Environmental Scoping Report (DRAFT)

Spes Bona Solar Photovoltaic Power Facility

Remainder of Portion 1 and Portion 10 of the Farm Spes Bona No. 2355, District Bloemfontein, Province of Free State

For public comment

Sustainable Development Projects cc

Compiled for: Scatec Solar SA (Pty) Ltd

March 2014

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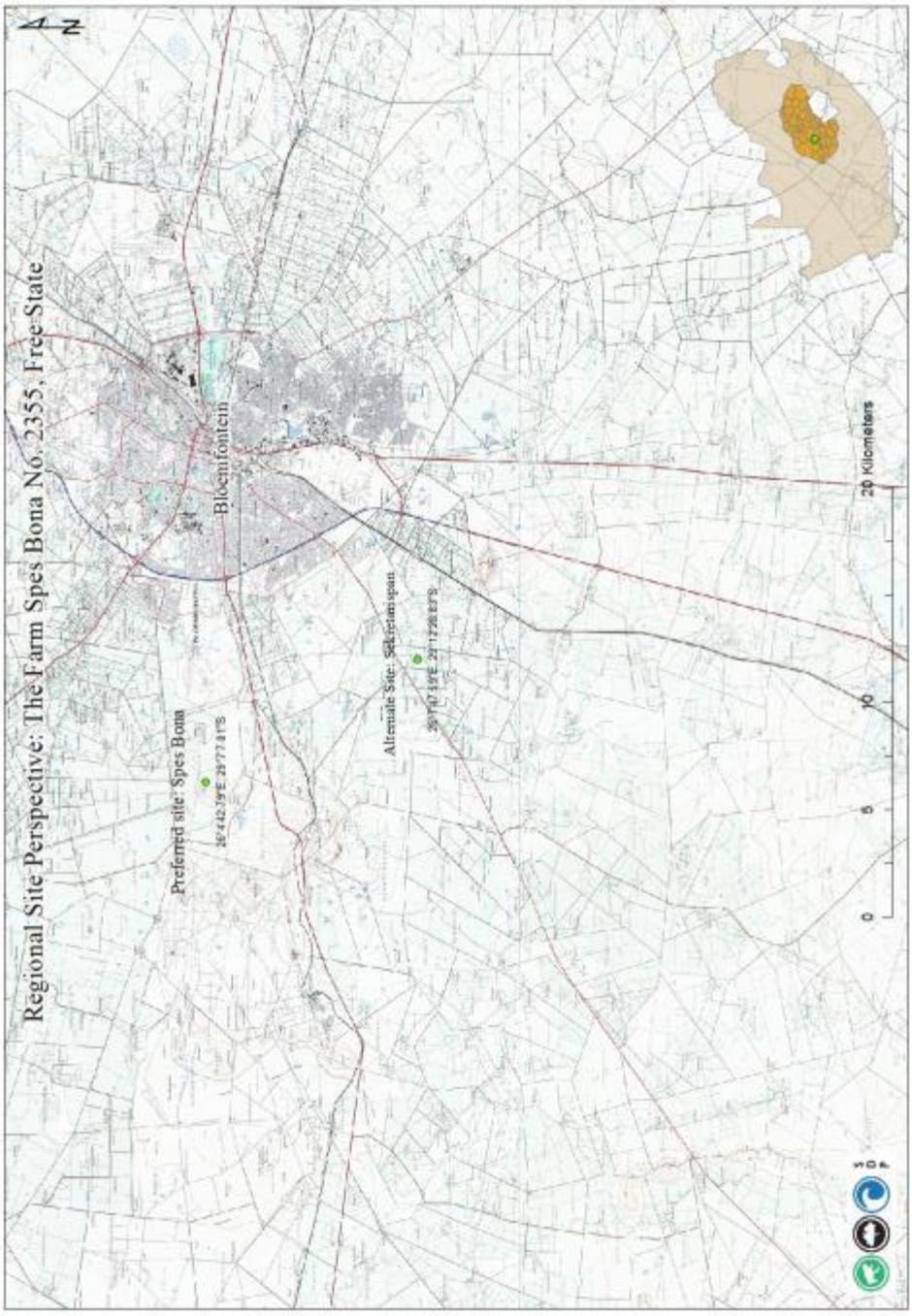
Environmental Scoping Report
Proposed Spes Bona Photo Voltaic Facility on
Remainder of Portion 1 and Portion 10 of the Farm Spes Bona No. 2355

Contents

Table 2. Summary of information pertaining to the site.



1 : 50 000 scale map indicating sites of proposed PV facility

SUMMARY OF SCOPING REPORT & RECOMMENDATIONS

This Environmental Scoping Report ('the scoping report') has been compiled to provide an indication of the ecological, social and economic impacts that may arise following the establishment of a photo-voltaic (solar power) facility on the property Remainder of Portion 1 and Portion 10 of the Farm Spes Bona No. 2355, District Bloemfontein, Province of Free State.

The applicant, Scatec Solar SA (Pty) Ltd, represented by Mr. J Borrill wishes to produce approximately 86MW of power which is to be fed into the localized power grid via a 132kV powerline serving the Harvard substation, which is situated on the property.

The Free State region is conducive to the establishment of solar farms on account of its generally high insolation, level topography and proximity to major power lines serving the region. The land in question is free of built structures and has been transformed as a result of grazing of livestock and other agricultural activities.

Solar power is considered a "clean energy" source and is a form of energy generation being promoted at local and international levels to meet energy demand and reduce reliance upon carbon based fuels.

The scoping report has not identified significant concerns although issues relating to ecological aspects, archaeological resources and agricultural productivity require evaluation and the integration of design and other technical aspects of the proposal should be undertaken in order to integrate the "farm" into the site and surrounds.. . Although some public concerns have been raised, these are limited.

This scoping report is presented for evaluation to the National Department of Environmental Affairs for consideration and approval of the plan of study, prior to engagement in the compilation of the environmental impact report.. The following technical investigations have been proposed based on information gaps:

- Agricultural assessment of potential
- Ecological assessment of site
- Heritage and Palaeontological Assessment
- Slope and visual parameters to be considered

RECOMMENDATION REGARDING EIA PROCESS

In terms of the regulations promulgated under the National Environmental Management Act 1998 ('NEMA') - GNR 546 of August 2010, regulation 32 of Chapter 3, Part 3 a full environmental impact assessment will be undertaken, following this environmental scoping process, including a public participation process, from which a number of issues have arisen, which should be investigated and assessed through an Environmental Impact Assessment Process.

This Environmental scoping report identifies the issues, associated with the proposed development of a photo-voltaic farm or power generation centre and the terms of reference to be followed in an environmental impact assessment process. The terms of reference for specific investigations during the EIA process are contained in item 11 of this document with a plan of study for the undertaking of the EIA process presented.

1 BACKGROUND AND INTRODUCTION

The issue of power provision is of national concern within South Africa - a problem of insufficient generation and supply that is seen against the global perspective on climate change and demand for greater investment in sustainable energy production or so-called "green energies". Solar power, through the use of, amongst other methods, photo voltaic receptors, is considered to be one of the most applicable and cost efficient, sustainable / renewable energy resources available in South Africa. Photo-voltaic power provision is seen as benign in its direct impact, as no atmospheric carbon generation is associated with the power production process and the structures are generally "temporary" in nature.

The Free State, on account of its relatively high insolation levels, reasonable temperature regime, low level topography and open agricultural lands, offers a suitable physical environment for the establishment of solar farms (photo-voltaic power generation facilities). The Free State has not received significant consideration from those promoting photo voltaic generation programmes, on account of the more financially lucrative opportunities located in the west of the country. However, the region offers significant opportunity for the establishment of PV and as such, the Free State and surrounds is considered a most suitable location. The existing and proposed distribution network in the region further supports the region as a solar power supply hub within the country.

