



# LIMPOPO

PROVINCIAL GOVERNMENT  
REPUBLIC OF SOUTH AFRICA

## DEPARTMENT OF ECONOMIC DEVELOPMENT, ENVIRONMENT & TOURISM

### BASIC ASSESSMENT REPORT - EIA REGULATIONS, 2010

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

File Reference Number:

14/12/16/3/3/1/969

NEAS Reference Number:

(For official use only)

Date Received:

Due date for acknowledgement:

Due date for acceptance:

Due date for decision

Kindly note that:

1. The report must be compiled by an independent Environmental Assessment Practitioner.
2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
3. Where applicable **tick** the boxes that are applicable in the report.
4. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the Department of Economic Development, Environment and Tourism as the competent authority (Department) for assessing the application, it may result in the rejection of the application as provided for in the regulations.
5. An incomplete report may be returned to the applicant for revision.
6. Unless protected by law, all information in the report will become public information on receipt by the department. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.

7. The Act means the National Environmental Management Act (No. 107 of 1998) as amended.
8. Regulations refer to Environmental Impact Assessment (EIA) Regulations of 2010.
9. The Department may require that for specified types of activities in defined situations only parts of this report need to be completed. No faxed or e-mailed reports will be accepted.
10. This application form must be handed in at the offices of the Department of Economic Development, Environment and Tourism:-

<p><b><u>Postal Address:</u></b></p> <p>Central Administration Office  Environmental Impact Management  P. O. Box 55464  <b>POLOKWANE</b>  0700</p>	<p><b><u>Physical Address:</u></b></p> <p>Central Administration Office  Environmental Affairs Building  Cnr Suid and Dorp Streets  <b>POLOKWANE</b>  0699</p>
<p><b>Queries should be directed to the Central Administration Office: Environmental Impact Management:-</b></p> <p><b>For attention:</b> Mr E. V. Maluleke</p> <p><b>Tel:</b> (015) 290 7138/ (015) 290 7167</p> <p><b>Fax:</b> (015) 295 5015</p> <p><b>Email:</b> <a href="mailto:malulekeev@ledet.gov.za">malulekeev@ledet.gov.za</a></p>	

View the Department's website at <http://www.ledet.gov.za/> for the latest version of the documents.

# DRAFT BASIC ASSESSMENT REPORT

DEA Ref. nr 14/12/16/3/3/1/969

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PROPOSED DEVELOPMENT OF A 10 MW SOLAR ENERGY PLANT  
ON FARM LIVERPOOL 543 KQ PORTION 2, KOEDOESKOP, THABAZIMBI  
LIMPOPO PROVINCE

## PREPARED FOR PROJECT APPLICANT:

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## PREPARED FOR APPROVAL BY COMPETENT AUTHORITY:

NATIONAL DEPARTMENT OF ENVIRONMENTAL AFFAIRS (DEA)  
DIRECTOR: ENVIRONMENTAL IMPACT MANAGEMENT  
PRIVATE BAG X 447  
PRETORIA  
0001

4<sup>TH</sup> FLOOR, SOUTH TOWER  
FEDSURE FORUM BUILDING  
315 PRETORIUS STREET  
PRETORIA  
0001

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## SECTION A: ACTIVITY INFORMATION

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

YES	NO
-----	----

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

Any specialist reports must be contained in Appendix D.

### 1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail<sup>1</sup>:

Background:
Allied Power C.C is proposing to develop a solar energy plant on the Farm Liverpool 543 KQ portion 2, approximately 45 km south of the town Thabazimbi, in the Limpopo Province. The facility will be referred to as the Liverpool Solar Energy Plant and is proposed to be a 10 MW capacity facility in an area of 19.8 hectares in size (Fig.1).
21 Digit Surveyor General code for the farm is TOK20000000054300002 Latitude 24°90'96" and Longitude 27°49'13" The current land use- Agriculture - Game camp The surrounding land use- Agriculture The copy of the Title Deeds of the Farm Liverpool is in Appendix G.
Allied Power recently installed solar driven geysers for all the employee houses on the farm and decided to expand solar energy to the whole farm. Allied Power currently uses 5 megawatts each month and need to get alternative energy sources because of the concern of ESKOM power and overloading that is occurring. Allied Power is a major supplier of maize, wheat and soy beans, the farm could not ever afford to stand without power for one day and therefore a backup energy source is necessary. If this backup energy could be "green", so much the better.  The proposed project involves the construction and operation of a photovoltaic solar power electricity generation facility. This project will provide a sustainable green energy resource for present and future generations. The positive aspects outweigh the negative aspects of using solar energy power by far. This proposed project could add to the capacity feeding into the national grid from renewable energy. In terms of this proposed development approximately 18 750 000 kilowatt and approximately 375 GW (375 000 000 kwh) of power is proposed to be generated by the solar sources over the next twenty years. The planned construction period for the proposed solar plant will be approximately one year after authorization granted. ESKOM is the direct energy supplier for Allied Power and not Thabazimbi Local Municipality. The proposed development will not be a total shutout of ESKOM but a combined power supply, during night time ESKOM energy will be used.

<sup>1</sup> Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description.



Figure 1: Proposed development site on Farm Liverpool 543 KQ portion 2.

### **The Photovoltaic (PV) Technology:**

Photovoltaic production is the world's fastest growing energy technology. Photovoltaic's are materials that convert solar radiation directly into electricity. PV solar cells are divided into two distinct groups: Traditional crystalline silicon solar cells and thin film solar cells. The absorbed solar radiation excites the electrons inside the cells and produces what is referred to as photovoltaic effect. The crystalline silicon solar cells are made from monocrystalline silicon or polycrystalline silicon. The thin film technologies comprise of thinner layers of semiconductor material, which are produced using a splutter process.

Photovoltaic solar power plants are comprised of solar modules connected together to form solar arrays for the production of electricity. Direct current electricity is produced from the solar array, which in turn is connected to inverters for conversion to alternating current. Power from the inverters is then stepped up via transformers to voltages suitable for injection into the ESKOM grid for distribution.

Solar power plants have different systems such as tracking systems or fixed tilt systems. With tracking systems, the surface of the arrays is moved to follow the sun resulting in large radiation gains. This system can be set to track the sun's daily path and /or its annual path. In a fixed tilt system, the modules are mounted at an optimised angle facing the sun.

Photovoltaic arrays can be up to several hundred hectares in spatial extent. The solar panels are mounted on metal structures which are fixed into the ground either through a concrete foundation or a deep seated screw. Central inverters are wired to sections of the PV field which can have a rated power of 500kW- 1250kW each. The inverter rated at 500kW has a size of approximately 3m x2.5m x 1m, and an output voltage of 480V Alternating

Current (AC).

The grid connection requires transformation of the voltage from 480V to between 22,000V and 400 000V depending on the existing infrastructure. The normal components and the size of a distribution-rated electrical substation will be required.

**Specifications on the Fixed PV panels that will be used in the proposed development:**

- Fixed Photovoltaic (PV) Panels (Fig. 2 & 3).
- One panel generates 240 watt, for 10MW about 45 000 panels are needed.
- The panels will be mounted up straight next to each other.
- One panel is 1.6m in length, 0.75m in width.
- For 10 MW, 56 rows 300m in length are needed.
- 3m space will be left for vehicle movement.
- Proposed area 300 x336m needed for all panels.



**Figure 2: Example of fixed photovoltaic panels.**





**Figure 3: Example: Vegetation growing underneath the panels for stabilisation of the soil.**

#### **Infrastructure of the proposed development:**

The solar power generation facility is proposed to accommodate an array of photovoltaic (PV) panels with a generation capacity of 10MW. Approximately 1.5 hectares are required per installed MW of PV panels. The following infrastructure is required for PV solar facilities:

- Access and inside roads/paths – existing paths are to be used where possible, a turning point for trucks and tractors must be taken into consideration and the use of these roads/paths will be minimal when the facility is in the operational phase.
- Foundations to support the PV panels.
- Photovoltaic (PV) panels: the panels are placed in number rows with a buffer from the boundary fence and access roads in between each row. Panels will have a junction box located below the rows where all connections between rows will meet up. Underground cables will run from this box to the transformer or inverter house at 400V-1000V Direct Current (DC).
- Trenching: within the PV plant all DC and AC wiring must be buried underground. Trenches will have a river sand base, space for pipes, backfill of sifted soil and soft sand and a proposed concrete layer where vehicles will pass. Cable trenches will be approximately 0.6m deep and 0.4m wide and backfilled with sand. Where vehicles pass over cable trenches, it must be deeper buried.
- Inverter /transformer house: a brick building of 6m x 4m located within the PV array each containing an inverter and a step up transformer will be constructed in the plant. Alternatively a pre-packaged inverter/transformer housed in a concrete substation for outdoor use can be utilized.

- Combined control room/ guard house: one brick building of approximately 100m<sup>2</sup> and standard height of 3m on the perimeter of the plant. The guardhouse will include a small kitchen and toilet and a storeroom for spare parts kept on site. The control room will contain switchgear and monitoring equipment for the PV plant.
- Connection to the grid- the grid connection requires transformation of the voltage from 480V to between 22,000V and 400,000V depending on the available infrastructure. The normal components and size of a distribution-rated electrical substation will be required.
- A small substation for the plant will be located outside of the control room.

## 2. FEASIBLE AND REASONABLE ALTERNATIVES

**“alternatives”**, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

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

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

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

**Note regarding Alternatives;**

In terms of design/ development/ operational alternatives and technology, both standard Photovoltaic (PV) as the preferred option and Concentrated Photovoltaic (CPV) are considered. Within the boundary of farm Liverpool 543 KQ portion 2, various areas have been considered as alternatives for the exact development footprint. The feasibility and suitability of a site for the development of any solar energy plant is highly dependent on the site-specific meteorological characteristics e.g. sunshine hours per year, sun intensity etc. and due to environmental and other considerations such as visual impact and landform, only one site is identified, therefore no site alternatives will be discussed.

**3. ACTIVITY POSITION**

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

List alternative sites, if applicable.

