

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

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

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

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

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

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

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

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

Property description/physical address: Portion 3 of Farm Rietfontein 140

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

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

Current land-use zoning: Agricultural

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

Is a change of land-use or a consent use application required? **YES✓**
Must a building plan be submitted to the local authority? **YES✓**

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

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

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

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

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

Alternative S2 (if any):

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

Alternative S3 (if any):

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

2. LOCATION IN LANDSCAPE

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

Alternative S1:

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

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

4. GROUNDCOVER

Indicate the types of groundcover present on the site:

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

Alternative S1:

Natural veld - good condition[E]	**Natural veld with scattered aliens [E]✓**	Natural veld with heavy alien infestation [E]	Veld dominated by alien species [E]	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.

Ekotrust cc was appointed to undertake an ecological study for the proposed facility, refer to Appendix D1.

5. LAND USE CHARACTER OF SURROUNDING AREA

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

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

5.22 Train station or shunting yard [N]
5.23 Railway line [N]
5.24 Major road (4 lanes or more) [N]
5.25 Airport [N]
5.26 Harbour
5.27 Sport facilities
5.28 Golf course
5.29 Polo fields
5.30 Filling station [H]
5.31 Landfill or waste treatment site
5.32 Plantation
5.33 Agriculture ✓ (Grazing)
5.34 River, stream or wetland
5.35 Nature conservation area
5.36 Mountain, koppie or ridge
5.37 Museum
5.38 Historical building
5.39 Protected Area
5.40 Graveyard
5.41 Archaeological site
5.42 Other land uses (describe)

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

If any of the boxes marked with an "[AN]" are ticked, how will this impact / be impacted upon by the proposed activity?
If YES, specify and explain:
If YES, specify:

If any of the boxes marked with an "[H]" are ticked, how will this impact / be impacted upon by the proposed activity.
If YES, specify and explain:
If YES, specify:

6. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including	✓
Archaeological or palaeontological sites, on or close (within 20m) to the site?	**YES✓**

If YES, explain:

Only isolated surface scatters of Middle Stone Age stone artefacts occur within the immediate and surrounding area proposed for the development. The stone artefacts were all manufactured on a fine-grained black (hornfels or lydianite) raw material and all similarly heavily weathered and patinated. The stone artefacts comprised mostly of varying small and large flakes and miscellaneous retouched pieces. Several of the flakes showed evidence of secondary retouch and some showed evidence of edge-damage that may indicate utilisation. Some prepared core or facetted platform flakes were also identified within the proposed area. Two cores were documented within the surrounding area of the small rocky outcrop. Several stone artefacts also showed fresh flaking that may have been caused recently by trampling by domestic stock and/or human and farming activity.

It is unlikely that the stone artefacts would be in situ and are regarded as being in a secondary and out of context position as they have been washed into the exposed areas and have been disturbed by domestic animal and human activities. However, the stone artefacts that occurred between the shrubs and dense grass vegetation may be in a less disturbed position. It is also possible that stone artefact may occur below the vegetation cover between the surface and 50 – 80 cm below the ground.

Figure 3: Examples of the stone artefacts identified within the proposed development area**.**

The proposed area for development is considered as having a

medium-high cultural sensitivity, and the recommendations must be taken into consideration prior to the construction activities.

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

Briefly explain the findings of the specialist:	Isolated surface occurrences of Middle Stone Age (MSA) stone artefacts extend over the proposed Dida Solar Energy Facility area as shown in Figure 4. 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. No permit would be required in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999.

Will any building or structure older than 60 years be affected in any way?		**NO X**
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?		**NO X**

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

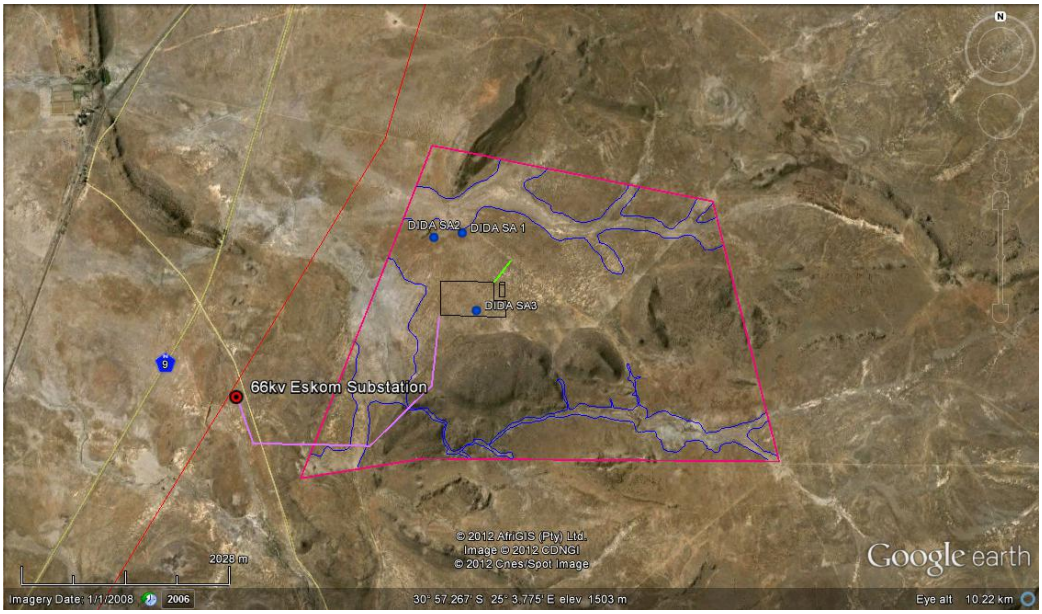

Figure 4: Stone Age Tools on the Tolle Site **(blue dots on the map)**

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENTS AND NOTICES

» A2 site notices were placed on the boundary fence of the project development site (i.e., at gates along existing access roads).
» A4 site notices were also placed at the Noupoort Municipality and at the local post office.
» A stakeholder letter was distributed to the database which included key stakeholders and organs of state relevant to the proposed project. The stakeholder letters served to announce the proposed project, and announce the review period for the draft Basic Assessment Report.
» An advert was placed in the Volksblad and the De Aar Echo to advertise the Basic Assessment process and the availability of the draft Basic Assessment Report on the 26th of April 2011.

Refer to Appendix E for proof of placement of the advertisements, site notice, and letters to stakeholders.

2. CONTENT OF ADVERTISEMENTS AND NOTICES

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

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

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

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

Advertisements and notices must make provision for all alternatives.

The proposed installation is unlikely to result in any direct impacts that extend beyond the municipal area where it is located.

The advertisement placed detailed the Basic Assessment process, the nature, and location of the proposed project, where further information on the proposed activity could be obtained and the manner in which representations on the application could be made. The advertisement also indicated the availability of the draft Basic Assessment Report for public review.

Copies of the advertisement and proof of placement is included within Appendix E.

4. DETERMINATION OF APPROPRIATE MEASURES

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

The use of a stakeholder database, stakeholder letters, advertisements, site notices, a public meeting and meeting with the local municipality was deemed adequate for the involvement of the public in the process.

5. COMMENTS AND RESPONSE REPORT

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

No issues, comments, and/or concerns have been raised to date. Any additional comments will be included in the Final BA report to be submitted to DEA within the Comments and Response Report

6. AUTHORITY PARTICIPATION

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

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

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

» DENC
» Umsobomvu Local Municipality
» Pixley ka Seme District Municipality
» Provincial Department of Agriculture, Forestry and Fisheries
» National Department of Agriculture, Forestry and Fisheries
» Provincial Department of Water Affairs
» South African National Roads Agency Limited
» Northern Cape Department of Roads and Public Works
» Northern Cape Department of Economic Development
» South African Civil Aviation Authority
» South African Heritage Resources Agency
» Northern Cape Heritage Authority

Refer to **Appendix E6** for proof of notification of these organs of state.

List of authorities from whom comments have been received:

Department of Agriculture and Forestry

7. CONSULTATION WITH OTHER STAKEHOLDERS

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

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

Potentially affected stakeholders have been identified and consulted regarding the proposed project and include inter alia: neighbouring landowners; parastatals; conservation authorities and members of the public.

A stakeholder database of is attached in Appendix E.

Has any comment been received from stakeholders?		NO✓

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

No formal comment has been received on the project to date, however consultation meetings has been held with the Noupoort community and municipality. Refer to Appendix E. for the minutes of the meetings.

SECTION D: IMPACT ASSESSMENT

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

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

. The main issues raised during public and community meetings include:

1. The need for job creation in the Noupoort area
2. The need for skills development in the Noupoort community
3. The timeline associated with the development of the project.

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

In summary the responses to points 1-3 above is as follows:

1. Regarding job creation, the developer has indicated the following jobs opportunities exists which will include local labour as far as possible:
   - Numbers of jobs that the project will create during construction – 60 – 80 jobs
   - Numbers of jobs that the project will create during operations – 10 – 20 jobs
2. The developer will commit to trying to aid in skills development by establishing a community trust. In addition, according to DoE bidding requirements the developer plans for 2% of the profit per annum from the PV facility to go back into the community through a beneficiation scheme.
3. Timeline for project implementation:
   - Bidding of the project to DoE – August 2012
   - Construction(9 month period and if preferred bidder status awarded) – 2013

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

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

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

Alternative (preferred alternative)

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

2.2. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE

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

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

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

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

S = Significance weighting
E = Extent
D = Duration
M = Magnitude
P = Probability
The **significance** weightings for each potential impact are as follows:

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

Impacts on Ecology

Vegetation of the study area is located in the Eastern Upper Karoo vegetation unit. Transformation of this vegetation type is approximately 2%. The vegetation of the proposed development area is extremely homogeneous.

