

**FINAL SCOPING REPORT**  
**for**  
**THE PROPOSED INYANGA ENERGY PROJECT 4**

**Prepared for:**

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## PROJECT SUMMARY

<b>Proposed Site</b>	Remainder of the Farm Perth No. 276.
<b>21 digit SG code</b>	C0410000000027600000
<b>Proposed Solar plant technology</b>	The proposed Photovoltaic solar plant will use “micromorph thin film photovoltaic module” technology.
<b>Structure height</b>	The height of the structure will vary from 1.5m – 2.7 m above the ground depending on the angle of the panels.
<b>Structure orientation</b>	All solar panels will be North facing.
<b>Development Footprint</b>	270 ha (excluding associated infrastructure).
<b>Lay down area dimensions</b>	To be addressed within the Environmental Impact Report.
<b>Generation Capacity</b>	75 MW.
<b>Site photograph plate</b>	Refer to <b>Appendix 2</b> .
<b>Copies of Title deeds</b>	Refer to <b>Appendix 7</b> .

## ENVIRONMENTAL ASSESSMENT PRACTITIONER

The following project team members are involved in this Scoping and EIR application process.

**Table 1 SEF Project Team Members**

Name	Organization	Project Role
Mr Dave Rudolph	Strategic Environmental Focus (Pty) Ltd	Project Director
Ms Vici Napier	Strategic Environmental Focus (Pty) Ltd	Project Manager
Mr Tashriq Naicker	Strategic Environmental Focus (Pty) Ltd	Environmental Manager
Ms Natasha Lalie	Strategic Environmental Focus (Pty) Ltd	Public Participation
Ms Christa Engelbrecht		

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## EXECUTIVE SUMMARY

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### 1 INTRODUCTION

Strategic Environmental Focus (Pty) Ltd (SEF) has been appointed by Islandsite Investments 519 (Pty) Ltd to undertake an environmental application process for the proposed Inyanga Energy Project 4 situated on the Remainder of the Farm Perth No. 276, within the Ga-Segonyana Local Municipality, approximately 9 km south of Hotazel, Northern Cape Province.

A Scoping and Environmental Impact Reporting (S&EIR) process will be conducted for this project based on triggered listed activities within the Environmental Impact Assessment (EIA) Regulations of 2010 (Government Notice (GN) No's 543; 544; 545 and 546) promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended (NEMA).

This application will be subject to a S&EIR process based on the listed activity within Government Notice No. 545 of the EIA Regulations being applicable to the project description. The purpose of this Final Scoping Report is to provide all interested and affected parties (I&APs) with an opportunity to assess whether or not their comments/ concerns submitted have been included and adequately addressed. All comments on this Final Scoping Report are to be submitted directly to the Department of Environmental Affairs (DEA) as the review period of 21 days will run concurrently with the DEA review period.

The DEA will based on this Final Scoping Report issue a decision on whether or not the application may proceed to the Environmental Impact Reporting Phase.

### 2 GENERAL PROJECT DESCRIPTION

The proposed Inyanga Energy Project 4, solar farm will be situated approximately 9 km south of Hotazel from De Aar in the Northern Cape Province, as illustrated in the locality map (**Appendix 1**). The proposed solar farm footprint area is approximately 270 ha (excluding associated infrastructure). The proposed solar farm will generate approximately 750 MW of electricity that will feed into the national grid via the Olien/Ferrum substation. The site is located in an optimal landscape position to cater for such a development, within the country. There may be supporting infrastructure associated with the solar farm *viz.* power lines, transformers on site, minimal administrative buildings for maintenance purposes, etc.

### 3 KEY IMPACTS

The following key impacts were identified and will be carried forward into the EIR phase for further investigation and assessment:

#### Biophysical Impacts:

- Potential impacts on surface water resources that occur in close proximity (the Witteegte River occurs on the south western edge of the farm);
- Potential impacts of increased surface water run-off (*viz.* increased soil erosion) associated with the establishment of hard internal surfaces and vegetation clearing (mainly during the construction phase);
- Potential impacts on ground and surface water quality due to hydrocarbon spillages from vehicles during the construction phase of the development;

- Potential impacts on soils due to hydrocarbon spillages from vehicles during the construction phase of the development;
- Destruction of flora within the proposed area, stemming from construction activities such as vegetation clearing and topsoil stripping within the site;
- Faunal displacement mainly during the construction phase of the project; and
- Adverse impacts on avifauna due to the potential reflections of the solar panels (during the operation phase).

**Socio-Economic Impacts:**

- Increased dust and noise generation during the construction phase;
- Change in the visual character of the area;
- Potential impacts on heritage resources;
- Potential loss of viable and high potential agricultural/ grazing land; and
- Job creation during the construction and operational phases of the proposed project.

**Cumulative Impacts:**

- Increased loss of viable and high potential agricultural/ grazing land; and
- Increased visual impacts associated with additional power lines.

## 4 ALTERNATIVES

To give effect to the principles of NEMA and Integrated Environmental Management (IEM), an EIA should assess a number of reasonable and feasible alternatives that may achieve the same end result as that of the preferred project alternative. The following alternatives have been identified as part of this Scoping exercise:

**Alternative 1: Site/ Location alternatives:**

Prior to the commencement of the environmental process, the Applicant undertook a Biodiversity Risk Assessment of eight (8) potential sites for the development of a 100 MW Solar Park, which would cover approximately 250 ha. The report assessed the ecological sensitivity and biodiversity risks associated with each proposed area. Based on the risk assessment (Refer to **Appendix 3 – Background Information**), the current site was selected for the proposed solar farm. No further site/ location alternatives will be investigated.

**Alternative 2: Layout/ Design alternatives:**

Alternative layout/ design plans may evolve from the findings of specialist studies that will be undertaken to inform the EIR phase. Design and layout alternatives will be proposed based on the environmental sensitivities as well as various alternatives for connection to the national grid.

**Alternative 3: Technology alternatives:**

Various technology alternatives will be considered and investigated during the EIR phase of the project. One such type of technology being considered is the type of solar panels that may be utilised, is the “micromorph thin – film photovoltaic module” (**Appendix 3**). The various technologies that will be considered will have implications varying from cost to effectiveness.

**Alternative 4: No development alternative:**

This option assumes that a conservative approach would ensure that the environment is not impacted upon any more than is currently the case. It is important to state that this assessment is informed by the current condition of the area. Should the DEA decline the application, the ‘No-Go’ option will be followed and the status quo of the site will remain.

## **5 CONCLUSIONS AND RECOMMENDATIONS**

In accordance with GN No. 543, the final Scoping Report is aimed at describing the proposed activity and those reasonable alternatives that have been identified as well as the receiving environment that may be affected by the proposed project. In accordance with the EIA Regulations, an identification of relevant legislation and guidelines is also given as well as a description of the public participation process that will be followed.