Scatec Solar SA (Pty) Ltd, a local Black Economic Empowerment company and subsidiary of Scatec Solar AS (Norway) and Simacel (Pty) Ltd, wishes to establish photo voltaic facilities within the Free State region, providing between 60MW and 150MW of power to the distribution network. After extensive investigations within the region the applicant has identified the Remainder of Portion 1 and Portion 10 of the Farm Spes Bona No. 2355, situated approximately 8 kilometres west of the city of Mangaung (Bloemfontein) (see Fig 1), as a suitable site for a solar power facility and provision to the grid. The following technical aspects have been taken into consideration:

- The suitability of the substation and surrounding network to allow for PV connection within minimal upgrade requirements and financial outlay
- Consenting landowner
- Appropriate bio-physical factors

Under NEMA read with the environmental impact assessment regulations promulgated thereunder, in order to establish an electricity facility with a generation capacity greater than 10MW, or a distribution potential of more than 33 kilovolts, all prospective developers must make application to the competent environmental authority for authorization to undertake such development. Such authorization follows a prescribed legal process, the environmental impact assessment process, where specific consideration of social, economic and bio physical impacts arising from the proposed activity is evaluated. The level of electricity generated or distributed dictates the level of assessment required. In this instance, the applicant requires more than 20 Megawatts, and accordingly the full EIA process, as opposed to a basic assessment, will be followed. This document provides the findings of the 'scoping' phase of

the environmental impact assessment process and identifies issues for specific consideration in the impact assessment report

2. PROJECT TEAM

This scoping process and the compilation of documentation was undertaken with input from the following professionals (Table 1)

Table 1 Project Team

Environmental Assessment Practitioners	S C Bundy - Sustainable Development Projects cc BSc MSc Dip Proj Man (Pr. Sci. Nat.) A M Whitehead. – Sustainable Development Projects cc. BSc Hons. (Pr. Sci. Nat.)
Engineering	Scatec Solar SA (Pty) Ltd – H Engela (Eng)
Geotechnical	Geosure (Pty) Limited – Mr. Francis Smith (Pr. Sci. Nat)
Geohydrological	Geosure (Pty) Limited – Mr. Francis Smith (Pr. Sci. Nat.)
Ecological	Sustainable Development Projects cc– A. M. Whitehead BSc. Hons. S C Bundy BSc MSc With review by Williams Environmental
Project Manager	Scatec Solar SA : Mr J Borrill (BA LlB P G Dip Env Law)

3. LEGISLATION

The proposed activity requires authorization in terms of the National Environmental Management Act (1998) for the following regulated activities tabulated in Table 2:

Table 2. NEMA Regulations for which authorisation is sought through the EIA Process

R545.2010	Activity 1	The construction of facilities or infrastructure for the generation of electricity where the electricity output is 20 megawatts or more.
R545.2010	Activity 8	The construction of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275 kilovolts or more, outside an urban area or industrial complex.
R545.2010	Activity 15	Physical alteration of undeveloped vacant or derelict land for residential, retail, commercial, recreational, industrial or institutional use where the total area to be transformed is 20 hectares or more; except where such physical alteration takes place for— (i) linear development activities; or (ii) agriculture or afforestation where activity 16 in this Schedule will apply.
R544.2010	Activity 10	The construction of facilities or infrastructure for the transmission and distribution of electricity- (i) Outside urban area or individual complexes with a capacity of more than 33 but less than 275kV; or (ii) Inside urban areas or industrial complexes with a capacity of 275kV or more
R544.2010	Activity 22	The construction of a road, outside urban areas— (i)with a reserve wider than 13,5 meters or, (ii)where no reserve exists where the road is wider than 8 metres, or (iii)for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Notice 545 of 2010.
R546.2010	Activity 14	The clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, except where such removal of vegetation is required for. (1) purposes of agriculture or afforestation inside areas identified in spatial instruments adopted by the competent authority for agriculture or afforestation purposes; (2) the undertaking of a process or activity included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the activity is regarded to be excluded from this list; (3) the undertaking of a linear activity falling below the thresholds in Notice 544 of 2010.

Furthermore, the activity is governed by the principles and provisions of NEMA, specifically Sections 2 and 24. Other items of relevant legislation that have been considered include:

The National Heritage Resources Act (1999)
The National Forest Act (1998)
The National Water Act (1998)
Conservation of Agricultural Resources Act (1983)

National Environmental Management: Biodiversity Act (2004)
The Province of the Free State also has a number of Provincial Acts that may apply to the proposed development including The Free State Nature Conservation Act 2007

The nature of the structures, as will be described below, are such that these structures can or may be considered temporary in nature. As such, the major focus of the environmental authorization process will consider the siting of the facility and the possible geotechnical and ecological concerns, as may be relevant under the National Environmental Management Biodiversity Act. Agricultural issues that may be associated with the Conservation of Agricultural Resources Act, visual impacts and possible cultural heritage issues that may arise will also be given due consideration.

4. METHODOLOGY

This scoping report has been undertaken in terms of Part 3 S 27 of GNR 543 of 18 June 2010, promulgated under section 24 of the National Environmental Management Act (1998).

The Environmental Impact Assessment Process (EIA) follows a prescribed process and pathway of evaluation and stakeholder interaction. The process and points of public interaction/consultation are depicted in Fig 1 below. The process commences with a summary of the proposal, notification to the public, and a call for interested and affected parties to register their interest and provide general comment on the proposal. These initial responses are documented and intercalated into the environmental scoping report (ESR) which is circulated to registered IAPs.

A further opportunity for comment is provided on the dissemination of the draft scoping report. The final scoping report, including any further responses and the plan of study for the EIA phase is submitted to the competent authority for review and acceptance. IAPs are also entitled to comment to the competent authority on the final report in the event of any changes.

Following acceptance of the scoping report and plan of study by the competent authority, the impact assessment process commences, and investigates and evaluates issues identified in the scoping phase, serving to rank such issues in terms of their impacts, as well as nature and level of significance, longevity and whether such impacts may be direct, indirect or cumulative in nature. The degree of the impacts are assessed, as well as any mitigation measures that may be employed.

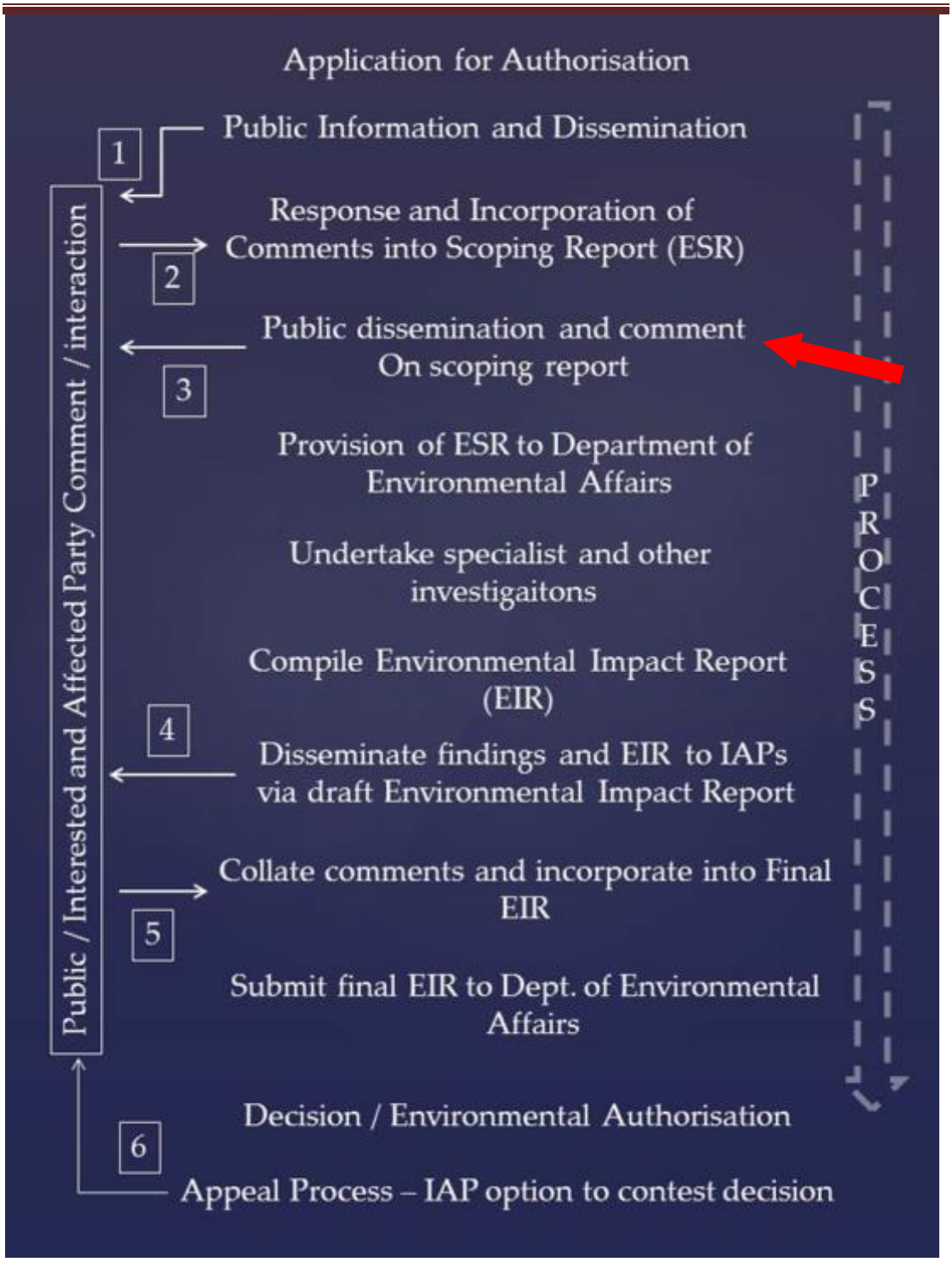


Fig 1 Flow chart indicating EIA process as defined in the National Environmental Management Act with present status of report within process.

