

**ENVIRONMENTAL IMPACT ASSESSMENT PROCESS
DRAFT BASIC ASSESSMENT REPORT**

**PROPOSED PHOTOVOLTAIC SOLAR ENERGY FACILITY
ON VOËLKLIP, SOUTH OF SPRINGBOK, NORTHERN
CAPE PROVINCE**

(DEA REF No: 14/12/16/3/3/1/557)

DRAFT BASIC ASSESSMENT REPORT

1 June 2012 - 30 June 2012

Prepared for:

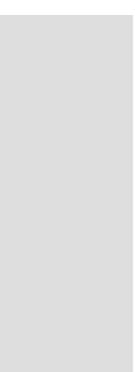
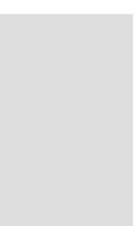
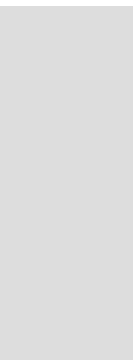
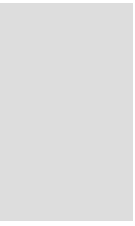
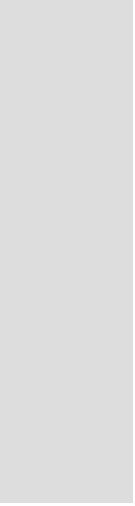
BQR South Africa (Pty) Ltd
Building 5 Midridge Office
IBG Office Park
Cnr New Road and 6th Street
Midrand
1685

Prepared by:

Savannah Environmental Pty Ltd

UNIT 606, 1410 EGLIN OFFICE PARK
14 EGLIN ROAD, SUNNINGHILL, GAUTENG
PO BOX 148, SUNNINGHILL, 2157
TEL: +27 (0)11 234 6621
FAX: +27 (0)86 684 0547
E-MAIL: INFO@SAVANNAHSA.COM
WWW.SAVANNAHSA.COM







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.	:	14/12/16/3/3/1/557
Title	:	Environmental Assessment Process Draft Basic Assessment for a Proposed Photovoltaic Solar Energy Facility on Voëlklip, South of Springbok, Northern Cape Province
Authors	:	John von Mayer Karen Jodas
Sub-consultants	:	MetroGIS ARC-Institute for Soil, Climate & Water Simon Todd Consulting GA Heritage cc
Client	:	BQR South Africa (Pty) Ltd
Report Status	:	Draft Basic Assessment Report for Public Review
Review Period	:	1 June – 30 June 2012

When used as a reference this report should be cited as: Savannah Environmental (2012) Draft Basic Assessment Report: Proposed Photovoltaic Solar Energy Facility on Voëlklip, South of Springbok, Northern Cape Province

COPYRIGHT RESERVED

This technical report has been produced for BQR South Africa (Pty) Ltd. The intellectual property contained in this report remains vested in Savannah Environmental and BQR South Africa (Pty) Ltd. No part of the report may be reproduced in any manner without written permission from BQR South Africa (Pty) Ltd or Savannah Environmental (Pty) Ltd.

TABLE OF CONTENTS

PROJECT DETAILS	i
TABLE OF CONTENTS.....	ii
APPENDICES	iii
SUMMARY AND OVERVIEW OF THE PROPOSED PROJECT	iv
1.1. Summary of the Proposed Development.....	6
1.2. Requirement for an Environmental Impact Assessment Process.....	7
1.3. Details of Environmental Assessment Practitioner and Expertise to conduct the Scoping and EIA.....	9
SECTION A: ACTIVITY INFORMATION.....	11
1. ACTIVITY DESCRIPTION	11
2. FEASIBLE AND REASONABLE ALTERNATIVES	15
3. ACTIVITY POSITION.....	17
4. PHYSICAL SIZE OF THE ACTIVITY	18
5. SITE ACCESS	18
6. SITE OR ROUTE PLAN.....	19
7. SITE PHOTOGRAPHS	19
8. FACILITY ILLUSTRATION.....	19
9. ACTIVITY MOTIVATION.....	20
9(a) <i>Socio-economic value of the activity</i>	20
9(b) <i>Need and desirability of the activity</i>	20
10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES	22
11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT	22
11(a) <i>Solid waste management</i>	22
11(b) <i>Liquid effluent</i>	23
11(c) <i>Emissions into the atmosphere</i>	24
11(d) <i>Generation of noise</i>	24
12. WATER USE	25
13. ENERGY EFFICIENCY.....	25
SECTION B: SITE/AREA/PROPERTY DESCRIPTION	26
1. GRADIENT OF THE SITE	27
2. LOCATION IN LANDSCAPE	27
3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE.....	28
4. GROUND COVER.....	29
5. LAND USE CHARACTER OF SURROUNDING AREA.....	29
6. CULTURAL/HISTORICAL FEATURES.....	30
SECTION C: PUBLIC PARTICIPATION	32
1. ADVERTISEMENTS AND NOTICES	32
2. CONTENT OF ADVERTISEMENTS AND NOTICES	32
3. PLACEMENT OF ADVERTISEMENTS AND NOTICES.....	32
4. DETERMINATION OF APPROPRIATE MEASURES	33
5. COMMENTS AND RESPONSE REPORT	33
6. AUTHORITY PARTICIPATION	33
7. CONSULTATION WITH OTHER STAKEHOLDERS.....	34
SECTION D: IMPACT ASSESSMENT	36
1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES.....	36
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	36
2.1. <i>IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN PHASE</i>	36
2.2. <i>IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE</i>	37
2.3. <i>IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE</i>	47
2.4. <i>IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING PHASE</i>	57
3. ENVIRONMENTAL IMPACT STATEMENT	58
SECTION E. RECOMMENDATION OF THE PRACTITIONER.....	62

APPENDICES

Appendix A: Site Plan(s)

Appendix B: Photo Record

Appendix C: Facility Illustration(s)

Appendix D: Specialist Reports

- » *Appendix D1: Ecology Study*
- » *Appendix D2: Heritage Study*
- » *Appendix D3: Agricultural Potential Study*
- » *Appendix D4: Visual Study*

Appendix E: Record of Public Involvement Process

- » *Appendix E1: Proof of Site Notice & Advert Placement*
- » *Appendix E2: Stakeholder Letters*
- » *Appendix E3: I&AP Database*

Appendix F: Draft Environmental Management Programme

Appendix G: Other Information

- » *A3 Maps*

SUMMARY AND OVERVIEW OF THE PROPOSED PROJECT

The need to expand electricity generation capacity in South Africa is based on **national policy** and is informed by on-going strategic planning undertaken by the Department of Energy (DoE). In response to the National Energy Policy's objective relating to affordable energy services, the DoE commissioned a National Integrated Resource Plan (IRP) in order to provide a long-term, cost-effective resource plan for meeting electricity demand, which is consistent with reliable electricity supply and environmental, social, and economic policies. The planning horizon for the study was from 2010 to 2030. The objective of the IRP is to determine the least-cost supply option for the country, provide information on the opportunities for investment into new power generating projects, and evaluate the security of supply. The long-term electricity planning goal is to ensure sustainable development considering technical constraints, economic constraints, social constraints, and externalities.

In order to meet the long-term goal of a sustainable renewable energy industry, a goal of 17,8 GW of renewables by 2030 has been set by the DoE within the Integrated Resource Plan (IRP) 2010, to be produced mainly from wind, solar, biomass and small-scale hydro (with wind and solar comprising the bulk of the power generation capacity). This amounts to approximately 42% of the total estimated electricity generation capacity by 2030 being from renewables. This translates to approximately 9% of the power generated being produced by renewable energy. This is however dependent on the assumed learning rates and associated cost reductions for renewable options.

BQR South Africa (Pty) Ltd is proposing the establishment of a PV facility for the purpose of commercial electricity generation on an identified site located approximately 6 km south of Springbok in the Northern Cape Province (refer to Figure 1.1). The proposed project will have maximum generating capacity of up to **10 MW** which will be evacuated into the national electricity grid as part of a power purchase agreement with Eskom and the South African Treasury.

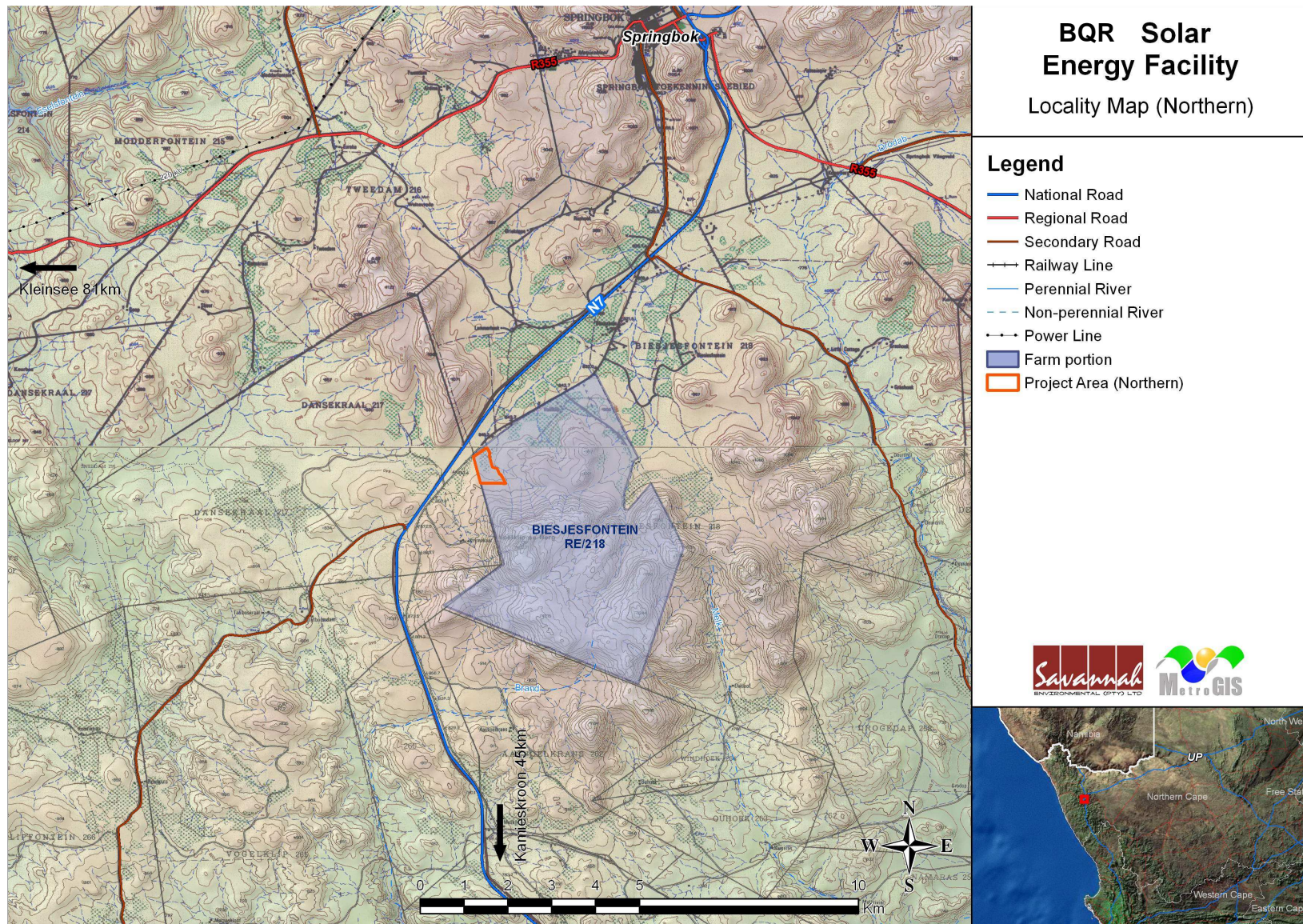


Figure 1.1: Locality map showing the proposed development site in relation to the town of Springbok in the Northern Cape Province

From a regional site selection perspective, this region is preferred for solar energy development by virtue of its annual direct solar irradiation values.