**Latitude (S):**

**Longitude (E):**

**Alternative:**

Alternative S1<sup>2</sup> (preferred or only site alternative)

Alternative S2 (if any)

Alternative S3 (if any)

24°	54'	33"	27°	29'	29"

**In the case of linear activities:**

**NOT Applicable**

**Alternative:**

**Latitude (S):**

**Longitude (E):**

Alternative S1 (preferred or only route alternative)

- Starting point of the activity

°	'	"	°	'	"
---	---	---	---	---	---

<sup>2</sup> "Alternative S.." refer to site alternatives.

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

°	'	"	°	'	"
°	'	"	°	'	"

Alternative S2 (if any)

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

°	'	"	°	'	"
°	'	"	°	'	"
°	'	"	°	'	"

Alternative S3 (if any)

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

°	'	"	°	'	"
°	'	"	°	'	"
°	'	"	°	'	"

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

#### 4. PHYSICAL SIZE OF THE ACTIVITY

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

**Alternative:**

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

or,

for linear activities:

**Size of the activity:**

198 000 m <sup>2</sup>
m <sup>2</sup>
m <sup>2</sup>

**Length of the activity:**

**Alternative:**

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

	m
	m
	m

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

**Size of the site/servitude:**

**Alternative:**

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

	m <sup>2</sup>
	m <sup>2</sup>
	m <sup>2</sup>

**5. SITE ACCESS**

**Does ready access to the site exist?**

<b>YES</b>	<b>NO</b>
√	
m	

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

**Describe the type of access road planned:**

There is already an access road to the site, Road from Koedoeskop-Pylkop/Northam (P20/2).  
 Also there are a number of farm dirt roads within the area as well.

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

**6. SITE OR ROUTE PLAN**

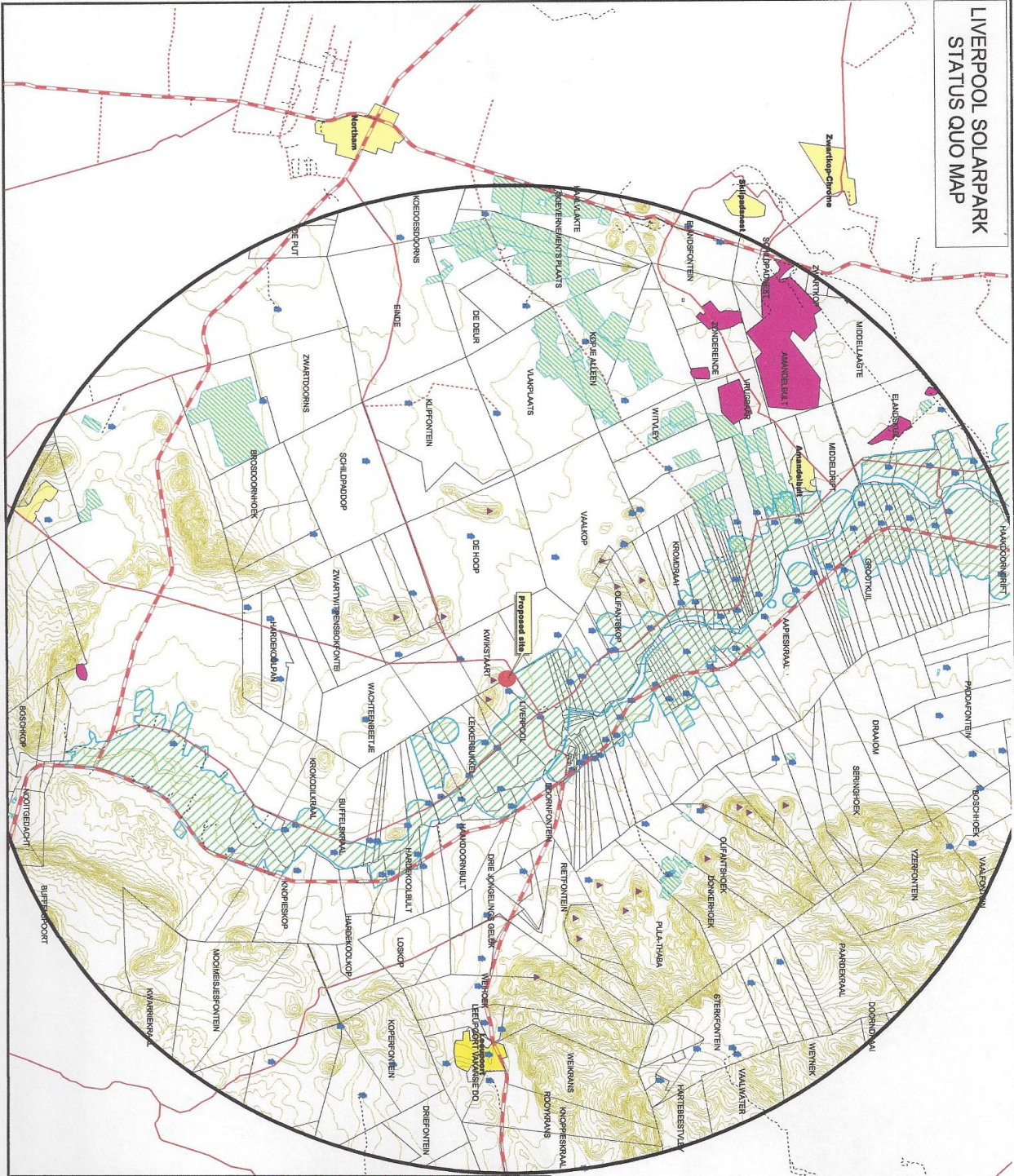
A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- 6.1 the scale of the plan which must be at least a scale of 1:500;
- 6.2 the property boundaries and numbers of all the properties within 50 metres of the site;
- 6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- 6.4 the exact position of each element of the application as well as any other structures on the site;
- 6.5 the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
- 6.6 all trees and shrubs taller than 1.8 metres;
- 6.7 walls and fencing including details of the height and construction material;
- 6.8 servitudes indicating the purpose of the servitude;
- 6.9 sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
  - rivers;
  - the 1:100 year flood line (where available or where it is required by Department of Water Affairs);

- ridges;
  - cultural and historical features;
  - areas with indigenous vegetation (even if it is degraded or invested with alien species);
- 6.10 for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
- 6.11 the positions from where photographs of the site were taken.

LIVERPOOL SOLARPARK  
STATUS QUO MAP



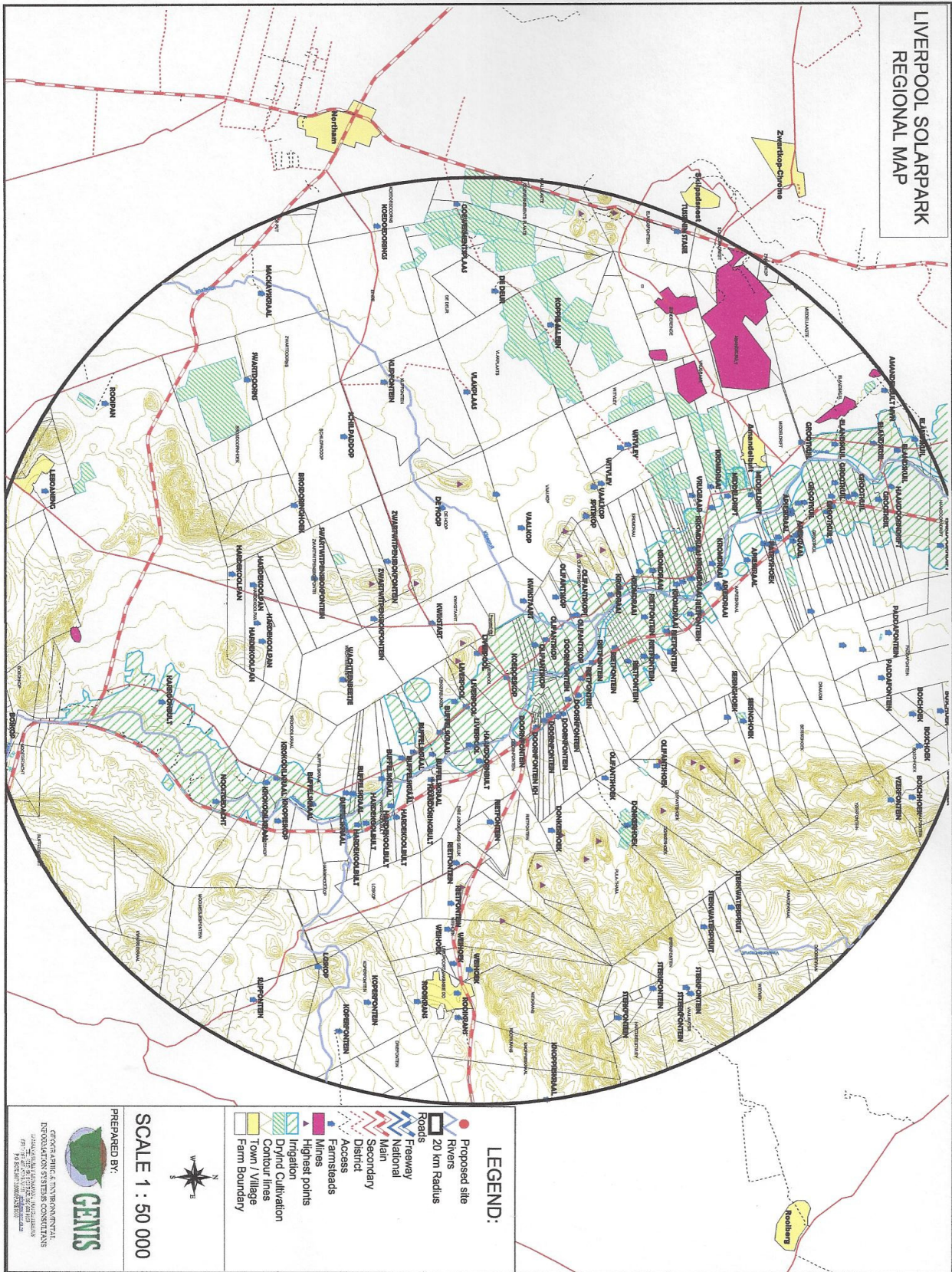
**LEGEND:**

- 20 km Radius
- Roads
  - Freeway
  - National
  - Main
  - Secondary
  - District
  - Access
- Farmsteads
- Mines
- Highest points
- Irrigation
- Dryland Cultivation
- Proposed site
- Contour lines
- Town / Village
- Farm Boundary