No protected trees or Red Data plant species with a threatened status were found on the site during the ecological field survey. However, other plant families and species protected according to the Northern Cape Nature Conservation Act (Act No 9 of 2009) were found on the site. The species found on the Dida site include *Nemesia* sp. (Scrophulariaceae), *Moraea* sp. (Iridaceae), *Ruschia intricata* and *Trichodiodema* cf. *barbatum* of the family Aizoaceae/Mesembryanthemaceae. The protected status of various species on the site requires a permit from Northern Cape Nature Conservation in order for the plants to be removed or destroyed i.e. a permit is required before development may commence.

Black wildebeest, springbok, gemsbok and blue crane were sighted in the vicinity of the farm. Species that occur in the area for example, the blue crane, black harrier and secretary bird are listed as vulnerable, while the Ludwig's Bustard is listed as endangered. The black-footed cat is vulnerable, white-tailed mouse is endangered and the leopard is listed as near threatened.

No streams or rivers were noted in the approximately the proposed development area, however, a wetland system occurs in the broader farm portion as shown in Figure 5.

Figure 5: Wetlands in the broader farm portion

The Dida site is not situated in a protected area, and the vegetation type (Eastern Upper Karoo) in which the site is located has a Least Threatened status. In general, the proposed solar facility site is not located in a highly sensitive area since the vegetation and habitat of the site is duplicated in the surrounding environment. However, care will have to be taken not to negatively impact on the wetland which is located approximately 200m to the west and southwest of the site. Run-off from the site will have to be controlled as not to cause soil erosion or increase or decrease seepage to the wetland. It is suggested that a re-vegetation plan is compiled to ensure the return of a vegetation cover as soon as possible.

The route that the proposed power line will follow will have to cross the wetland to connect to the Fontein Substation situated in close proximity. The shortest access route from the Fontein Substation to the site is across the wetland, therefore crossing the wetland is unavoidable and mitigation measures will be required during the construction phase and a Water Use Licence will be required in terms of the National Water Act.

a) Impact tables summarising impacts on ecology

Nature: Impact of the construction phase on the natural vegetation
Construction of infrastructure will lead to a direct loss of vegetation. Removal of vegetation and the associated loss of habitat impacts on the common, endemic and Red Data species. The footprint of the proposed development in relation to the surrounding environment is small, the surrounding vegetation is relatively homogenous and no threatened plant species were found at the Dida site. Therefore, the development of the site will not have a major effect on the vegetation in the region. The protected status of several plant species requires a permit from Northern Cape Nature Conservation in order for the plants to be removed or destroyed. Permits will be required before development may commence. It is suggested that active rehabilitation of denuded areas takes place

as soon as possible in order to limit further damage to adjacent environment.		
	Without mitigation	***With mitigation***
Extent	Local (1)	Local (1)
Duration	Long-term (4)	Medium term (3)
Magnitude	Moderate (6)	Low (4)
Probability	Definite (5)	Definite (5)
Significance	**Medium (55)**	**Medium (40)**
Status	Negative	Negative
Reversibility	Partially reversible	Partially reversible
Irreplaceable loss of resources?	Partially irreplaceable	Partially irreplaceable
Can impacts be mitigated?	Low degree	
Mitigation: » Development should be contained in the proposed footprint of the solar facility and unnecessary disturbance adjacent to the site be restricted. » Rehabilitation of the denuded and disturbed site should take place as soon as possible.		
Cumulative impacts: Additional infrastructure development, for example, new power lines; the spread of alien invaders due to loss of natural vegetation; and increased water runoff leading to erosion will exacerbate the impact and lead to a loss of habitat for indigenous fauna.		
Residual impacts: Low residual impact due to the loss of a part of the vegetation type but since this vegetation unit is so large this effect is minimal.		

Nature: Impact of the construction phase on the spread of declared weeds and alien invasive plant species Declared weed and invasive plant species are found in the surrounding environment of the proposed solar facility site. Alien species include *Salsola kali*, *Amaranthus* spp., *Chenopodium* sp., *Argemone ochroleuca, Cirsium vulgare, Schkuhria pinnata* and *Datura* spp. of which some are declared weeds. The removal of the natural vegetation on the site and the associated disturbance of natural habitats provide an ideal opportunity for declared weeds and invasive species to establish. Species listed in the Conservation of Agricultural Resources Act will have to be controlled during the construction phase to limit their establishment and spread during the operational phase.		
	Without mitigation	***With mitigation***
Extent	Site & surrounds (2)	Site & surrounds (2)
Duration	Long-term (4)	Medium-term (3)
Magnitude	Moderate (6)	Low (4)
Probability	Highly probable (4)	Probable (3)
Significance	**Medium (48)**	**Low (27)**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources?	Low degree	Low degree

Can impacts be mitigated?	High degree	
Mitigation: » Development should be restricted to the proposed solar facility site and the disturbance to the surrounding vegetation be kept to a minimum. » Rehabilitate disturbed areas as soon as possible following construction of the facility. » Establish a monitoring program for the early detection and control of alien invasive plant species.		
Cumulative impacts: The establishment of declared weed and alien invasive plant species could lead to their spread into the surrounding natural vegetation and onto neighbouring properties.		
Residual impacts: Low residual impact if the declared weed and alien invader species are controlled.		

Nature: Impact of the construction phase on the fauna According to the Northern Cape Nature Conservation Act, various faunal species that could possibly occur on the Dida site are specially protected and protected fauna. Additionally, certain fauna species are Red Data listed as endangered, vulnerable or near threatened. Impacts on the fauna populations on site relate to a loss of habitat and disturbance during the construction phase. Since the surrounding environment contains the same habitat, the fauna is expected to move into these surrounding areas during construction. If some areas of natural vegetation will be left intact within the proposed development site, it is expected that some of the faunal components will return to the site once the construction phase has been completed.		
	Without mitigation	***With mitigation***
Extent (E)	Local (1)	Local (1)
Duration (D)	Permanent (5)	Long-term (4)
Magnitude (M)	Moderate (6)	Low (4)
Probability (P)	Definite (5)	Highly probable (4)
Significance (S = E+D+M)*P	**Medium (60)**	**Medium (36)**
Status (positive, neutral or negative)	Negative	Negative
Reversibility	Partially reversible	Partially reversible
Irreplaceable loss of resources?	Partially irreplaceable	Partially irreplaceable
Can impacts be mitigated?	Low degree	
Mitigation: » Limit disturbance to the proposed solar facility site and ensure that minimum disturbance takes place in the surrounding area.		
Cumulative impacts: Loss and/or disturbance of the natural vegetation and an increase in declared weed and alien invasive species could have a significantly negative impact on the faunal component.		
Residual impacts:		

Residual impacts depend on the intensity and permanence of disturbance as to whether the faunal component returns to the site and to what degree this takes place.

Nature: Impact of the construction phase on the closely situated wetland

Care should be taken to prevent any impact on the wetland to the west and south-west of the Dida site. This will imply that measures need to be implemented to prevent erosion from occurring where the vegetation has been removed for the construction of the panels. Runoff speed should be sufficiently slowed down and the amount reduced in order to limit erosion on site and along the path to the wetland.

	Without mitigation	***With mitigation***
Extent	Local (1)	Local (1)
Duration	Permanent (5)	Medium (3)
Magnitude	High (8)	Low (4)
Probability	Highly probable (4)	Probable (3)
Significance	**Medium (56)**	**Low (24)**
Status	Negative	Negative
Reversibility	Irreversible	High degree
Irreplaceable loss of resources?	Irreplaceable	Low degree
Can impacts be mitigated?	High degree	

Mitigation:

» Water runoff and infiltration from the proposed site should be controlled to limit erosion damage to the surrounding areas, including the wetland.
» Ground water usage in the vicinity of the development should be limited as not to decrease water that should migrate to the wetland.
» Conversely, additional water should not be added to the hydrological system which would negatively impact upon the wetland.
» Power line construction across the wetland should take place in the dry season in order to limit damage to the soil profile and vegetation in the wetland.

Cumulative impacts:

Soil erosion resulting from the changed/developed area will exacerbate the pressure on the hydrological processes in the region.