The nature and extent of the proposed facility, and the potential environmental impacts associated with the construction, operation and decommissioning phases are explored in more detail in this Basic Assessment Report. This report has been compiled in accordance with the requirements of the EIA Regulations and includes details of the activity description; the site, area and property description; the public participation process; the impact assessment; and the recommendations of the Environmental Assessment Practitioner.

1.1. Summary of the Proposed Development

BQR South Africa (Pty) Ltd is proposing to establish a commercial photovoltaic solar energy facility as well as associated infrastructure on a site located approximately 10 km south of Springbok in the Northern Cape Province. Based on a pre-feasibility analysis and site identification processes undertaken by BQR South Africa, a favourable area has been identified for consideration and evaluation through a Basic Assessment.

The project is proposed on a portion of the farm Remainder of Farm 218 (Biesjesfontein). The site proposed for the facility falls within the Nama Khoi Local Municipality (within the Namakwa District Municipality).

The solar energy facility is proposed to accommodate an array of photovoltaic (PV) panels with a generating capacity of up to 10 MW. An area of less than 20ha will be required for this proposed facility. Other infrastructure associated with the facility will include:

- » An on-site generator transformer and a small switching station to facilitate the connection between the renewable energy facility and the Eskom electricity grid;
- » Concrete foundations to support the PV panels;
- » Cabling between the project components, to be laid underground where practical;
- » An overhead distribution power line either connecting to existing Eskom power line immediately west of the site (500 m), or alternatively, feeding into the Eskom electricity network at the existing Nama substation ~16 km north of the site
- » Internal access roads; and
- » Workshop area for maintenance and storage.

The overall aim of the design and layout of the facility is to maximise electricity production through exposure to the solar radiation, while minimising infrastructure, operation and maintenance costs, and social and environmental impacts. The use of solar energy for power generation can be described as a non-consumptive use of natural resources which emits zero greenhouse gas emissions. The generation of renewable

energy contributes to South Africa's electricity generating market which has been dominated by coal-based power generation.

1.2. Requirement for an Environmental Impact Assessment Process

In terms of the Environmental Impact Assessment Regulations published in terms of Section 24(5) of the National Environmental Management Act (NEMA, Act No. 107 of 1998), authorisation is required from the National Department of Environmental Affairs (DEA), in consultation with the Northern Cape Department of Environment and Nature Conservation (DENC), for the establishment of the proposed facility. This project has been registered with National DEA under reference number **14/12/16/3/3/1/557**. In terms of sections 24 and 24D of NEMA, as read with the Environmental Impact Assessment Regulations of GNR543; GNR544; GNR545; and GNR546, a Basic Assessment process is required to be undertaken for the construction of the proposed facility. The following listed activities are applicable:

Notice No.	Activity	Description	Project Components
544, 18 June 2010	1	The construction of facilities or infrastructure for the generation of electricity where: » The output is 10 MW or less but the total extent of the facility covers an area in excess of 1 ha. <i>The output of the solar facility will be less than 10 Megawatts.</i>	» PV Panels » Switching station » Power line
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 33kv but less than 275kv; or ii. Inside urban areas or industrial complexes with a capacity of 275kv or more. <i>The facility will require the construction of an overhead distribution power line of between 33kV and 275 kV.</i>	» Switching station » Power line
GN 544, 18 June	11	The construction of: Infrastructure or structures covering	» PV Panels

Notice No.	Activity	Description	Project Components
2010		<p>50 m² or more where such construction occurs within a watercourse or within 32 m of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</p> <p><i>Placement of infrastructure may occur within 32 m of a watercourse.</i></p>	<ul style="list-style-type: none"> » Switching station » Ancillary infrastructure
544, 18 June 2010	23	<p>The transformation of undeveloped, vacant or derelict land to:</p> <ul style="list-style-type: none"> » Residential, retails, commercial, recreational, industrial, or institutional use, outside an urban area, and where the total area to be transformed is bigger than 1 ha but less than 20 ha. <p><i>The site is currently vacant / undeveloped and an area of 1 < 20 ha will be transformed by the activity.</i></p> 	<ul style="list-style-type: none"> » PV Panels » Switching station » Power line » Ancillary infrastructure
546, 18 June 2010	4(a)	<p>The construction of a road wider than 4 metres with a reserve less than 13,5 metres</p> <p><i>Access roads are required to be constructed for access to the PV panels. In places these may be wider than 4m.</i></p>	<ul style="list-style-type: none"> » Access road
546, 18 June 2010	10(ii)	<p>The construction of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres.</p> <p><i>This may be triggered during construction by the fuels etc (e.g. diesel) temporarily stored on site.</i></p>	<ul style="list-style-type: none"> » Switching station » Construction of PV Panels » Construction of Power line
546, 18 June 2010	13(c)ii	<p>The clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation.</p>	<ul style="list-style-type: none"> » Switching station » PV Panels » Power line

Notice No.	Activity	Description	Project Components
		<i>The construction of the facility will require the clearance of >1 hectare of vegetation.</i>	<ul style="list-style-type: none"> » Access roads » Ancillary infrastructure
546, 18 June 2010	16(iii)& (iv)	<p>The construction of:</p> <ul style="list-style-type: none"> i. Buildings with a footprint exceeding 10 square metres in size or ii. Infrastructure covering 10 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line. <p><i>The facility may entail construction close to existing watercourses / drainage lines on site.</i></p>	<ul style="list-style-type: none"> » PV Panels » Power line » Access roads » Ancillary infrastructure

An EIA is an effective planning and decision-making tool for the project developer as it provides the opportunity for the developer to be forewarned of potential environmental issues and to assess if potential environmental impacts can be avoided, minimised or mitigated to acceptable levels. The EIA process forms part of the feasibility studies for a proposed project and informs the final design process. Comprehensive, independent environmental studies are required in accordance with the EIA Regulations to provide the competent authority with sufficient information in order to make an informed decision.

1.3. Details of Environmental Assessment Practitioner and Expertise to conduct the Scoping and EIA

Savannah Environmental has been appointed as the independent environmental consultant, to undertake the Environmental Basic Assessment to identify and assess the potential environmental impacts associated with the proposed facility. Neither Savannah Environmental nor any of its specialist sub-consultants on this project are subsidiaries of or are affiliated to BQR South Africa. 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 consulting company providing holistic environmental management services, including environmental impact assessments and planning to ensure compliance and evaluate the risk of development;

and the development and implementation of environmental management tools. Savannah Environmental benefits from the pooled resources, diverse skills and experience in the environmental field held by its team.

The Savannah Environmental team has considerable experience in environmental impact assessments and environmental management, and have been actively involved in undertaking environmental studies, for a wide variety of projects throughout South Africa, including those associated with electricity generation.

Karen Jodas, the principle Environmental Assessment practitioner (EAP) for this project, is a registered Professional Natural Scientist and holds a Master of Science degree. She has over 15 years experience consulting in the environmental field. Her key focus is on strategic environmental assessment and advice; management and co-ordination of environmental projects, which includes integration of environmental studies and environmental processes into larger engineering-based projects and ensuring compliance to legislation and guidelines; compliance reporting; the identification of environmental management solutions and mitigation/risk minimising measures; and strategy and guideline development.

John von Mayer holds a BSc Honours degree and has over four years experience consulting in the environmental field. He has been involved in numerous projects within the energy sector with a strong focus on renewable energy.

In order to adequately identify and assess potential environmental impacts associated with the proposed project, Savannah Environmental has appointed the following specialist sub-consultants:

- » Ecology – Simon Todd Consulting
- » Heritage – GA Heritage
- » Visual – MetroGIS
- » Agricultural Potential – Agricultural Research Council: Institute for Soil, Climate and Water
- » Public Participation Consultant – Sustainable Futures ZA

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 detail¹:

PROJECT LOCATION

The proposed development site is located approximately 10 km south of Springbok, within the Nama Khoi Local Municipality. The project is proposed on a portion of the farm Remainder of Farm 218 (Biesjesfontein). The area proposed for the PV facility covers an extent of approximately 18 ha. The site is currently zone as agricultural, and is used for grazing purposes. The N7 national road passes the site directly to the west, while the R355 regional road extends east – west approximately 10 km to the north of the site. The only urban and built up area in the vicinity of the development site is the town of Springbok.

PHOTOVOLTAIC TECHNOLOGY AND THE GENERATION OF ELECTRICITY

Photovoltaic (PV) technologies use the energy from the sun to generate electricity through a process known as the *Photovoltaic Effect*. Simply speaking, this refers to light energy knocking electrons into a higher state of energy to create electricity. Each PV cell is made of silicone (i.e. semiconductors) which is positively and negatively charged on either side, with electrical conductors attached to both sides to form a circuit. This circuit captures the released electrons in the form of an electric current (direct current). An inverter (located in an inverter cabin) is required to convert the direct current (DC) into alternating current (AC) which can be evacuated into the National Eskom grid.

A single cell is sufficient to power a small device such as an emergency telephone. However, to produce 10 MW, the proposed facility will require numerous linked cells placed behind a protective glass sheet to form a panel. Multiple panels will be required to form the solar array. The PV panels will be fixed to a support structure set at an angle so to receive the maximum amount of solar radiation while withstanding the buffeting effects of the wind. The angle of the panel is dependent on the latitude and may be adjusted to optimise for summer or winter solar radiation characteristics and for daily movement of the sun from east to west. The transformer installed inside the switching station will step up the power prior to the evacuation into a distribution power line which will either loop-in loop-out of the existing Eskom power lines crossing the site or link to the Eskom Nama substation ~16 km north of the site. BQR South

¹ 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.

Africa has, through preliminary discussions with Eskom, determined that this substation has capacity to receive the power from the proposed facility.

ACTIVITIES TO BE UNDERTAKEN DURING THE CONSTRUCTION PHASE

A facility consisting of several PV arrays with a generating capacity of 10 MW could take approximately 3 months to construct and commission, and would require the expertise of skilled, semi-skilled and low skilled staff. In order to construct the proposed facility and its associated infrastructure, a series of activities will need to be undertaken which is discussed in more detail below.

Conduct Surveys

Prior to initiating construction, a number of surveys will be required including, but not limited to:

- » *Geotechnical survey* – the geology identified in the specialist studies undertaken as part of this Basic Assessment Process will be confirmed. The geotechnical study will look at flood potential, foundation conditions, potential for excavations, and the availability of natural construction materials. This study will serve to inform the type of foundations required to be built, and the extent of earthworks and compaction required in the establishment of the internal access roads. The geotechnical examination will include surface and subsurface exploration, soil sampling, and laboratory analysis.
- » *Site survey* - in order to finalise the design layout of the solar arrays, the switching station, and other associated infrastructure. The micro-siting footprint will consider any environmental sensitivity identified during the Basic Assessment Process and will need to be confirmed in line with the Environmental Authorisation issued for the facility.

Transport Components and Construction Equipment to Site

The equipment will be transported to the site using appropriate national, provincial, and local roads. Some of the switching station components *may* be defined as abnormal loads in terms of the Road Traffic Act (Act No. 29 of 1989)² by virtue of the dimensional limitations (i.e. the transformer). In some instances, these dimensional characteristics may require alterations to the existing road infrastructure (e.g. widening on corners), and protection of road-related structures (i.e. bridges, culverts, etc) because of abnormal loading.