The scoping process included the following activities:

4.1 Comparative Review of Alternative Site

An alternative site was identified by Scatec Solar on the 1(Cecelia) of the farm Sekretarispan, Bloemfontein. This site offered the opportunity for consideration based on the following:

- Level topography
- Apparent ease of connection to existing distribution network
- Consent from landowner

Specific issues that were given consideration in the comparative phase of the scoping process were :

- Site specific ecology including habitat form(s)
- Agricultural impacts (prevailing agricultural activities on sites and suitability with proposed PV centre)
- Significance of sites from archaeological and cultural heritage perspective
- Geohydrological and surface hydrological reviews
- Geotechnical aspects - the nature of the prevailing geologies and suitability for founding of solar panels on sites
- Visual impacts – including "sense of place" and aesthetic amenity at each site
- Degree of disturbance and alteration of sites from present status, as well as rehabilitation issues
- Physical disturbance factors – e.g. likelihood of flooding etc.
- Consideration of service requirements of development, primarily proximity to existing power lines and substations and ability to "connect" and "supply" grid
- Access to proposed area for shipment of material to and from site
- Design constraints for layout of farm / PV centre

At a preliminary level of evaluation, The 1(Cecelia) of the farm Sekretarispan and the candidate site, Remainder of Portion 1 and Portion 10 of the Farm Spes Bona were given due consideration. The results of this comparative evaluation are provided below, but indicate that the Remainder of Portion 1 and Portion 10 of Spes Bona is the preferred and most appropriate site for the construction of the PV Facility.

4.2 Public Participation Process

Following selection of the candidate site, namely the properties on the Farm Spes Bona, the public participation process consisted of the following activities and inputs.

4.2.1 A background information document with a response form was compiled as well as an I&AP list.

4.2.2 All neighbouring property owners adjacent to and within 100m of the project area, all relevant government departments and other mandatory I&APs were identified and informed via registered post of the application through the background information document.

4.2.3 Two notices 60cm x 42cm were placed outside the site at strategic points, including the site and the interface with the N8 at Spes Bona, indicating that an application for authorisation is to be submitted, identifying assessment processes, identifying the general

nature of the development proposed, a contact address for the EAP and how and when further representation should be made (See Annexure "B").

Fig. 2 An advertisement was placed in the local newspaper (The Bloem News) on the 24th February 2014.

NOTICE OF APPLICATIONS FOR ENVIRONMENTAL AUTHORIZATION

Notice is hereby given that an application for environmental authorization under the National Environmental Management Act, 1998, as amended, has been lodged with the National Department of Environmental Affairs.

Project details: Scatec Solar SA (Pty) Ltd, represented by Mr Jed Borrill, proposes to establish photovoltaic facilities for the generation of electrical power utilising solar energy for the national grid. The proposed extent of the facility is approximately 300 hectares on the property **the Remainder of Portion 1 of the farm Spes Bona No. 2355 and Portion 10 of the Farm Spes Bona No. 2355**, in the District of Bloemfontein and within the Mangaung Local Municipality and in the Province of the Free State.

The proposed activity requires an application subject to an environmental impact assessment under GNR 544, 545 and 546 of 18 June 2010. Permission has been requested under regulation 20(4) of GNR 543 of 18 June 2010 to apply a basic assessment to the application. All interested and affected parties are invited to register with Sustainable Development Projects cc (contact details below) within 14 days of the date of this notice.

A background information document will be provided via e mail or post to registered interested parties

Registration or representations with respect to this application may be made in writing – email, fax or post - to Simon Bundy (contact details below).

Further information regarding this project can be obtained from:
Simon Bundy / Calum Clague
Sustainable Development Projects cc
Tel: 032 946 0685 / Fax: 032 946 0784
P.O. Box 1016, Ballito, 4420
Email: simon@ecocoast.co.za \ alex@ecocoast.co.za \ calum@ecocoast.co.za

Fig. 3 Copy of Notice of Advertisement

4.2.5 No public meeting was deemed necessary due to the low level of response received to the call for registration of interest..

All of the above documentation can be found in Annexure "A"

4.3 Technical or Specialist Input

On-site appraisals were undertaken between October 2013 and February 2014. This included consideration of an alternative site located approximately 10 kilometres south of the preferred site. The primary focus of these investigations being:

Situation of site(s) within regional context	(evaluated by SDP)
General topography of site(s)	(evaluated by SDP)
Habitat and habitat diversity on site(s)	(evaluated by SDP)
Agricultural implications	(considered by SDP)
General geology and geohydrology of the site	(considered by Geosure)
Other service issues	(Scatec Solar SA (Pty) Ltd)
Historical and paleontological issues	(Cobus Dreyer/Alan Smith)
"Off-site" or "indirect" impacts / issues	(evaluated by SDP/team)
"Cumulative" impacts	(evaluated by SDP/team)

A number of "off-site" impacts were identified as being likely to occur as a result of the proposed activity. Such "off-site" impacts were identified as.

Visual impacts particularly from the adjacent road as a result of the change of onsite aesthetics and landscape qualities.

Socio-economic aspects including the generation of employment, as well as the ability to service sites with staff.

Access issues: The transport of sub stations and other material requires moderately suitable road access, hence road infrastructure is considered to be a factor in determining the suitability of the site.

5. NEED AND DESIRABILITY

At an international level and within the Republic of South Africa, the provision of energy has become a significant limiting factor to economic growth and competitiveness. In addition to these limitations, there is both mandatory and voluntary directives for the establishment of sustainable energy projects including wind and solar programmes (the so – called "green energies").

The applicant has identified the need for the provision of solar power in the southern African region and through its international associate organizations is proposing the establishment of a number of solar farms that will serve to supplement power to the grid and act as "pathfinder" projects for solar power in the region.

Solar power is considered a desirable energy production mechanism on account of:

- its utilization, with no adverse bi products, as may be generated through conventional energy sources such as coal power
- the primary source of power is solar energy, requiring no abstractive industries for the generation of fuel
- the method of harnessing solar energy is relatively innocuous in comparison to fossil fuel power provision
- the facilities for harnessing power are generally "mobile" being easily relocated in the medium to long term
- the facilities for generating power may be established with little interruption of existing agricultural land use practices, where applicable.

In addition to the above, the applicant avers that photo voltaic facilities offer significant employment opportunities with the capacity of approximately 80 staff being required on a 10MW plant.

6. PHOTO VOLTAIC POWER GENERATION IN SOUTH AFRICA

Photo voltaic (PV) power generation or "solar power" production has been in existence since the 1950s. PV power generation entails the entrapment of light energy from the sun through an electro-chemical reaction that is facilitated within crystalline cells. The energy released from this reaction is harnessed and through electrical conversion and step up systems, discharged into the existing power grid for utilisation.

The crystalline cells are contained within laminated modules and positioned at an angle that optimises solar impingement on the face of the modules (See Fig 4 below). Either fixed or tracking modules are employed, with the latter being able to move according to the diurnal placement of the sun as well as seasonal variation. Such tracking systems are capable of generating more power than fixed systems. The number of modules are erected according to a pre-determined power generation capacity or the availability of suitable land, as well as other constraining factors.

Fig. 4 Image indicating the nature of a fixed PV park and module arrangement

Howells (1999) estimates the potential of solar energy production in South Africa at 8500 000 PJ/yr which can be compared with the 621 PJ output from coal-fired power stations. (H Winkler 2005). As such, this shows the significance of photovoltaic power as a renewable energy source for the country. Fig 3 below identifies the potential for solar power within the South African context.