Comments and/or concerns identified by Interested and Affected Parties (I&APs) during the review period of the draft Scoping Report have been incorporated into the final Scoping Report for further investigation during the EIR Phase to follow. The final Scoping Report will now be submitted to the DEA for consideration, together with the Plan of Study for the EIR phase of the project and other relevant supporting information. All registered I&APs have been advised to submit any additional comments on the final Scoping Report directly to the DEA for consideration.

The EAP proposes that, on the basis of the information contained in this Scoping Report, that the DEA accept the Scoping Report and Plan of Study for the EIR phase and allow the EAP to proceed with the EIR phase of the project, such that the more pertinent issues can be thoroughly investigated and assessed, in terms of their significance and impact.

The ability to mitigate any of the potential impacts identified in this Scoping Report will also be investigated during the EIR phase and summarised into a working/ dynamic Environmental Management Programme (EMP) for consideration by I&APs and ultimately by the DEA.

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## LIST OF ABBREVIATIONS AND ACCRONYMS

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<b>DEA</b>	Department of Environmental Affairs (previously DEAT)
<b>DEAT</b>	Department of Environmental Affairs and Tourism
<b>DoE</b>	Department of Energy
<b>DWA</b>	Department of Water Affairs
<b>EAP</b>	Environmental Assessment Practitioner
<b>EIA</b>	Environmental Impact Assessment
<b>EIR</b>	Environmental Impact Reporting
<b>EMP</b>	Environmental Management Programme
<b>GN</b>	Government Notice
<b>ha</b>	Hectares
<b>I&amp;APs</b>	Interested and Affected Parties
<b>IEM</b>	Integrated Environmental Management
<b>IRP</b>	Integrated Resource Plan
<b>kV</b>	Kilo Voltage
<b>ME</b>	Mitigation Efficiency
<b>MW</b>	Mega Watt
<b>NEMA</b>	National Environmental Management Act, 1998 (Act No. 107 of 1998)
<b>NERSA</b>	National Energy Regulator of South Africa
<b>NHRA</b>	National Heritage Resources Act (Act No. 25 of 1999)
<b>NWA</b>	National Water Act, 1998 (Act No. 36 of 1998)
<b>PV</b>	Photovoltaic
<b>REFIT</b>	Renewable Energy Feed-in Tariffs
<b>SAHRA</b>	South African Heritage Resources Agency
<b>SEF</b>	Strategic Environmental Focus (Pty) Ltd
<b>SFM</b>	Significance Following Mitigation
<b>S&amp;EIR</b>	Scoping and Environmental Impact Reporting
<b>SDF</b>	Spatial Development Framework
<b>WOM</b>	Without Mitigation Measures
<b>WM</b>	With Mitigation Measures



## GLOSSARY OF TERMS

Applicant	Any person who applies for an authorisation to undertake an activity or to cause such activity to be undertaken as contemplated in sections 24(5), 24M and 44 of the National Environmental Management Act, 19998 (Act No. 107 of 1998).
Ecology	The study of the interrelationships between organisms and their environments.
Environment	All physical, chemical and biological factors and conditions that influence an object.
Environmental Impact Assessment	Assessment of the effects of a development on the environment.
Environmental Management Programme	A working document on environmental and socio-economic mitigation measures, which must be implemented by several responsible parties during all the phases of the proposed project.
Interested and affected party	Any person or groups of persons who may express interest in a project or be affected by the project, positively or negatively.
Key stakeholder	Any person who acts as a spokesperson for his/her constituency and/or community/organization, has specialized knowledge about the project and/or area, is directly or indirectly affected by the project or who considers himself/herself a key stakeholder.
Stakeholder	Any person or group of persons whose live(s) may be affected by a project.
Study area	Refers to the entire study area encompassing all the alternatives as indicated on the study area map.
Succession	The natural restoration process of vegetation after disturbance.

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## **SECTION A: INTRODUCTION**

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Strategic Environmental Focus (Pty) Ltd (SEF) has been appointed by Islandsite Investments 519 (Pty) Ltd to undertake an environmental application process for the proposed Inyanga Energy Project 4 situated on the Remainder of Farm Perth No. 276, within the Ga-Segonyana Local Municipality, approximately 9 km south of Hotazel, Northern Cape Province.

A Scoping and Environmental Impact Reporting (S&EIR) process will be conducted for this project based on triggered listed activities within the Environmental Impact Assessment (EIA) Regulations of 2010 (Government Notice (GN) No's 543; 544; 545 and 546) promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended (NEMA).

### **A-1 DESCRIPTION OF PROPOSED ACTIVITY**

#### **A-1.1 LOCALITY**

The proposed Inyanga Energy Project 4, solar farm will be situated approximately 9 km south of Hotazel on the Remainder of Farm Perth No. 276 (**Appendix 1**). The R380 road traverses the site, as well as two Eskom power lines and a railway line. This site is accessible from the R 380 which runs to the east of the railway line. The proposed solar farm will generate approximately 75 MW of electricity that will feed into the national grid via the Olien/Ferrum substation. The estimated footprint area for the solar farm is 270 ha (excluding associated infrastructure), which will be strategically located within the broader site. The proposed sites central co-ordinates are: 27° 26' 81.23" S and 22° 98' 55.79" E

It should be noted that there is a smaller proposed solar plant, known as Transalloys Energy Project 4, that will be located on the remainder of the Farm Perth 276 close to the substation area. This project is undergoing a separate Basic Assessment process, as the applicant is Transalloys (Pty) Ltd. The Transalloys Energy Project 4 site is approximately 19.9ha in extent. The cumulative impact associated with this development and that of the proposed Inyanga Energy Project 4 will be assessed during the EIR phase of this project.

#### **A-1.2 SURROUNDING LAND USE**

To further place the site in context, the land uses within all four major compass directions are described in the table below.

**Table 1: Surrounding land use table**

Direction	Land Use	Distance (m)
North	Electrical Infrastructure (Hotazel Traction)	500 m
	Vacant Land	Adjacent to the site
East	Vacant Land	Adjacent to the site
	Agriculture/ Farming	Adjacent to the site
South	Agriculture/ Farming	Adjacent to the site
	Vacant Land	Adjacent to the site
West	Agriculture/ Farming / Mining	Adjacent to the site
	Tributary of the Witleegte River	Passes adjacent to the site
	Vacant Land	Adjacent to the site

### **A-1.3 DETAILS OF THE PROPOSED PROJECT**

The proposed Inyanga Energy Project 4, solar farm, will generate renewable electricity that will feed into the national grid via the closest substation. The site is located in an optimal landscape position to cater for such a development, within the country. There will be supporting infrastructure associated with the solar farm viz. 132 kV power lines, transformers on site, minimal administrative buildings for maintenance purposes, etc.