The typical civil engineering construction equipment will need to be brought to the site (e.g. excavators, trucks, graders, compaction equipment, cement trucks, etc.) as well as components required for the establishment of the switching station and power line.

Establishment of Internal Access Roads

The N7 national road passes the site directly to the west. Secondary roads are also present in the area, leading from the N7 to the site. Access to the site already exists via the Voelklip / Droedap gravel road located west of the site. Supplementary internal gravel access road of approximately 3m in width will be constructed around the site for maintenance purposes.

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

² A permit will be required for the transportation of any abnormal loads on public roads.

proposed site are not known at this stage. This will need to be assessed via the geotechnical study to be conducted. It has not yet been determined whether these proposed internal access roads will be comprised of gravel tracks or whether access track construction would comprise of compacted rock-fill with a layer of higher quality surfacing stone on top. Should the latter be required, the strength and durability properties of the rock strata at the proposed site would need to be assessed during the geotechnical surveys. Depending on the results of these studies, it may be possible, in some areas, to strip off the existing vegetation and level the exposed ground surface to form an access track surface.

Undertake Site Preparation

Site preparation activities will include clearance of vegetation at the footprint of the PV panels, and ancillary infrastructure, establishment of laydown areas and internal access roads, and excavations for foundations (i.e. switching station and workshop area). These activities will require the stripping of topsoil, which will need to be stockpiled, backfilled and/or spread on site.

Site preparation will be undertaken in a systematic manner to reduce the risk of open ground to erosion. In addition, site preparation will include search and rescue of floral species of concern (where required).

Establishment of Laydown Areas on Site

Once the required equipment has been transported to site, a dedicated equipment construction camp and laydown area will need to be established adjacent to the workshop area. The equipment construction camp serves to confine activities and storage of equipment to one designated area to limit the potential ecological impacts associated with this phase of the project. The laydown area will be used for the assembly of the PV panels and the general placement/storage of construction equipment.

The storage of fuel for the on-site construction vehicles and equipment will need to be secured in a temporary bunded facility with the construction camp to prevent leakages and soil contamination.

Establishment of PV Panels

The PV panels will be sited a certain distance away from each other to avoid shading. The support structures are usually comprised of galvanised steel tubing and will be buried into the ground to a depth of approximately 1,5 m.

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

Construct On-Site Switching Station

The on-site switching required to facilitate the connection between the PV facility and the Eskom Grid. It would be constructed in the following simplified sequence:

- » *Step 1* - survey of the site;
- » *Step 2* - site clearing;

- » *Step 3* - construction of terrace and switching station foundation;
- » *Step 4* - assembly and installation of equipment (i.e. including the transformer);
- » *Step 5* - connection of conductors to equipment; and
- » *Step 6* - rehabilitation of disturbed areas and protection of erosion sensitive areas.

Connect the Switching Station to the Power Grid

The overhead power line will connect / feed into the Eskom grid at the existing Nama Substation which is located ~16 km north the site, following an existing power line route as well as the N7 national road (and therefore consolidation linear infrastructure), alternatively it will connect to Eskom's existing power lines which traverse the site (preferred from an environmental perspective, however the feasibility of this option is still being assessed). The servitude cleared for the power line will be used for erecting the poles, where after the stringing process of the cabling between the on-site switching station and the evacuation point can be carried out.

Undertake Site Remediation

Areas requiring rehabilitation will include those areas disturbed during the construction phase and those that are not required for operation and maintenance operations. Rehabilitation should be undertaken in an area as soon as possible after the completion of construction activities within that area. Where relevant, disturbed areas must be rehabilitated/re-vegetated with appropriate natural vegetation and/or local seed mix. Re-vegetated areas may have to be protected from wind erosion and maintained until an acceptable plant cover has been achieved. All temporary facilities, equipment, and waste materials will be removed from site. Erosion control measures (i.e. drainage works and anti-erosion measures) should be used in sensitive areas (i.e. steep slopes, hills, and drainage lines), to minimise loss of topsoil and control erosion. Any access points and/or access roads which are not required during the operational phase must be closed as part of the post-construction rehabilitation.

ACTIVITIES TO BE UNDERTAKEN DURING THE OPERATIONAL PHASE

The photovoltaic panels are designed to operate continuously, unattended and with low maintenance for approximately 20 years. The electricity that is generated from the PV panels will be converted from DC to AC by the inverters and stepped up by the transformer at the on-site switching station. Thereafter the power will be evacuated via the short power line linking into the existing Eskom overhead power lines immediately west of the site or alternatively Eskom's Nama Substation.

It is anticipated that a full-time security, maintenance, and control room staff will be required on-site. Each component within the PV facility will be operational except under circumstances of mechanical breakdown, unfavourable weather conditions, or maintenance activities (i.e. cutting of grass on the site, cleaning the PV panels etc). The panels will be cleaned by water twice a year. As this is a small amount of water and the requirement is for distilled water, this water will be transported to site.

ACTIVITIES TO BE UNDERTAKEN DURING THE DECOMMISSIONING PHASE

The PV facility is expected to have a lifespan of approximately 20 years (i.e. the power purchase agreement will be issued for a period of 20 years). 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.

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.

Disassemble and Replace Existing Components

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

2. FEASIBLE AND REASONABLE ALTERNATIVES

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

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

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

No feasible alternatives have been identified for this proposed project and therefore none have been assessed within this report. The following describes the reasons as to why alternatives were not assessed.

The property on which or location where it is proposed to undertake the activity:

Two areas on the farm were initially identified as areas with potential for the construction of a PV facility. The initial sites proposed were larger in extent, and were subject to an initial screening to test for environmental suitability. Portions of the initial greater areas were rejected through a preliminary screening test due to the fact that they straddled watercourses. The site development area was then revised, and the site considered in this BAR earmarked for development. No further site alternatives are proposed for this project as the placement of a solar facility is strongly dependent on several factors including climatic conditions, relief and orography, grid connection,

the extent of the site, as well as availability of the site. This site has been identified by BQR South Africa as being highly desirable for the establishment of a photovoltaic plant as per the following technical, logistical and environmental characteristics.

- 1) Climatic conditions: The economic viability of a photovoltaic plant is directly dependent on the annual direct solar irradiation values. A study of available radiation data shows that the proposed site is uniformly irradiated by the sun. In addition the site experiences temperatures which are suitable for PV technology.
- 2) Power transmission considerations: Eskom's Nama substation is located 16 km north of the site. It has been determined through preliminary discussions with Eskom that this substation has capacity to receive the 10MW of power to be generated by the proposed facility. There are also existing power lines immediately west of the site (500 m) which offer an alternative option to connect to the grid, if feasible.
- 4) Environmentally suitable: The site is bare, with very low agricultural potential. Any impacts can be effectively avoided through the consideration of layout alternatives within the site.

The type of activity to be undertaken:

No activity alternatives were assessed. BQR South Africa intend to develop renewable energy projects in response to the government's goal in this regard, as well as in response to the Department of Energy's competitive bidding process in order to procure energy projects from IPPs. Due to the local climatic conditions, the site is considered most suitable for the development of a solar energy facility is considered to be the only feasible activity alternative.

The design or layout of the activity

Two alternatives are being considered for the connection of the facility to the grid:

A1) An overhead distribution power line connecting to the Eskom electricity network at the existing Nama substation ~16 km north of the site; OR

A2) A loop-in loop-out power line linking to existing Eskom power lines traversing the site.

Both these alternatives are assessed in this Basic Assessment Report. The technical viability of the two grid connection alternatives are being assessed by Eskom.

Other design and layout alternatives were not assessed during the compilation of the DBAR. The preliminary layout will be revised in order to consider environmental sensitivities and the recommendations from the environmental studies conducted as part of the Basic Assessment process.

The technology to be used in the activity

Very few technological options exist in as far as PV technologies are concerned. The choice of technology does not affect the environmental impact of the proposed development. The construction, operation and decommissioning of the facility will be the same irrespective of the technology chosen (fixed panels, tracking etc).

The operational aspects of the activity

No operational alternatives were assessed as no feasible and reasonable operational alternatives were identified.

The option of not implementing the activity

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

In conclusion no other feasible alternatives exist and none are being assessed in this basic assessment report. The site, activity, design and technology being assessed are the only ones considered suitable for this project.

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:

Alternative S1³

Alternative S2 (if any)

Alternative S3 (if any)

Latitude (S): Longitude (E):

29°	45' 18.43"	17°	51' 5.87"
°	'	°	'
°	'	°	'

In the case of linear activities (Grid Connection):

Alternative:

Alternative A1 (preferred or only route alternative)

Connection to Nama Substation

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

Latitude (S): Longitude (E):

29°	45'8.20"	17°	50'57.9"
29°	42'3.13"	17°	53'48.4"
29°	38'3.87"	17°	52'52.2"

Alternative A2 (if any)

Connection to existing power lines

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

29°	45'7.96"	17°	50'57.26"
29°	45'6.50"	17°	50'51.09"
29°	45'6.44"S	17°	50'48.00"

Alternative A3 (if any)

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

³ “Alternative S.” refers to site alternatives

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:

Alternative A1⁴

Alternative A2 (if any)

Alternative A3 (if any)

Size of the activity:

200 000 m ²
m ²
m ²

Or, for linear activities:

Alternative:

Alternative A1

Alternative A2 (if any)

Alternative A3 (if any)

m
m
m

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

Alternative:

Alternative A1 (connect to Nama substation)

Alternative A2 (connect to existing power lines)

Alternative A3 (if any)

Size of the site/servitude:

160 m ²
10 m ²
m ²

5. SITE ACCESS

Does ready access to the site exist?

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

YES ✓	

Describe the type of access road planned:

Access to the site already exists via Voelklip/Droedap gravel road located south of the site. Existing gravel access roads exist from this road to the site, already used by the landowner to access the site. Supplementary internal gravel access roads of approximately 3m in width will, however, need to be constructed within the site for maintenance purposes.

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.

⁴ "Alternative A." refers to activity, process, technology or other alternatives.

6. SITE OR ROUTE PLAN

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

The site or route plans must indicate the following:

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

A detailed site plan has been included as part of this report as **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 taken from the centre of the site in the eight major compass directions with a description of each photograph are attached within **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.

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

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	~ R170 million
What is the expected yearly income that will be generated by or as a result of the activity?	R 45 million
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?	~50 - 75
What is the expected value of the employment opportunities during the development phase?	~ R200 000 000
What percentage of this will accrue to previously disadvantaged individuals?	75% objective
How many permanent new employment opportunities will be created during the operational phase of the activity?	1 - 5
What is the expected current value of the employment opportunities during the first 10 years?	R2.5 million year
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 ✓
2.	Does the proposed land use fall within the relevant provincial planning framework?	YES ✓
3.	If the answer to questions 1 and / or 2 was NO, please provide further motivation / explanation:	

DESIRABILITY:			
1.	Does the proposed land use / development fit the surrounding area?		NO ✓
2.	Does the proposed land use / development conform to the relevant structure plans, SDF, and planning visions for the area?	YES ✓	
3.	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	YES ✓	
4.	If the answer to any of the questions 1 - 3 was NO, please provide further motivation / explanation:		
	Development in the study area is largely absent, except for sheep farming settlements or homesteads, which occur in a dispersed pattern throughout the study area.		
5.	Will the proposed land use / development impact on the sense of place?	YES ✓	
6.	Will the proposed land use / development set a precedent?		NO ✓
7.	Will any person's rights be affected by the proposed land use / development?		NO ✓
8.	Will the proposed land use / development compromise the "urban edge"?		NO ✓
9.	If the answer to any of the question 5 - 8 was YES, please provide further motivation / explanation.		
	The construction and operation of the Proposed PV Solar Energy Facility and its associated infrastructure will have a visual impact on the natural scenic resources and rural character of the study area, particularly within 2km of the proposed facility. The anticipated visual impacts are not considered to be fatal flaws from a visual perspective, considering the relatively contained area of potential visual exposure and the low occurrence of visual receptors.		