Residual impacts:

None, if mitigation takes place to limit/nullify the impact on the wetland.

b) Potential impacts: power line

Nature: Impact of the construction phase of the power line on the natural vegetation		
Construction of the power line will lead to a direct loss of vegetation at the footprint of the pylon sites. Removal of vegetation and the associated loss of habitat impacts on the common, endemic and Red Data species. Some disturbance of the vegetation will also be associated with the construction phase. The pylons for the power line should not be placed in the wetland area and that they in no way obstruct the flow of water, or a		
	Without mitigation	***With mitigation***
Extent	Site and surrounds (2)	Site and surrounds (2)
Duration	Long term (4)	Medium term (3)
Magnitude	Low (4)	Low (4)
Probability	Definite (5)	Highly probable (4)
Significance	**Medium (50)**	**Medium (36)**
Status	Negative	Negative
Reversibility	Low degree	Medium degree
Irreplaceable loss of resources?	Irreplaceable	Irreplaceable
Can impacts be mitigated?	Medium degree	
Mitigation: » Power lines should be placed with caution and minimum damage should occur along the route of the power line during the construction phase.		
Cumulative impacts: The development of the proposed Dida solar facility, new access roads, the spread of alien invaders due to loss of natural vegetation, and increased water runoff leading to erosion will exacerbate the impact and lead to a loss of habitat and associated indigenous fauna and flora.		
Residual impacts: Low residual impact due to the loss of a part of the vegetation type but since this vegetation unit is so large this effect is minimal. However, impact of the power line on the wetland has a large residual impact if damage to the wetland occurs during the construction phase.		

Nature: Impact of the construction of the power line on the spread of declared weeds and alien invasive plant species		
Weed species such as *Salsola kali*, *Amaranthus* spp., *Chenopodium* sp., *Argemone ochroleuca, Schkuhria pinnata* and *Datura* spp. are found on the surrounding vegetation. The removal and disturbance of the natural vegetation and associated habitats provide an ideal opportunity for declared weeds and invasive species to establish. Species listed in the Conservation of Agricultural Resources Act will have to be controlled during the construction phase to limit their establishment and spread during the operational phase.		
	Without mitigation	***With mitigation***
Extent	Site & surrounds (2)	Site & surrounds (2)
Duration	Long-term (4)	Medium-term (3)

Magnitude	Moderate (6)	Low (4)
Probability	Highly probable (4)	Probable (3)
Significance	**Medium (48)**	**Low (27)**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources?	Low degree	Low degree
Can impacts be mitigated?	High degree	

Mitigation:

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

Cumulative impacts:

The establishment of declared weed and alien invasive plant species could lead to their spread into the surrounding natural vegetation and onto neighbouring properties.

Residual impacts:

Low residual impact if the declared weed and alien invader species are controlled.

Nature: Impact of the construction of the power line on the fauna

Certain fauna species that could potentially occur on the Dida site are Red Data listed as endangered, vulnerable or near threatened. According to the Northern Cape Nature Conservation Act, various faunal species are specially protected and protected fauna. Impacts on the fauna populations on site relate to a loss of habitat and disturbance during the construction phase. The wetland provides habitat to a special suite of animal species and care should be taken not to locate the pylons for the power lines in the wetland.

Bird collisions with overhead power lines are of great concern. Threatened bird species such as Blue cranes, bustards, flamingo's and water birds are among the most affected species. This situation can be mitigated to a large degree by making the power lines more visible to the birds using various techniques. These techniques are used by Eskom on power lines in, for example, the Platberg-Karoo Conservancy close to De Aar.

	Without mitigation	***With mitigation***
Extent	Site and surrounds (2)	Site and surrounds (2)
Duration	Long-term (4)	Long-term (4)
Magnitude	Moderate (6)	Low (4)
Probability	Highly probable (4)	Probable (3)
Significance	**Medium (48)**	**Low (30)**
Status	Negative	Negative
Reversibility	Irreversible	Irreversible
Irreplaceable loss of resources?	Irreplaceable	Irreplaceable

Can impacts be mitigated?	Low degree	

Mitigation:

» Ensure that minimum disturbance takes place during construction of the power line along the route and in the surrounding area.

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

Cumulative impacts:

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

Residual impacts:

Residual impacts depend on the intensity and permanence of disturbance as to whether the faunal component returns to the site and to what degree this takes place.

Nature: Impact of the construction phase of the power line on the closely situated wetland (if power line traverses wetland)

The overhead power lines from the proposed solar facility at the Dida site to the existing power lines that feed into the Fontein Substation will traverse the wetland. The necessary precautions must be taken to limit the impact on the wetland. Heavy vehicles will impact the soil profile by sinking into the soil and creating tracks that influence hydrological processes. It is suggested that the pylons are not placed in the wetland and that vehicles do not traverse the wetland at all but drive around this sensitive area.

	Without mitigation	***With mitigation***
Extent	Local (1)	Local (1)
Duration	Permanent (5)	Medium (3)
Magnitude	High (8)	Low (4)
Probability	Highly probable (4)	Improbable (2)
Significance	**Medium (56)**	**Low (16)**
Status	Negative	Negative
Reversibility	Partially reversible	High degree
Irreplaceable loss of resources?	Partially irreplaceable	Low degree
Can impacts be mitigated?	High degree	

Mitigation:

» Limit vehicle and personnel movement in and around wetlands.

» Mark wetlands using danger tape before construction commences.

» Consider

Cumulative impacts:

Soil erosion and profile change resulting from the changed/developed area will exacerbate the pressure on the hydrological processes in the region.

Residual impacts:

None, if mitigation takes place and the power line is re-directed over another route thereby not crossing any wetland area.

c) Potential impacts: proposed access road

Nature: Impact of the construction phase of the access road on the natural vegetation and ecology Construction of the access road (300 m in length) will lead to a direct loss and disturbance of the vegetation. Removal of vegetation and the associated loss of habitat impacts on the common, endemic and Red Data species. Should the access road follow existing farm roads the footprint of the access road in relation to the surrounding environment would be small.		
	Without mitigation	***With mitigation***
Extent	Site and surrounds (2)	Site and surrounds (2)
Duration	Long term (4)	Medium term (3)
Magnitude	Moderate (6)	Low (4)
Probability	Definite (5)	Highly probable (4)
Significance	**Medium (60)**	**Medium (36)**
Status	Negative	Negative
Reversibility	Low degree	Medium degree
Irreplaceable loss of resources?	Irreplaceable	Irreplaceable
Can impacts be mitigated?	Medium degree	
Mitigation: » The access road should be placed with caution and minimum damage should occur along the route of the access road during the construction phase. » The road should be routed as not to impact on the wetland or surrounding wetlands.		
Cumulative impacts: The development of the proposed Dida solar facility, new power lines, the spread of alien invaders due to loss of natural vegetation, and increased water runoff leading to erosion will exacerbate the impact and lead to a loss of habitat and associated indigenous fauna and flora.		
Residual impacts: Low residual impact due to the loss of a part of the vegetation type but since this vegetation unit is so large this effect is minimal. However, impact of the access road on the wetland has a large residual impact if damage to the wetland takes place.		

Impacts on Geology, soils, and agricultural potential

The geology of the area is characterized by Dolerite and Beaufort Group mudstone and sandstone. The B-horizons of the soils are generally prismacutaneous and pedocutaneous with a red to non-red colour, with a medium depth (300mm to 1000mm), are well drained and apedal (without structure). The susceptibility to erosion of the soils is categorised as low to medium. The most prevalent soil forms present are Hutton, Dundee, Clovelly, Avalon, Glenrosa, Sterkspruit, Shortlands, Swartland and Valsrivier. The soil on this site is of the Clovelly form with an Ortic A horizon over a yellow-brown apedal B horizon. The A horizon is on average 100mm deep. This structureless (apedal), well-drained soil has a

medium erosion danger. The topsoil is susceptible to wind erosion, specifically with trampling and traffic.

The mean long term grazing capacity of the site is estimated at 16 ha/LSU. The best agricultural use is for grazing by sheep, goats and beef cattle. These demonstrate that the loss in agricultural potential would be low and negligible.

Figure 6: The site is relatively poor in terms of agricultural potential and are suitable for extensive grazing purposes only.

Nature: Soil erosion on the construction site during and after the construction phase due to decreased vegetation cover and increased water run-off		
	Without mitigation	***With mitigation***
Extent	Regional (2)	Local (1)
Duration	Medium-term (3)	Very short-term (1)
Magnitude	Low (4)	Low (4)
Probability	Definite (4)	Probable (3)
Significance	**Medium (36)**	**Low (18)**
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	
Mitigation: » Care must be taken with the ground cover during and after construction on the site. If it is not possible to retain a good plant cover during construction, technologies should be employed to keep the soil covered by other means, i.e. straw, mulch, erosion control mats, etc., until a healthy plant cover is again established. » Care should also be taken to control and contain storm water run-off.		
Cumulative Impacts: » Little with the necessary mitigation in place		
Residual Impacts: » Little with the necessary mitigation in place		

Nature: Increased wind erosion due to trampling effect on the topsoil by increased vehicle traffic.		
	Without mitigation	**With mitigation**
Extent	Regional (3)	Local (1)

Duration	Short-term (1)	Very short-term (1)
Magnitude	Low (4)	Minor (2)
Probability	Definite (5)	Probable (3)
Significance	**Medium (40)**	**Low (18)**
Status (positive or negative)	Negative	Negative
Reversibility	Low	High
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation: » Care should be taken to put gravel on access road surfaces to protect the soil against wind erosion, as well as construction sites.		
Cumulative Impacts: » Little with the necessary mitigation in place		
Residual Impacts: » Little with the necessary mitigation in place		

Nature: Dust pollution		
	Without mitigation	**With mitigation**
Extent	Regional (2)	Local (1)
Duration	Very short term (1)	Very short-term (1)
Magnitude	Low (4)	Minor (2)
Probability	Highly probable (4)	Highly probable (4)
Significance	**Low (28)**	**Low (16)**
Status (positive or negative)	Negative	Negative
Reversibility	Low	High
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation: » Apply dust control measures, i.e. water spraying.		
Cumulative Impacts: » Little with the necessary mitigation in place		
Residual Impacts: » Little with the necessary mitigation in place.		