PREPARED BY:  
**GENIS**  
GENIS AGENCIE & INGENieursBUREAU  
ENVIRONMENTAL SYSTEMS CONSULTANTS  
1171 THE LANE, 1171, WILHELMINA  
P.O. BOX 107, 1170 AA DIJKSTERHOOFT

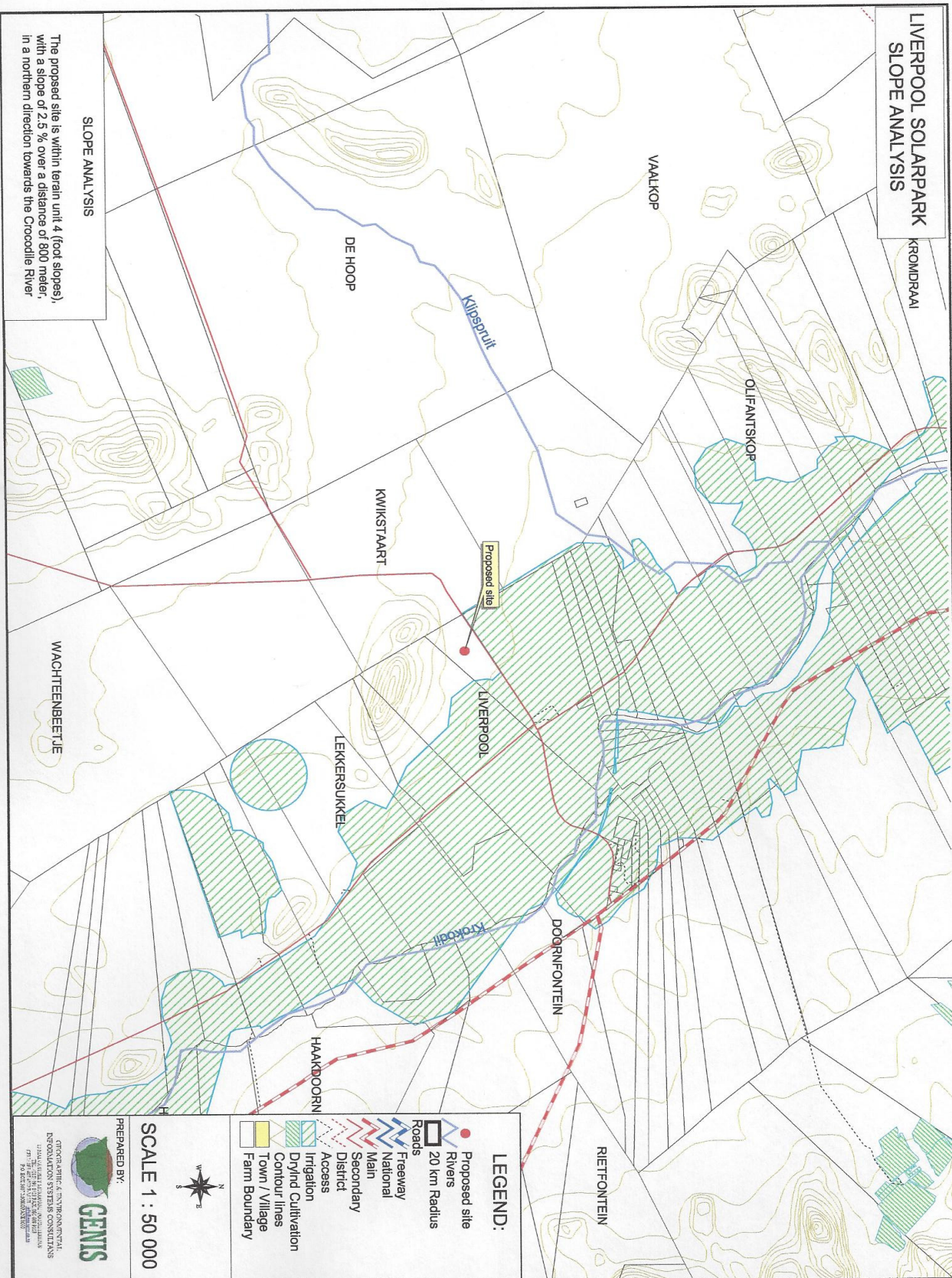
SCALE 1 : 150 000

# LIVERPOOL SOLARPARK REGIONAL MAP





**LIVERPOOL SOLARPARK  
SLOPE ANALYSIS**



The proposed site is within terrain unit 4 (food slopes), with a slope of 2.5 % over a distance of 800 meter, in a northern direction towards the Crocodile River

**SLOPE ANALYSIS**

PREPARED BY:  
  
 GENIS  
 GEOTECHNIEK & INGENIEURWERK  
 INFRASTRUKTUUR EN VERBODINGSSTREEKS  
 Uitsluitend te gebruiken voor de afgeleverde  
 opdracht. Het gebruik van de afgeleverde  
 tekening voor andere doeleinden is  
 niet toegestaan.  
 P.O. BOX 1000 • 2000 AA HAAKHOORN

SCALE 1 : 50 000



**LEGEND:**

- Proposed site
- Rivers
- 20 km Radius
- Roads
  - Freeway
  - National
  - Main
  - Secondary
  - District
  - Access
- Irrigation
- Dryland Cultivation
- Contour lines
- Town / Village
- Farm Boundary

## **7. SITE PHOTOGRAPHS**

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

## **8. FACILITY ILLUSTRATION**

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

PROPOSED  
SOLAR POWER STATION  
LIVERPOOL  
SITE LAYOUT PLAN



**LEGEND:**

-  Existing-pv1, Photovoltaic Substation Solar Panels
-  Buildings
-  Transmission line
-  Power Station boundary

Scale 1: 6000

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## 11. ACTIVITY MOTIVATION

### 9(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R200 Million	
What is the expected yearly income that will be generated by or as a result of the activity?	R5 M/annum	
Will the activity contribute to service infrastructure?	YES √	NO
Is the activity a public amenity?	YES	NO√
How many new employment opportunities will be created in the development phase of the activity?	30	
What is the expected value of the employment opportunities during the development phase?	R40000/month	
What percentage of this will accrue to previously disadvantaged individuals?	80 %	
How many permanent new employment opportunities will be created during the operational phase of the activity?	3/4	
What is the expected current value of the employment opportunities during the first 10 years?	R10000/month	
What percentage of this will accrue to previously disadvantaged individuals?	95%	

### 9(b) Need and desirability of the activity

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

<b>NEED:</b>			
i.	Was the relevant municipality involved in the application?	YES	NO
ii.	Does the proposed land use fall within the municipal Integrated Development Plan?	YES	NO
iii.	If the answer to questions 1 and / or 2 was NO, please provide further motivation / explanation:		
	<p>The Local Municipality of Thabazimbi were informed about the proposed development and invited to the public meetings, but they didn't want to participate. It is not expected that the development would be in contradiction with any local planning/development objectives, as the proposed area has low agricultural potential, and that the fact that development of a renewable energy facility is so important for our economy.</p> <p>The activity involves the construction of a solar power facility (Photovoltaic PV) for private use. With populations in south Africa growing rapidly, and the need for "green" energy such as solar energy becoming more prevalent, the project will provide a sustainable, green energy, resource for present and</p>		

future generations. The positive aspects of using solar energy far outweigh the negative. This proposed site will aid in the farms 5 MW demand per month. 375 GW is proposed to be generated by this PV solar plant over the next twenty years.

ADVANTAGES of SOLAR ENERGY	DISADVANTAGES of SOLAR ENERGY
1. Solar power is free.	1.Solar energy can only be harnessed during daytime (±10 hours).
2. Solar power is renewable and a natural resource.	2.Solar plant expensive to build (however, it will pay back quickly).
3. Minimal environmental impact.	3.The factories that build the solar panels generate pollution.
4. Reduces carbon footprint.	
5. Solar power is silent.	
6. Solar power can be installed in remote locations.	
7. Solar cells require little maintenance.	
8. Solar energy is forever, where it is estimated that the world's oil & coal reserves will just last 30 -40 years.	

Allied Power C.C cannot afford a summer crop like maize to stand for 10 hours without any irrigation. Maize uses 10mm a day in peak time. If a power failure occurs because of load shedding, it will lead to catastrophically consequences. The summer harvest will be lost; less grain will be delivered to the regional economy that will have a major influence on the food supply on the local and regional economy, financial losses-can't pay back debt from the harvest and could probably lead to undesired retrenchments. For example; Production costs for maize is ±R 20 000/ hectare, if you harvest and receive about R2000/ton you will break equal and make no profit. It will have a major impact on the food supply of the country. It is just not feasible to be without electricity.

**DESIRABILITY:**

i.	Does the proposed land use / development fit the surrounding area?	YES	NO
----	--	-----	----

			√
ii.	Does the proposed land use / development conform to the relevant structure plans, Spatial development Framework, Land Use Management Scheme, and planning visions for the area?	YES Un- sure	NO
iii.	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	YES √	NO
iv.	<p>If the answer to any of the questions 1-3 was NO, please provide further motivation / explanation:</p> <p>It is not expected that the development would be in contradiction with any local planning/development objectives, considering current land-use and limited agricultural potential, and that the fact that development of renewable energy facilities is encouraged by the national government.</p> <p>The activity involves the construction of a solar Photovoltaic power generation facility. Although the project would entail the development of a natural vegetation site (game camp), due to the specific nature of the infrastructure and operational phase of the project, it is not expected to have a high significant impact on the surrounding area. The activity does not exactly fit with the surrounding area which is agricultural crop and game farming, however Northam Platinum Mine is visible to the North-west, approximately 3km to the south is a small sub-station and power lines, High structures such as Grain Silo's on the surrounding farms and the Koedoeskop fertilizer Plant also occurs in the surrounding area thus the solar development would not be so obtrusive. High trees will form the border/ buffer zone of approximately 50m around the Solar plant as well.</p> <p>Department Agriculture, Forestry &amp; Fisheries did a site inspection and concluded that re-zoning of land use will not be necessary (Fig.4 Letter from Department Agriculture).</p> <p>With populations in South Africa growing rapidly, and the need for "green" energy such as solar power, becoming more important, the project will provide sustainable, green energy, for years to come.</p>		



**DEPARTMENT OF AGRICULTURE  
 WATERBERG DISTRICT**

Enq. : B.F. Greeff  
 Ref No. : DEA – 14/12/16/3/3/1/969

THE SENIOR MANAGER  
 DEPARTMENT OF AGRICULTURE  
 WATERBERG DISTRICT  
 P/BAG X 1048  
 MODIMOLLE  
 WATERBERG DISTRICT  
 16 OCTOBER 2013

JONKBEGIN  
 P.O. Box 70  
 KOEDOESKOP  
 0361  
[bothadp@gmail.com](mailto:bothadp@gmail.com)

**RE: PROPOSED ESTABLISHMENT OF A SOLAR PANEL ENERGY PLANT ON PORTION 2 OF THE FARM LIVERPOOL 543 KQ - THABAZIMBI**

**1. Background:**

This application is to establish a solar energy plant on the abovementioned farm to provide electricity for a farming enterprise known as “Allied Farms” in the Koedoeskop area. The solar facility will have the capacity to produce between 10 – 20 megawatts of electricity and will occupy ± 20 ha. The owner is farming intensively under irrigation and the ESKOM supply became too expensive and unreliable. He cannot afford to be without electricity supply during peak production periods and need to convert to a more reliable source that is also more environmentally friendly.