BENEFITS:			
1.	Will the land use / development have any benefits for society in general?	YES ✓	
	Explain:		
	The evacuation of additional electricity into the Eskom Grid will serve to strengthen the grid itself, and boost local grid stability. Due to the small scale nature of the project, the significance of this positive impact is low. However, with the cumulative effect of numerous proposed renewable energy facilities across the country the long term impact will prove significant.		
2.	Will the land use / development have any benefits for the local communities where it will be located?	YES ✓	
	Explain:		
	Job opportunities will arise for the local community during the construction phase.		

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
Constitution of the Republic of South Africa (Act No 108 of 1996)	National Government	1996
National Environmental Management Act (Act No 107 of 1998)	National and Provincial Department of Environmental Affairs	1998
National Environmental Management: Waste Act (Act No 59 of 2008)	Department of Environmental Affairs	2008
Environment Conservation Act (Act No 73 of 1989)	National Department of Environmental Affairs	1989
National Water Act (Act No 36 of 1998)	Department of Water Affairs	1998
National Heritage Resources Act (Act No 25 of 1999)	South African Heritage Resources Agency	1999
National Environmental Management: Air Quality Act (Act No 39 of 2004)	Department of Environmental Affairs	2004
Conservation of Agricultural Resources Act (Act No 43 of 1983)	Department of Environmental Affairs	1983
National Environmental Management: Biodiversity Act (Act No 10 of 2004)	Department of Environmental Affairs	2004
National Veld and Forest Fire Act (Act No 101 of 1998)	The National Department of Agriculture, Forestry and Fisheries	1998
National Forests Act (Act No 84 of 1998)	The National Department of Agriculture, Forestry and Fisheries	1998
Promotion of Access to Information Act (Act No 2 of 2000)	National Department of Environmental Affairs	2000
Northern Cape Nature Conservation Act (Act No 9 of 2009)	Northern Cape Department of Environment and Nature Conservation	2009
Nama-Khoi Municipality IDP	Nama-Khoi Municipality	2011

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?

Approximately 100 m³ of solid construction waste consisting mainly of vegetation and spoil material from clearing activities.

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

Construction solid waste will be disposed of at an appropriately licensed waste facility.

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

As above

Will the activity produce solid waste during its operational phase?

	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?

	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?

	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?

	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?

	NO ✓
--	----------------

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

Will the activity produce effluent that will be treated and/or disposed of at another facility?

	NO ✓
--	----------------

If yes, provide the particulars of the facility:

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:

No waste water will be produced therefore this is not applicable.

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:

PV facilities 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. 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:

Limited noise will be generated during the construction phase of the development. The operation phase will not generate any noise.

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	<p>The activity will not use water ✓</p> <p>Panels will be cleaned with compressed air and distilled water (min. twice a year) that is purchased and transported to site.</p>
-----------	-------------	-------------	----------------------------	-------	---

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:

N/A

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

The proposed facility will utilise a renewable/alternative energy technology therefore this is not applicable.
--

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? **NO** ✓

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

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

Property description/physical address:

The project is proposed on the Remainder of farm 218 (Biesjesfontein).

(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 (currently used as grazing land).

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 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:

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 be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted).

4. GROUND COVER

Indicate the types of groundcover present on the site:

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

Natural veld - good condition ^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.

Refer to the specialist ecology report included within Appendix D

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

- 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?

N/A

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

	NO ✓
--	-------------

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

	NO ✓
--	-------------

If YES, explain:

--

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

Briefly explain the findings of the specialist:

--

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

NO ✓

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

NO ✓

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

Refer to the specialist heritage report included within Appendix D.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENTS AND NOTICES

- » A2 site notices were placed at the access gates of the property on 24 April 2012.
- » A stakeholder letter was distributed to the database of registered parties which included key stakeholders and organs of state relevant to the proposed project. The stakeholder letters served to announce the proposed project and invite comment on the Draft Basic Assessment Report.
- » A notice placed in Die Namaqualander to advertise the Basic Assessment Process and the availability of the Draft BA report.

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 PV facility is unlikely to result in any impacts that extend beyond the municipal area where it is located. Therefore it was only deemed necessary to advertise in one local newspaper, i.e. Die Namaqualander. The advertisement placed detailed the Basic Assessment process, the

DEA EIA Reference number, 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. Copies of advertisements and proof of placement are 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.

A public meeting and focus group meetings are to be held during the review period of the Basic Assessment. I&APs and stakeholders notified of these meetings once they are scheduled.

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 comments have been received at this stage. All comments received during the review period of the report will be included in Appendix E of the Final Basic Assessment 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 distribution of a stakeholder letter sent on several dates as stakeholder contact information was collated, these included, amongst others:

- » Northern Cape Department of Environment and Nature Conservation
- » Nama-Khoi Local Municipality
- » Namakwa District Municipality
- » Northern Cape Heritage Authority
- » South African Heritage Resources Agency
- » South African Roads Agency Limited - Northern Cape (Western Region)
- » Department of Transport, Roads and Public Works
- » Department of Water Affairs - Upington
- » Department of Energy
- » Northern Cape Department of Agriculture, Land Reform and Rural Development

List of authorities from whom comments have been received:

No comments have been received at this stage. All comments received during the review period of the report will be included in Appendix E of the Final Basic Assessment report.

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.

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):

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

- » Northern Cape Department of Environment and Nature Conservation
- » Nama-Khoi Local Municipality
- » Namakwa District Municipality
- » South African Heritage Resources Agency
- » Department of Water Affairs - Upington
- » Department of Energy
- » Department of Agriculture, Land Reform and Rural Development

» Surrounding landowners

No comments have been received at this stage. All comments received during the review period of the report will be included in Appendix E of the Final Basic Assessment report.

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 comments have been received at this stage. All comments received during the review period of the report will be included in Appendix E of the Final Basic Assessment report.

SECTION D: IMPACT ASSESSMENT

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

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

No comments have been received to date.

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

All comments raised during the Basic Assessment Process will be included, together with a response from the EAP, in the Comments and Response Report (Appendix E) of the Final Basic Assessment Report.

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.

The following sections are relevant for both activity alternatives (A1 and A2)

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

Alternative (preferred alternative)

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

2.2. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE

Nature: Impacts on vegetation and protected plant species due to the construction of the facility.		
Some loss of vegetation is an inevitable consequence of the development and the potential impacts on listed plant species are a concern given the high number of listed species which may occur on the site.		
	No mitigation	Mitigation considered
Extent	Local (2)	Local (1)
Duration	Long-term (4)	Short-term (2)
Magnitude	Medium (7)	Low (2)
Probability	Definite (5)	Highly Probable (4)
Significance	High (65)	Low (20)
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	
Can impacts be mitigated?	Yes	
Mitigation measures:		
<ul style="list-style-type: none"> » Follow-up surveys to be conducted during the flowering season to establish the presence and abundance of listed species at the site. » Vegetation clearing to be kept to a minimum. No unnecessary vegetation to be cleared. » Sensitive areas as demarcated on the sensitivity map should be avoided as far as possible, and where these areas must be traversed by roads or infrastructure, specific precautions should be taken to ensure that impacts are minimised. » The final development area should be surveyed for species suitable for search and rescue. » Surveys for and clearing of alien plants should take place on at least an annual basis. 		
Cumulative impacts:		
The potential for cumulative impacts is quite low on account of the small development footprint of the facility.		
Residual impacts:		
Some loss of vegetation is inevitable and cannot be avoided		

Nature: Increased erosion risk as a result of soil disturbance and loss of vegetation cover.		
Some loss of vegetation is an inevitable consequence of the development and the potential impacts on listed plant species are a concern given the high number of listed species which may occur at the site.		
	No mitigation	Mitigation considered
Extent	Local (2)	Local (1)
Duration	Long-term (4)	Short-term (2)
Magnitude	High (8)	Low (4)
Probability	Highly Probable (4)	Probable (3)
Significance	Medium-High (56)	Low (21)
Status (positive or negative)	Negative	Negative

Reversibility	Low	High
Irreplaceable loss of resources?	Yes	
Can impacts be mitigated?	Yes	
Mitigation measures:		
<ul style="list-style-type: none"> » Roads should run along the contour wherever possible and roads that do not should have diversion structures in place at regular intervals to ensure that water flow and movement is regulated in a manner which minimizes erosion risk. » Roads which cross drainage lines should be constructed in manner which does not encourage erosion of the downstream channel and does not disrupt the natural flow of water down the channel. » Post-construction revegetation of all bare areas with local species. » Regular monitoring for erosion after construction to ensure that no erosion problems have developed as result of the disturbance. » All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and revegetation techniques. 		
Cumulative impacts:		
Higher sediment loads in rivers and streams will affect in-stream vegetation and biota.		
Residual impacts:		
If erosion at the site is controlled, then there will be no residual impact.		

Nature: Faunal habitat destruction, alteration and physical disturbance.		
Increased levels of noise, pollution, disturbance and human presence will be detrimental to fauna. Sensitive and shy fauna would move away from the area during the construction phase as a result of the noise and human activities present. Some mammals and reptiles such as tortoises would be vulnerable to illegal collection or poaching during the construction phase as a result of the large number of construction personnel that are likely to be present. Depending on how the development was fenced off, the fencing would probably also restrict animal movement and disrupt the connectivity of the landscape for fauna.		
	No mitigation	Mitigation considered
Extent	Local (2)	Local (1)
Duration	Long-term (4)	Long-term (4)
Magnitude	Medium (4)	Medium-Low (3)
Probability	Highly Probable (4)	Probable (3)
Significance	Medium (40)	Low (24)
Status (positive or negative)	Negative	Negative
Reversibility	High	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation measures:		
<ul style="list-style-type: none"> » Any fauna directly threatened by the construction activities should be removed to a safe location by the ECO or other suitably qualified person. » The collection, hunting or harvesting of any plants or animals at the site should be strictly forbidden. Personnel should not be allowed to wander off the construction site. » Fires should only be allowed within fire-safe demarcated areas. » No fuelwood collection should be allowed on-site. 		

- » No dogs should be allowed on site.
- » If the site must be lit at night for security purposes, this should be done with low-UV type lights (such as most LEDs), which do not attract insects.
- » If the site must be fenced, then provision should be made for faunal access at least at strategic sites such as where drainage lines enter or leave the site.
- » All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill.
- » No unauthorised persons should be allowed entry to the site.
- » Staff present during the operational phase should receive environmental education so as to ensure that that no hunting, killing or harvesting of plants and animals occurs.

Cumulative impacts:

Higher sediment loads in rivers and streams will affect in-stream vegetation and biota.

Residual impacts:

If erosion at the site is controlled, then there will be no residual impact.

Nature: Negative impacts on avifauna, including listed species as a result of disturbance, electrocution and collisions.

Direct and indirect impacts of the development on avifauna would result from habitat loss as well as from the risk of electrocution and collisions with power lines. Larger species, such as eagles, flamingos, cranes and bustards many of which are listed, are particularly vulnerable to impacts from power line infrastructure. Power line-related impacts may account for a large proportion of mortalities in vulnerable species. Unless mitigation measures are implemented the significance of this impact is potentially very high on account of the fact that the risk would be persistent and would remain for as long the power line infrastructure is in place.