All existing servitudes on site will be adhered to. The technology that is proposed for the solar plant is “micromorph thin film photovoltaic (PV) module” technology. With this technology it is estimated that approximately 1 MW of electricity can be generated for every 2.5 ha (in optimal conditions) of solar panels. The solar panels will all be North facing and will vary in height from 1.5 m – 2.7 m, depending on the angle of the panels ( $15^{\circ}$  –  $35^{\circ}$  respectively). Each solar panel will be made up of a maximum of 3 X 4 individual PV modules; with each PV module being 1.3 m long and 1.1 m wide, weighing approximately 26 kg (**Appendix 3**). The solar panels supporting structure will be made up of either steel or aluminium, and the panel will be tilted to an angle to ensure that they receive maximum exposure to solar radiation. Refer to Figures 2 and 3 for examples of solar panels.

#### **Grid Connection**

When deciding where to locate a solar park development one of the main considerations is the connection to the electrical grid. The larger the generation capacity of the solar park, the higher the connecting network voltage needs to be. For a 75 MW solar park, one needs to at least connect to a 132kV network, as this capacity is close to the thermal limit of most of Eskom’s 132kV lines. The additional benefits of connecting to a heavily loaded 132kV network is reducing the load on the network, reducing energy losses and deferring any Eskom network expansion plans. As the land parcels located next to Eskom facilities are not always readily available for development, a compromise needs to be found between the availability of land plots, and the availability of a grid connection, as the grid connection cost could make a generation project un-feasible. On the other hand the land plot should also satisfy all the other criteria to make solar development feasible.

When considering the Inyanga Energy Project 4 location the grid connections in the area where identified and considered. A description of the electrical network in the area, follows:

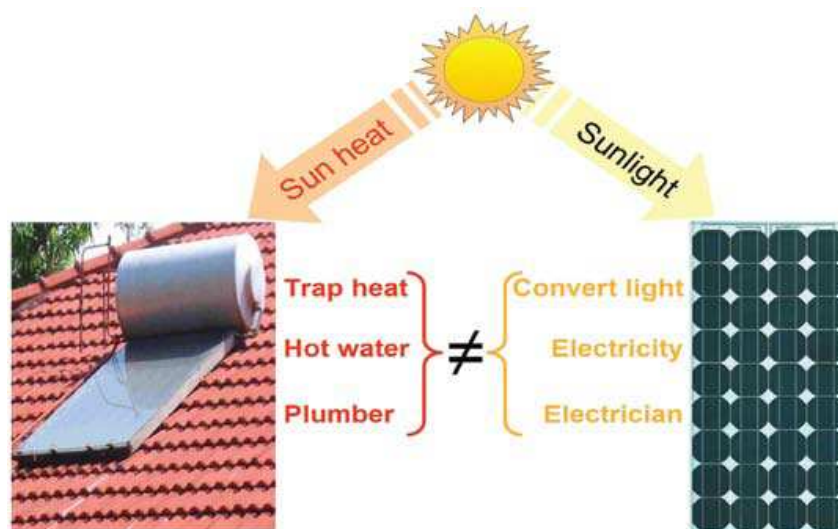
### *Eskom Ferrum/Olien System*

- The Olien/Ferrum 275 kV substation is supplied from Persues MTS substation with 2x275 kV lines, through Boundary substation at Kimberley.
- This forms part of the Northwest grid. Due to the 275 kV system being overloaded, the transmission system will be extended to introduce 400 kV at Ferrum and Hotazel. Reactors are also considered at Olien in the short term. Any generation in the short term will therefore strengthen this network and reduce losses.
- The introduction of 400 kV at Ferrum, as well as shunt reactors, will alleviate the pressure on the Persues Boundary 275 kV system.
- Ferrum has 3x132 kV and 2x275 kV spare bays and 250MVA trf capacity (n-1).

The Perth site is situated close to Hotazel on the Ferrum/Olien system. In the short term it will feed into the Eskom 132 kV UMK Hotazel network, to release the loading and reduce electrical losses. These lines run over the site, and a new 11 or 22/132 kV will feed directly into these lines.

## **A-1.4 PHOTOVOLTAIC (PV) SOLAR ENERGY FACILITY AND GENERATION OF ELECTRICITY**

The sun delivers energy to us in two forms, mainly heat and light. There are two main types of solar power systems, namely solar thermal systems that trap heat to warm up water, and solar PV systems that convert sunlight directly into electricity. See Figure 1 below illustrating this.



**Figure 1: The difference between solar thermal and solar PV systems (Source from: Tan & Seng)**

When the PV modules are exposed to sunlight, they generate direct current ("DC") electricity. An inverter then converts the DC into alternating current ("AC") electricity, which is then fed into a building's AC distribution boards, without affecting the quality of supply.

### ***Solar PV Technology***

A solar PV system is powered by many crystalline or thin film PV modules. Individual PV cells are interconnected to form a PV module, and this takes the form of a panel, which allows for easy installation. PV cells are made of light-sensitive semiconductor materials that use photons to dislodge electrons to drive an electric current. Two broad categories of technology

can be used, namely crystalline silicon or thin film. Although the former accounts for the majority of PV cell production, thin film is a newer technology which is growing in popularity<sup>1</sup>.

For large-scale generation of solar electricity the solar panels are connected together into a solar array.



**Figure 2: Installed PV Panels (Sourced from Ecoware)**



**Figure 3: Installed PV Panels (Sourced from Ecoware)**

## **A-2 LEGAL REQUIREMENTS APPLICABLE TO THIS APPLICATION**

The aim of this component of the report is to provide a brief overview of the pertinent policies as well as legal and administrative requirements applicable to the proposed Inyanga Energy Project 4. SEF registered the project with the DEA and the project has been assigned the reference number: 12/12/20/2491. The legislation, guidelines and policies applicable to this project are as follows:

### **A-2.1 NEMA AND ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS**

The EIA Regulations, promulgated under NEMA, focuses primarily on creating a framework for co-operative environmental governance. NEMA provides for co-operative environmental governance by establishing principles for decision-making on matters affecting the

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<sup>1</sup> Handbook for Solar Photovoltaic (PV) Systems, Tan, D. and Seng, A. K. Energy Market Authority

environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by State Departments and to provide for matters connected therewith.

In terms of the EIA Regulations of 2010 and activities listed in GN No. 544 and 546 (requiring a Basic Assessment process) and GN No. 545 (requiring a S&EIR process), the following listed activities are deemed by the EAP to be applicable to the proposed solar farm based on the information provided by the project proponent and their consulting engineers.