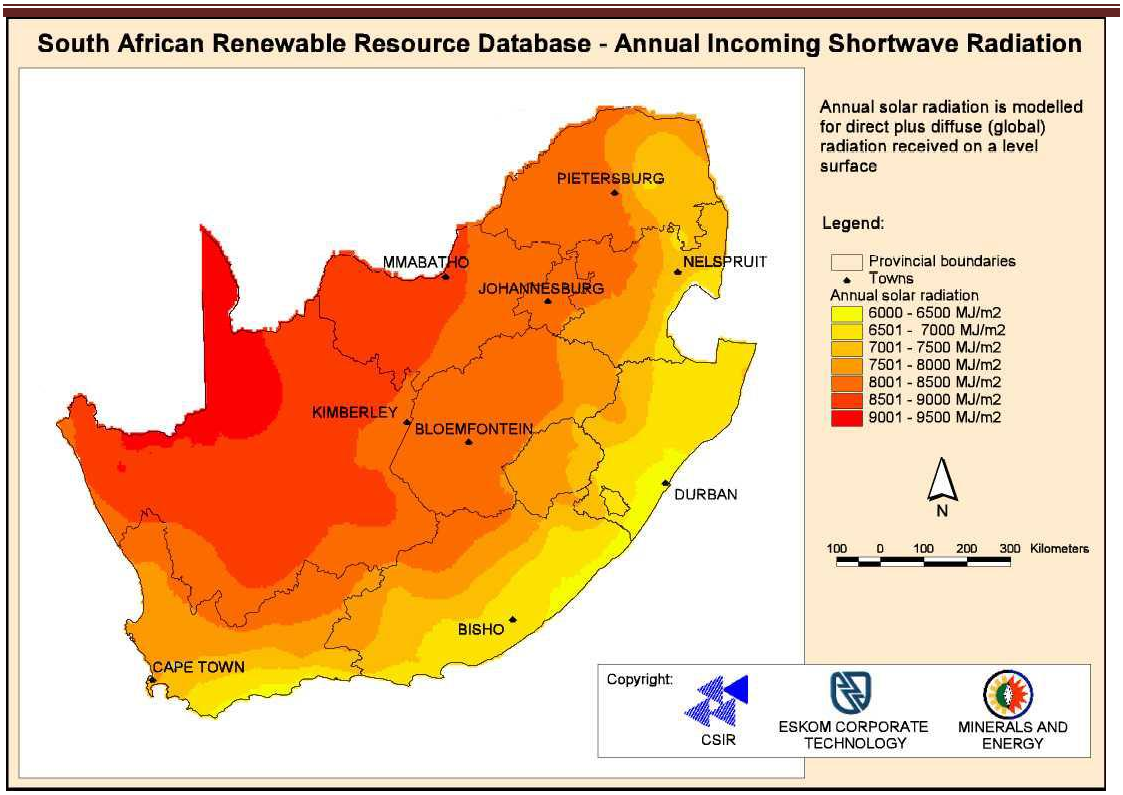


Fig. 5 Image indicating areas within South Africa in terms of incident solar impingement. Areas of high impingement are indicative of high potential solar power generation. (DME; Eskom CSIR 2001)

Given the above and in light of the noted objectives of the South African Government, that 10 000 GWh of renewable energy is to be generated for contribution to final energy consumption by 2014, with such energy production sources being produced mainly from biomass, wind, solar and small-scale hydro-electrical power generation, (White Paper on Sustainable Energy 2004), it is understood that solar power generation shows both a need, in terms of assisting with the provision of power to the national grid as well as desirability, in terms of meeting national and international commitments in terms of energy, environment and climate change.

7. DESCRIPTION OF PV FACILITY INFRASTRUCTURE & OPERATION

Scatec Solar, the applicant have identified the possibility of introducing up to 90MW into the electrical grid in and around the Mangaung Municipal complex. Two sites have been initially considered at a preliminary level, and the outcome of the assessment process is provided in the next section of this document.

The selected site will have panels of photo voltaic cells mounted on wood or aluminium frames established across level areas of the site. Some minor earthworks may have to be undertaken to accommodate such frames, the bulk of which will be undertaken {by} machinery. Such excavations will be surface related and will be required to ensure the orientation of the panels is congruous throughout the PV farm, while the foundings or footings of the panels are secure and stable. (See Fig 4 & 5). Small steel footings will be established to "anchor" the panels to the ground.

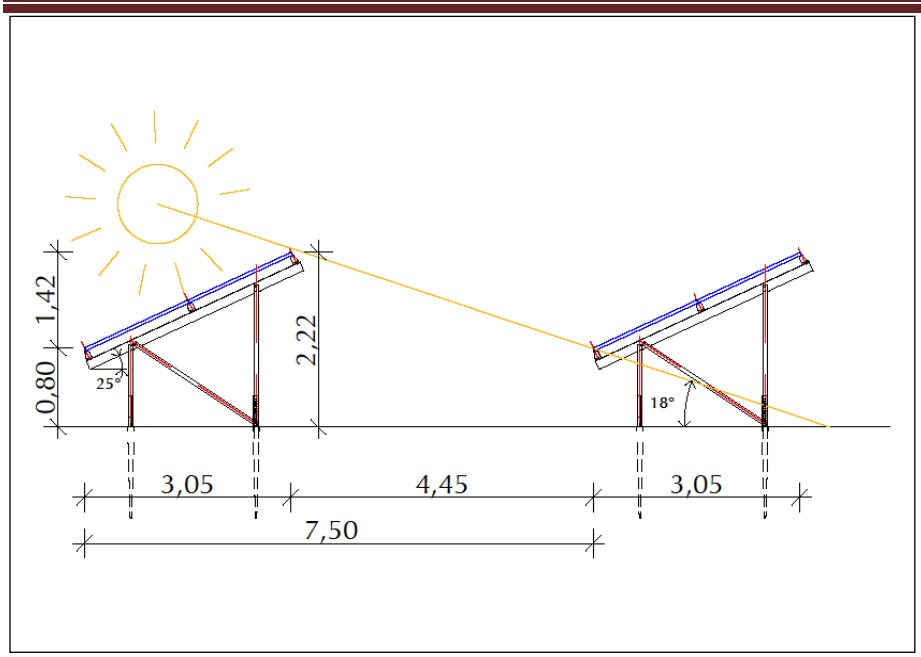


Fig 6. Schematic diagram of panels as established within PV farm (source Scatec SA)

The panels will be approximately 2.2m in height above natural ground level, with a width of approximately 3.0m. The panels are constructed of crystalline material encapsulated in a laminated plastic of high durability. Each panel is "edged" in aluminium or plastic and feeds a small circuit board that cumulatively delivers a direct current to an invertor. This current is then stepped up within a step up transformer for delivery to the grid. The panels are non-reflective (they are required to absorb solar radiation, not reflect it) and are of a dark grey colour (Fig 6).

Fig 7. Solar panels within PV centre in Europe. (Source Scatec SA)

In the Free State, approximately 2.5ha of land is required in order to generate 1MW of power, thus a 10MW centre will require between 25ha and 30ha. The photovoltaic cells establish a direct current (DC) which is converted to an alternating current (AC) through an inverter. The inverter is a temporary structure that approximates 16m^2 and should be founded on level ground and suitably under-pinned. (See Fig 6). Power is then fed from the inverter to the substation and into the grid.

Fig 8 Image depicting fixed PV modules with inverter (source SDP)

Most PV sites are situated adjacent to a suitable powerline. All power generated by the plant is collated at a step up transformer facility which steps up the voltage to a suitable and compatible capacity acceptable for provision to the grid.

While the primary focus of the PV centre will be the generation of power, other agricultural activities need not be precluded from the site. As such, grazing of livestock may be pursued on site, while the maintenance of the panels is generally considered to be routine and innocuous in nature. Such maintenance may include:

- cleaning of panels on an *ad hoc* basis
- minor electrical repairs
- general site maintenance as generally associated with farming activities

Most sites are cordoned with an electrical and steel mesh security fence of approximately 2.2m height.

7. SITE SELECTION AT MANGAUNG

The following two sites have been considered for the establishment of a PV facility at Mangaung:

- Remainder of Portion 1 and Portion 10 of the Farm Spes Bona
- 1(Cecelia) of the Farm Sekretarispan

Fig. 7 below indicates the placement of these two farms within a regional context.

Fig. 9 Image of sites from comparative perspective, with Spes Bona to the north and Site 2, Bloemfontein (The Farm Sekretaresse) indicated to the south.

Fig. 9 indicates a Google Earth projection of the two sites under consideration, namely Site 1 Bloemfontein (Remainder of Portion 1 and Portion 10 of the Farm Spes Bona No. 2355) and Site 2 Bloemfontein (Sekretaresiespan). Both sites are situated within the Mangaung Municipal area on major thoroughfares to Aliwal North (R 238), in the case of 1(Cecelia) of the farm Sekretarispan and N1 to Kimberly in respect of the Farm Spes Bona.

Fig's 10 and 11 indicate the general nature of the land in question, with the prevailing land use being agriculture, primarily cultivated lands and livestock on the Farm Sekretarispan and a combination of cattle and game on the Farm Spes Bona.

Fig. 10 View across the Farm Sekretarispan, showing former cultivated (maize) field.

Fig. 11 General view of Spes Bona farm, showing generally flat relief, with sown Digitaria veld.

Some comparative data on each farm is provided below in Table 3.

Table 3 indicating comparison of selected factors assessed at Spes Bona and Sekeraterispan Sites. Points of concern are highlighted.

	Remainder of Portion 1 and Portion 10 Spes Bona	**Sekretarispan**
Topography	Low relief with some dolerite outcrops	Low relief
Land Use	Cattle and game	Cultivated lands and cattle with orchard
Ecological status	Low – high level transformation of habitat	Low – high level transformation of habitat
Geology and geotechnical aspects	Moderately deep sandy clays over dolerite	Deep clays over sandstones
Visual Aspects	Low – site remote from main visual receptors	Moderate – site adjacent to main road
Agricultural Potential	Low	Moderate to high
Grid Connectivity	Available within property	Available within property
Other aspects	No aquatic systems. Site well drained	Soils prone to waterlogging and intermittent flooding

Using the information provided in Table 3, it is evident that 4 bio physical factors within the Farm Sekretarispan were considered to be a limitation to the site, when comparison was made to Remainder of Portion 1 and Portion 10 of the Farm Spes Bona No. 2355 (highlighted). These four limitations are considered :

- **Land use** : By comparison, the 1(Cecelia) of the Farm Sekretarispan was deemed to show a greater extent of arable land with improved diversity in agricultural activities undertaken on the farm (livestock, maize and pecan nut production)
- **Visual Aspects** : The Farm Sek lies adjacent to the R 706 a major visual receptor. The Farm Spes Bona lies approximately 400m from the N1 a major visual receptor and topography abates such visual impacts
- **Agricultural Potential** : The 1(Cecelia) of the farm Sekretarispan has greater agricultural potential comparative to Spes Bona on account of depth of soil and a high pedsol state.
- **Other aspects** : The Farm Sekretarispan is deemed to be prone to waterlogging and intermittent flooding by virtue of its placement in the landscape and the nature of its edaphics. Spes Bona is considered to be a well-drained site.