	No mitigation	Mitigation considered
Extent	Local (2)	Local (1)
Duration	Long-term (5)	Short-term (2)
Magnitude	Medium (3)	Low (2)
Probability	Highly Probable (4)	Probable (3)
Significance	Medium (40)	Very Low (15)
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	

Mitigation measures:

- » Any new lines required as part of the development should be aligned with existing lines if possible.
- » Ensure that all new lines are marked with bird flight diverters in areas of likely impact.
- » All new power line infrastructure should be bird-friendly in configuration and adequately insulated. These activities should be supervised by someone with experience in this field.
- » Any electrocution and collision events that occur should be recorded, including the species affected and the date. If repeated collisions occur within the same area, then further mitigation and avoidance measures may need to be implemented.

Cumulative impacts:

The development would contribute to cumulative avifaunal impacts in the area resulting from

electrocution and collisions. However, these impacts can be avoided to a large extent through mitigation.

Residual impacts:

Despite mitigation actions which are not entirely effective, some birds are still likely to be killed on an occasional basis. Furthermore, the facility itself would represent some habitat loss for avifauna.

An ecological sensitivity map of the site (Figure 1.2) was produced by integrating the information collected on-site with the available ecological and biodiversity information available in the literature and various spatial databases. This includes delineating the different vegetation and habitat units identified in the field and assigning sensitivity values to the units based on their ecological properties, conservation value and the potential presence of species of conservation concern. The ecological sensitivity of the different units identified in the mapping procedure was rated according to the following scale:

- » Low – Units with a low sensitivity where there is likely to be a negligible impact on ecological processes and terrestrial biodiversity. This category is reserved specifically for areas where the natural vegetation has already been transformed, usually for intensive agricultural purposes such as cropping. Most types of development can proceed within these areas with little ecological impact. There were however no Low Sensitivity areas within the study area.
- » Medium- Areas of natural or previously transformed land where the impacts are likely to be largely local and the risk of secondary impact such as erosion low. Development within these areas can proceed with relatively little ecological impact provided that appropriate mitigation measures are taken.
- » High – Areas of natural or transformed land where a high impact is anticipated due to the high biodiversity value, sensitivity or important ecological role of the area. Development within these areas is undesirable and should only proceed with caution as it may not be possible to mitigate all impacts appropriately.
- » Very High – Critical and unique habitats that serve as habitat for rare/endangered species or perform critical ecological roles. These areas are essentially no-go areas from a developmental perspective and should be avoided at all costs.

Sensitive features which have been captured on the map include the drainage line along the eastern boundary of the site, the rocky ridge which runs roughly east-west across the central part of the site, and the upper slopes of the site which are steep and not suitable for development. Provided that the rocky ridge and the steep upper slopes of the site are avoided, the site is not highly sensitive from a faunal perspective. The preliminary results suggest that the site is not likely to be highly sensitive from a flora perspective either, although this definitely requires confirmation. Listed species which are likely to occur in the area are likely to be mostly geophytes and succulents, which if necessary could be translocated out of the affected area, although avoidance would be preferable. The relatively small extent of the development however implies that any impacts resulting from the development would be local in nature and not likely to be of broader ecological or conservation significance.

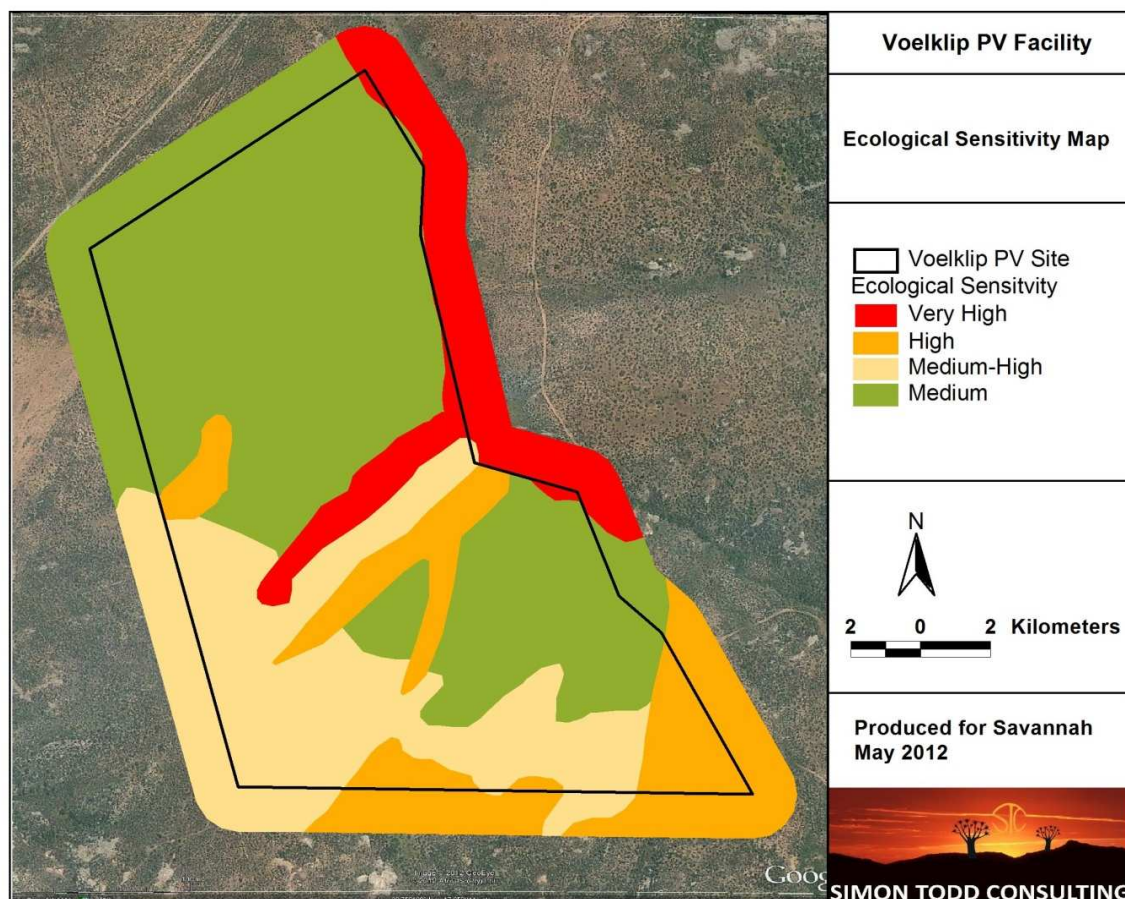


Figure 1.2 Ecological sensitivity map for the site

Nature: Dust creation		
The operation of vehicles on-site may lead to the creation of dust which can affect large areas depending on the environmental and climatic conditions.		
	No mitigation	Mitigation considered
Extent	Local (2)	Local (2)
Duration	Short term (2) *	Short term (2) *
Magnitude	Minor (2)	Minor (2)
Probability	Highly probable (4)	Improbable (2)
Significance	Low (24)	Low (12)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	Yes
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	Yes
Mitigation measures:		
» Limit vehicle movement to absolute minimum		
Cumulative impacts:		
The cumulative impact of this activity will be small if managed but can have widespread impacts if the recommended mitigation measures are not employed.		
Residual impacts:		

None

Nature: Loss of potentially arable land associated with the construction of PV panels, buildings and other infrastructure.

The overall soil impacts are expected to be low as the establishment of solar energy structures and infrastructure will not impact negatively on high potential agricultural land, and will not significantly alter the soil conditions on the site. Due to the dry and hot climate of the region this impact would in all probability be of limited significance and would be local in extent. There are high potential soils occurring on site, but not for rain-fed cultivation. The soils have grazing potential at best.

	No mitigation	Mitigation considered
Extent	Local (1)	Local (1)
Duration	Long-term (4)	Long-term (4)
Magnitude	Low (4)	Low (2)
Probability	Highly probable (4)	Probable (4)
Significance	36 (Medium)	28 (Low)
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation measures:		
<ul style="list-style-type: none"> » Limit footprint to the immediate development area where possible. » Disturbance of the topsoil layer should be kept to a minimum to optimise potential future grazing areas. 		
Cumulative impacts:		
The cumulative impact of the proposed construction activities will be small as it is constructed on land with low agricultural potential.		
Residual impacts:		
None		

Nature: Soil erosion on the construction site during and after the construction phase due to decreased vegetation cover and increased effect of prevailing wind

With fine-grained, sandy soils occurring, there is a potential hazard for topsoil removal by wind.

	No mitigation	Mitigation considered
Extent	Local (1)	Local (1)
Duration	Medium-term (3)	Short term (2)
Magnitude	Low (4)	Minor (2)
Probability	Probable (3)	Improbable (2)
Significance	24 (Low)	Low (10)
Status (positive or negative)	Negative	Negative
Reversibility	No	No
Irreplaceable loss of resources?	No	No

Can impacts be mitigated?	Yes	
Mitigation measures:		
<ul style="list-style-type: none"> » 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, even though this is likely to be very infrequent) 		
Cumulative impacts:		
The cumulative impact of this activity will be small if managed.		
Residual impacts:		
None		

Nature: Impacts on heritage and the cultural landscape		
The construction of the solar generation sites could result in alteration in the cultural characteristics of the landscape. No sites of heritage significance were identified within the study area or on the study site. Limited to negligible impacts on the cultural landscape are anticipated.		
	No mitigation	Mitigation considered
Extent	Local (2)	N/A
Duration	Short term (2)	N/A
Magnitude	Low (1)	N/A
Probability	Improbable (3)	N/A
Significance	Low (15)	N/A
Status (positive or negative)	Negative	Negative
Reversibility	No	No
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation measures:		
» None required		
Cumulative impacts:		
None.		
Residual impacts:		
None		

The development of solar generation site and associated infrastructure could impact on unidentified sites of paleontological importance if bedrock was to be disturbed.		
No paleontological sites of high value could be identified. Paleontological sites could be affected if bedrock was to be disturbed during the excavation activities associated with the construction of the generation facility and associated infrastructure.		
	No mitigation	Mitigation considered
Extent	Local (2)	Local (2)

Duration	Short term (2)	Long term (5)
Magnitude	Low (2)	Low (1)
Probability	Improbable (2)	Improbable (1)
Significance	Low (12)	Low (8)
Status (positive or negative)	Negative	Negative
Reversibility	No	No
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation measures: » Paleontological monitoring during excavation activities if bedrock is to be disturbed.		
Cumulative impacts: None.		
Residual impacts: None		

Nature: Visual impact

There will be a noticeable increase in heavy vehicles utilising the external access roads. This may cause a visual nuisance to other road users and land owners in the area. Furthermore, in this environment, dust from construction work is also likely to represent a significant visual impact.

	No mitigation	Mitigation considered
Extent	Local (4)	Local (4)
Duration	Very short term (1)	Very short term (1)
Magnitude	Moderate (6)	Moderate (6)
Probability	Improbable (2)	Improbable (1)
Significance	Low(22)	Low (11)
Status (positive or negative)	Negative	Negative
Reversibility	Recoverable (3)	Recoverable (3)
Irreplaceable loss of resources?	No	No
Can impacts be enhanced?	No	No

Mitigation measures:

- » Ensure that vegetation is not unnecessarily cleared or removed during the construction period.
- » Reduce the construction period through careful logistical planning and productive implementation of resources.
- » Retain a buffer (approximately 30-50m wide) of intact natural vegetation along the perimeter of the development site.
- » Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed regularly at licensed waste facilities.
- » Reduce and control construction dust through the use of approved dust suppression techniques as and when required (i.e. whenever dust becomes apparent).