#### **GN No. 544 of 18 June 2010**

##### Activity listing No. 9:

The construction of facilities or infrastructure exceeding 1000 metres in length for the bulk transportation of water, sewage or storm water:

- i. with an internal diameter of 0,36 meters or more; or
- ii. with a peak throughput of 120 litres per second or more,

excluding where:

- a. such facilities or infrastructure are for bulk transportation of water, sewage or storm water or storm water drainage inside a road reserve; or
- b. where such construction will occur within urban areas but further than 32meters from a watercourse, measured from the edge of the watercourse.

##### Activity listing No. 10:

The construction of facilities or infrastructure for the transmission and distribution of electricity

- i. outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or
- ii. inside urban areas or industrial complexes with a capacity of 275 kilovolts or more.

##### Activity listing No. 11:

The construction of:

- i. canals;
- ii. channels;
- iii. bridges;
- iv. dams;
- v. weirs;
- vi. bulk storm water outlet structures;
- vii. marinas;
- viii. jetties exceeding 50 square metres in size;
- ix. slipways exceeding 50 square metres in size;
- x. buildings exceeding 50 square metres in size; or
- xi. infrastructure or structures covering 50 square metres or more

where such construction occurs within a watercourse or within 32 meters of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.

##### Activity listing No. 18:

The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from:

- i. a watercourse;
- ii. the sea;

- iii. the seashore;
- iv. the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater – but excluding where such infilling, depositing, dredging, excavation, removal or moving;
  - (a) is for maintenance purposes undertaken in accordance with a management plan agreed to by the relevant environmental authority; or
  - (b) occurs behind the development setback line.

Activity listing No. 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 meters, 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.

**GN No. 546 of 18 June 2010**

Activity listing No. 14:

The clearance of area of 5 hectares or more of vegetation where 75% or more 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.

**In the Northern Cape:** All areas outside urban areas

**GN No. 545 of 18 June 2010**

Activity listing No. 1:

The construction of facilities or infrastructure for the generation of electricity where the electricity output is 20 megawatts or more.

Activity listing No. 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.

Activity listing No. 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;
- ii. or agriculture or afforestation where activity 16 in this Schedule will apply.

It must be noted that activities requiring a Basic Assessment process, as well as activities requiring a S&EIR process are triggered by the proposed Inyanga Energy Project 4. Therefore, according to the above listed activities, a situation arises, whereby; the legal

requirements of the activity listed in terms of GN No. 545 of 2010 supersede those of the activities listed in terms of GN No. 544 and 546 of 2010, and as such this application shall undergo a S&EIR process. .

The aforementioned listed activities are deemed to include activities that could potentially have a detrimental impact on the social and biophysical state of an area and as such, are required to undergo an environmental impact assessment process.

## **A-2.2 NATIONAL WATER ACT, 1998 (ACT NO. 36 OF 1998)**

The National Water Act, 1998 (Act No. 36 of 1998) (NWA) aims to provide management of the national water resources to achieve sustainable use of water for the benefit of all water users. This requires that the quality of water resources is protected as well as integrated management of water resources with the delegation of powers to institutions at the regional or catchment level. The purpose of the Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in responsible ways.

Of specific importance to this application is Section 19 of the NWA, which states that an owner of land, a person in control of land or a person who occupies or uses the land which thereby causes, has caused or is likely to cause pollution of a water resource must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring and must therefore comply with any prescribed waste standard or management practices.

Due to the various streams, tributaries and drainage lines that occur on site, according to the NWA, the proposed solar plant may trigger the following water uses listed in Section 21:

- (c) impeding or diverting the flow of water in a watercourse; and
- (i) altering the bed, banks, course or characteristics of a watercourse.

Accordingly, the proposed solar plant may thus require a water use licence, which is administered by the Department of Water Affairs (DWA).

## **A-2.3 OTHER LEGAL REQUIREMENTS**

### **Acts**

#### *Constitution of the Republic of South Africa*

The Constitution of the Republic of South Africa has major implications for environmental management. The main effects are the protection of environmental and property rights, the change brought about by the sections dealing with administrative law, such as access to information, just administrative action and broadening of the *locus standi* of litigants. These aspects provide general and overarching support and are of major assistance in the effective implementation of the environmental management principles and structures of the NEMA. Section 24 in the Bill of Rights of the Constitution specifically states that:

Everyone has the right -

- To an environment that is not harmful to their health or well-being; and
- To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that -



- Prevent pollution and ecological degradation;
- Promote conservation; and
- Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

*National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)*

The purpose of the Biodiversity Act is to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA and the protection of species and ecosystems that warrant national protection. As part of its implementation strategy, the National Spatial Biodiversity Assessment was developed.

This Act is applicable to this application for environmental authorisation, in the sense that it requires the project applicant to consider the protection and management of local biodiversity.

*National Heritage Resources Act, 1999 (Act No. 25 of 1999)*

This Act legislates the necessity for cultural and heritage impact assessment in areas earmarked for development, which exceed 0.5 hectares (ha) and where linear developments (including roads) exceed 300 metres in length. The Act makes provision for the potential destruction to existing sites, pending the archaeologist's recommendations through permitting procedures. Permits are administered by the South African Heritage Resources Agency (SAHRA).

*National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)*

The purpose of this Act is to provide for the protection, conservation and management of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes.

*Promotion of Access to Information Act, 2000 (Act No. 2 of 2000)*

The Promotion of Access to Information Act, 2000 (Act No. 2 of 2000) recognises that everyone has a Constitutional right of access to any information held by the state and by another person when that information is required to exercise or protect any rights. The purpose of the Act is to foster a culture of transparency and accountability in public and private bodies and to promote a society in which people have access to information that enables them to exercise and protect their rights

### **Provincial policies/ guidelines**

*Integrated Environmental Management (IEM)*

Integrated Environmental Management is a philosophy for ensuring that environmental considerations are fully integrated into all stages of the development process. This philosophy aims to achieve a desirable balance between conservation and development (DEAT, 1992). The IEM guidelines intend encouraging a pro-active approach to sourcing, collating and presenting information in a manner that can be interpreted at all levels.

The DEA Integrated Environmental Management Information Series guidelines are also considered during this S&EIR application process.

National Spatial Biodiversity Assessment

The National Spatial Biodiversity Assessment (NSBA) classifies areas as worthy of protection based on its biophysical characteristics, which are ranked according to priority levels.

Protected species – Provincial Ordinances

Provincial ordinances were developed to protect particular plant species within specific provinces. The protection of these species is enforced through permitting requirements associated with provincial lists of protected species. Permits are administered by the Provincial Departments of Environmental Affairs.