Nature: Agricultural potential Loss of agricultural potential and land capability owing to the development.		
	Without mitigation	***With mitigation***
Extent	Site (1)	N/A
Duration	Permanent (5)	
Magnitude	Minor (2)	
Probability	Improbable (2)	
Significance	**Low (16)**	
Status (positive or negative)	Negative	
Reversibility	No	
Irreplaceable loss of resources?	Yes	
Can impacts be mitigated?	No	
Mitigation measures: » The loss of agricultural land is a long term loss and there are no mitigation measures that can be put in place to combat this loss. The agricultural potential is however very low.		
Cumulative impact: » None expected.		

Residual impact:
» The loss of agricultural land is a long term loss. This loss extends to the post-construction phase. The agricultural potential is however very low.

Impacts on Heritage Resources

Only isolated surface scatters of Middle Stone Age stone artefacts occurred within immediate and surrounding area proposed for the development. The stone artefacts were all manufactured on a fine-grained black (hornfels or lydianite) raw material and all similarly heavily weathered and patinated. The stone artefacts comprised mostly of varying small and large flakes and miscellaneous retouched pieces. Several of the flakes showed evidence of secondary retouch and some showed evidence of edge-damage that may indicate utilisation. Some prepared core or facetted platform flakes were also identified within the proposed area. Two cores were documented within the surrounding area of the small rocky outcrop. Several stone artefacts also showed fresh flaking that may have been caused recently by trampling by domestic stock and/or human and farming activity.

It is unlikely that the stone artefacts would be in situ and are regarded as being in a secondary and out of context position as they have been washed into the exposed areas and have been disturbed by domestic animal and human activities. However, the stone artefacts that occurred between the shrubs and dense grass vegetation may be in a less disturbed position. It is also possible that stone artefact may occur below the vegetation cover between the surface and 50 – 80 cm below the ground.

The proposed area for development is considered as having a medium-low cultural sensitivity, and the following recommendations must be taken into consideration prior to the construction activities.

Nature: The destruction stone artefacts during construction		
	Without mitigation	**With mitigation**
Extent	Local (2)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Low (4)	Low (4)
Probability	Highly Probable (4)	Probable (3)
Significance	**Medium (44)**	**Low (30)**
Status (positive or negative)	Negative	Negative
Reversibility	None	Low
Irreplaceable loss of resources?	Yes	Low
Can impacts be mitigated?	Yes	Yes
Mitigation: • If archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the Albany Museum (046 622 2312) and/or the South African Heritage Resources Agency (SAHRA) (021 642 4502) so that systematic and professional investigation/ excavation can be undertaken. • Construction managers/foremen 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.		
Cumulative impacts: • Irreplaceable loss of archaeological heritage resources.		
Residual impacts:		

- Irreplaceable loss of archaeological heritage resources.

Impacts on the visual aesthetics

Nature: Potential visual impact of construction on observers in close proximity to the proposed solar energy facility There will be a noticeable increase in heavy vehicles utilising the roads to the development site that may cause, at the very least, a visual nuisance to other road users and land owners in the area. Dust from construction work could also result in potential visual impact.		
	Without mitigation	***With mitigation***
Extent	Local (4)	Local (4)
Duration	Very short term (1)	Very short term (1)
Magnitude	Moderate (6)	Moderate (6)
Probability	Probable (3)	Improbable (2)
Significance	**Moderate (33)**	**Low (22)**
Status (positive or negative)	Negative	
Reversibility	Recoverable (3)	
Irreplaceable loss of resources?	No	
Can impact be mitigated?	Yes	
Mitigation measures: » Retain and maintain natural vegetation in all areas outside of the development footprint. » Proper planning and management of the construction site. » Ensure that vegetation is not cleared unnecessarily during the construction period. » Rehabilitation of construction areas as soon as possible once construction in an area is complete.		
Cumulative impact: » None.		
Residual impact: » None.		

Impacts on the socio-economic environment

Nature: Job creation Approximately 60-80 people are expected to be required during the construction phase (which is expected to take place over a period of 9 months) of which 25% is estimated to be low skilled/semi-skilled positions, and 75% skilled.		
	Without enhancement	***With enhancement***
Extent	Local (1)	Local (1)
Duration	Very short (2) *	Very short (2) *
Magnitude	Minor (2)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	**Low (15)**	**Low (21)**
Status (positive or negative)	Positive	
Reversibility	N/A	
Irreplaceable loss of resources?	N/A	
Can impact be enhanced?	Yes	
Mitigation measures: » Maximise the use of local labour for low – semi skilled jobs far as possible.		
Cumulative impact:		

» The development of additional renewable energy facilities in the region may serve to increase the potential for job creation.
Residual impact:
» Once the construction phase is complete, locals may not be able to find future employment. » Alternatively local employed during the construction phase may learn new skills thereby making them more employable in the future.

No Go Alternative

The 'Do-Nothing' alternative is the option of not constructing the proposed Dida Solar Energy Facility. The land-use of the facility is currently agriculture and would continue to be agricultural land if the facility is not developed. Should this alternative be selected then the socio-economic and environmental benefits of this renewable energy facility will not be realised. These benefits are explored in further detail in the South Africa REFIT Regulatory Guideline published by NERSA (March 2009), and include:

» **Increased energy security:** The current electricity crisis in South Africa highlights the significant role that renewable energy can play in terms of power supplementation. In addition, given that renewables can often be deployed in a decentralised manner close to consumers, they offer the opportunity for improving grid strength and supply quality, while reducing expensive transmission and distribution losses.
» **Resource saving:** Conventional coal fired plants are major consumers of water during their requisite cooling processes. It is estimated that the achievement of the targets in the Renewable Energy White Paper will result in water savings of approximately 16.5 million kilolitres, when compared with wet cooled conventional power stations; this translates into revenue savings of R26.6 million. As an already water-stressed nation, it is critical that South Africa engages in a variety of water conservation measures, particularly due to the detrimental effects of climate change on water availability.
» **Exploitation of our significant renewable energy resource:** At present, valuable national resources including biomass by-products, solar radiation and wind power remain largely unexploited. The use of these energy flows will strengthen energy security through the development of a diverse energy portfolio.
» **Pollution reduction:** The releases of by-products through the burning of fossil fuels for electricity generation have a particularly hazardous impact on human health and contribute to ecosystem degradation.
» **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 9th worldwide in terms of per capita CO_2 emissions.
» **Support for international agreements:** The effective deployment of renewable energy provides a tangible means for South Africa to demonstrate its commitment to its international agreements under the Kyoto Protocol, and for cementing its status as a leading player within the international community.
» **Employment creation:** The sale, development, installation, maintenance and

management of renewable energy facilities have significant potential for job creation in South Africa.

» **Acceptability to society:** Renewable energy offers a number of tangible benefits to society including reduced pollution concerns, improved human and ecosystem health and climate friendly development.

» **Protecting the natural foundations of life for future generations:** Actions to reduce our disproportionate carbon footprint can play an important part in ensuring our role in preventing dangerous anthropogenic climate change; thereby securing the natural foundations of life for generations to come.

The No-Go alternative is not preferred as South Africa needs to diversify our electricity sources, which this project will contribute to.

2.3. IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE

Impacts on Ecology

Nature: Impact of the operational phase on the natural vegetation

Vegetation will begin to recolonise denuded areas following the construction phase. Naturally occurring indigenous species will re-establish, however, invasive weed species will also colonise the area and threaten the re-establishment of the natural vegetation. Depending on the extent of the initial disturbance and the amount and types of seeds in the seed bank the re-vegetation process may be slow. During the operational phase the vegetation will have to be managed and large shrubs and trees will be prevented from establishing.

	Without mitigation	**With mitigation**
Extent	Local (1)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Low (4)	Minor (2)
Probability	Definite (5)	Definite (5)
Significance	**Medium (50)**	**Medium (40)**
Status (positive, neutral or negative)	Negative	Negative
Reversibility	Partially reversible	Partially reversible
Irreplaceable loss of resources?	Partially irreplaceable	Partially irreplaceable
Can impacts be mitigated?	Low degree	

Mitigation:

» Disturbance should be contained in the proposed footprint of the solar facility (approximately 20 ha) and unnecessary disturbance adjacent to the site be restricted.

Cumulative impacts:

The spread of declared weeds and alien invaders and increased water runoff leading to erosion will exacerbate the impact and lead to further loss of natural vegetation and habitat for indigenous fauna and flora.

Residual impacts:

None, if mitigation is successful in restricting disturbance.