<ul style="list-style-type: none"> » Restrict construction activities to daylight hours in order to negate or reduce the visual impacts associated with lighting. » Rehabilitate all disturbed areas, construction areas, roads, slopes etc. immediately after the completion of construction works.
<p>Cumulative impacts: None</p>
<p>Residual impacts: None</p>

Nature: Creation of employment and business opportunities during the construction phase

Based on the information from work carried out on other projects of this nature the construction phase is expected to extend over a period of 6 - 12 months and create approximately 40 employment opportunities, depending on the final design. The work associated with the construction phase will be undertaken by contractors and will include the establishment of the PV facility and the associated infrastructure.

	No enhancement	Enhancement considered
Extent	Local – Regional (2)	Local – Regional (3)
Duration	Very Short Term (1)	Very Short Term (1)
Magnitude	Low (4)	Low (4)
Probability	Highly probable (4)	Highly probable (4)
Significance	Low (28)	Medium (32)
Status (positive or negative)	Positive	Positive
Reversibility	N/A	N/A
Irreplaceable loss of resources?	N/A	N/A
Can impacts be enhanced?	Yes	

Enhancement measures:

Employment

- » Where reasonable and practical, the developer should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area.
- » The local authorities, community representatives, and organisations on the I&AP database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that BQR SA intends following for the construction phase of the project.
- » Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase.
- » The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.

Business

- » BQR SA should seek to develop a database of local companies, specifically BEE companies, which qualify as potential service providers (e.g. construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction contractors. These companies should

be notified of the tender process and invited to bid for project-related work;
Cumulative impacts: Opportunity to up-grade and improve skills levels in the area. However, due to relatively small number of local employment opportunities this benefit is likely to be limited.
Residual impacts: Improved pool of skills and experience in the local area. However, due to relatively small number of local employment opportunities this benefit is likely to be limited.

Nature: Increased risk of stock theft, poaching and damage to farm infrastructure		
The presence of construction workers on the site increases the potential risk of stock theft and poaching. The movement of construction workers on and off the site also poses a potential threat to farm infrastructure, such as fences and gates, which may be damaged. Stock and game losses may also result from gates being left open and/or fences being damaged.		
	No mitigation	Mitigation considered
Extent	Local (4)	Local (2)
Duration	Very short term (1)	Very short term (1)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (33)	Low (21)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	Yes
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	Yes
Mitigation measures:		
<ul style="list-style-type: none"> » BQR SA should enter into an agreement with the affected landowners whereby the company will compensate for damages to farm property and disruptions to farming activities. This includes losses associated with stock theft and damage to property etc. » Contractors appointed by BQR SA should ensure that construction workers who are found guilty of stealing livestock, poaching and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation. » The housing of construction workers on the site should be limited to security personnel. 		
Cumulative impacts: No, provided losses are compensated for.		
Residual impacts: See cumulative impacts.		

2.3. IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE

Potential visual impact

Visibility analysis / exposure

The proposed facility has a very contained core area of potential visual exposure (Figure 2.2). This is due to the location of the Voëlkli se Berg, located south of the site and the low mountains located north and west of the site and the N7 national road.

To the north east, the flatter topography associated with the valley floor results in a viewshed that extends further northwards. The undulating nature of the land however results in this longer distance exposure being fragmented and interrupted. In addition, the low lying drainage lines and dry river beds are also visually screened, by virtue of the topography.

A relatively long and continuous stretch of the N7 national road, to the north and west of the site, falls within the core zone (2km radius from the site) of potential visual exposure. The only other roads within this zone include sections of access roads to a number of homesteads and structures located around the proposed site. Homesteads that are expected to be exposed to the PV facility include Voëlkli, located almost 2km from the site (on the farm identified for the development) and Bloustasie located almost 4km from the PV facility.

It is envisaged that the proposed facility would be visible to observers travelling along roads and to the residents of the identified homesteads and farms as well as tourists visiting the region, within (but not restricted to) an 8km radius of the proposed facility.

Other than along the nearby roads, viewer incidence will be concentrated within the limited number of farming homesteads within the study area.

In terms of viewer sensitivity, the most vulnerable to potential visual impacts include residents of homesteads and settlements (who will be exposed while at home) and tourists visiting and travelling through the area.

Daily commuters (by road) are also considered to be sensitive receptors, but as this exposure will be of shorter duration than that for residents of homesteads, their sensitivity is somewhat lower.

The severity of the visual impact on visual receptors decreases with increased distance from the proposed facility.

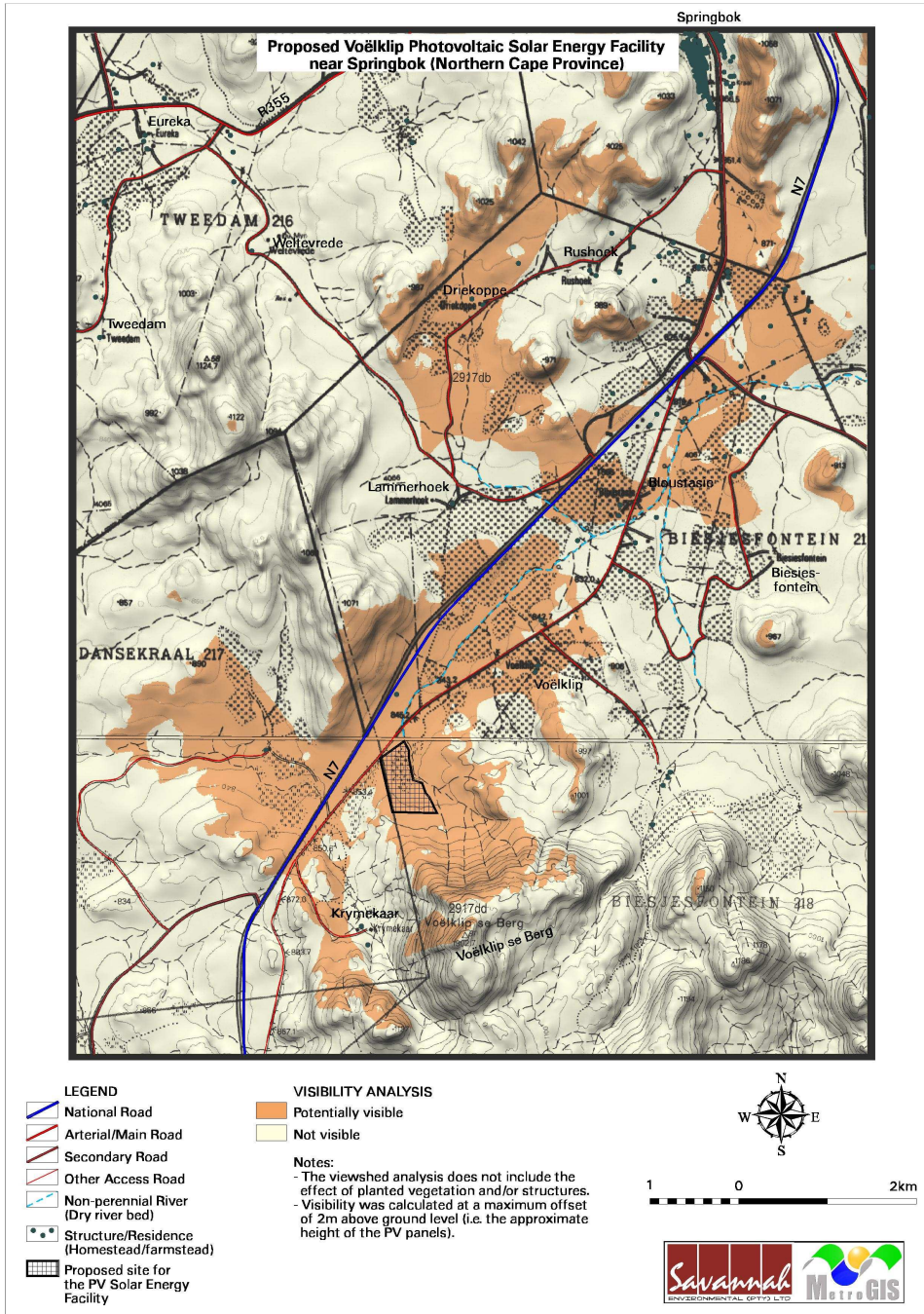


Figure 2.2: Potential visual exposure of the proposed PV plant, assuming no vegetation absorption capacity, the pink / brown shading indicates areas from which the facility or parts thereof could potentially be visible

Potential visual impact

The visual impact index

The combined results of the visual exposure, viewer incidence / perception and visual distance of the proposed solar energy facility site options are displayed on Figure 2.3.

Here the weighted impact and the likely areas of impact have been indicated as a visual impact index. Values have been assigned for each potential visual impact per data category and merged in order to calculate the visual impact index.

An area with short distance, a potential visual exposure to the proposed facility, a high viewer incidence and a predominantly negative perception would therefore have a higher value (greater impact) on the index. This helps in focussing the attention to the critical areas of potential impact when evaluating the issues related to the visual impact.

Areas of potentially moderate visual impact are indicated within a 2km radius of the proposed facility.

Within the 2km radius, sensitive visual receptors are limited to users of the N7, which bypasses the site to the north and west, and one homestead (Voëlklip) located on the farm identified for the PV development. These sensitive visual receptors are likely to be exposed to a potentially high visual impact.

Sensitive visual receptors travelling along access roads within this zone may experience a moderate to high visual impact, which is ranked slightly lower than the national road (which is expected to have a higher volume of traffic and potentially more tourists).

The extent of potential visual impact remains moderate to high along the N7 national road, between the 2km and 4km radius north east of the proposed development. Other visually exposed areas within this zone are likely to experience potentially low visual impacts, except for the Bloustasie homestead where observers may experience a moderate to high visual impact.

Between the 4km and 8km radius, the viewshed becomes increasingly fragmented, with visual exposure greatly restricted to higher lying ground along south-facing slopes of hills and mountains. These areas are likely to experience potentially very low visual impact.

Beyond a radius of 8km from the site, the extent of potential visual exposure is further reduced and fragmented. The magnitude of visual impact is mostly negligible. The town of Springbok falls within this zone and is not exposed to the proposed PV plant.