**A-3 DETAILS OF THE APPLICANT**

The details of the project applicant are:

Name of Applicant	Postal Address	Relevant Numbers
Mr Kirill Ilin Islandsite Investments 519 (Pty) Ltd	Office 301, 3rd floor, The Square, 30 Melrose Boulevard, Melrose Arch, 2076	Tel: 011 994 9610 Fax: 011 994 9611 E-mail: k.ilin@renova-africa.com

**A-4 NEED AND DESIRABILITY OF THE PROJECT**

At present South Africa relies heavily on fossil fuels to provide electricity for the country. This practice is not sustainable, associated with very high environmental impacts and socio-economic impacts. As such there is a drive to locate and identify feasible, sustainable and environmentally acceptable alternatives for electricity generation.

One such alternative is solar power; this form of electricity generation is sustainable and is associated with “lesser” environmental impacts, for example there are limited to no air quality impacts and impacts on water resources are minimal and effectively mitigated. There is global pressure on countries to decrease their reliability on fossil fuels and to increase their share of renewable energy. In 2008, approximately 93% of South Africa’s electricity was produced from coal, with nuclear energy making up most of the remainder. The growing energy demand and concern over the environmental impact of coal-fired power generation has led to government outlining a programme that would attempt to change this situation (Goldie-Scott, 2011).

In South Africa, The Integrated Resource Plan (IRP) for South Africa, has been initiated by the Department of Energy (DoE), it is a “*co-ordinated schedule for generation expansion and demand-side intervention programmes, taking into consideration multiple criteria to meet electricity demand*”. The IRP has undergone two rounds of public participation, and has been recommended to Cabinet for adoption. The Policy-Adjusted IRP for South Africa is a major step towards building local industry clusters, as well as assisting South Africa in fulfilling the commitments made at the Copenhagen Climate Change Summit, in terms of mitigating climate change (IRP2, 2011).

The current goal set for the sustainable renewable energy industry, is 17.8 GW of renewables by 2030. This mix of renewables will come mainly from wind, solar, biomass and small-scale hydro. This will result in a total of 42 % of new power generation being sourced from renewables.

The proposed project is a response to the Department of Energy's bid invitations for renewable energy. Should the proposed project be successful in the bid, the project will contribute approximately 75 MW of electricity to the national grid network. This power will reduce the burden of electricity demand on the existing coal fuelled power stations, and in turn reduce the amount of fossil fuels required for electricity production, which will have positive benefits on the receiving environment as a whole.

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## **SECTION B: THE RECEIVING ENVIRONMENT**

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In order to, with any level of confidence, assess the potential impacts of the proposed solar plant on the receiving environment, one needs to first assess the baseline conditions found over the study area. Using this *Status Quo* one can then, broadly speaking, determine the likely impacts that will emanate from a specific development typology on a well defined receiving environment.

### **B-1 BIOPHYSICAL ENVIRONMENT**

#### **B-1.1 Geology and Geotechnical Suitability**

The site is mainly dominated by Aeolian sand of Recent age with a few outcrops of Tertiary Kalahari beds (surface limestone, silcrete and sandstone) in the riverbeds.<sup>2</sup> Due to the nature of the geology present, the site is not unsuitable for the proposed solar plant, from a construction point of view.

#### **B-1.2 Soils and agricultural potential**

The site is composed of the Ah9 soil type. The above relates to the soil having mainly red-yellow apedal, freely drained soils, which have a high base status, usually with < 15% clay. As such the soil potential is classed as having poor suitability for agriculture (where climate permits).

As requested by the DEA, an agricultural potential study will be conducted during the EIR phase of the project to determine the significance and use of the site for agricultural purposes.

#### **B-1.3 Topography and hydrology**

The Northern Cape Province is situated within the western section of South Africa at an average altitude between 1200 - 1750 m above sea level. The general topography can be described as vast arid plains with random rock outcrops.<sup>3</sup>

The proposed site has no wetlands on site. However, the Witleegte River runs on the south western side of the farm. If it is not possible to construct the proposed solar farm without impacting on any waterbodies, rivers, drainage lines and/or wetlands (and their associated buffer zones), a water use license application will be applied for from the DWA.

#### **B-1.4 Climate**

The Northern Cape's weather is typical of desert and semi desert areas which is a large dry region of fluctuating temperatures and varying topographies. The annual rainfall is sparse, only 50 to 400 mm per annum. In January, afternoon temperatures usually range from 34 to 40° C. Winter days are warm, with the onset of night bringing dew and frost to supplement the low rainfall of the region.<sup>4</sup>

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<sup>2</sup> Department of Environmental Affairs and Tourism, 2001, ENPAT. Pretoria: DEAT.

<sup>3</sup> <http://www.southafrica.info/about/geography/northern-cape.htm>

<sup>4</sup> <http://www.cosechaypostcosecha.org/data/articulos/ConvenioSudafrica/ClimateAndWeather.pdf>

## **B-1.5 Flora and Fauna**

Floral and Faunal (including avifaunal) Assessments will be conducted during the EIR phase of the project and their findings shall be incorporated into the Environmental Impact Report.

According to the South African National Botanical Institute: Vegetation Atlas of South Africa, Lesotho and Swaziland, 2006 (SANBI), the site is mostly covered by the site is mostly covered by the Kathu bushveld (Least Threatened) vegetation type. These vegetation types will be verified during the vegetation study that will be conducted.

## **B-2 SOCIAL ENVIRONMENT**

### **B-2.1 Visual**

Scenic value can be described as the reaction to aesthetics of the environment as perceived by an individual or a group and therefore it is a very subjective perception. In terms of surrounding landscape compatibility, the proposed solar plant may be out of character, and as such a Visual Impact Assessment will be conducted during the EIR phase of the project to assess the significance of such an impact.

### **B-2.2 Heritage**

As per the National Heritage Resources Act, 1999 (Act No. 25 of 1999), the proposed development will undergo a Phase 1 Heritage Impact Assessment, due to the size of the development exceeding 0.5 ha. Should any heritage artefacts be uncovered, the relevant heritage agency will be appropriately consulted.

### **B-2.3 Noise**

Noise control must form part of the planning stage of any development. During the construction phase, noise may be generated as a result of construction related activities such as: the use of machinery and equipment, and the movement of construction vehicles etc. These potential noise impacts must be mitigated, where possible. This will be investigated during the EIR phase of the project and suitable mitigation measures will be recommended.

### **B-2.4 Air**

Vehicles travelling on exposed surfaces, earthworks as well as wind are the main generators of dust. The nuisance and aesthetic impacts associated with the dust generated during the construction phase should be minimal, if mitigating measures are implemented.

Dust generated off the earth's surface is generally regarded as a nuisance rather than a health or environmental hazard. On a large scale dust will impair atmospheric visibility; however, in the context of the proposed activity, the impact of dust production on air quality should be minimal taking into account that effective dust suppression techniques are available and will be recommended during the EIR phase. The nuisance aspect of dust will be minimal as the area is sparsely populated and people do not reside in close proximity to the site.