Nature: Impact of the operational phase on the spread of declared weeds and alien invasive plant species

Disturbance during the construction phase will provide declared weed and invader plant species an opportunity to establish on the disturbed/denuded areas. *Salsola kali*, *Amaranthus* spp., *Chenopodium* sp., *Argemone ochroleuca, Schkuhria pinnata* and *Datura* spp. are weed species that could establish. Species listed in the Conservation of Agricultural Resources Act will have to be controlled during the operational phase of the proposed solar facility development.

	Without mitigation	**With mitigation**
Extent	Site & surrounds (2)	Site & surrounds (2)
Duration	Long-term (4)	Medium-term (3)
Magnitude	Low (4)	Low (4)
Probability	Highly probable (4)	Probable (3)
Significance	**Medium (40)**	**Low (27)**
Status (positive, neutral or negative)	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources?	Low degree	Low degree
Can impacts be mitigated?	High degree	

Mitigation:

» Disturbance should be restricted to the proposed solar facility site and the disturbance to the surrounding vegetation be kept to a minimum.
» Implement the monitoring program for the early detection and control of declared weed and alien invasive plant species.

Cumulative impacts:

The establishment of declared weed and alien invasive plant species could lead to their spread into the surrounding natural vegetation and onto neighbouring properties.

Residual impacts:

Low residual impact if the declared weed and alien invader species are controlled.

Nature: Impact of the operational phase on the fauna

The re-colonisation of the remaining natural vegetation and re-establishing vegetation on denuded areas will create habitats that can be re-colonised by the faunal component. Threatened bird species (vulnerable) that utilise habitats in the surrounding environment include the blue crane, lesser kestrel, martial and tawny eagle, Cape vulture and Kori and Ludwig's bustard.

	Without mitigation	**With mitigation**
Extent (E)	Local (1)	Local (1)
Duration (D)	Long-term (4)	Long-term (4)
Magnitude (M)	Low (4)	Minor (2)
Probability (P)	Highly probable (4)	Probable (3)
Significance (S =	**Medium (36)**	**(21)**

E+D+M)*P		
Status (positive, neutral or negative)	Negative	Negative
Reversibility	Partially reversible	Partially reversible
Irreplaceable loss of resources?	Partially irreplaceable	Partially irreplaceable
Can impacts be mitigated?	Low degree	
Mitigation: » Limit disturbance to the proposed solar facility site and ensure that minimum disturbance takes place in the surrounding area.		
Cumulative impacts: Disturbance of the surrounding natural vegetation and an increase in declared weed and alien invasive species could have a significantly negative impact on the faunal component.		
Residual impacts: Residual impacts depend on the intensity and permanence of disturbance as to whether the faunal component returns to the site.		

Nature: Impact of the operational phase on the closely situated wetland The wetland is 200m from the cloest point to the Pv facility. Runoff from the Dida solar facility could affect the hydrological processes in the landscape especially the wetland. The necessary mitigation measures will have to be taken in order to prevent damage to the wetland.		
	Without mitigation	**With mitigation**
Extent	Local (1)	Local (1)
Duration	Long-term (4)	Medium (3)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	**Medium (33)**	**Low (24)**
Status (positive, neutral or negative)	Negative	Negative
Reversibility	Irreversible	Medium degree
Irreplaceable loss of resources?	Irreplaceable	Low degree
Can impacts be mitigated?	High degree	
Mitigation: » During the operational phase water runoff and infiltration from the site should be controlled to limit erosion damage to the surrounding areas, including the wetland. » Ground water usage in the vicinity of the development should be limited as not to decrease water that should migrate to the wetland. » Conversely, additional water should not be added to the hydrological system, which would negatively impact upon the wetland.		
Cumulative impacts: Soil erosion originating from the solar facility will exacerbate the pressure on the hydrological processes in the region.		

Residual impacts:
None if mitigation is successful.

Impacts on the visual aesthetics

The **Dida PV Facility** will consist of PV panels and power lines that will be visible on the site and to the surrounds. The visibility of PV panels may be a negative impact, depending on the people who live near the site or travel past the site on a regular basis. What is perceived as a negative impact is subject to individual preferences. Nevertheless, as part of the assessment of potential impacts, visual impacts (which is a social impact) has been explored in this assessment.

Physical dimensions (height) of the proposed solar infrastructure of particular relevance to the visual impact assessment:

Final Height of installed panels from ground level	~4 m
Height of inverters	~2.5 m
Height of Transformers	~1.8 m
Height of Buildings	~3 m
Height of Fencing	~ 2 - 3 m
Height of Powerline	~ 10 – 12 metres in height , & 3.2 km in length

» **Assumptions and Limitations**

The following assumptions and limitations are applicable to this study:

» The Chief Directorate of Survey & Mapping holds 5m contours for large portions of South Africa. However due to the remoteness of this particular study area, only 20m contours were available.

» **Topography**

The site is located on flat terrain. The development footprint and broader farm portion and study area has an elevation ranging from 1440 – 1735 metres above mean sea level (mamsl). . The broader study area is characterised by gentle slopes and hills.

» **Visual Quality and Character**

Noupoort is a town in the eastern Karoo region of South Africa which revolved principally around the railways lines and the Noupoort railway station. Colesberg is the next closest town to the site and is considered to be a halfway stop by road travellers between Cape Town to Johannesburg. The landscape is characterised by rural and sheep-farming activities. Colesberg saw a large number of battles and skirmishes during the second Anglo-Boer War, and the Colesberg Garden of Remembrance is located just outside the town.

Visual receptors (homesteads) within 5 km from the site include:

» The Farm Arundal, which is located 4 km north-west of the site;
» An un-named farm building, linked to Farm Arundal, which is located 4 km north-west of the site; and
» The Farm Ventersfontein, which is located 5 km south of the site.

» **Visual Analysis**

The visual impact of an object in the landscape diminishes at an exponential rate as the distance between the observer and the object increases (Hull and Bishop, 1988). Therefore, the visual impact at 1000m would be approximately a quarter of the impact as viewed from 500m. Consequently, at 2000m, it would be one sixteenth of the impact at 500m. The 'zone of potential influence' (the area defined as the radius about the centre point of the project beyond which the visual impact of the most visible features will be insignificant) was established at 5km. Over 5km the impact of the proposed infrastructure on visibility would have diminished considerably due to the diminishing effect of distance and atmospheric conditions. On the other hand the visual impact of the project components within a distance of 2000m or less would be at its maximum.

» **Viewshed**

A viewshed analysis is carried out to define areas, which contain all possible observation sites, from which the proposed infrastructure could potentially be visible. Topographic data was captured for the site and its environs at 20m contour intervals to create the Digital Elevation Model (DEM). The DEM includes features such as vegetation, rivers, roads and nearby urban areas. These features were draped over the topographic data to complete the model used to generate the viewshed analysis. The viewshed considers the worst-case scenario, using line-of-sight i.e. ignoring trees and other structures and is based on topography alone. This assists the process of identifying possible affected viewers and the extent of the effected environment.

The viewshed is shown on **Figure 6** and revealed the following:

» Within 5 km from the site, the PV facility will be visible to observers.
» Only the Farm Arundel (owner of the property for the PV facility) falls within the 5km radius from the site. No other homesteads are within a 5km radius of the site.
» The site is located 2.2 km from the N9 road, therefore it will be visible when people travel on sections of the N9 and look in an easterly direction towards the site.

Visual Impact Index

The result of the viewshed analysis for the site is shown in **Figure 7**. The viewshed analysis was undertaken at an offset of 4m above average ground level (i.e. the maximum height of the PV structures). This was done in order to determine the general visual exposure of the area under investigation, simulating the proposed structures associated with the solar energy facility. The following values were used in the Visual Impact Index:

» Low visual impact – 0% – 33 % of the facility visible.
» Medium Visual Impact – 34 % - 66% of the facility visible..

» High visual impact – 37 % - 100 of the facility visible.

Visual impact is defined as the significance and/or magnitude of changes to visual quality of the area resulting from a development or change in land use that may occur in the landscape. Significance or magnitude is a measure of the response of viewers to the changes that occur. It represents the interaction between humans and the landscape changes that they observe. The response to visible changes in the landscape may vary significantly between individuals.

The potential visual impact of the proposed activity will primarily result from changes to the visual character of the area within the viewshed. The nature of these changes will depend on measurable factors such as viewing distance, the visual absorption capacity of the surrounding landscape and the scale of the surrounding environment and landform. Other factors are subjective, such as the perception of observers that will view the PV facility. The following is of relevance:

» An area of high visual impact occurs within a 1km – 5 km around the site, mainly in the northern and eastern areas around the site. The visual impact is limited to observers that reside on Farm Arundal (the landowner of the PV facility site) and observers travelling on the N9 road.
» Large areas in the south of the study area will experience no visual exposure, including the Farm Ventersfontein.