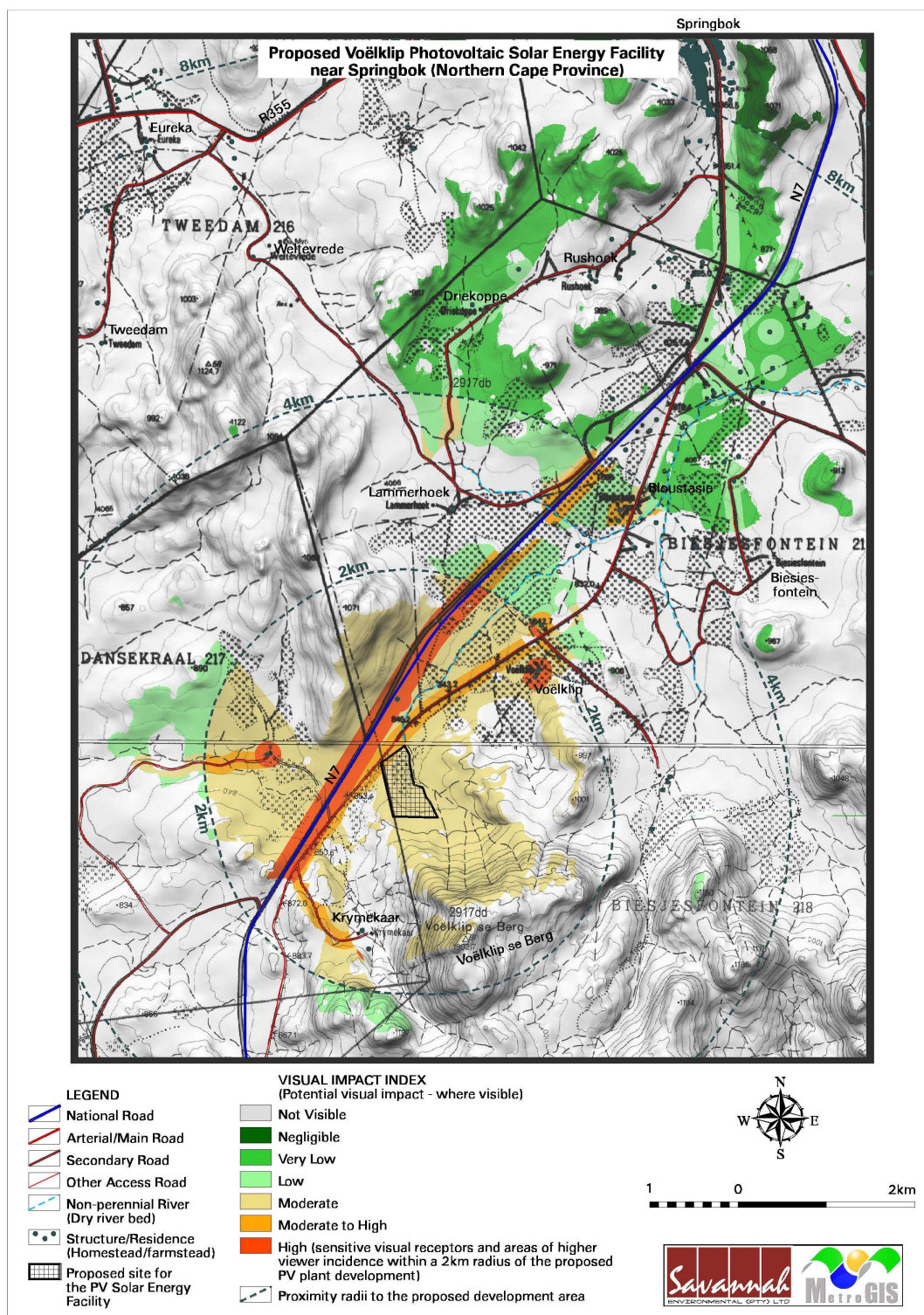


Figure 2.3: Visual impact index of the proposed PV facility

Nature: Potential visual impact on sensitive visual receptors and road users in close proximity to the proposed SEF.

Sensitive visual receptors in close proximity to the proposed facility (i.e. within a 2km radius) include residents of Voëlklip and users of the N7 national road, which bypasses the site to the north and west.

	No mitigation	Mitigation considered
Extent	Local (4)	Local (4)
Duration	Long term (4)	Long term (4)
Magnitude	High (8)	High (8)
Probability	Probable(3)	Improbable(2)
Significance	Moderate (48)	Moderate (32)
Status (positive or negative)	Negative	Negative
Reversibility	Recoverable (3)	Recoverable (3)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	To a degree ⁵	
<p>Mitigation:</p> <p>Planning:</p> <ul style="list-style-type: none"> » 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, and make use of already disturbed areas rather than pristine sites wherever possible. <p>Construction:</p> <ul style="list-style-type: none"> » Rehabilitation of all construction areas. » Ensure that vegetation is not cleared unnecessarily to make way for the access road and ancillary buildings. <p>Operations:</p> <ul style="list-style-type: none"> » Maintain the general appearance of the facility as a whole. » Maintenance of roads to avoid erosion and suppress dust. <p>Decommissioning:</p> <ul style="list-style-type: none"> » 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. 		
<p>Cumulative impacts:</p> <p>The construction of the solar energy facility and ancillary infrastructure will increase the cumulative visual impact of industrial type infrastructure within the region. This is relevant in light of the existing 22kV power line to the west and north of the site.</p>		
<p>Residual impacts:</p> <p>None - the visual impact will be removed after decommissioning.</p>		

Nature: Potential visual impact on sensitive visual receptors within the region.		
Sensitive visual receptors within the region (i.e. beyond the 2km radius) include users of main roads (i.e. the N7) and residents of a limited number of homesteads and settlements.		
	No mitigation	Mitigation considered
Extent	Regional (3)	Regional (3)
Duration	Long term (4)	Long term (4)

⁵ The appearance and size of the PV panels (with an approximate height of 2m) is not possible to mitigate. The functional design of the structures cannot be changed in order to reduce visual impacts.

Secondary impacts anticipated as a result of the proposed facility (i.e. visual character, sense of place, tourism value and tourism potential) are also not possible to mitigate.

Magnitude	Moderate (6)	Moderate (6)
Probability	Improbable (2)	V Improbable (1)
Significance	Low (26)	Low (13)
Status (positive or negative)	Negative	Negative
Reversibility	Recoverable (3)	Recoverable (3)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	To a degree	
<p>Mitigation:</p> <p>Planning:</p> <ul style="list-style-type: none"> » 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, and make use of already disturbed areas rather than pristine sites wherever possible. <p>Construction:</p> <ul style="list-style-type: none"> » Rehabilitation of all construction areas. » Ensure that vegetation is not cleared unnecessarily to make way for the access road and ancillary buildings. <p>Operations:</p> <ul style="list-style-type: none"> » Maintain the general appearance of the facility as a whole. » Maintenance of roads to avoid erosion and suppress dust. <p>Decommissioning:</p> <ul style="list-style-type: none"> » 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. 		
<p>Cumulative impacts:</p> <p>The construction of the solar energy facility and ancillary infrastructure will increase the cumulative visual impact of industrial type infrastructure within the region. This is relevant in light of the existing 22kV power line to the west and north of the site.</p>		
<p>Residual impacts:</p> <p>None - the visual impact will be removed after decommissioning.</p>		

Nature: Potential visual impact of lighting at night on observers in close proximity to the proposed facility

The area immediately surrounding the proposed facility has a relatively low incidence of receptors and light sources, so light trespass and glare from the security and after-hours operational lighting for the facility will have some significance for visual receptors in close proximity.

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

Mitigation:

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

Cumulative impacts:

The construction of the solar energy facility and ancillary infrastructure will increase the cumulative visual impact of industrial type infrastructure within the region. This is relevant in light of the existing power line to the west and north of the site as well as other similar facilities planned in the region.

Residual impacts:

None - the visual impact will be removed after decommissioning.

Nature: Potential visual impact of the proposed facility on the visual character of the landscape, the sense of place and the tourism potential of the region.

The character of the landscape is one of undeveloped, wide open spaces. Development, where this occurs is of a domestic scale. The visual quality of the landscape is considered to be high and the sense of place defined by an absence of development within the expansive Namaqualand.

The nature of the impact is again that of an expansive built form within a natural context. In addition, vegetation will need to be removed for these structures to be built. It is this very same vegetation that, for most part of the year appears to be dry and dull shrubland, transforms the Namaqualand into the flowering wonderland that has made the region famous both locally and internationally.

The anticipated visual impact of the facility on the regional visual character, and by implication, on the sense of place and tourism potential, is expected to be of moderate significance, both before and after mitigation. The small scale of the proposed facility does serve as potential mitigation of this impact and the limited occurrence of sensitive visual receptors for most part of the year reduces the probability somewhat.

	No mitigation	Mitigation considered
Extent	Regional (3)	Regional (3)
Duration	Long term (4)	Long term (4)
Magnitude	High (8)	High (8)
Probability	Highly Probable (4)	Probable (3)
Significance	Moderate (60)	Moderate (45)
Status (positive or negative)	Negative	N/A
Reversibility	Recoverable	Recoverable
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	To a degree	

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, and make use of already disturbed areas rather than pristine sites wherever 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 PV facility and the associated infrastructure will increase the cumulative visual impact of electricity related infrastructure within the region.

Residual impacts:

None - the visual impact will be removed after decommissioning.

Nature: Visual impact of the power line to Nama Substation on observers in close proximity to the proposed facility

The construction of the power line will increase the cumulative visual impact of electricity related infrastructure within the region. This is relevant in light of the existing power line to the west and north of the site.

	No mitigation	Mitigation considered
Extent	Local (4)	Local (4)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Probability	Improbable (2)	Improbable (2)
Significance	Low (24)	Low (24)
Status (positive or negative)	Negative	Negative
Reversibility	Recoverable (3)	Recoverable (3)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No	
Mitigation:		
» None required.		
Cumulative impacts:		
As above.		
Residual impacts:		
None - the visual impact will be removed after decommissioning.		

Nature: Creation of employment and business opportunities

The proposed facility will create potential employment opportunities in the Northern Cape Province and the Nama-Khoi Municipality. However, given that the solar energy sector in South Africa is relatively new, it may be necessary to import the required operational and maintenance skills from other parts of South Africa or even overseas. However, it will be possible to increase the number of local employment opportunities through the implementation of a skills development and training programme linked to the operational phase.

Given the location of the proposed facility the majority of permanent staff is likely to reside in the town Springbok. In terms of accommodation options, a percentage of the permanent employees may purchase houses here, while others may decide to rent. Both options would represent a positive economic benefit for the region. In addition, a percentage of the monthly wage bill earned by permanent staff would be spent in the regional and local economy, which will benefit local businesses in these towns. The benefits to the local economy will extend over the operational lifespan of the project.

The local hospitality industry in Springbok is also likely to benefit from the operational phase. These benefits are associated with site visits by company staff members and other professionals (engineers, technicians etc) who are involved in the company and the project but who are not linked to the day-to-day operations.

	No enhancement	Enhancement considered

Extent	Local and Regional (2)	Local and Regional (3)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (30)	Medium (33)
Status (positive or negative)	Positive	Positive
Reversibility	N/A	
Irreplaceable loss of resources?	No	
Can impacts be enhanced?	Yes	
Enhancement measures:		
» BQR SA should implement a training and skills development programme for locals during the first 5 years of the operational phase. The aim of the programme should be to maximise the number of South African's and locals employed during the operational phase of the project.		
Cumulative impacts:		
Creation of permanent employment and skills and development opportunities for members from the local community and creation of additional business and economic opportunities in the area		
Residual impacts:		
See cumulative impacts.		

Nature of impact: Promotion of renewable energy		
South Africa currently relies on coal-powered energy to meet more than 90% of its energy needs. The establishment of a clean, renewable energy facility will therefore reduce, albeit minimally, South Africa's reliance on coal-generated energy.		
The overall contribution to South Africa's total energy requirements of the proposed PV facility is relatively small. However, the 10 MW produced will help to offset the total carbon emissions associated with energy generation in South Africa. Given South Africa's reliance on Eskom as a power utility, the benefits associated with an IPP based on renewable energy are regarded as an important contribution.		
	No enhancement	Enhancement considered
Extent	Local, Regional and National (4)	Local, Regional and National (4)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Probability	Highly Probable (4)	Highly Probable (4)
Significance	Medium (48)	Medium (48)
Status (positive or negative)	Positive	Positive
Reversibility	Yes	
Irreplaceable loss of resources?	Yes, impact of climate change on ecosystems	
Can impacts be enhanced?	Yes	
Enhancement measures:		
» None required.		

Cumulative impacts:

Development of several renewable energy facilities.

Residual impacts:

N/A

No Go Alternative

The impact that will result from the no-go alternative will mean that an additional 10 MW will not be evacuated into the Eskom grid. In the context of coal fired power stations, some of which generate in excess of 3 GW, the loss of 10 MW is not significant in the local, regional, or national context. The evacuation of 10 MW will not contribute significantly as a stand-alone facility, however several solar energy facilities are proposed into the Northern Cape grid and therefore there could be a cumulative positive effect. The evacuation of additional electricity into the Eskom Grid will serve to strengthen the grid itself, and boost local grid stability. These potential benefits will also be lost assuming a no-go alternative.