## SECTION C: ENVIRONMENTAL IMPACT ASSESSMENT (EIA) PROCESS

### C-1 APPROACH TO THE EIA

An Environmental Impact Assessment (EIA) is an effective environmental planning tool. It identifies the environmental impacts of a proposed project and assists in ensuring that a project will be environmentally acceptable and integrated into the surrounding environment in a sustainable way.

The EIA for this project complies with the requirements of the National Environmental Management Act, 1998 (Act 107 of 1998), as amended [NEMA] and the NEMA EIA Regulations, 2010 of the DEA. The guiding principles of an EIA are listed below.

#### Definition of the term “environment”

The term “environment” is used in the broadest sense in an environmental impact assessment. It covers the physical, biological, social, economic, cultural, historical, institutional and political environments.

### C-2 GUIDING PRINCIPLES FOR AN EIA

The EIA must take an open participatory approach throughout. This means that there should be no hidden agendas, no restrictions on the information collected during the process and an open-door policy by the proponent. Technical information must be communicated to stakeholders in a way that is understood by them and that enables them to meaningfully comment on the project.

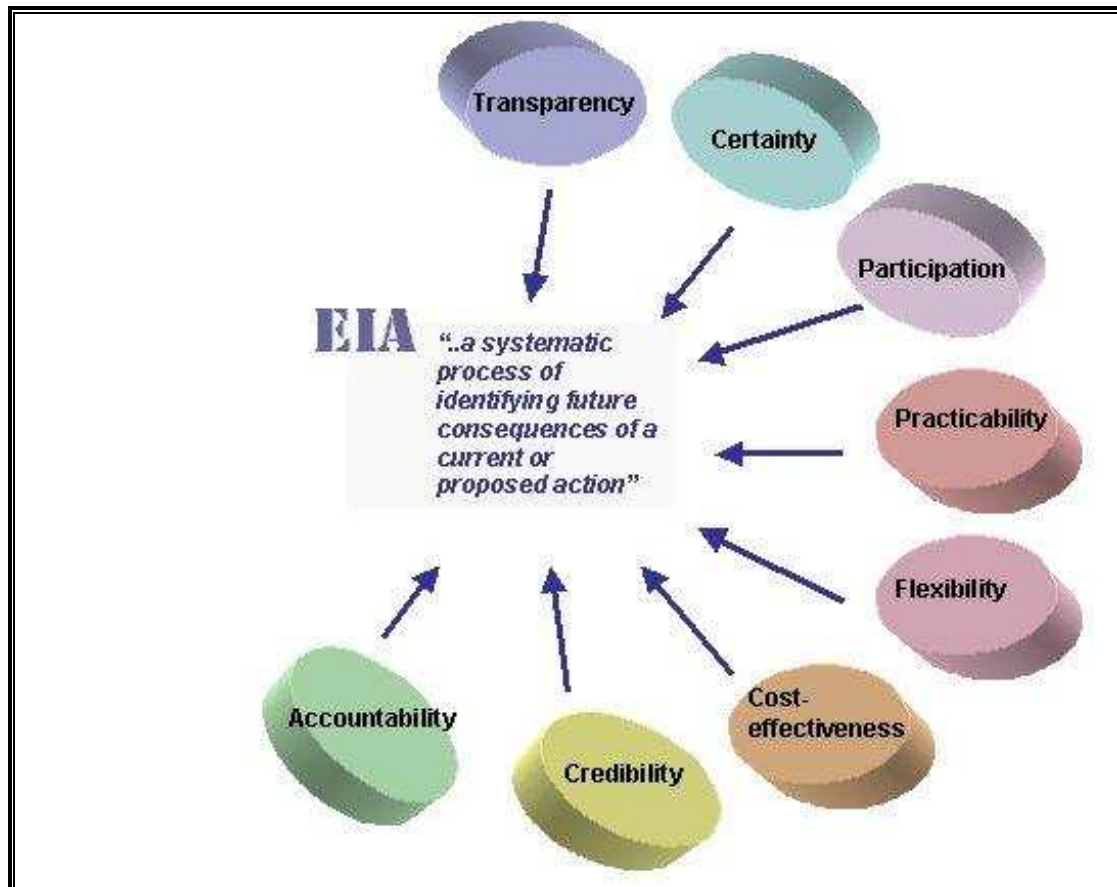
There should be ongoing consultation with Interested and Affected Parties (I&APs) representing all walks of life. Sufficient time for comment must be allowed. The opportunity for comment should be announced on an on-going basis. There should finally be opportunities for input by specialists and members of the public. Their contributions and issues should be considered when technical specialist studies are conducted and when decisions are made.

The eight guiding principles that govern the entire process of EIA are as follows (see **Figure 4**):

- **Participation:** An appropriate and timely access to the process for all interested parties.
- **Transparency:** All assessment decisions and their basis should be open and accessible.
- **Certainty:** The process and timing of the assessment should be agreed in advanced and followed by all participants.
- **Accountability:** The decision-makers are responsible to all parties for their action and decisions under the assessment process.
- **Credibility:** Assessment is undertaken with professionalism and objectivity.
- **Cost-effectiveness:** The assessment process and its outcomes will ensure environmental protection at the least cost to the society.
- **Flexibility:** The assessment process should be able to adapt to deal efficiently with any proposal and decision making situation.
- **Practicality:** The information and outputs provided by the assessment process are readily usable in decision making and planning.

A S&EIR process is considered as a project management tool for collecting and analysing information on the environmental effects of a project. As such, it is used to:

- Identify potential environmental impacts;
- Examine the significance of environmental implications;
- Assess whether impacts can be mitigated;
- Recommend preventive and corrective mitigating measures;
- Inform decision makers and concerned parties about the environmental implications; and
- Advise whether development should go ahead.



**Figure 4: The eight guiding principles for the EIA process**

A S&EIR process typically has four phases, as illustrated in **Figure 5** below. The Public Participation process forms an integral part of all four phases and is discussed in greater detail in Section C – 4 of this final Scoping Report.

## C-3 EIA TECHNICAL PROCESS

This section provides a summary of the technical process to be followed for this S&EIR process.