**2. Locality:**

The site is situated ± 5km southwest of Koedoeskop next to the Koedoeskop / Northam road in the Thabazimbi municipal area. The farm forms part of the Crocodile West Irrigation Scheme.

**3. Current land use:**

The farm is 381, 4 ha in extent. The primary income generator on the farm is crop production under irrigation. Wheat, maize and soya beans are produced on a rotational basis.

Land Use	Area (ha)	% of Total
Irrigation	260	68,2
Natural grazing	86	22,6
Infrastructure (buildings, roads)	15	3,9
Proposed solar plant	20	5,3
<b>Total</b>	<b>381 ha</b>	<b>100%</b>

**4. Topography:**

The average slope of the proposed site is 4 – 5%. The landscape is a northern foot slope of a mountain covered in natural vegetation.

**5. Soil:**

The soil on the identified site for the development is a very shallow soil with underlying rock. The site is on a foot slope of a mountain and can therefore not be utilized for crop production.

**6. Vegetation:**

The site is invaded by Sickle bush (*Dichrostachys cinerea*) and Black thorn (*Acacia mellifera*) to such an extent that the grass component is nearly non-existent.

The only protected tree specie found on site were the Shepard's tree (*Boscia albitrunca*).

Although the carrying capacity for the area is 7ha / LSU, it is not applicable in this case due to the bush encroachment.

**7. Comments:**

The purpose of the proposed solar energy installation will contribute to the national initiative to save electricity. The initiative to move towards "green" energy will also be embraced while it will not have a negative impact on existing or future agricultural production practices.

The land that will be involved is low potential agricultural soil and the improvement will also contribute to optimize production in that a more reliable and affordable source of energy will be available.

**8. Recommendations:**

8.1 It is recommended that the area be protected against soil erosion after the initial clearing by means of a storm water drain and contour banks.

8.2 We further recommend that the applicant successfully apply for a permit to do bush clearing and to remove the protected trees.

**9. Conclusion:**

We have no objections to the proposed development from an agricultural point of view as long as the conditions of Act 43 of 1983 are met. Since the solar energy plant will be part of the farm infrastructure, we are of the opinion that an application for rezoning will not be necessary.



.....  
B.F. GREEFF  
LANDUSE PLANNER : WATERBERG DISTRICT

FIGURE 4: LETTER FROM THE DEPARTMENT AGRICULTURE



v.	Will the proposed land use / development impact on the sense of place?	YES √	NO
vi.	Will the proposed land use / development set a precedent?	YES	NO √
vii.	Will any person's rights be affected by the proposed land use / development?	YES	NO √
viii.	Will the proposed land use / development compromise the "urban edge"?	YES	NO √
ix.	If the answer to any of the question 5-8 was YES, please provide further motivation / explanation.		
	Regarding the impact on sense of place, the proposed development is not aligned with surrounding land-use, the impact on the sense of place is not considered so significant as the area is not a tourism destination, a sub-station occurs nearby, many high infrastructures are visible in the surrounding area and the proposed development is not visually intrusive (Referring to Visual Impact Assessment).		

<b>BENEFITS:</b>			
i.	Will the land use / development have any benefits for society in general?	YES √	NO
ii.	<p>Solar Insolation levels in the Northern parts of South Africa are some of the best in the world and the proposed development site has a high level of renewable energy potential (Koedoeskop, Thabazimbi, Limpopo Province). Electricity generation from solar energy as renewable energy offers many socio-economic and environmental benefits such as:</p> <ul style="list-style-type: none"> <li>• Employment opportunities: Many temporary and permanent employment opportunities are created through the construction and operational phases of the proposed development.</li> <li>• Increased energy security: The country's current electricity crisis show the need for an alternative, more sustainable energy source.</li> <li>• Saving of valuable resources: Water and natural resources can be saved by using solar energy as conventional power plants are major consumers of valuable natural resources such as coal.</li> <li>• It is estimated that the worlds' oil reserves will last 30-40 years, on the other hand solar energy is forever.</li> </ul>		

	<ul style="list-style-type: none"> <li>Pollution reduction: With solar energy no harmful by-products such as carbon, sulphur and nitrogen are released into the atmosphere, solar radiation is directly transformed to electricity.</li> </ul>		
iii.	Will the land use / development have any benefits for the local communities where it will be located?	YES	NO
iv.	<p>Explain:</p> <p>The major benefit is that employment opportunities will be created for the local community. Temporary employment as well as Permanent employment will be created during the operational phase of the development in the form of maintenance and security staff; therefore it will provide a sustainable income for the local economy.</p>		

## 10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

<b>Title of legislation, policy or guideline:</b>	<b>Administering authority:</b>	<b>Date:</b>
Regulation 544, Listing Notice 1, Activity 1: The construction of facilities or infrastructure for the generation of electricity where the electricity output is more than 10 megawatt but less than 20 megawatts	National Department of Environmental Affairs (DEA)	18 June 2010
Regulation 546, Listing Notice 3, Activity 14: The clearance of an area of 5ha or more of vegetation where 75% or more of the vegetation cover constitutes indigenous vegetation.	National Department of Environmental Affairs (DEA)	18 June 2010
Agriculture Resources Act (Act 43 of 1983)	Department of Agriculture, Forestry & Fisheries	1983
Integrated Environmental Management (IEM Department of Environmental Affairs: DEA, 1992). IEM is a philosophy that prescribes a code of practice for ensuring that environmental considerations are fully integrated into all stages of the development process. The goal is to achieve	Department of Environmental Affairs	1992

a balance between development and conservation.		
National Heritage Resources Act, 1999 (Act no 25 of 1999)	South African Heritage Resources Agency (SAHRA).	April 1999
Environmental Conservation Act (Act 73 of 1989)	Department of Environmental Affairs & Tourism	Various
National Environmental Management: Biodiversity Act 10 of 2004.	Department of Environmental Affairs & Tourism.	2004
National Environmental Management Waste Act (Act No 59 of 2008)	National Department of Environmental Affairs (DEA)	2008

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

### 11(a) Solid waste management

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

YES	NO
Difficult to estimate m <sup>3</sup>	

If yes, what estimated quantity will be produced per month?

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

The minimum waste will be generated but it will be temporarily stored in a skip and periodically taken off-site for disposal at an acceptable landfill of Thabazimbi Municipality. No solid waste will be disposed of on-site.

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

The minimum waste will be generated but it will be temporarily stored in a skip and periodically taken off-site for disposal at an acceptable landfill of Thabazimbi Municipality. No solid waste will be disposed of on-site.

Will the activity produce solid waste during its operational phase?

If yes, what estimated quantity will be produced per month?

YES	NO <input checked="" type="checkbox"/>
m <sup>3</sup>	

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

Not applicable

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

Not applicable

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

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation? 

YES	NO <input checked="" type="checkbox"/>
-----	--

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

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

YES	NO <input checked="" type="checkbox"/>
-----	--

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

**11(b) Liquid effluent**

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system? 

YES	NO <input checked="" type="checkbox"/>
-----	--

If yes, what estimated quantity will be produced per month? 

m <sup>3</sup>	
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Will the activity produce any effluent that will be treated and/or disposed of on site? 

Yes	NO <input checked="" type="checkbox"/>
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If yes, the applicant should consult with the Department to determine whether it is necessary to change to an application for scoping and EIA.

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

YES	NO <input checked="" type="checkbox"/>
-----	--

If yes, provide the particulars of the facility:

Facility name:	N/A		
Contact person:			
Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	

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

**11(c) Emissions into the atmosphere**

Will the activity release emissions into the atmosphere? 

YES	NO
<input checked="" type="checkbox"/>	

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

YES	NO <input checked="" type="checkbox"/>
-----	--

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

If no, describe the emissions in terms of type and concentration:

The activity will not produce any emissions during operation. It is anticipated that during the construction phase, dust emissions and vehicle fumes will result and this will only be limited to the construction phase. Proper mitigation measures (dust suppression techniques) will be employed to ensure that the impact is properly managed. No emissions are expected during the operational phase.

**11(d) Generation of noise**

Will the activity generate noise?

YES <input checked="" type="checkbox"/>	NO
YES	NO <input checked="" type="checkbox"/>

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

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

If no, describe the noise in terms of type and level:

There will be no noise generated during operation of the site. There will be a slight increase in ambient noise levels during construction from the bulldozer, tractors and vehicles, but it will be localized to the site itself. The noise levels are expected not to be very high and the activities will be restricted to the normal working hours.

**12. WATER USE**

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

municipal	water board	Groundwater <input checked="" type="checkbox"/>	river, stream, dam or lake	other	the activity will not use water
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If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate

the volume that will be extracted per month:

See note 1	
YES	NO <input checked="" type="checkbox"/>

Does the activity require a water use permit from the Department of Water Affairs?

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

**NOTE 1**

The applicant Allied Power C.C has a registered borehole with certificate just for industrial use on the farm (Appendix ). The proposed development will use an estimated 1000 cubic meters in one year and the bore hole is registered to deliver 3 800 cubic meters a year.