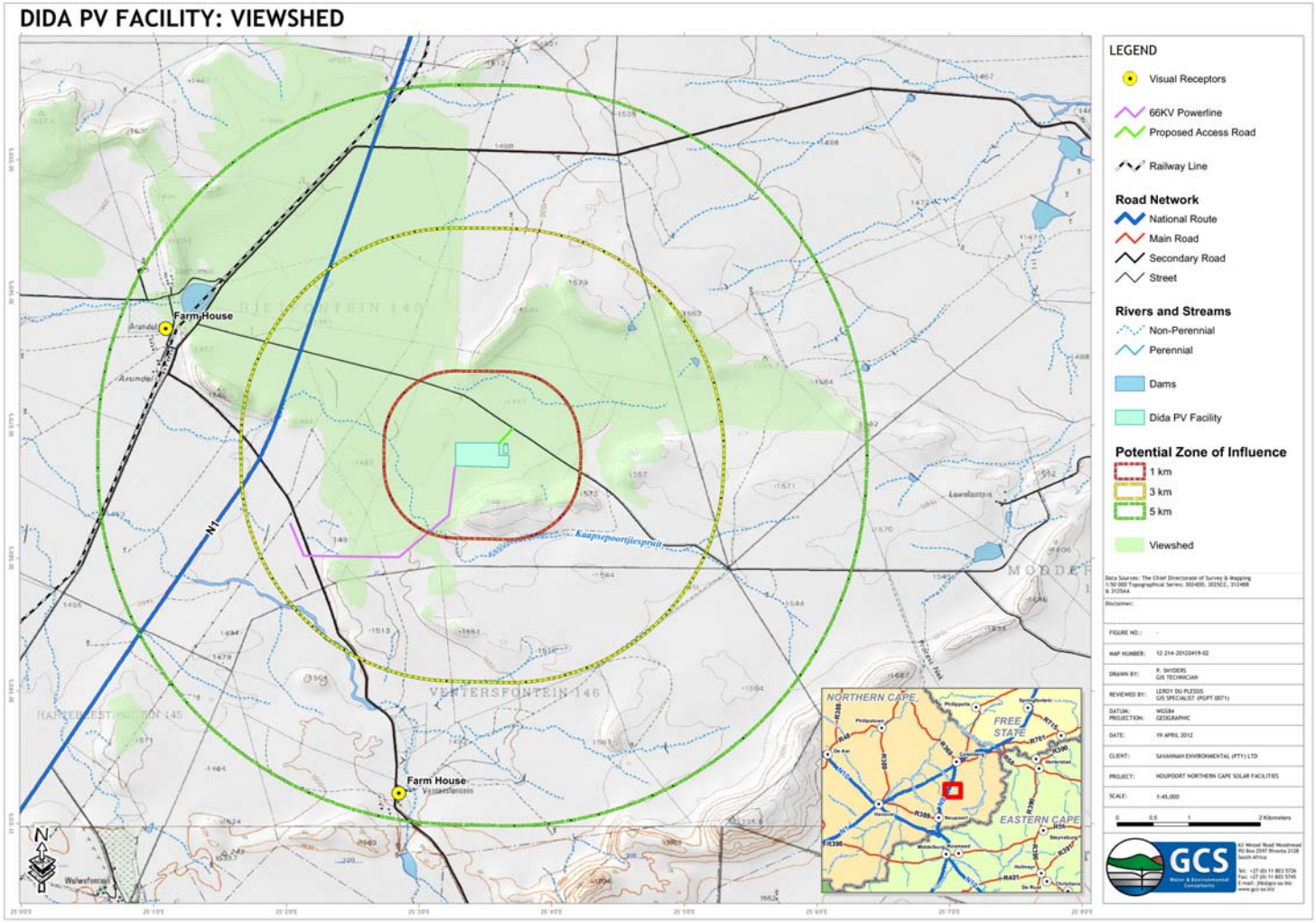

Figure 6: Viewshed for the Dida Pv Facility

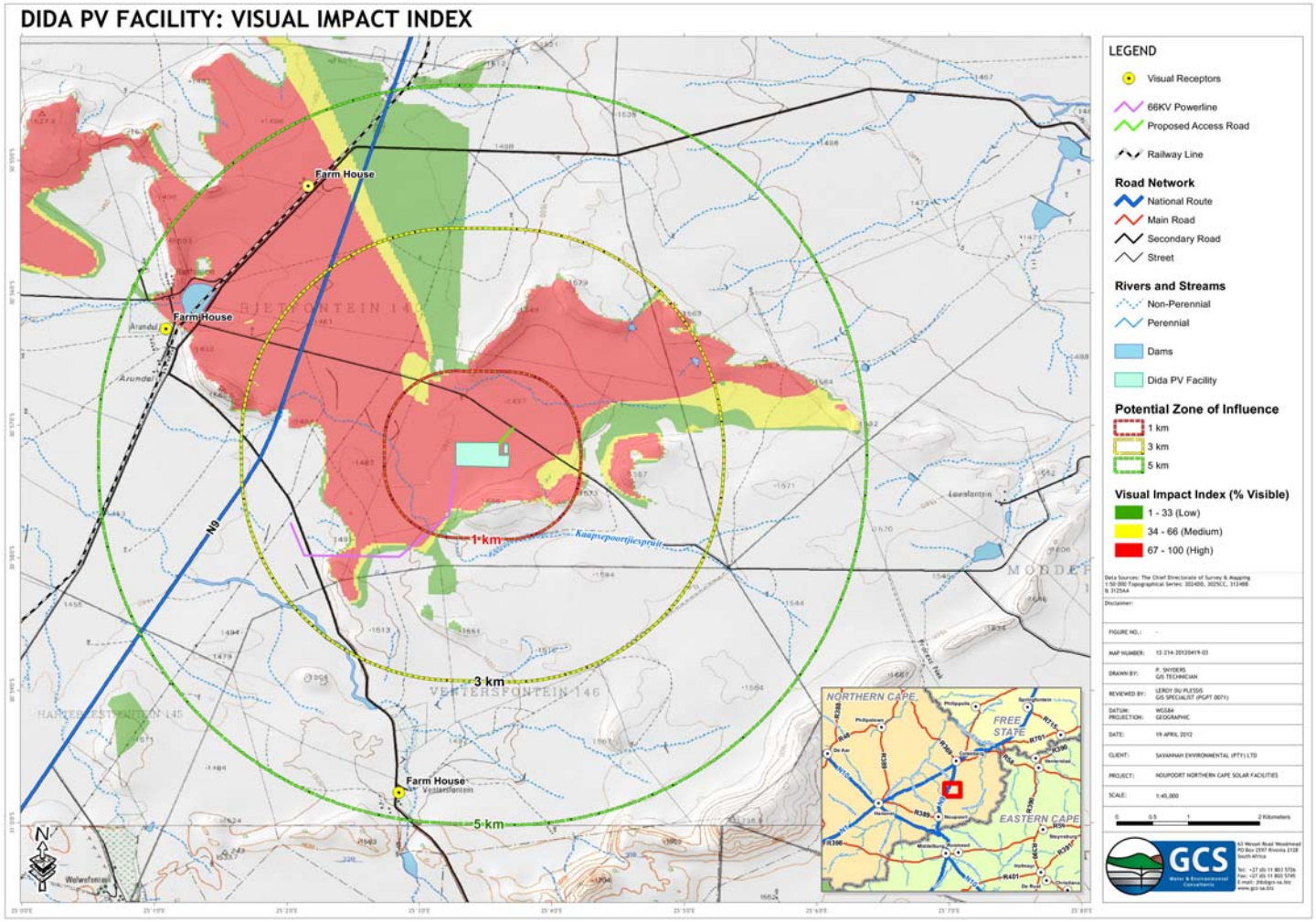

Figure 7: Visual Impact Index for the Dida Pv Facility F

Impact tables summarising visual impacts

Nature of Impact: Potential visual impact on sensitive visual receptors that reside within 5km of the site		
	No mitigation	***Mitigation considered***
Extent	Local (1)	Regional (1
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Moderate (6)
Probability	Probable (3)	Improbable (2)
Significance	**Medium (33)**	**Low (22)**
Status (positive or negative)	Negative	Negative
Reversibility	Recoverable **(3)**	Recoverable **(3)**
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes, but to a limited extent	

Mitigation:

Planning:

» Retain and maintain natural vegetation in all areas outside of the development footprint.
» Plan internal roads and ancillary infrastructure in such a way and in such a location that clearing of vegetation is minimised. Consolidate infrastructure as much as possible.

Construction:

» Rehabilitation of all construction areas.
» Ensure that vegetation is not cleared unnecessarily to make way for the access road and ancillary buildings.

Operations:

» Maintain the general appearance of the facility as a whole.
» Maintenance of roads to avoid erosion and suppress dust.

Decommissioning:

» Remove infrastructure and roads not required for the post-decommissioning use of the site.
» Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications.
» Monitor rehabilitated areas post-decommissioning and implement remedial actions.

Cumulative impacts:

The construction of the solar energy facility and ancillary infrastructure will increase the cumulative visual impact of industrial type infrastructure within a fairly rural region. The same developer is proposing another PV facility on the adjacent farm; therefore this will be an additive visual impact. However it also represents clustering of PV facilities in an area.

Residual impacts:

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

Lighting Impacts:

The PV facility will require general lighting for the facility. Therefore the potential for light pollution exists. Light pollution can be avoided by the use of mitigation measures as specified in the table below.