2.4. IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING PHASE

Alternative (preferred alternative)

During the decommissioning and closure phases environmental or social impacts are not expected to differ from those of the construction phase of the project which have already been indicated in the above tables.

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.

BQR South Africa (Pty) Ltd is proposing the establishment of a PV facility for the purpose of commercial electricity generation on an identified site located approximately 10 km south of Springbok in the Northern Cape Province (refer to Figure 1.1). The proposed project will have maximum generating capacity of up to 10 MW which will be evacuated into the national electricity grid as part of a power purchase agreement with Eskom, the Department of Energy, and the South African Treasury.

Due to the localised nature and relatively short-term duration of the proposed project, the establishment of the proposed PV facility is considered environmentally acceptable should the following potential impacts be mitigated and/managed for:

Impacts on the biodiversity (i.e. flora, fauna and avifauna)

Overall, the site does not appear to be highly sensitive from an ecological and conservation perspective, although the status of listed species at the site requires confirmation before this assertion can be broadly accepted.

Although some of the activities likely to be associated with the development pose some risk to the environment, these can be effectively mitigated to an acceptably **low** significance level. In the context of the current study, erosion risk is identified as a particular risk that would require specific attention during the design and construction phases of the development. The site is steep and a lot of mitigation measures to reduce erosion potential to a low level would be required. The impact on vegetation and listed plant species is assessed as being high, pre-mitigation.

Impacts on identified heritage resources

No sites of heritage significance were identified within the study area indicated.

The area could still contain the remains of nomadic hunter/gatherer camps and some areas with suitable substrates could have been used as quarries for material to produce Stone Age tools. No such sites were however identified. In three areas scatterings of surface stone artifacts were noticed, however none of these were concentrated enough to be classified as Stone Age Sites.

Overall impact significance post mitigation is regarded as being **low**.

Soils and agricultural potential – the land capability and land use comprises mainly extensive grazing due to climatic and soil constraints. Therefore the agricultural potential in the area is very low due to these constraints. There are three aspects that have to be managed on the site:

- » Erosion must be controlled through adequate mitigation and control structures.
- » Impacts from vehicles, such as spillages of oil and hydrocarbons, should be prevented and

mitigated.

- » Dust generation on site should be mitigated.

Overall impact significance post mitigation is regarded as being **low**.

Visual impacts on sensitive visual receptors near the facility - the rural visual quality and wide open views surrounding the site will be transformed for the entire operational lifespan. The visual environment surrounding the site will be visually impacted upon for the anticipated operational lifespan of the facility (i.e. 20 - 30 years). Potential visual impacts will be concentrated within 2km of the proposed facility, although the extent of visual impact will not be limited to this zone.

The proposed facility has a very contained core area of potential visual exposure.

This is due to the location of the Voëlklip se Berg, located south of the site and the low mountains located north and west of the site and the N7 national road.

To the north east, the flatter topography associated with the valley floor results in a viewshed that extends further northwards. The undulating nature of the land however results in this longer distance exposure being fragmented and interrupted.

In addition, the low lying drainage lines and dry river beds are also visually screened, by virtue of the topography.

The proposed facility would be visible within an area that incorporates certain sensitive visual receptors. These include users of the N7, other secondary roads and a limited number of residents of farming homesteads and settlements.

The overall impact significance of the visual impacts is considered **low** to **moderate**.

Socio-Economic Impacts - the proposed PV facility is strongly supported at a national, provincial, and local level in terms of the relevant policy and planning documents for the area (i.e. The National Energy Act (2008), The White Paper on the Energy Policy of the Republic of South Africa (December 1998), The White Paper on Renewable Energy (November 2003) and Northern Cape Provincial Growth and Development Strategy (2004-2014).

The key social issues associated with the *construction phase* include:

- » *Positive impacts* - creation of employment and business opportunities, and the opportunity for skills development and on-site training.
- » *Negative impacts* - influx of construction workers employed on the project; increased risk of stock theft, poaching and damage to farm infrastructure associated with construction workers; impact of heavy vehicles, including damage to roads, safety, noise and dust creation.

The overall impact significance of these impacts is considered **moderate**.

The key social issues associated with the *operational phase* include:

- » *Positive impacts* - creation of employment and business opportunities, opportunities for skills development and training, and the establishment of infrastructure to generate renewable

energy.

- » *Negative impacts* - the visual impacts and associated impact on sense of place and the landscape, and the potential impact on tourism.

The overall impact significance of these impacts is considered **moderate**.

As part of the Environmental Management Programme (EMP), mitigation measures will be proposed to manage /and or mitigate these potential impacts. Positive benefits/impacts related to limited job creation during the construction phase will be enhanced, where possible, through the selection of local labourers.

Activity Alternatives:

Two alternatives are being considered for the connection of the facility to the grid:

A1) An overhead distribution power line connecting to the Eskom electricity network at the existing Nama substation ~16 km north of the site; OR

A2) A loop-in loop-out power line linking to existing Eskom power lines west of the site.

The proposed Alternative A1 to link the development to the Eskom grid would potentially pose a greater risk to listed avifauna as well as most raptors and bustards present in the area as a result of the risk of collisions as well as electrocution, compared to Alternative A2 (due to the longer length of the power line for A1, ~ 16km). This impact would to some extent be mitigated by the fact that the power line to the Nama substation would mostly run adjacent to the N7 and many species would avoid this area on account of the high traffic volumes on the road. In addition, there is already an existing power line along this route and so the addition of an additional line along the same route would have less impact than a line along a new route.

Once the route of the line has been finalized, any sections of the line which may pose a risk to avifauna should be fitted with bird flight diverters (bird flappers). This would potentially create a net benefit as this would help to prevent impacts on the adjacent line.

Alternative A1 will also pose a slightly higher visual impact due to the length of the power line (16 km). Again there is already an existing power line along this route and so potential visual impacts are reduced somewhat.

The technical feasibility of connecting to the existing power lines immediately west of the site is still being investigated. Currently **Alternative A2** (connection to the existing power lines west of the site) is slightly preferred from an ecological and visual perspective due to the much shorter length of power line required to be constructed (250 m) compared to the power line to Nama Substation (Alternative A1, 16km), however the technical feasibility of this option has not yet been confirmed and additional discussions are still to be held between Eskom and the developer. The final Basic Assessment report submitted to DEA will nominate a final preferred alternative. Both Alternatives have been assessed in this Basic Assessment. Neither Alternative for grid connection (A1 nor A2) is considered to be fatally flawed from an environmental perspective.

No-go alternative (compulsory)

The impact that will result from the no-go alternative will mean that an additional 10 MW will not be evacuated into the Eskom grid. In the context of coal fired power stations, some of which generate in excess of 3 GW, the loss of 10 MW is not that significant in the regional and national context. The evacuation of 10 MW will not contribute significantly as a stand-alone facility, however several solar energy facilities are proposed into the Northern Cape grid and therefore there could be a cumulative positive effect.

At a site level the implications of the no-go alternative are that the site would remain as is, without any of the positive or negative impacts of the project affecting the area. The implementation of the no-go alternative will result in the 10MW not being available to generate power towards meeting the government's goal of 17GW of renewable energy capacity, and will also result in the loss of local and regional economic upliftment opportunities.

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:

From the conclusions of the Basic Assessment undertaken, the proposed PV facility is considered to be acceptable from an environmental perspective, and no fatal flaws have been identified for the site or power line route.

MITIGATION MEASURES

In order to mitigate and manage for potential impacts the following mitigation measures are recommended to form part of the Environmental Authorisation:

- » Highly sensitive areas as demarcated on the ecological sensitivity map should be avoided as far as possible, and where these areas must be traversed by roads or infrastructure, specific precautions should be taken to ensure that impacts are minimised.
- » Keep disturbance of indigenous vegetation to a minimum.
- » Follow-up surveys to be conducted during the flowering season to establish the presence and abundance of listed species at the site. Permits may be required for the removal or relocation of certain plant species.
- » The final development area should be surveyed for species suitable for search and rescue.
- » Vegetation clearing to be kept to a minimum. No unnecessary vegetation to be cleared.
- » Post-construction re-vegetation of all bare areas with local species.
- » Surveys for and clearing of alien plants should take place on at least an annual basis.
- » Any new lines required as part of the development should be aligned with existing lines if possible.
- » Erosion must be controlled through adequate mitigation and control structures.
- » Regular monitoring for erosion after construction to ensure that no erosion problems have developed as result of the disturbance.
- » All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill.
- » Ensure that all new power lines are marked with bird flight diverters in areas of likely impact.
- » The construction area should be clearly defined and demarcated by a fence.
- » Spoil material should be removed from the site for disposal.
- » All areas disturbed by the construction footprint, should be rehabilitated at the end of the construction phase.
- » The footprint associated with the construction footprint should be minimised.
- » An Environmental Control Officer (ECO) should be appointed to monitor the establishment

phase of the construction phase.

- » The housing of construction workers on the site should be limited to security personnel.
- » Vehicles should use existing access roads only.
- » Roads must be maintained to forego erosion and to suppress dust, and rehabilitated areas must be monitored for rehabilitation failure. Remedial actions must be implemented as a when required.
- » Dust suppression measures must be implemented where heavy vehicles make use of local roadways.
- » Impacts from vehicles, such as spillages of oil and hydrocarbons onto bare soil, should be prevented.
- » Internal access roads should be planned with due cognisance of the topography and the construction of roads should be undertaken with adequate drainage structures in place to forego potential erosion problems.
- » The construction period should be reduced through careful planning and productive implementation of resources.
- » Control stormwater and runoff water to avoid erosion impacts on watercourses.
- » No structures should be permanently positioned within the bed of watercourses.
- » A lighting engineer should be consulted to assist in the planning and placement of light fixtures for the facility and all ancillary infrastructure in order to reduce visual impacts associated with glare and light trespass.
- » Where possible, BQR South Africa should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically semi and low-skilled job categories. This will reduce the potential impact that this category of worker could have on local family and social networks. Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction / operation phases.
- » On uncovering a possible grave or burial site it is imperative that construction be ceased immediately. The area should be marked and a heritage practitioner should be informed immediately.
- » In terms of ancillary infrastructure, it is recommended that the access road, power line and ancillary infrastructure be planned in such a way and in such a location that clearing of vegetation is minimised. This implies consolidating infrastructure as much as possible and making use of already disturbed areas rather than pristine sites wherever possible.
- » During operation, the maintenance of the PV panels and all ancillary structures and infrastructure will ensure that the facility does not degrade, thus aggravating visual impact.
- » Once the facility has exhausted its lifespan, the main facility and all associated infrastructure not required for the post rehabilitation use of the site should be removed and all disturbed areas appropriately rehabilitated. An ecologist should be consulted to give input into rehabilitation specifications.
- » Once the route of the power line has been finalised, any sections of the line which may pose a risk to avifauna should be fitted with bird flight diverters (bird flappers). This would potentially create a net benefit as this would help to prevent impacts on the adjacent line.

The feasibility of connecting to the existing power lines immediately west of the site is still being investigated. Currently Alternative A2 is preferred from an ecological and visual perspective due to the shorter length of power line required to be constructed, however the feasibility of this option has not yet been confirmed and additional discussions are still to be held between Eskom and the developer. Both Alternatives are assessed in this Basic Assessment. The final Basic

Assessment report submitted to DEA will nominate a final preferred alternative based on feasibility and potential environmental impacts. Neither Alternative for grid connection (A1 or A2) is considered to be fatally flawed from an environmental perspective.

Is an EMPR attached?

YES

✓

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