**13. ENERGY EFFICIENCY**

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

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The whole purpose of the proposed development is to produce energy from an alternative “green” power source. The photovoltaic PV panels produce electricity by direct conversion of solar rays to energy. The energy source is free and clean and no consumption/ burning of fuel are required.

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

No alternative energy sources have been taken into account for this development. The installation of a Photovoltaic solar plant is considered as clean and renewable alternative energy source for power generation as opposed to the current used coal.

## SECTION B: SITE/AREA/PROPERTY DESCRIPTION

### Important notes:

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

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

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

3. Has a specialist been consulted to assist with the completion of this section?  YES  NO

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

All specialist reports must be contained in Appendix D.

Property description/physical address:

Farm Liverpool 543 KQ portion 2, Koedoeskop District, Thabazimbi Local Municipality  
Surveyor-general code: TOK20000/00000543/00008  
The farm is 45 km south of Thabazimbi, on Gravel Road P20/2 Koedoeskop – Pylkop/Northam.

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


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

Current land-use zoning:

Agriculture

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

Is a change of land-use or a consent use application required?

YES	NO
<b>Unsure</b>	
YES √	NO

Must a building plan be submitted to the local authority?

Locality map:

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

- an indication of the project site position as well as the positions of the alternative sites, if any;
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection)

## 1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative Only Site

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S2 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S3 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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## 2. LOCATION IN LANDSCAPE

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

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

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

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

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

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

### GEOLOGY OVERVIEW:

Brief explanation of the findings from the Geotechnical Study:

- The site is underlain by feruginised shale, covered with a thick layer of transported colluvium on a lower hill-



slope land facet.

- The colluvium consist of a loose to medium dense, clast supported agglomerate of sub angular to sub-rounded pebbles cobbles and gravel in silty sand matrix (Fig.5).
- The rectangular foundations should be founded in foundation trenches compacted to 95% MOD at a depth of no less than 200mm below surface.
- Normal strip footing foundations with compacted trenches, is recommended for buildings.
- The expected excavatability on site is soft to a depth of 3.0m.
- No shallow groundwater conditions were encountered.
- The potential for collapse of side walls of deep excavations is moderate.
- The topography and soil profile encountered resulted in a single land use area.
- The site is classified as DEVELOPABLE with PRECAUTIONS due to the moderate potential for foundation settlement and the relative steep slopes of the site.
- No slope failure is expected.
- It is recommended that good site drainage be designed to guide run-off away from panel foundations.
- The water quality of the registered bore hole is suitable for the proposed development.
- FROM A GEOTECHNICAL PERSPECTIVE THE PROPOSED DEVELOPMENT AREA IS SUITABLE FOR THE DEVELOPMENT OF THE SOLAR PLANT.

**Soil Profile TP 1 (Liverpool Solar Park)**

Profiled by C de Beer  
 Diameter  
 Depth 1.60 m  
 Type: Trial pit

Co-coordinates:  
 X-coord  
 Y-coord  
 Z-coord  
 (WGS'84 decimal degrees)

Contractor Lenfield Construction  
 Machine Bell 315s  
 Operator Gert



**Soil Profile Description**

Profile	Depth to	Description
	0,23	Dry, uniform reddish brown, loose, intact, angular to sub rounded, pebbles and cobbles in a clast supported matrix of silty sand, TRANSPORTED COLLUVIUM with grass roots.
	1,60	Dry, uniform reddish brown, loose, intact, angular to sub rounded, pebbles and cobbles in a clast supported matrix of silty sand, TRANSPORTED COLLUVIUM.
End of Hole 1.6m, Hole stopped, no refusal in medium dense TRANSPORTED COLLUVIUM.		

- Notes:**
- 1 Hole Stopped @1.60m
  - 2 No Seepage or perched watertable.
  - 3 No Sample Collected
  - 4 No DCP test conducted



#### 4. GROUND COVER

Indicate the types of groundcover present on the site:

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

Natural veld - good condition <sup>E</sup>	Natural veld with scattered aliens <sup>E</sup>	Natural veld with heavy alien infestation <sup>E</sup>	Veld dominated by alien species <sup>E</sup>	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

If any of the boxes marked with an “E” is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn’t have the necessary expertise.

#### VEGETATION:

The timing of the survey during almost dry season (September) meant that conditions on site were not ideal for a proper ecological assessment, e.g. flora and fauna. Coupled to this was the fact that the site was extensively browsed and grazed by game, making it difficult to determine the species composition and vegetation structure normally present on this proposed development area.

The site is situated in Limpopo on portion 2 of the Farm Liverpool 543 KQ, Koedoeskop District. The area is a northern rocky mountain slope. The altitude of the site is between 4 - 5 %. The mean annual rainfall measured at Koedoeskop Weather Station is 675mm. The rainy season is predominantly from October to April with driest months being June to August. The mean annual temperature measured at Koedoeskop Weather Station is 21° with extreme maximum and minimum temperature of -8.5° and 45° respectively.

According to Mucina and Rutherford (2006) the study site occurs in the Dwaalboom Thornveld with intrusion of Sandy Bushveld. *Acacia tortilis*, *A nilotica* and *A karroo* dominate the Thornveld whereas *Acacia nigrescens*, *A erubescens* and *Combretum* species occurs on the sandy soils. Just *Acacia karoo* and *Combretum apiculatum* subsp. *apiculatum* were found on the proposed development site.

The plant community identified on the proposed site is *Dichrostachys cinerea* - *Acacia senegal* disturbed Bushveld. A total of 51 indigenous species were recorded on site. 12 Tree species, 22 Forbs or Wild Flowers and 17 Graminoids were identified.

The Red Data Lists of NEMBA: National Environmental Management Biodiversity Act (act 10 of 2004), the protected trees according to the National Forest Act (Act 84 of 1998) TOPS List of NEMBA and the International Union of the Conservation of Nature (IUCN) were consulted. One protected tree species occur on the proposed development site namely *Boscia albitrunca* (Shepherds tree) (National Forest Act). No endemic species were listed for the area. The site has a low sensitivity meaning the sensitivity is not significant enough and should not have an influence on the decision about the proposed development.

This vegetation type is afforded a Least Threatened Conservation status. Current transformation within the proposed site is mostly defined by gravel roads and small field paths within the study area as well as overgrazing and browsing by game. Natural woodland/savanna vegetation of the study area and the surrounds is regarded representative of the regional vegetation types, exhibiting limited divergence from the species composition, diversity and vegetation structure.

The field study consisted of a desktop study and a field survey of mammals, birds, reptiles and amphibians that are likely to occur at the site, was performed. The field survey consisted of: identifying the different habitats and sensitive areas for fauna and record the types of animals in the area. The field survey was done during the month of September, but the extent of the survey was limited by over grazing and browsing of the proposed area by game.

The conclusion by the author is that the vegetation of the proposed development site is representative of the greater area with only one tree species with protective status namely *Boscia albitrunca*. Bush encroachment is caused by the overgrazing/browsing and trampling of the veld, therefore the dominant tree /shrub species *Dichrostachys cinerea* (Sickle bush) and *Acacia karroo* (Sweet thorn) and forb *Solanum panduriforme* confirms it. No Red Listed Fauna, Avian-Fauna and Insects were documented during the field survey. From an Ecological perspective the proposed development of a Solar Energy Plant will have the least influence on floral habitat and ecosystem functioning if developed in this proposed area.

## 5. LAND USE CHARACTER OF SURROUNDING AREA

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

5.1 Natural area	√	5.22 School	
5.2 Low density residential		5.23 Tertiary education facility	
5.3 Medium density residential		5.24 Church	
5.4 High density residential		5.25 Old age home	
5.5 Medium industrial <sup>AN</sup>		5.26 Museum	
5.6 Office/consulting room		5.27 Historical building	
5.7 Military or police base/station/compound		5.28 Protected Area	
5.8 Spoil heap or slimes dam <sup>A</sup>		5.29 Sewage treatment plant <sup>A</sup>	
5.9 Light industrial		5.30 Train station or shunting yard <sup>N</sup>	
5.10 Heavy industrial <sup>AN</sup>		5.31 Railway line <sup>N</sup>	
5.11 Power station		5.32 Major road (4 lanes or more)	
5.12 Sport facilities		5.33 Airport <sup>N</sup>	
5.13 Golf course		5.34 Harbour	

5.14 Polo fields		5.35 Quarry, sand or borrow pit	
5.15 Filling station <sup>H</sup>		5.36 Hospital/medical centre	
5.16 Landfill or waste treatment site		5.37 River, stream or wetland	
5.17 Plantation		5.38 Nature conservation area	
5.18 Agriculture	√	5.39 Mountain, koppie or ridge	√
5.19 Archaeological site		5.40 Graveyard	
5.20 Quarry, sand or borrow pit		5.41 River, stream or wetland	
5.21 Dam or Reservoir		5.42 Other land uses (describe)	

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

Farm Liverpool is located in rural area with Agriculture as land use and far away from nearest town.

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

If YES, specify and explain:	
If NO, specify:	The current and surrounding land use is agriculture.

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

If YES, specify and explain:	
If NO, specify:	The proposed site is far away from a filling station, it is Agricultural land therefore it will not impact or be impacted upon by the proposed development.

## 6. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including

YES	NO
NO	

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

If YES, explain:

--

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

Briefly explain the findings of the specialist:

The examination of heritage databases, historical data and cartographic resources were conducted. A number of previous archaeological or historical studies had been performed within the wider vicinity of the study area by van Schalkwyk, J.A. The specialist Hutten, M, carried out one study in the immediate vicinity of the study area and four other studies a bit further to the north. No heritage sites were identified in these surveys other than a historical homestead which lay outside of the proposed development area (Hutten 2013b). Most parts of the proposed area were undisturbed and were used for game grazing. No sampling was done as no sites or finds of heritage significance were found.

Van Schalkwyk (2007b) carried out a Heritage Impact assessment on the Farm Aapieskraal 376 KQ approximately 10km to the north, which recommended that the proposed development could go ahead from a heritage point of view. The HIA found no features, sites or artefacts of cultural significance and stated that the flat terrain, without landscape features such as rocky hills, coupled with the fact that the study area is within the floodplain of the Crocodile River, made the locality highly unsuitable for settlement (Van Scalkwyk, 2007b).