Nature of Impact: Potential visual impact of lighting on visual receptors in close proximity of the proposed solar energy facility.		
	No mitigation	***Mitigation considered***
Extent	Local (1)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Moderate (6)
Probability	Probable (3)	Improbable (2)
Significance	**Medium (33**	**Low (22)**
Status (positive or negative)	Negative	Negative
Reversibility	Recoverable **(3)**	Recoverable **(3)**
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation: Planning & operation: » Limiting mounting heights of lighting fixtures, or alternatively using foot-lights or bollard level lights; » Utlising minimum lumen or wattage in fixtures; » Utlising down-lighters, or shielded fixtures; » Utilising motion detectors on security lighting. This will allow the site to remain in relative darkness, until lighting is required for security or maintenance purposes.		
Cumulative impacts: » This facility, plus the Amandla facility will result in minor cumulative lighting of the site & immediate surrounds. The development of the proposed solar energy facility will contribute to a cumulative lighting impact in a rural region.		
Residual impacts: The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed.		

Impact of the Powerline

A new 66 kV powerline, which will be 3.2 km in length and 3.2 km in height, extends from the planned facility to the existing Fontein Substation (located on the same property). The power line will have a visual impact of low significance after the use of mitigation measures.

Nature: Potential visual impact of the power lines		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	**Low (24)**	**Low (21)**
Status	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources?	No	
Can impact be mitigated?	Yes	
Mitigation: *N/A*		
Cumulative impacts: None		
Residual impacts: None.		

Implications for project implementation:

» The following mitigation is recommended:
  - Retain / re-establish and maintain natural vegetation in all areas outside of the development footprint. This measure will help to soften the appearance of the facility within its context.
  - Consolidate infrastructure as much as possible and making use of already disturbed areas rather than pristine sites wherever possible.
  - Mitigation of lighting impacts includes the pro-active design, planning and specification lighting for the facility by a lighting engineer. The correct specification and placement of lighting and light fixtures for the Solar facility and the ancillary infrastructure will go far to contain rather than spread the light. Mitigation measures include the following:

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

No Go Alternative

The 'Do-Nothing' alternative is the option of not decommissioning the proposed Dida Solar Energy Facility at the end of its life span. At the end of its life span the efficiency of the facility would be reduced such that less electricity is produced. However, the additional electricity that could continue to be evacuated into the Eskom grid would be beneficial to the Northern Cape region.

2.4. IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING PHASE

Alternative (preferred alternative)

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

No Go Alternative (Compulsory)

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

At the end of its life span the efficiency of the facility could be reduced such that less electricity is produced. However, the additional electricity that could continue to be evacuated into the Eskom grid would be beneficial to the area. In addition, implementation of this alternative would mean that job opportunities are not lost.

3. ENVIRONMENTAL IMPACT STATEMENT

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

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

environmental impacts associated with the proposed project.

The overall impact on **ecology** is likely to be of **low significance** with the implementation of appropriate mitigation measures. Various species of conservation significance occur in the proposed development site. According to the Northern Cape Nature Conservation Act certain species and families of flora found are listed as protected. In the area of the proposed development the main threats posed by this development concerns a minor and localised loss of habitat and the associated loss of biodiversity. The proposed Dida Solar Energy site is not situated in a protected area and the vegetation type, Eastern Upper Karoo in which it is located has a Least Threatened status. Generally, the proposed solar facility site is not located in a highly sensitive area and the vegetation and habitat of the site is duplicated in the surrounding environment. Due to this vegetation type being so extensive, this does however represents a very small percentage of the available habitat and is highly unlikely to have any effects on population trends of fauna that occur here. Various species of conservation significance occur in the proposed development site.

The overall **agricultural potential** of the site is of relatively **low significance** and the site is too small to contribute significantly to the economy or food security of the area (or the farm on which it is situated upon). The site is susceptible to both water and wind erosion. Due diligence should be observed with the implementation of proper control of water and wind erosion measures during the construction phase. Furthermore impacts from vehicles, such as spillages of oil and hydrocarbons, should be prevented and mitigated. Dust generation on site should be mitigated and minimised as the dust can negatively affect the quality the surrounding environment and can contribute to dust loads from surrounding land uses. .

The overall **heritage** impact is likely to be of **low significance** with the implementation of mitigation measures. No archaeological sites with any depth of deposit or associated material and organic remains were identified within the area proposed for development. The proposed focus area for the construction of the solar facility and associated infrastructure is of a low cultural sensitivity. A professional archaeologist (with an already authorised collection permit) must be appointed during the various phases of development including vegetation clearing and the excavation activities to monitor and identify possible archaeological material remains and features that may occur below the surface and further make appropriate recommendations on removing and / or protecting the archaeological material remains and features. If concentrations of archaeological heritage material and/or human remains are uncovered during construction, all work must cease immediately and be reported to the Albany Museum (046 622 2312) and/or the South African Heritage Resources Agency (SAHRA) (021 642 4502) so that systematic and professional investigation/ excavation can be undertaken. Construction managers/foremen must be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.

The overall **visual impact** is likely to be of a predominantly **low - moderate significance** with the implementation of appropriate mitigation measures. The construction and operational phases will have a visual impact on the visual environment

especially within, but not limited to the area within 2 km of the proposed facility.

The overall **social impact** is likely to be of a predominantly **low significance (positive impact)** with the implementation of appropriate enhancement measures.

The establishment of the facility will have positive benefits as the integration of an additional ~16 MW may alleviate the pressure on the local grid to a small extent and would contribute (albeit small) to the national target for renewable energy. Therefore, based on the findings of the studies undertaken, in terms of environmental constraints identified through the initial Environmental Basic Assessment process, no environmental fatal flaws were identified with the establishment of the proposed Didar Solar Energy Facility and associated infrastructure. Therefore, it is recommended that the project should be authorised. However, a number of issues requiring mitigation have been highlighted. Environmental specifications for the management of these issues / impacts are detailed within the draft Environmental Management Programme (EMP) included within Appendix F.

No Go Alternative (Compulsory)

Also referred to as the 'Do nothing' option, this refers to Didar Solar Energy not constructing their proposed solar energy facility on the identified site near Noupoort. In this scenario the potential positive and negative environmental and social impacts as described in this Basic Assessment Report will not occur and the status quo will be maintained. The land-use will continue as agricultural and the potential for harnessing solar energy will not be realised on this site.

Should the project not proceed, the contribution of up to ~16 MW from this project towards the Government target for **renewable energy** will not be realised. As a result the potential local and regional socio-economic and environmental benefits expected to be associated with the proposed project would not be realised. These include:

» *Increased energy security:* The current electricity crisis in South Africa highlights the significant role that renewable energy can play in terms of power supplementation. In addition, given that renewables can often be deployed in a decentralised manner close to consumers, they offer the opportunity for improving grid strength and supply quality, while reducing expensive transmission and distribution losses. In addition the proposed facility will increase electricity security for the local Maropong Township during the day.

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

» *Pollution reduction:* The releases of by-products through the burning of fossil fuels for electricity generation have a particularly hazardous impact on human health and contribute to ecosystem degradation.

» *Support for international agreements:* The effective deployment of renewable energy

provides a tangible means for South Africa to demonstrate its commitment to its international agreements under the Kyoto Protocol, and for cementing its status as a leading player within the international community.

» *Employment creation:* The sale, development, installation, maintenance, and management of renewable energy facilities have significant potential for job creation in South Africa.

» *Acceptability to society:* Renewable energy offers a number of tangible benefits to society including reduced pollution concerns, improved human, and ecosystem health.

» *Support to a new industry sector:* The development of renewable energy offers the opportunity to establish a new industry within the South African economy.

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

Within a policy framework, the development of renewable energy in South Africa is supported by the White Paper on Renewable Energy (November 2003), which has set a target of 17MW renewable energy contributions to final energy generation mix by 2030. The target is to be achieved primarily through the development of solar, biomass, solar and small-scale hydro.

The 'Do nothing' alternative will not assist the South African government in addressing climate change, in reaching the set targets for renewable energy, nor will it assist in supplying the increasing electricity demand within the country. The 'Do nothing' alternative is, therefore, not a preferred alternative.

SECTION E: RECOMMENDATION OF THE PRACTITIONER

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

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

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

There are no insurmountable environmental or social constraints that prevent the establishment of the proposed Dida Solar Energy Facility. However, several sensitive areas / features were identified on the site, and are contained within this basic assessment report and are highlighted **below. The following environmental and/ social features have been identified (and are showed in Figure 8**) for the proposed project, that require specific management action and should be included in the Environmental Authorisation (EA) for the project, in keeping with the principles of sustainable development, and balancing environmental, social and economic needs:

SENSITIVE FEATURE	IMPLICATIONS FOR PROJECT IMPLEMENTATION TO BE INCLUDED IN EA
» There is one heritage artefact (Stone Age tool) that occurs on the site for the PV facility. This heritage artefact is from the Stone Age and has been given a Grade III rating in terms of the NHR Act 25 of 1999, which means mitigation against negative impacts (damage) is required, along with a permit for removal of these artefacts (from SAHRA).	» The detailed design to avoid placement of PV panels on the area where the stone artefact occurs. If this is not possible a permit for the removal of heritage artefacts will be required. » If archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the Albany Museum (046 622 2312) and/or the South African Heritage Resources Agency (SAHRA) (021 642 4502) so that systematic and professional investigation/ excavation can be undertaken. » Construction managers/foremen 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.