Both sites are capable of enabling easy access to existing distribution networks within the power grid, however with the higher level of risk from bio physical and related factors, it is evident that the Farm Spes Bona offers a more favourable site for the establishment of a PV facility.

Given the above, the Farm Sekr was discarded as an option for further consideration.

9. DESCRIPTION OF RECEIVING ENVIRONMENT –Farm Spes Bona No. 2355

The Farm Spes Bona lies at 29°29’ 00”S / 26°04’ 15”E. Fig. 12 indicates cadastral and aerial imagery associated with the site.

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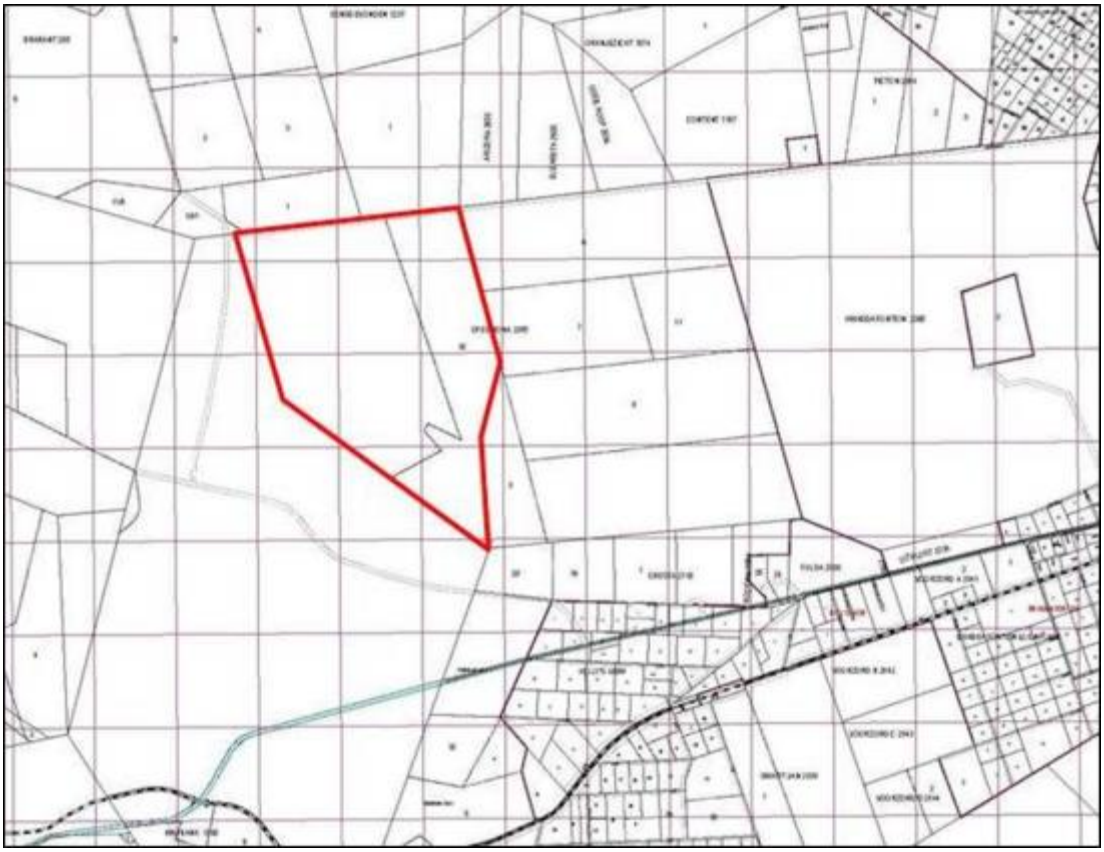

Fig. 12 Cadastral plan of Spes Bona, indicating area under consideration(Source SG office)

Fig. 12 Aerial image of Spes Bona site using Google Earth 2012 imagery The position of the 132 kV powerline is indicated. (Source : Google Earth)

9.1 The Property

The proposed 380 ha site falls adjacent to the 132kV powerline which serves the Harvard substation, positioned to the east. The site is considered of level or flat relief in general, however an elevated dolerite mound is located to the south of the property and effectively bisects the site. A homestead, belonging to the owner of the property, lies centrally and upon a dolerite promontory, with a number of smaller out house structures associated with the farm being located sporadically around the site.

9.2 Regional Context

The proposed site is situated within the Mangaung Metropolitan Municipal area. The site is "zoned" agriculture with the nearest urban centre being the town of Bloemfontein, some 8 kilometres to the east.

The region falls within the Moist Cool Highveld Grassland Biome as described by Low and Rebelo (1998) which is a generally level region of the country dominated by sandstone and dolerite geologies. Rainfall varies according to relief with much of the rainfall being convectional. An annual average fall of approximately 560mm is recorded by Mucina and Rutherford (2006). Temperatures vary with an annual average of 15°C maximum temperatures approximating 32°C and regular minima reaching below 0°C.(Cowling et al 1986, Mucina and Rutherford 2006). The average temperature records for the region are conducive to the use of PV in the generation of power within the region.

9.3 Geological conditions

The study area is generally underlain rocks and derived sub soils of Adelaide formation with Jurassic dolerite intrusions found intermittently across the region. Soils of Mispah and Glenrosa forms dominate.The lithic origin of Glenrosa soils provides for a shallow, but arable soil that is prone to wetness. Erosion can be a concern in these soils. The orthic Mispah soil form also offers moderate agricultural potential and a more gravelly nature (Fey 2010).

A site investigation from a geotechnical perspective was undertaken by Geosure (Pty) Ltd Given the above information, the following statements are forthcoming from the geotechnical specialists:

1. The majority of the site is suitable for development of the photo voltaic facility.
2. Central and southern areas associated with the "hard topography" are not considered suitable due to founding constraints.
3. A number of recommendations regarding conceptual engineering design are proposed.

The preliminary geo technical investigation is attached as Annexure B, and indicates the site's overall suitability for the construction of the PV facility. **It is not proposed that any further investigations on this matter are required during the environmental impact assessment phase of this review**.

9.4 **Ecology**

The entire study area falls within the Winburg Grassy Shrubland" (Fig, 13). Much of the region has however, been subject to cultivation as well as other anthropogenic influences and is thus likely to be considered "highly transformed".

The predominant vegetation cover comprises of *Digitaria eriatha* that has been sown for as pasture for cattle and game, present on site. A number of thickets of *Acacia karoo* and *Ziziphus mucronata* are present along disturbed areas and where plant water relations improve at a localized level (Fig 13).

Two points of erosion / storm water drainage are evident on site and the nature and construct of these ecological / anthropogenic features needs further consideration.

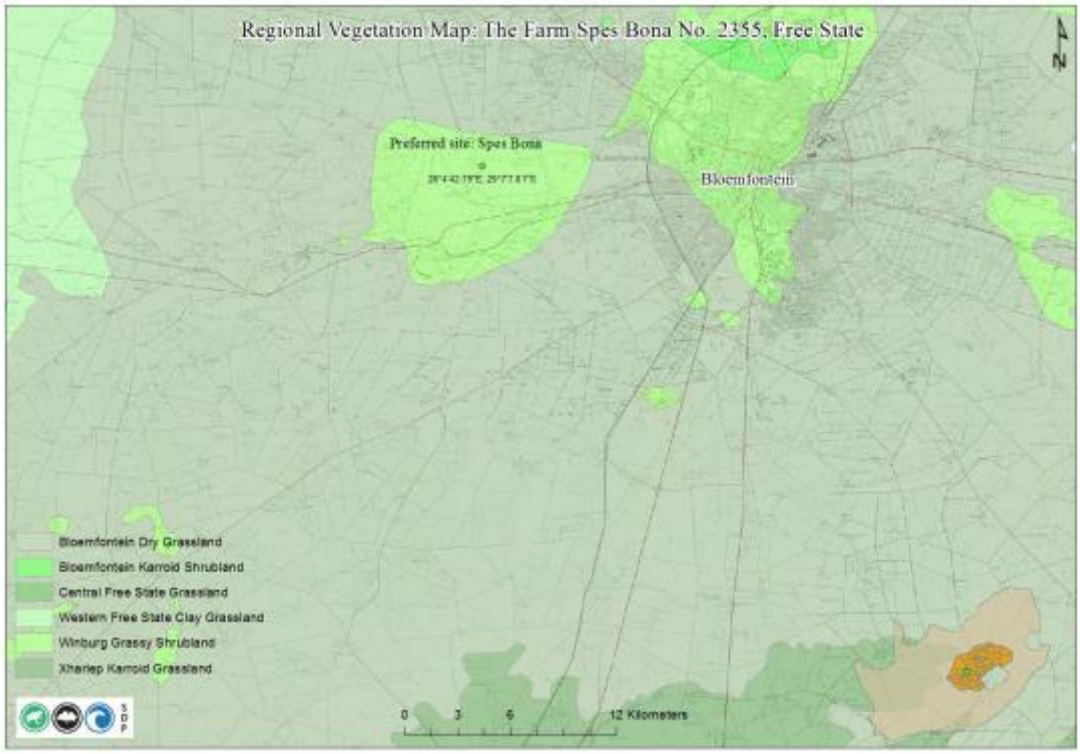

Fig 13. Vegetation Map (SANBI GIS – Mucina and Ruitherford 2007) indicating sites in relation to coarse level vegetation mapping units.