Although some parts of the study area were situated on the northern slopes of Geyskop, this deduction will also apply to the study area, due to its close proximity to the floodplains. As for the proposed site, the following is recommended:

- No site-specific actions or any further heritage mitigation measures are recommended for the study area as no other heritage resource sites or finds of any value or significance were identified in the indicated study area.
- The proposed solar plant development on parts of Portion 2 of the Farm Liverpool 543 KQ at the indicated area can continue from a heritage point of view.

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

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

The report of the Specialist Hutten Heritage Consultants were submitted to SAHRA for comment (Fig. 6). They requested further Palaeontological studies or Letter of Exemption for further studies. Dr. Francois Durand as Palaeontological Specialist conducted the survey and issued a Letter of Exemption (Fig. 7).

#### The Findings of the Palaeontologist Briefly Explained:

The Specialist investigated available resources (geological maps, scientific literature, previous impact assessment reports, institutional fossil collections, satellite images or aerial photos) to inform an assessment of fossil heritage and/or exposure of potentially fossiliferous rocks within the study area. A field study was an integral part.

During the field survey the following was found:

The soil has a red colour due to the underlying iron-rich rocks. The slope is covered in typical Bushveld vegetation. The adjacent flat areas to the north and east of the study area with deeper soils are under cultivation (Fig. 8). The study site is largely situated on Pretoria Group sediments while the southern margin overlaps the Penge Formation of the Chuniespoort Group. These late Archaean to early Proterozoic Transvaal Supergroup metamorphosed sediments consist mostly of iron-rich mudrock.

**Allied Farms Solar Park**

**Our Ref:**

Enquiries: Phillip Hine  
Tel: 021 462 4502  
Email: phine@sahra.org.za  
CaseID: 2625

Date: Tuesday June 25, 2013

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**Interim Comment**

**In terms of Section 38(8) of the National Heritage Resources Act (Act 25 of 1999)**

Attention: Jonk Begin Omgewings Dienste

Phillip Hine  
Heritage Officer

**Proposed 50ha solar park development on parts of Portions 2 & 3 of the Farm Liverpool 543 KQ, approximately 2km west of Koedoeskop in the Limpopo Province.**

*Hutten, M. May 2013. Heritage Impact Assessment for the proposed Solar Park development on the farm Liverpool, near Koedoeskop, Limpopo Province.*

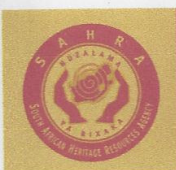
Allied Farms (Pty) Ltd. proposes the establishment of a solar farm on Portions 2 & 3 of the Farm Liverpool 543 KQ, near Koedoeskop, Limpopo Province. The footprint of the solar farm will be approximately 50 hectares. According to the author the farm is currently being used for cattle grazing and game farming. It is further noted that thick vegetation cover hampered the identification of archaeological resources.

The author reported that no archaeological or any other types of heritage resources were identified during the field assessment. However, due to dense vegetation cover it is possible that the identification of heritage resources may have been missed. Furthermore, no palaeontological assessment was undertaken for this project, nor was any supporting documents such as the EIA has been provided that would place SAHRA in a position to make an informed decision.

**Decision:**

- For SAHRA to make an informed decision regarding this project, SAHRA requires the submission of the Environmental Impact Assessment;
  - If the developer believes that the area is not palaeontologically sensitive, a Letter of Exemption from a professional palaeontologist must be submitted to SAHRA for comment,
  - SAHRA will make a Final comment on this project as soon as the requested information is provided. Please note that development may not proceed until SAHRA has issued its final comment on this project
- Should you have any further queries, please contact the designated official using the case number quoted above in the case header.

Yours faithfully



The South African Heritage Resources Agency

Street Address: 111 Harrington Street, Cape Town 8000 \* Postal Address: PO Box 4637, Cape Town 8000  
\* Tel: +27 21 462 4502 \* Fax: +27 21 462 4509 \* Web: <http://www.sahra.org.za>



**Allied Farms Solar Park**

**Our Ref:**

Enquiries: Phillip Hine  
Tel: 021 462 4502  
Email: phine@sahra.org.za  
CaseID: 2625

Date: Tuesday June 25, 2013

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Phillip Hine  
Heritage Officer

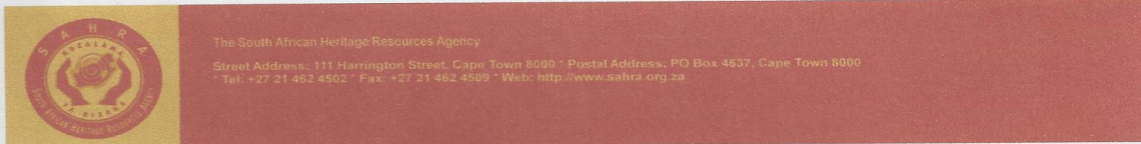
Colette Scheermeyer  
SAHRA Head Archaeologist  
South African Heritage Resources Agency

**ADMIN:**

Direct URL to case: <http://www.sahra.org.za/node/121781>

**Terms & Conditions:**

1. This approval does not exonerate the applicant from obtaining local authority approval or any other necessary approval for proposed work.
2. If any heritage resources, including graves or human remains, are encountered they must be reported to SAHRA immediately.
3. SAHRA reserves the right to request additional information as required.



**FIGURE 6: COMMENT LETTER FROM SAHRA**

## LETTER OF RECOMMENDATION FOR THE EXEMPTION FROM FURTHER PALAEOLOGICAL STUDIES

For: Proposed development of a 10 MW Solar Energy facility on the Farm Liverpool 543 KQ Portion 2 at Koedoeskop, Limpopo

Client: Jonk Begin Environmental Services, Allied Power. Main Street 1, Koedoeskop, 0361

Date: 11 September 2013

### Methodology:

The geology of the region in which the development of a solar energy facility south of Thabazimbi, Limpopo Province is proposed to take place, has been studied for a Desktop Study.

### Findings:

The region is of no palaeontological importance. The geology of the region consists of the late Archaean to early Proterozoic Transvaal Supergroup metamorphosed and iron-rich rocks of sedimentary origin.

Due to the improbability of fossils occurring in the study area it is recommended that the project should be exempted from further palaeontological studies.



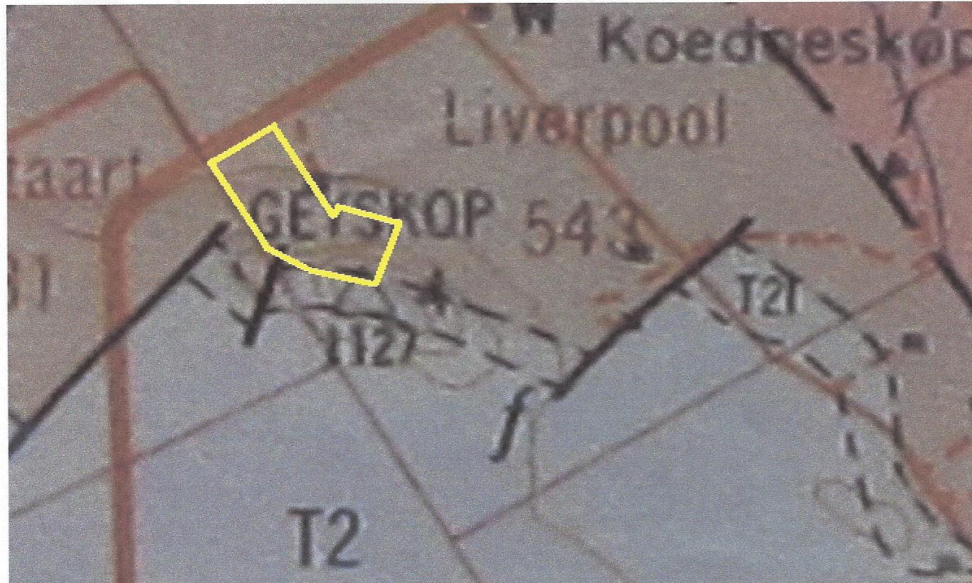
Dr. J.F. Durand (Sci. Nat. Zoological and Earth Sciences, Reg. no. 400095/05)

### Specialist:

Dr JF Durand BSc Botany & Zoology (RAU), BSc Zoology (WITS), PhD Palaeontology (WITS), HED (RAU), Museology Dipl. (UP).

FIGURE 7: LETTER OF EXEMPTION FROM DR. J.F. DURAND

#### 4. Geological setting of the study area



[The study area is indicated by the yellow polygon]

Figure 2: Geological Map of the study area and surroundings (adapted from the 2426 THABAZIMBI 1:250 000 Geology Map, Council for Geoscience, 1978)

#### GEOLOGICAL LEGEND

3GI	Course-grained granite	Nebo Granite	Lebowa Granite Suite	Bushveld Igneous Complex
T3tS	Shale (ferruginous) and hornfels – locally with conglomerate and quartzite near base and higher up	Pretoria Group		Transvaal Supergroup
T2I	Banded ironstone, locally with shaly dolomitic limestone at top	Penge Formation	Chuniespoort Group	
T2	Dolomite, chert, shale, locally with interbedded quartzite	Malmani Subgroup		

The study site is largely situated on Pretoria Group sediments while the southern margin overlaps the Penge Formation of the Chuniespoort Group (Fig.2). These late Archaean to early Proterozoic Transvaal Supergroup metamorphosed sediments consist mostly of iron-rich mudrock (Figs. 4-7) (Eriksson *et al.*, 2006).

#### FIGURE 8: GEOLOGICAL MAP OF STUDY AREA.

## SECTION C: PUBLIC PARTICIPATION

### 1. ADVERTISEMENT

The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by—

- (a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the department) at a place conspicuous to the public at the boundary or on the fence of—
  - (i) the site where the activity to which the application relates is or is to be undertaken; and
  - (ii) any alternative site mentioned in the application;
- (b) giving written notice to—
  - (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
  - (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  - (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
  - (v) the municipality which has jurisdiction in the area;
  - (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
  - (vii) any other party as required by the department;
- (c) placing an advertisement in—
  - (i) one local newspaper; or
  - (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
- (d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the local municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and
- (e) using reasonable alternative methods, as agreed to by the department, in those instances where a person is desiring of but unable to participate in the process due to—
  - (i) illiteracy;
  - (ii) disability; or
  - (iii) any other disadvantage.