» Watercourses and drainage areas: this represents a number of ecological processes including groundwater dynamics, hydrological processes, nutrient cycling and wildlife dispersal; » Widespread occurrence of populations of the protected plant species on the site: Euphorbia spp., and all species of the family *Aizoaceae/ Mesembryanthemaceae*, *Crassulaceae, Orchidaceae, Iridaceae, Asphodelaceae* and *Amaryllidaceae*.	» The power line traverse a wetland, this would require a Water use Licences from the Department of Water Affairs. » In terms of the Northern Cape Nature Conservation Act (Act No. 9 of 2009 a permit is required for these species for removal of these species before construction can commence. The environment is relatively undisturbed and contains four protected plant species, as listed by Northern Cape Provincial legislation – the Northern Cape Nature Conservation Act of 2009. Soils may be prone to erosion and this may affect wetlands that receive runoff off these plains. However, none of the protected species encountered are considered of special conservation concern as defined by the South African Red List Categories (SANBI), but are protected due to potential commercial exploitation and due to their role in the stability of ecosystem services. With suitable mitigation, such as minimising the destruction of vegetation and re-vegetating bare areas as soon as possible, and/or transplanting plants wherever feasible, impacts on the vegetation on site and the wider ecosystem can be minimised as well. Without mitigation, degradation of the site as a result of the development will be inevitable.
Job creation during construction and operations / decommissioning.	» Job creation needs to be managed in order to enhance this positive impact for the local community, during construction and operations, via various mechanism as proposed in the impact assessment above and EMP. » The developer should consider the need for the establishment of a Monitoring Forum (MF) for the construction phase.

Considering, the above-mentioned recommendations, the EAP is of opinion that the potential impacts to the social, economic and biophysical environment can be mitigated to acceptable levels. The construction of the proposed Didar Solar Energy Facility should be

implemented according to the EMP to adequately mitigate and manage potential impacts associated with construction activities. The construction activities and relevant rehabilitation of disturbed areas should be monitored against the approved EMP, the Environmental Authorisation and all other relevant environmental legislation.

Relevant conditions to be adhered to include:

Design, Construction, and Decommissioning Phases:

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

» Minimise large-scale clearance of the natural vegetation and disturbance at the proposed 20 ha site.
» Use existing and dedicated access roads to limit disturbance of the natural vegetation.
» Minimise damage to the natural vegetation during the construction of power lines and access road.
» Care will have to be taken not to negatively impact on the wetland to the west and southwest of the site.
» Run-off from the site will have to be controlled as not to cause soil erosion or increase or decrease seepage to the wetland thereby affecting the hydrological processes in the environment.
» It is suggested that the power line and access road be re-routed if necessary in order not to cross the wetland. Care should be taken not to cross other wetlands also present in the area.
» Re-vegetate the disturbed areas as soon as possible with indigenous vegetation.
» Maintenance of soil cover, the maintenance of the necessary buffer zones with a good plant cover and the correct placement of the site outside of danger and ecologically sensitive zones.
» Minimum soil surface erosion, immediate action should be taken when negative impacts are experienced.
» Monitor erosion rates and erosion sites on a weekly basis and after each storm water event; monitor buffer zones for a dense grass cover.
» Covering all access and construction routes with gravel and control of water run-off. from road surfaces.
» The necessary flora permits should be acquired from Northern Cape Nature Conservation in terms of the Northern Cape Nature Conservation Act since vegetation will be disturbed or destroyed during the construction of the proposed solar facility, power lines and access road.
» Monitor and control the spread of declared weed and alien invasive plant species, 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.
» Areas of prime reptile habitat (e.g. extensive areas of flat rock, boulders fields) should be avoided. Reptiles present on the study site could potentially also be trapped and translocated.

- » Limit construction, maintenance, and inspection activities to dry periods.
- » Develop emergency maintenance operational plan to deal with any event of contamination, pollution, or spillages, particularly in riparian areas.
- » If large areas are cleared for the storage of equipment, these could be rehabilitated using arid site rehabilitation techniques such as planting cover crops reseeding with local grasses and shrubs.
- » Demarcate all areas where no impacts will be allowed, clearly marking these areas with high visibility signs, inform all contractors and construction workers to refrain from entering/ affecting these areas.
- » Prevent impacts on any surface water as a result of hazardous materials, contamination, unnecessary crossing by vehicles or personnel, extraction, drinking or other human uses, construction and maintenance activities.
- » Prevent open fires; provide demarcated fire-safe zones, facilities, and fire control measures.
- » Fire fighting equipment shall be made available on all vehicles and at various suitable points within the development site.
- » 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. If concentrations of archaeological heritage material and human remains are uncovered, all work must cease immediately and be reported to the Albany Museum and/or SAHRA so that systematic and professional investigation/ excavation can be undertaken.
- » The ECO should monitor and identify possible archaeological material remains during construction. A professional archaeologist (with an already authorised collection permit) must be appointed when possible archaeological material remains and features are found and make appropriate recommendations on removing and / or protecting the archaeological material remains and features.
- » Compile and implement a detailed waste management plan.
- » Compile and implement a storm water management plan.
- » Appoint an Environmental Control Officer (ECO).

Operation Phase:

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

- » Use and maintenance of erosion control measures, where deemed necessary.
- » Development and implementation of a storm water management plan.

Is an EMPR attached?	**YES✓**	

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

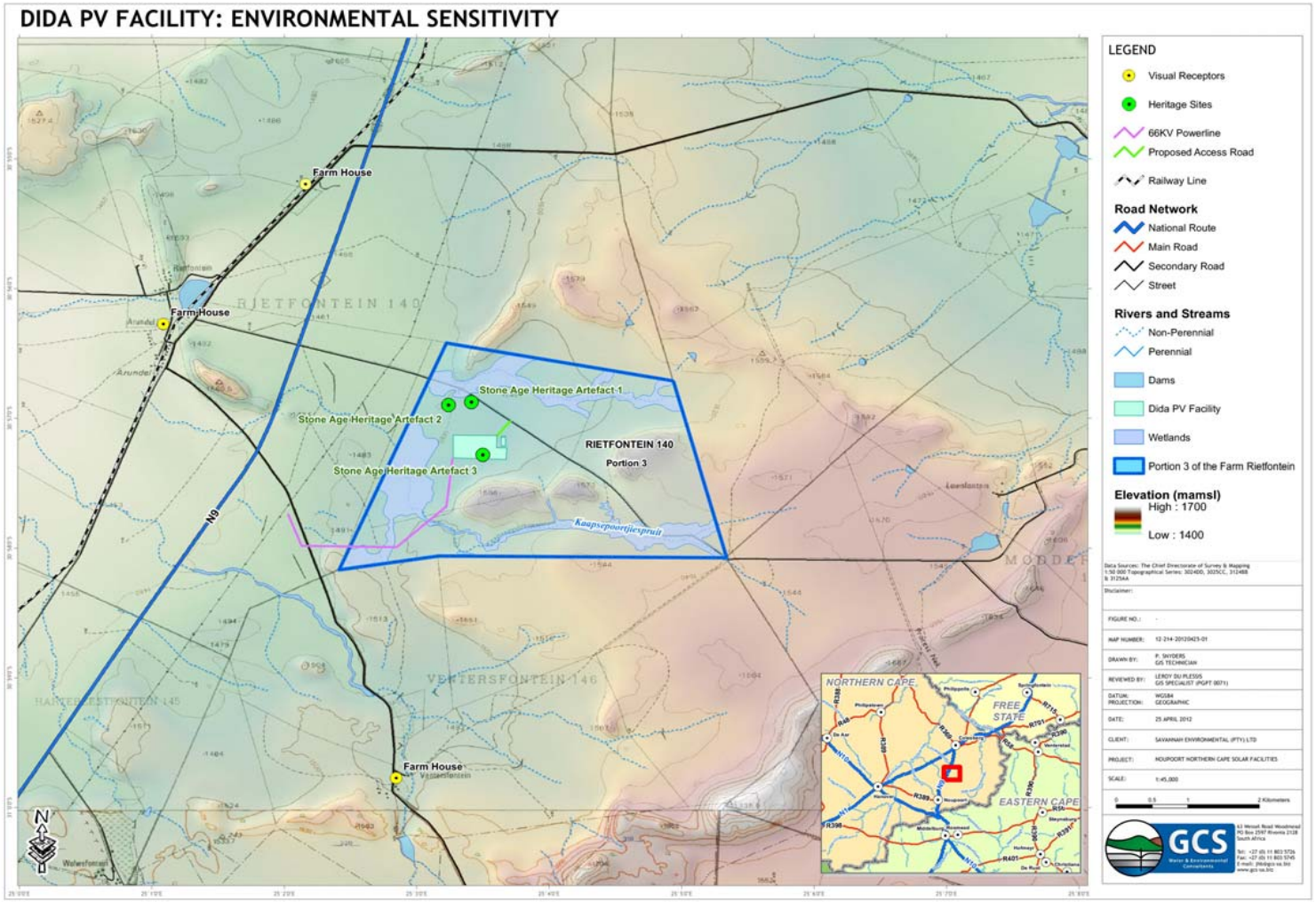

Figure 8: Environmental Sensitivity Map for the Didar solar energy facility