In addition, common naturally endemic fauna include Aardvark, (*Orycteropus afer*), Black backed jackal (*Canis mesomelas*) and a number of hares (lagomorphs). Other mammals of lesser occurrence, but possibly of greater conservation significance include Bat eared fox (*Otocyon megalotis*), Aardwolf (*Protelese cristatus*) and Cape fox (*Vulpes chama*) . The former species as in the case of *O afer*, are considered to be strongly related through diet (being insectivores) to the area. A number of termiteria were found on site. Other classes that may relate directly to the region and the development in general include members of the Scorpiones, including members of the family Scorpiondiae. These taxa are generally fossorial and/or arboreal in habit and are thus affected directly by vegetation and edaphic disturbance.

Fig 14. View of prevailing on-site vegetation. Note sown grass (Smuts finger grass).

Within the proposed site, the dominant agricultural activity is livestock farming, with sheep the most common livestock run on the area in question.

Other classes that may relate directly to the region and the development in general include amphibians, in particular the Southern Pygmy Toad (Poyntonophrynus vertebralis) – one of the few amphibian species common to the region and members of the Scorpiones, including members of the family Buthidae and Scorpiondiae. These taxa are generally fossorial and/or arboreal in habit and are thus affected directly by vegetation and edaphic disturbance.

It is proposed that an ecological investigation be undertaken for further consideration during the compilation of the EIR, which specifically gives consideration to the nature of vegetation on site and ecological drivers.

9.5 Cultural and Historical Aspects

No resources of heritage value were noted on the identified site. The nature of the proposed development is such that most anthropogenic resources, (structures, sites of value) can be avoided through variation in the layout and design of the farm sites. However, a heritage resource/agricultural assessment will be undertaken in accordance with SAHRA requirements.

In addition to the above, and due primarily to the possibility of Permian fossils associated with the Adelaide formation, a preliminary paleontological assessment has been undertaken

by Dr Alan Smith. The report, contained in Annexure C indicates that Beaufort rock forms are present within the region and that paleontological sensitivity within the area may be considered "medium to high".

From the above, a further **paleontological and cultural heritage assessment be undertaken with findings being incorporated into the environmental impact report**.

9.6 Landscape and Aesthetic Value of Site / "Sense of Place"

"Landscape" and other issues related to "aesthetics" are seen as issues which are highly subjective in nature. It is evident that the landscape associated with the development site is not "unique", rather being "common". Using the criteria of the United Kingdom's Institute of Environmental Management and Assessment "landscape sensitivity" and "visual receptors" should form the basis for the evaluation of visual impacts. Temporal and spatial arrangement should also be considered from a mitigation perspective. Further to the above, the presence of existing "visually intrusive" structures should be taken into consideration.

While receptors on and around site are considered to be minimised, **a preliminary review of visual impacts and abatement options should be given consideration within the EIR. Such consideration should be accompanied by a preliminary slope analysis.**

9.7 Socio-Economic Issues

The socio-economic benefits of the proposed photo voltaic farms can be evaluated in terms of local, regional and national beneficiation

The provision of power is the most apparent and critical component of the proposed development. As stated above, power availability is one of the most critical concerns affecting national growth and development and is considered a limiting factor. The proposed PV facility on the Farm Spes Bona will assist in alleviating the shortage of power at a regional and localised level. Added to the above, the method of generation is noted as:

- not being reliant upon fossil fuels
- given the above, not resulting in the emission of CO_2 or other gases in the operation phase
- has a power production longevity in excess of 25 years
- Other externalities, including vibrational and consistent sound emissions are avoided

The establishment and operations, for example, of a 10MW solar power farm will generate and maintain approximately 10 jobs per MegaWatt of power produced during generation, with up to 33 jobs created during the process of installation ("Solar Generation V 2008)). As such local employment opportunities should increase both at the construction phase and operations phase. While some of the expertise associated with the construction and operations will have to be imported into the region, the value added opportunities for small business in the region may also offer secondary, indirect job opportunities.

In addition to job creation, the proposal brings some diversity of land use to the local economy, which may assist in stemming the flow of farmers from the region and support alternative and diversification in agriculture. General broad scale information indicates that the number of operation farming units in the Free State and Northern Cape have declined within the last 20 years (Mail and Guardian, May 2011) with no concomitant take up of the decline in agricultural productivity by other land owners. Given this consideration, the benefit of PV at a regional level is determined to be a positive externality.

9.8 **Agricultural Potential Issues**

The farm under consideration is an existing commercial agricultural venture and has been for over a century. Farming activities are varied and have included the production of maize and sunflower, however the cattle and game, run in isolation and in combination are the dominant agricultural activity on site.

Game is maintained primarily for hunting purposes, as well as in part, for the sale of specimens. Gemsbok (*Oryx gazelle*), Blesbok (*Damaliscus pygargus*), Zebra (*Equus quagga*) and Giraffe (*Giraffa camelopardis)* are noted species on site.

It is noted that the site does offer some opportunity for the maintenance of the prevailing land use, unencumbered by other activities, despite its present utilisation. For this reason it is **proposed that the site be subject to an agricultural assessment** in order to gauge the potential of the land under a unitary agricultural function.

Having stated the above, it has been identified both abroad and in South Africa, that livestock farming with smaller animal units, such as sheep may be maintained on sites being utilised for PV production. Fig. 14 below indicates a typical PV facility in Europe.

Fig 15. Livestock grazing between panels (source Scatec Solar SA)

9.9 Access to Site

Access to site is considered to be of "low" concern. The issue of access relates to the requirement to import larger structures that will be associated with the PV centre.

Access to the site in question is off the N 8 a major thoroughfare between Bloemfontein and Kimberley which links with the A 179 a provincial earthen road that links with Kopple Street that will form the main entrance to the PV facility. These roadways are generally utilised for access to farmsteads and adjacent lands. The accesses are all formal in nature and where required, will be subject to upgrade at the expense of the applicant.

9.10 Electrical Installation Aspects

The most suitable sites for connection of solar generated PV power to the national grid is into facilities accommodating 132kV power or smaller. This is based on the cost of implementation versus return on power production and availability to the grid. It is preferable to have a sub-station on site to assist with such connections, however this is not a limiting factor and an invertor and sub-station can be established on site in the absence of any pre-existing substation.

The proposed site is ideal as power generated from the PV facility and fed through the step up transformer may be fed directly into the Harvard 132kV line which lies within an Eskom servitude adjacent to the site. As such, only minimal additional infrastructure (invertor and cables) will be required, with no requirements for new powerlines traversing adjacent properties.

9.11 Storm water disposal

The photovoltaic panels will provide an impermeable surface of approximately 300 ha within the site. As such, the presence of the panels may present concerns in terms of erosion (particularly "splash force" erosion), whereby storm water drops directly from the modules / panels onto unconsolidated soils, loosening and mobilizing sediment, as well as "shading" areas from direct precipitation, particularly under minimal precipitation events. It is evident that such concerns can be attended to via a "split disposal system" that allows for the collection of storm water (and possible utilization for livestock) with diversion of portion of any rainfall onto ground lying beneath the modules.

The final design of the panels should identify the "split system" and incorporate this into the final EIR for implementation on the ground.

9.12 "Existing" and "Adjacent Zonings"

All sites lie within zoned "agricultural lands". As such no significant conflict is expected with other land uses nor the prevailing land use on site.

9.13 Disturbance and Module life span

During projects of a similar nature, issues regarding disturbance of panels from natural processes such as fire, and the life span of the panels have been raised. In terms of fire, due to the use of plastics and possibly wood, fire would damage the panels. Fire management and prevention is the only way of preventing damage to the panels. Measures will include reducing combustible material within the site, i.e. keeping vegetation low through grazing or cutting, keeping firefighting equipment on site and the maintenance of fire breaks.

In terms of the lifespan of the panels, the panels can last more than 20 years with minimal maintenance. Maintenance would include periodic cleaning (once a year is the expected level of washing required) and repairing any damage/faults with the mounting system and electrical circuit and cables.