## **2. CONTENT OF ADVERTISEMENTS AND NOTICES**

A notice board, advertisement or notices must:

- (a) indicate the details of the application which is subjected to public participation; and
- (b) state—
  - (i) that the application has been submitted to the department in terms of these Regulations, as the case may be;
  - (ii) whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental authorisation;
  - (iii) the nature and location of the activity to which the application relates;
  - (iv) where further information on the application or activity can be obtained; and
  - (v) the manner in which and the person to whom representations in respect of the application may be made.

## **3. PLACEMENT OF ADVERTISEMENTS AND NOTICES**

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

Advertisements and notices must make provision for all alternatives.

## **4. DETERMINATION OF APPROPRIATE MEASURES**

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

## 5. COMMENTS AND RESPONSE REPORT

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

## 6. AUTHORITY PARTICIPATION

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

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

The following Authorities were involved:

Name of Authority informed:	Comments received (Yes or No)
Department of Agriculture, Forestry & Fisheries: Directorate Land Use & soil Management	Mrs Anneliza Collett NO
Department of Water Affairs	Mr Rens Botha YES
DAFF: Thabazimbi Manager	Mrs MM Makwaana NO
DAFF: Waterberg District	Mr Ben Greeff YES
Waterberg District Municipality	Cllr Mokgadi Mojela NO
Thabazimbi Municipal Manager	Mr. Edward Ntsoane YES
Thabazimbi Municipality: Land re-zoning	Mr. Piet janse van Rensburg YES
Thabazimbi Municipality: Ward Councillor	Mr. Themba Mkansi NO
Thabazimbi Manager: Planning & Development	Mrs Molatole Mabitsela NO
ESKOM (Grid Connectivity)	Mr Kevin Leask NO
ESKOM (Grid Connectivity)	Mr Ronald Marais NO
Delegate of the Minister (Act 70 of 1970)	Ms Mashudu Marubini NO
Agriland Liaison Office	Ms Thoko Buthelezi NO

A List of Authorities from whom comments have been received will be included in the Final Basic Assessment Report.

## 7. CONSULTATION WITH OTHER STAKEHOLDERS

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

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

**Has any comment been received from stakeholders?**

YES	NO
	√

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

A background information document was sent to all I & Aps and adverts were placed in the Local newspaper (Appendix E).

## SECTION D: IMPACT ASSESSMENT

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

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

List the main issues raised by interested and affected parties.

There has been little interest in the project and no comments have been received as yet. This section will be updated if any comments are received on the Draft Basic Assessment Report.

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

There has been little interest in the project and no comments have been received as yet. This section will be updated if any comments are received on the Draft Basic Assessment Report.

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

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

### **Impact Assessment Methodology**

The assessment of impacts will be based on DEA's Guideline document, 1998: EIA Regulations. The assessment will consider impacts arising from the construction and operation phases of the proposed project both before and after the implementation of appropriate mitigation measures. Each issue is ranked according to extent, duration, intensity and probability. From these criteria, a significance rating is obtained, the method is described below. Where possible, mitigatory recommendations have been made and are given below.

### **Status of Impact**

The impacts are to be assessed as either having a:

- Negative effect (at a 'cost' to the environment)
- Positive effect (a benefit to the environment)
- Neutral effect on the environment.

### **Extent of the Impact**

- 1. Site only
- 2. Local (site boundary and immediate surrounding)
- 3. Regional,
- 4. National or,
- 5. International.

### **Duration of the Impact**

The length that the impact will last for is described as

- 1. Immediate (<1 year)
- 2. Short term (1-5 years)



- 3. Medium term (5-15 years)
- 4. Long term
- 5. Permanent.

### **Magnitude of the Impact**

The intensity or severity of the impacts is indicated as:

- 0 None
- 2 Minor
- 4 Low
- 6 Moderate (environmental functions altered but continue)
- 8 High (environmental functions temporarily ceases)
- 10 Very High/ Unsure (environmental functions permanently cease)

### **Probability of Occurrence**

The likelihood of the impact actually occurring is indicated as either:

- 0 None
- 1 Improbable (Probability very low)
- 2 Low probability (unlikely to occur)
- 3 Medium probability (distinct probability that impact will occur)
- 4 High probability (Most likely)
- 5 Definite (don't know)

### **Significance of the Impact**

The potential impacts are assigned a significance rating. The rating is given in:

- Low (the impact would not have a direct influence on the decision to develop in the area)
- Medium (the impact could influence the decision to develop in the area unless it is effectively mitigated)
- High (the impact must have an influence on the decision to develop in the area).

## 2.1 PLANNING AND DESIGN PHASE

### Alternative (only alternative)

#### **Direct impacts:**

The planning and the design of the solar plant will all take place off site. The layout and diagrams of the facility are planned off site. Therefore no direct, indirect or cumulative impacts will be on the site during the project's planning and design phase.

There will be minimal movement on site during the planning and design phase. There are already paths over the area as it is a game camp, making vehicle movement easy. Thus the potential for further disturbance is limited.

#### **Indirect impacts:**

None considered

#### **Cumulative impacts:**

None considered

## 2.2 CONSTRUCTION PHASE

### Alternative (only alternative)

#### **Direct Impacts:**

NEGATIVE: Summary of direct impacts.

- Change in land-use character of the area (Low to Medium impact).
- Impact on the movement and habitat of wildlife and other Fauna.
- Removal of natural vegetation on the proposed 19.8 hectares – Loss of vegetation.
- Removal of topsoil and disturbance of surface level rock.
- Alteration of surface hydrology on site during construction phase.
- Ablution facilities: Could spread diseases and environmental pollution, possible decrease in groundwater quality and possible soil contamination.
- Possible decrease in groundwater quality and possible soil contamination during construction from potential minor spillages by construction vehicles and machinery.
- Noise levels increased around construction site, however very minimal.
- Air pollution may occur during the clearing of vegetation with dust emission.
- Potential loss of significant cultural heritage or archaeological findings during construction.

POSITIVE:

- Temporary and Permanent Employment opportunities for local communities during construction.

#### **Indirect Impacts:**

None envisaged

**Cumulative Impacts:**

Impacts associated with ground clearing and levelling of site. The clearance of natural vegetation with the disturbance of fauna, avian-fauna and flora, the visual impact and noise levels during the construction phase. The cumulative impact has a score of moderation. However these impacts will be minimized substantially if the appointed ECO enforce the mitigation measures prescribed. When the operational phase starts, the cumulative impact will substantially decrease.

**Direct impacts:** 1. Vegetation disturbance – With the proposed development, natural vegetation of 19.8ha will be cleared. Construction vehicles must work within the site location boundaries so that they not disturb the natural vegetation not affected by the development.

Status – Negative

Extent – 1

Duration – 5

Magnitude – 10

Probability – 4

Significance after mitigation – Medium

Mitigation measures – Clear guidelines and proper plans must be given to the contractors. Daily inspections are needed to prevent problems. Construction vehicles must stay on access road on all times. Disturbed areas around the construction site should be re-vegetated. Proper strategy must be implemented to prevent invasive alien plants from establishing. A licence must be obtained beforehand to remove and cut protected tree species *Boscia albitrunca* (Shepherd’s tree). No unnecessary vegetation must be removed outside the proposed development site.

2. Alien Species (Removing) – There was no important invasive species observed on the proposed development site. Clearing of soil may lead to alien infestation, therefore the removal is of highly importance.

Status - Positive

Extent - 2

Duration - 4

Magnitude - 6

Probability - 4

Significance after mitigation - Medium

Mitigation measures – All alien plants on the proposed development sites need to be removed and cleared regularly. Any areas being disturbed around the sites under development should be re-vegetated with indigenous shrubs and trees approved by government authorities and a qualified Botanical / Ecological specialist.

3. Soil disturbance and erosion –The clearing of natural vegetation and movement of construction vehicles together with the preparation of the foundation for the fixed solar panels as well as the small security/store room and sub-station and inverter is likely to impact on the soil and could result in erosion, soil loss and topsoil disturbance. This impact is however limited to the site only. Provided that adequate measures are implemented in the construction phase this impact can be deemed to have a low significance.

Status – Negative

Extent – 2

Duration – 1

Magnitude – 6

Probability – 1

Significance after mitigation – low

Mitigation measures – Clear guidance must be given to the contractor, construction vehicles must stay on the Access road at all times. Anti-erosion measures must be implemented in areas where erosion is likely to occur, on completion of construction work, all areas that are prone to erosion must be re-vegetated with indigenous grasses. Soil polluted with hazardous substances e.g. fuel and oil should be removed and managed as hazardous waste.

4. Disruption of Fauna – The clearing of natural vegetation and the removal of large trees will result in loss of Faunal habitat. No feeding of wild animals is allowed and areas considered faunal habitat are to be marked as no-go areas.

Status – Negative

Extent – 2

Duration – 2

Magnitude – 4

Probability – 4

Significance after mitigation – Medium

5. Air pollution – The development area will be prone to dust because of the clearing of vegetation that will

leave large areas of exposed soils, which then can result in air pollution. The movement of construction vehicles can contribute to excessive dust emission as well as vehicle and machinery fumes may also contribute to air pollution if not serviced regularly.

Status – Negative

Extent – 2

Duration – 1

Magnitude – 4

Probability – 4

Significance after mitigation –Low

Mitigation measures – Areas cleared of vegetation must be wet down to prevent excessive dust. During construction dust suppression measures must be implemented including periodic wetting of exposed soils. Construction vehicles must travel at low speeds especially on gravel roads. Ultimately just the necessary clearing of vegetation should be done. No excessive exhaust fumes/ emissions should be allowed, machines and vehicles should be maintained regularly. Caution must be taken to prevent any veld fires and veld fire control equipment must be present at the site.

6.Noise Levels – Construction activities and movement of construction vehicles will contribute to noise generation.

Status – Negative

Extent – 2

Duration – 1

Magnitude – 2

Probability – 1

Significance after mitigation – Low

Mitigation measures – All reasonable precautions must be made to minimize the generation of noise on site. The Construction activities should be limited to normal working hours from 08h00- 17h00 week days and Saturdays from 08h00 -13h00. Any deviations from these hours must be agreed to with all interested and affected parties.