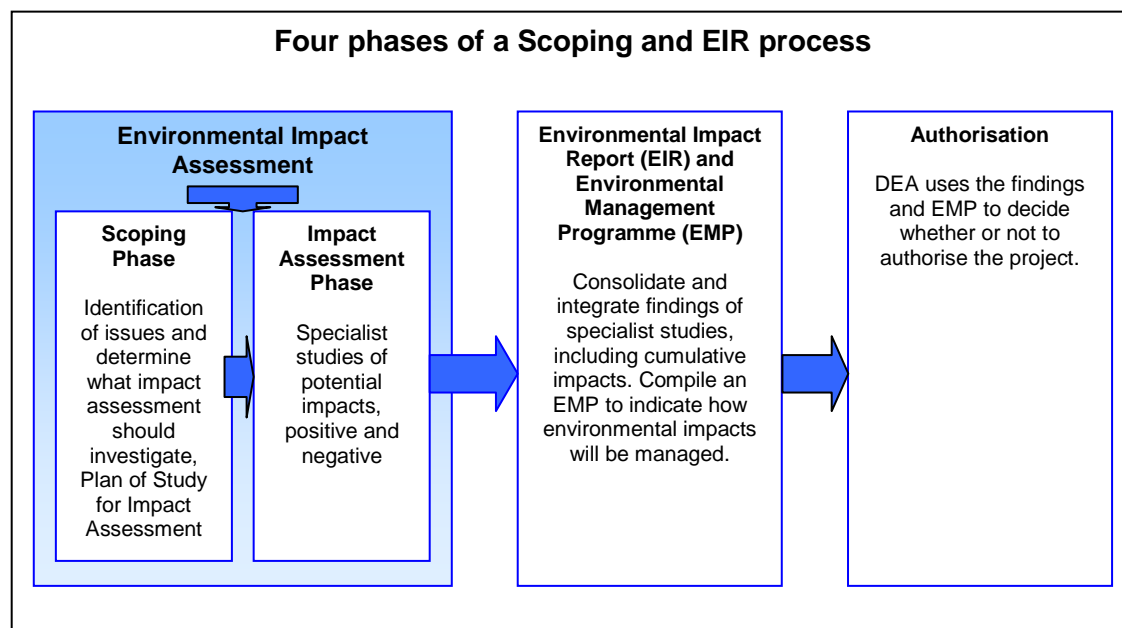


Figure 5: Flow diagram of the Scoping and EIR process

### C-3.1 Pre-application consultation with the DEA

No pre-consultation meeting was held between SEF and DEA. The EAP conducting the S&EIR process for the applicant, in support of their application for an environmental authorisation, is deemed to have a good understanding of the information requirements of the Department for the proposed solar plant, such that the Department's specific information requirements are deemed to have been met for the scoping phase of this project.

### C-3.2 Application for authorization

The application form informing the Department of intent to obtain an environmental authorisation was submitted to the DEA on 30 September 2011. The project was subsequently registered and assigned the reference number DEA Ref: 12/12/20/2491.

### C-3.3 Information gathering

Early in the EIA process, the technical specialists identified the information that would be required for the impact assessment and the relevant data was obtained. In addition, the specialists sourced available information about the receiving environment from reliable sources, I&APs, previous documented studies in the area and previous EIA Reports.

### C-3.4 Specialist studies

The following specialist studies were identified to be undertaken during the EIR phase:

- Flora Assessment;
- Faunal (including Avifaunal) Assessment;



- Phase 1: Heritage Impact Assessment;
- Visual Impact Assessment; and
- Agricultural Potential Assessment.

## **C-4 PUBLIC PARTICIPATION PROCESS**

The principles of NEMA govern many aspects of the S&EIR process, including consultation with I&APs. These principles include the provision of sufficient and transparent information to I&APs on an ongoing basis, to allow them to comment; and ensuring the participation of historically disadvantaged individuals, including women, the disabled and the youth.

The principal objective of public participation is thus to inform and enrich decision-making. This is also the key role in the scoping phase of the process.

### **C-4.1 Identification of interested and affected parties**

I&APs representing the following sectors of society have been identified in terms of Regulation 55 of the EIA Regulations R543 of 2010 (see **Appendix 6** for a complete preliminary I&AP distribution list):

- Provincial Authorities;
- Local Authorities;
- Ward Councillors;
- Parastatal/ Service Providers;
- Non-governmental Organisations;
- Local forums/ unions; and
- Adjacent Landowners.

### **C-4.2 Public announcement of the project**

The project was announced on 02 November 2011 in the following manner (see **Appendix 6** for public announcement documentation):

- Publication of media advertisements (in English and Afrikaans) in a local/regional newspaper, Die Volksblad;
- On-site notices advertising the S&EIR process were placed on and around the site, as well as in the public venue where reports were made available for review and comment; and
- Distribution of letters by fax/ by hand/ post/ email to I&APs including Registration and Comment Sheets.

### **C-4.3 Draft Scoping Report**

I&APs and relevant State Departments have had the opportunity to raise issues either in writing, by telephone or email on the Draft Scoping Report for a period of 40 days (from 02 November 2011 until 12 December 2011). The availability of the Draft Scoping Report has been announced by means of personal letters to all the registered I&APs on the distribution list, and by adverts placed in the abovementioned newspapers.

In addition, the Draft Scoping Report will be distributed for comment as follows:

- Left in public venues (De Aar Public Library);
- Hand-delivered/ couriered to the relevant authorities; and
- Posted on SEF's website at <http://www.sefsa.co.za>.

All the comments and concerns raised by I&APs during the S&EIR process will be captured in a Comment and Response Report. I&APs will receive letters acknowledging their contributions.

#### **C-4.4 Final Scoping Report**

The Scoping Report has been updated with comments and/or concerns raised by I&APs. The Comment and Response Report has also been attached to this final Scoping Report. The final Scoping Report will now be submitted to the DEA and registered I&APs simultaneously for review and comment for a period of 21 days. Registered I&APs have been advised to submit any additional comments on this final Scoping Report directly to the DEA prior to the lapsing of the 21 day review period.

#### **C-4.5 Public participation during the Impact Assessment Phase**

Public participation during the Impact Assessment Phase of the S&EIR process will revolve around a review of the findings of the Environmental Impact Report (EIR) and inputs into the Environmental Management Programme (EMP). The findings will be presented in a Draft Environmental Impact Report and EMP (including the specialist studies conducted), which will be available for public review and comment.

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## **SECTION D: IDENTIFICATION OF IMPACTS**

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### **D-1 IDENTIFICATION OF IMPORTANT ENVIRONMENTAL IMPACTS**

The key environmental impacts listed in the following section have been determined through:

- Legislation; and
- Experience of the Environmental Assessment Practitioner (EAP).