9.14 General

From the physical and technical indicated above from the proposed development the following are to be considered in greater detail through the EIR:

- Design and layout issues, primarily detailed integration of the solar farms with prevailing topography and existing power line and substation.
- Storm water run-off and management for agricultural beneficiation and to ensure that erosion (splash form) does not occur.
- Ecological review of final site selection with consideration of the flora and fauna present on site.
- Archaeological and heritage importance of the site. Confirmation of the site status from a paleontological perspective is required by a specialist.
- An agricultural assessment indicating the viability and suitability of the site from the point of continued cultivation (i.e. continued agricultural use).
- Spatial review and information particular in respect of slope and visual abatement issues. Cumulative impact issues should be addressed as a consequence of the presence of a 5MW PV facility being positioned in close proximity to the site.

10. PUBLIC COMMENTARY AND INTERACTION

10.1 Public and Social Interaction and Responses

The public participation process demonstrated above, has been followed according to the methodology described above. The provision of a background information document to key stakeholders and interested and affected parties (IAPs) was undertaken electronically and via registered post. Confirmation of the provision of such information is provided in Annexure

D, along with a copy of the background information document. In addition, notices and advertisements as indicated above in Section 4.2 were provided.

The following parties were included in the parties to whom notice of intention to seek authorisation were delivered.

Table 4 Table indicating parties identified and approached for comment in the scoping phase of the EIA for the Spes Bona farm

Contact Person	Address	e-mail	Telephone	Fax
Andrea Van Gensen	P.O.Box 356, Bloemfontein, 9300	andrea.vangensen@eskom.co.za	012 319 7508	
Andries Wessels	PO Box 13522, Noordstad, 9320			
Cecil John Schoeman	PO Box 1014 Kimberley 8301			
Susanna Du Plessis	PO Box 17654, Bain's Vlei		051 4511376	
Charl Du Plessis	as above		as above	
Bernard Amm	PO Box 78, Ladybrand 9745		0519242086	
Jaconus Bekker	PO Box 34147 Faunsig, 9325			
Bird Life SA	Dr Hanneline Smit-Robinson	conservation@birdlife.org.za	Tel:+27 (0) 11 789 1122	
Johannes Janse Van Rensburg	PO Box 12096 Bloemfontein 9300		051 5233731	
M. Kolobe	P.O. Box 3704 Bloemfontein 9301	Mpolokeng.kolobe@manguang.co.za	051 405 8577	051 405 8882
Buti Mathebula	P/Bag x20801 Bloemfontein 9300	Mkhosana@dteea.fs.gov.za	051 400 4843	051 400 4842/11
Director: Tourism, Environment and Economic Affairs	P.O Box 264 Bloemfontein, 9300		051 403 3719	051 403 3718
Ms. L. Stroh		strohl@caa.co.za	011 545 1232	011 545 1282
Mr. T. P. Ntili	P.O. Box 528, Bloemfontein, 9300	ntilit@dwaf.gov.za	051 405 9281	051 430 8146
Mr. G. Tlhapi	P/Bag x20606 Bloem 9300			
Mariagrazia Galimberti	P.O. Box 4637, Cape Town, 8000	MGALIMBERTI@sahra.org.za	012 348 16 63	021 462 45 09
Head of Department	P/Bag X 01 Bloemfontein 9300		051 561 8401	051 861 8452
Ms Annaliza Collett	P/Bag x120, Pretoria, 0001	annelizaC@nda.agric.za	012 319 85 08	

As of date, no formal responses were obtained from the above parties arising either through the background information document, advertisement or notices.

11. OUTCOME OF SCOPING PROCESS AND RECOMMENDATIONS

From the above scoping exercise, the following are notable:

- From a geotechnical perspective the sites is deemed to be geotechnically sound for the establishment of the PV panels
- The proposed site is situated on existing farmlands and is deemed to lie within an area of low ecological sensitivity. Confirmation of the site's ecological status is required
- During the initial site visit, no evidence of cultural or heritage importance was noted. This requires confirmation by a suitable specialist
- Visual impacts on aesthetic amenity may be of low concern. Confirmation through broad scale analysis in required in this respect
- Agricultural potential, based around soil and agro economic principles is required in respect of this site
- Design issues, in terms of the arrangement of the panels on the selected sites to ease and accommodate issues such as surface flow, avoidance of woody specimens and other aspects must be explored, considered and incorporated into the final design.

The technical design of the panels to avoid storm water induced erosion and assist with water harvesting for livestock must be considered

- Access to the site is good. The road surface, although a dirt road, is deemed to be suitable for large trucks. No access constraints were noted

- In terms of electrical infrastructure, the site is considered ideal by the applicant. The 132kv Harvard substation lies immediately east of the site and minimal additional electrical infrastructure is expected to be required

The proposal meets criteria for the establishment of "green" energy production and will provide power to the local grid, improving the reliability of local supply.

12. PLAN OF STUDY – ENVIRONMENTAL IMPACT ASSESSMENT

The assessment of the proposed site for the establishment of a photovoltaic power generation farm as presently proposed, is noted to have limited bio physical constraints associated with its establishment and is generally considered to offer an improved location for such project in comparison to the alternative Farm Sekrateresse.

A number of issues (information gaps) that should be addressed through an environmental impact assessment process have been identified. This process is proposed to comprise of the following:

- An additional public participation process, whereby registered interested and affected parties and identified authorities, will be provided with both the environmental scoping report and environmental impact report and be given the opportunity to scrutinize and comment on such reports

- The undertaking of technical investigations into the issues identified above

- Through the public participation process and further investigation of the issues identified above and the proposed options identified, all garnered information will be considered and assessed through the use of a comparative matrix / decision matrix. To this end an environmental impact assessment report will be compiled setting out the findings and outcomes of an integrated review of such information

The environmental impact assessment report (EIA Report) is to be compiled to:

- Identify impacts associated with proposed engineering solutions to the situating and layout of the PV panels and their required founding conditions
- Provide recommendation on most appropriate site layout using topography, and ecological factors as well as other criteria to determine such layout
- Provide background on specific issues including cultural heritage and agricultural aspects if considered to have relevance

- Provide an indication of any mitigation that may be available to reduce the abovementioned impacts where required

Further detail on the methodology for review of alternative land use options is provided below.

12.1 **Alternative Site and Planning Options**

The proposed site development option is provided in Annexure A and is discussed above. The site alternative was dismissed on primarily bio physical grounds, in preference for the Spes Bona site.

Given the above, the "layout and design option" will be given due consideration through the Environmental Impact component, where bio physical factors will dictate site layout and design. Using topographical and related bio physical and technical information for the site, the most suitable arrangement for the portion of the affected farm should be identified. In addition, the following additional issues should be considered in the evaluation of layouts:

- Impacts on habitat and ecology (avoidance of physical and topographic features)
- Agricultural management aspects (running of livestock with panels)
- Storm water management options and avoidance of splash and rill erosion
- Cultural heritage issues

The options and alternatives are to be evaluated through multi variate analytical techniques and a "decision matrix" whereby options are compared and a "value" ascribed in terms of impact through the use of three degrees or parameters of 'positive' or 'negative' impact ascribed by the independent practitioner. A second practitioner ascribes a rating of such impact. These values are confirmed or rejected through empirical and/or statistical review and determination of data (see Table 5 below).

Table. 5 Example of decision matrix utilised in similar PV project. (source SDP)

Geophysical	+ve impact	-ve impact	Probability of Occurrence	Severity of Impact	Duration of Impact	Scale of Impact	Avoidance	Mitigation	Direct	Indirect	Cumulative
Landscape Modification		x	Medium	Moderate	Long term	Site	Yes	Yes	X		
Erosion		x	Low	Low	Medium term	Site	No	Yes	X		
Flood Inundation	na	na	Low	Low	Short term	Site	No	Yes	X		
Seismic Impacts	na	na	Low	Low	Short term	Site	No	No			
Structural Failures		x	Low	Low	Short term	Site	Yes	Yes	X		
Ecological	**+ve**	**-ve**	**Probability of Occurrence**	**Severity**	**Duration**	**Scale**	**Avoidance**	**Mitigation**	**Direct**	**Indirect**	**Cumulative**
Habitat Modification		x	Medium	Low	Medium term	Site	No	No	X	X	X
Habitat Loss		x	Medium	Low	Medium term	Site	Yes	No	X		X
Species Behaviour Modific.		x	Low	Low	Short term	Site	No	No	X	X	X
Species Loss/ Population Impacts		x	Low	Low	Short term	Site	No	No	X	X	X
Cultural Heritage	**+ve**	**-ve**	**Probability of Occurrence**	**Severity**	**Duration**	**Scale**	**Avoidance**	**Mitigation**	**Direct**	**Indirect**	**Cumulative**
Landscape Modification		x	Low	Low	Medium term	Site	No	Yes	X	X	X
Paleontological Alteration/Loss		x	Low	Low	n/a	Site	No	n/a			
Archaeological Alteration/ Loss		x	Low	Low	n/a	Site	No	n/a			
Cultural Heritage Alteration/Loss		x	Low	Low	n/a	Site	No	n/a			
Palaeontological Resources	**+ve**	**-ve**	**Probability of Occurrence**	**Severity**	**Duration**	**Scale**	**Avoidance**	**Mitigation**	**Direct**	**Indirect**	**Cumulative**
Geological Site Significance		x	Low	Low	n/a	Site	n/a	n/a	X		
Palaeontological Artefacts		x	Low	Low	n/a	Site	n/a	n/a	X		
Palaeontological academic value		x	Low	Low	n/a	Site	n/a	n/a	X		
Socio- Economic	**+ve**	**-ve**	**Probability of Occurrence**	**Severity**	**Duration**	**Scale**	**Avoidance**	**Mitigation**	**Direct**	**Indirect**	**Cumulative**
Poverty Alleviation	x		High	Low	Long term	Regional	n/a	n/a	X	X	X
Job Creation	x		High	Low	Long term	Local	n/a	n/a	X	X	X
Community Development	x		High	Low	Long term	Regional	n/a	n/a	X	X	X
Economic Development	x		High	Low	Long term	National	n/a	n/a	X	X	X
Land value	x	x	Moderate	Low	Long term	Local	n/a	No	X	X	
Agricultural	**+ve**	**-ve**	**Probability of Occurrence**	**Severity**	**Duration**	**Scale**	**Avoidance**	**Mitigation**	**Direct**	**Indirect**	**Cumulative**
Veld Alteration		x	Low	Low	Medium term	Site	No	No	X		
Agro-economic impact	x		Low	Low	Medium term	Site	Yes	n/a	X	X	
Access to Water Resources	x		Moderate	Low	Medium term	Site	No	n/a	X		
Farm Management	x		High	Low	Medium term	Site	No	n/a	X		
Access	**+ve**	**-ve**	**Probability of Occurrence**	**Severity**	**Duration**	**Scale**	**Avoidance**	**Mitigation**	**Direct**	**Indirect**	**Cumulative**
Traffic Impact		x	Low	Low	Short term	Site	No	Yes	x		
Pedestrian safety		x	Low	Low	Short term	Site	No	Yes	x		
Visual	**+ve**	**-ve**	**Probability of Occurrence**	**Severity**	**Duration**	**Scale**	**Avoidance**	**Mitigation**	**Direct**	**Indirect**	**Cumulative**
Landscape Value & Sensitivity		x	High	Low	Medium term	Site	No	No	x		
Sense of place		x	Low	Low	Medium term	Site	No	No	x	x	x
Viewshed alteration		x	High	Moderate	Medium term	Site	No	Yes	x		

Examples of outcome of multi variate evaluation of site data in order to arrive and suitable outcome for decision – making are provided in

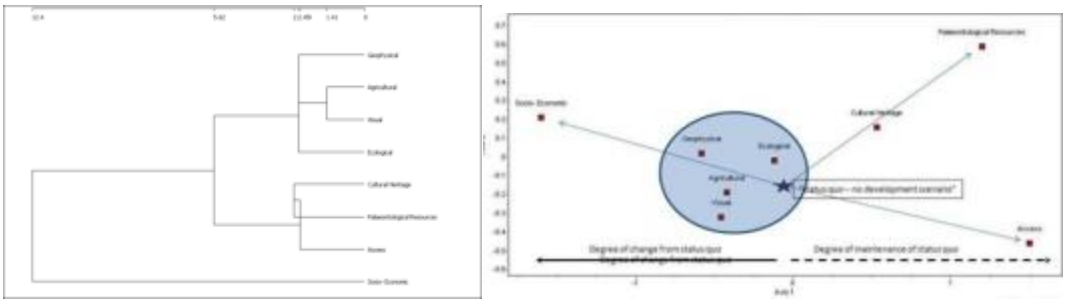

Fig. 16 Dendrograms and ordination analysis outcomes for similar PV facility

12.2 **Technical Investigations**

The following technical information is required, prior to evaluating and finalizing the suitability of sites and other actions that should be done to mitigate and avoid negative

impacts. These technical requirements are: Topographic and Detail survey information. The following actions to be undertaken:

- Identification of the exact parameters of site within the proposed farm providing the required capacity (MW) for the feasible generation of power
- Detailed 5m to 20m contour survey of site (depending upon grade of land), identifying in detail specific areas of topographic variance, infrastructure and other natural features of significance
- Identification of landscape factors affecting site

Site specific reports to be produced in arriving at a suitable proposal for endorsement by the Department are:

Layout / Site arrangement. Review of specific layout plan for panels that will inter alia:

- Avoidance of riparian or hygrophilous components of landscape
- Listed woody specimens and any "other' specimens identified as well as other natural physical features anomalous within the landscape
- Avoidance of any significant plant communities identified.

Ecological aspects. A comparative analysis of the chosen site and consideration of affected habitat form(s) providing information that will at a qualitative and quantitative level consider:

- Vegetative cover / habitat
- Species diversity

Agricultural Review of land – provision of review of opportunity for existing farming activities to integrate with proposed development.

Cultural heritage review of site with indication of the significance of the site from a historical perspective and paleontological assessment for the integration of any resources into existing and proposed site layout proposal.

Aesthetic and visual issues – review of the visual amenity intrusion of the development. The impacts are generally considered minimal, however opportunities for the mitigation of such impacts exist and should be elaborated.

Storm water management; recommendations on the management of precipitation and dissipation of surface water off panels.

The above evaluations will serve to :

- Identify any portions of site that should not be subject to development of the proposed PV farm.

- Identify the most suitable portions of site for implementation of project and layout of project.

- Identify avoidance and mitigation methods to be employed on site.

The status quo or "no go" option will be considered in respect of the site – i.e. where the parameters (ecological, hydrological, visual and economic and social) indicate that impacts cannot be avoided or mitigated through design. Given the scoping process this outcome seems unlikely.

12.3 **Public Participation**

This scoping document will be made available to all registered interested and affected parties. They will be requested to comment within 40 days of dissemination. A public participation process will be engaged in whereby:

1. All registered IAPs will be informed of completion of the scoping process and commencement of EIA process.
2. An advertisement advising of the EIA process and opportunity for further inclusion in the process will be placed in the Diamond Fields Advertiser.
3. IAPs will have 14 days to comment on outcome of EIA report.

Submission of process will be made.

12.4 **Timeframe for Environmental Impact Assessment Process and Authority Consultation**

The following schedule is provided for the undertaking of the proposed environmental impact assessment process. Interaction points with the Department of Environmental Affairs are provided.

Table 6. Timeframes and interaction during process

	FREE STATE PV FACILITY – SCATEC NEMA R 543 activity EIA Process		Maximum Timeframes (Months)						
			1	2	3	4	5	6	7
1	DEA interaction	SDP	■						
2	Finalise plan of study	SDP	■						
3	Proposed final survey of sites	EC	■	■					
4	proposed eco - geo evaluations	GGS SDP Scatec GGS	■	■					
5	Design review	SDO	■	■					
6	Archaeo / Palaeo review	JB	■	■					
7	Visual assessments Site I	tba	■	■					
8	Agricultural integration commentary	tba	■	■					
9	final layouts and planning proposals	Team	■	■					
10	visual impact assessment	tba	■	■					
11	Contingency	tba			■				
12	Environmental Management Programme	SDP			■				
	Public Participation								
13	Advertisement #1		■						
14	Public information Public meeting - contingent upon outcomes		■						
	Report Compilation								
15	Public comment		■	■	■				
	EA & Authorisation								
16	Submission of EIA document	SDP			■				
17	Authority Interaction	SDP /TEAM	■	■	■				
18	Interaction DEAT	SDP							
19	Finalise EA	SDP/TEAM							
20	Advertise EA	SDP							
21	Close Out	SDP			■				

13. CONCLUSION

The scoping phase has confirmed that the proposed site on Remainder of Portion 1 and Portion 10 of the Farm Spes Bona is a suitable site for a solar photo voltaic facility. An alternative site in the vicinity, the Farm 1(Cecelia) of the Farm Sekretarispan was dismissed on primarily bio physical factors. Site specific positives associated with the site include the fact that a suitable 132kV powerline and proximal Harvard substation with associated infrastructure lies upon the farm, adjacent to the proposed site. In addition, the site has relatively sound access and the site is subject to a high level of transformation on an ongoing basis. Further to the above, site topography is generally 'flat' with a slight easterly aspect, while geologically the site is suitable and stable. Being "remote", the site offers little visual and aesthetic impairment..

This scoping document was compiled between December 2013 and March 2014, with submission to all IAPs in March 2014. While most of the technical investigations are underway, the EIA phase should commence within 30 days of receipt of the report.

The scoping document once reviewed by IAPs, will be submitted to DEA, who will advise the EAP whether the scoping process has been acceptable or requires amendment or alternatively, whether the EAP may proceed according to the plan of study provided above.

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ANNEXURES