The following issues were identified and will be carried forward into the EIR phase for further investigation and assessment:

#### **D-1.1 Biophysical Impacts**

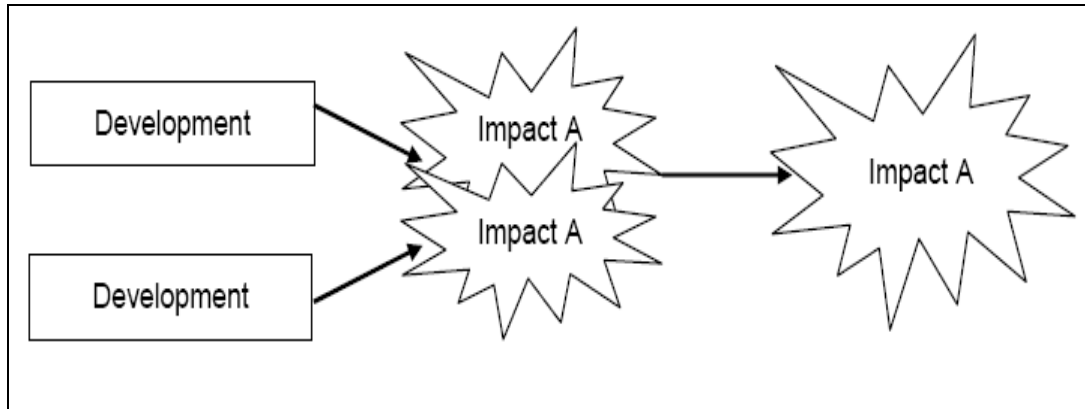
- Potential impacts on surface water resources that occur in close proximity (the Witteegte River occurs on the south western edge of the farm);
- Potential impacts of increased surface water run-off (*viz.* increased soil erosion) associated with the establishment of hard internal surfaces and vegetation clearing (mainly during the construction phase);
- Potential impacts on ground and surface water quality due to hydrocarbon spillages from vehicles during the construction phase of the development;
- Potential impacts on soils due to hydrocarbon spillages from vehicles during the construction phase of the development;
- Destruction of flora within the proposed area, stemming from construction activities such as vegetation clearing and topsoil stripping within the site;
- Faunal displacement mainly during the construction phase of the project; and
- Adverse impacts on avifauna due to the potential reflections of the solar panels (during the operation phase).

#### **D-1.2 Socio-Economic Impacts**

- Increased dust and noise generation during the construction phase;
- Change in the visual character of the area;
- Potential impacts on heritage resources;
- Potential loss of viable and high potential agricultural land; and
- Job creation during the construction and operational phases of the proposed project.

### **D-2 IDENTIFICATION OF CUMULATIVE IMPACTS**

Cumulative impacts, as illustrated below, occur as a result from the combined effect of incremental changes caused by other activities together with the particular project. In other words, several developments with insignificant impacts individually may, when viewed together, have a significant cumulative adverse impact on the environment (Figure 6).



**Figure 6: The identification of Cumulative Impacts**

The following cumulative impacts have been identified in terms of the proposed development and warrant further investigation during the assessment phase:

- Increased loss of viable high potential agricultural land; and
- Increased visual impact associated with additional power lines

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## SECTION E: ALTERNATIVES

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### E-1 IDENTIFICATION OF ALTERNATIVES

The EIA procedures and regulations stipulate that the environmental investigation needs to consider feasible alternatives for any proposed development. Therefore, a number of possible proposals or alternatives for accomplishing the same objectives should be identified and investigated. During the EIR phase of the project, the identified alternatives will be assessed, in terms of environmental acceptability as well as socio-economic feasibility. To define the term alternatives as per Government Notice No. 543 of the NEMA EIA Regulations 2010 means:

*“...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.”*

The alternatives below will be further investigated during the EIR phase of the project:

#### **Alternative 1: Site/ Location alternatives:**

Prior to the commencement of the environmental process, the Applicant undertook a Biodiversity Risk Assessment of eight (8) potential sites for the development of a 100 MW Solar Park, which would cover approximately 250 ha. The report assessed the ecological sensitivity and biodiversity risks associated with each proposed area. Based on the risk assessment (Refer to **Appendix 3 – Background Information**), the current site was selected for the proposed solar farm. No further site/ location alternatives will be investigated.

#### **Alternative 2: Layout/ Design alternatives:**

Alternative layout/ design plans may evolve from the findings of specialist studies that will be undertaken to inform the EIR phase. Design and layout alternatives will be proposed based on the environmental sensitivities as well as various alternatives for connection to the national grid.

#### **Alternative 3: Technology alternatives:**

Various technology alternatives will be considered and investigated during the EIR phase of the project. One such type of technology being considered is the type of solar panels that may be utilised, is the micromorph thin – film Photovoltaic module (Appendix 3). The various technologies that will be considered will have implications varying from cost to effectiveness.

#### **Alternative 4: No development alternative:**

This option assumes that a conservative approach would ensure that the environment is not impacted upon any more than is currently the case. It is important to state that this assessment is informed by the current condition of the area. Should the DEA decline the application, the ‘No-development’ option will be followed and the status quo of the site will remain.

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## SECTION F: CONCLUSION AND RECOMMENDATIONS

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In accordance with GN No. 543, the final Scoping Report is aimed at describing the proposed activity and those reasonable alternatives that have been identified, as well as the receiving environment that may be affected by the proposed project. In accordance with the EIA Regulations, an identification of relevant legislation and guidelines is also given, as well as a description of the public participation process that will be followed.

In conclusion, the final Scoping Report established the scope of the proposed project throughout its phases, as well as its key potential impacts on the receiving and surrounding environments. The project motivation and the *status quo* of the social and biophysical environments have been described. The final Scoping Report also sets out the proposed scope of the EIR phase that will be undertaken for the proposed project (**Appendix 5 – EIR Plan of Study**).

Comments and/or concerns identified by Interested and Affected Parties (I&APs) during the review period of the draft Scoping Report have been incorporated into the final Scoping Report for further investigation during the EIR Phase to follow. The final Scoping Report will now be submitted to the DEA for consideration, together with the Plan of Study for the EIR phase of the project and other relevant supporting information. All comments received on the final Scoping Report will also be forwarded to the DEA for consideration.

The EAP proposes that, on the basis of the information contained in this Scoping Report, that the DEA accept the Scoping Report and Plan of Study for the EIR phase and allow the EAP to proceed with the EIR phase of the project, such that the more pertinent issues can be thoroughly investigated and assessed, in terms of their significance and impact.

The ability to mitigate any of the potential impacts identified in this Scoping Report will also be investigated during the EIR phase and summarised into a working/ dynamic Environmental Management Programme (EMP) for consideration by I&APs and ultimately by the DEA.

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## **SECTION G: REFERENCES**

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(Date Accessed: 19 October 2011)

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## **SECTION H: ANNEXURES**

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**Appendix 1:** Locality Map

**Appendix 2:** Photograph plate

**Appendix 3:** Background Information

**Appendix 4:** Authority Correspondence

**Appendix 5:** Plan of Study for EIR Phase

**Appendix 6:** Public Participation

**Appendix 7:** Copies of Title deeds