7. Construction personnel and Public safety –

Status – Negative

Extent – 1

Duration – 2

Magnitude – 2

Probability – 1

Significance after mitigation – Low

Mitigation measures – Access to the construction site must be controlled. The contractor should assess potential environmental safety risks, and have an action plan in place to handle any reasonably possible emergencies.

Construction workers should be provided with the correct personal protection equipment. Construction vehicles must travel at a maximum speed of 30km/h.

8. Employment creation – There is a need for optimum job creation during implementation and operation of the project. This project will be a labour intensive one (during the construction phase) therefore sufficient amount of temporary jobs are created.

Status – Positive

Extent – 0

Duration – 0

Magnitude – 0

Probability – 0

Significance after mitigation – 0

Mitigation measures – The use of local labour must be encouraged where possible. Potential indirect employment creation through sourcing of materials from local suppliers should also be considered.

9. Excessive emissions – Unserviced vehicles and machinery will contribute to air pollution.

Status – Negative

Extent – 2

Duration – 1

Magnitude – 2

Probability – 1

Significance after mitigation – Low

Mitigation measures – Construction vehicles and machinery must be serviced regularly to prevent excessive emissions.

10. Archaeological / Heritage Disturbance – During the proposed development, heritage findings may be exposed.

Status – Negative

Extent – 2

Duration –5

Magnitude – 2

Probability – 1

Significance after mitigation – Low

Mitigation measures – If any Heritage findings of importance are exposed during the proposed development, the South African Heritage Resources Authority (SAHRA) must be informed immediately, all the development activities should be stopped and an accredited archaeologist with ASAPA should be notified and determine appropriate mitigation measures. A permit may be necessary (from SAHRA) to conduct any mitigation measures.

11 .Ablution facilities – Spread of diseases and environmental pollution. Workers using bush system and emptying of chemical toilets onsite has a potential to pollute the surface and ground water. It poses a health risk for the workers.

Status - Negative

Extent - 3

Duration - 1

Magnitude - 4

Probability - 2

Significance after mitigation - Low

Mitigation measures – The applicant must make provision of temporary on-site clean sanitation facilities for the workers during development (Chemical Toilets). The toilets must be cleaned and emptied into Thabazimbi Municipality sewer system with necessary permission.

12 .Change in land use character of the area. The current and surrounding land use is Agriculture. With the proposed development the area use of 19.8 hectares will change to “Green” energy infrastructure.

Status - Negative

Extent - 2

Duration - 1

Magnitude - 6

Probability - 4

Significance after mitigation - Medium

Mitigation measures – A Buffer Zone of natural vegetation a 50m in width around the proposed area must be implemented. The whole development is based on an environmental friendly way. The Farm is more than 380 hectares in size including infrastructure: 2 farmhouses, Rovon Lodge and two airplane Hangers on site. The proposed development area of 19.8 ha makes up a small part of the total area.

**No-go alternative:** Should the proposed activity not proceed, none of the impacts identified will result.

## 2.3 OPERATIONAL PHASE

### Alternative (Only alternative)

#### **Direct Impacts:**

##### NEGATIVE:

- Change in land-use character of the area.
- Impact on the movement and habitat of Fauna.
- Alteration of visual character of the site.
- Alteration of surface hydrology.

##### POSITIVE:

- Employment opportunities created.
- Climate change with no poisonous emissions such as carbon and nitrogen.
- Green, clean, renewable energy are produced.
- Energy security to Allied Power C.C

#### **Indirect Impacts:**

##### POSITIVE:

- Long-term renewable energy source.
- Reduction in overall carbon emissions.
- Solar power is silent.

#### Cumulative Impacts:



The cumulative impact of the proposed development of the Photovoltaic Solar plant on the site is low. The 19.8 hectares site is the best and preferred alternative for the development. It does not affect any drainage lines or other potentially sensitive features and has a low visual impact. The overall development will undoubtedly directly affect the 19.8 ha were the solar plant will be, but areas surrounding the development area will be very minimally impacted, if at all, by the proposed development.

The positive impacts far outweigh the negative impacts of the solar plant on the area. The reduction in carbon footprint, employment opportunities and energy security makes this development sustainable. However, if the EMP is implemented correctly, the cumulative impact will substantially decrease and can become positive.

## 2.4 DECOMMISSIONING AND CLOSURE PHASE

### *Alternative (Only alternative)*

#### ***Direct Impact:***

This development will not be decommissioned in the foreseeable future. This project has an extended lifespan period. However, if any panels need to be replaced or technology improvements need to be done, the parts such as panels or frames will be sent to a proper recycling facility. Due to the extended period, no possible mitigation measures can be determined because of the constant environmental changes that may take place over time.

#### ***Indirect Impact:***

None

#### ***Cumulative Impact:***

None

### 3. ENVIRONMENTAL IMPACT STATEMENT

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

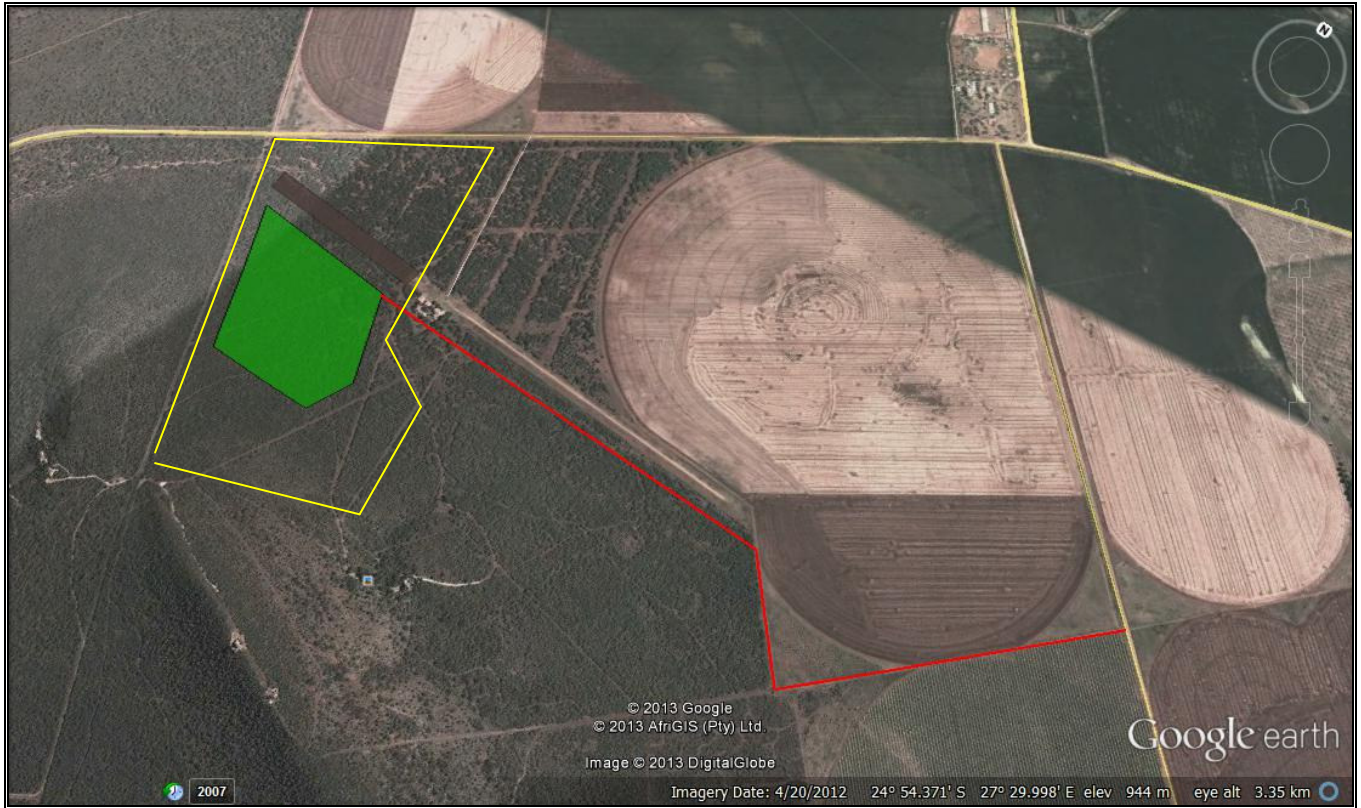
Our country is facing an energy shortage because the amount of consumers increase, the demand is increasing. Thus more natural resources such as coal is being mined and burned in order to supply electricity. Coal combustion is the primary source of electricity in South Africa. It is a non-renewable resource, which scientists estimate, will only last 30-40 years. The negative impact of the traditional technologies on the global climate increases, as the use of fossil fuel for electricity generation continues.

South Africa needs to implement alternative energy methods, especially "Green" energy such as Solar energy which is a clean and renewable energy source. Taking into consideration social-; economic-; and environmental impacts that have been assessed in this process, it is concluded that all direct and indirect impacts on the environment on the proposed site can be effectively mitigated and managed so that the overall cumulative impact is low. Therefore the production of clean and renewable energy for Allied Power C.C is sustainable.

Taking important factors such as ecology, visual impact, soil and archaeology/heritage assessment, road access and transmission lines and specialist studies into account, only one preferred site within the study area were determined (Indicated in green shaded area, figure below). This 19.8 ha area is the most suitable for the development of the photovoltaic solar plant and its infrastructure from an environmental perspective. Based on the findings of this Basic Assessment, it is the opinion of the Environmental assessment Practitioner that the project benefits outweigh the costs, and that the proposed project will make a positive contribution to steering the local community and South Africa on a pathway towards sustainable development. Provided that the specified mitigation measures are applied effectively, it is proposed that the project receive environmental authorization in terms of the EIA Regulations promulgated under the National Environmental Management Act (NEMA).

# DRAFT BASIC ASSESSMENT REPORT

DEA Ref. nr 14/12/16/3/3/1/969



### **Alternative (Preferred technology alternative)**

The preferred technology alternative is standard fixed photovoltaic panels. There will be no further impact caused from the preferred technology above those already occurring. Other panels such as the panels with tracking system require higher initial capital cost and maintenance. From an environmental point of view there should be no objection to the proposed.

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

The energy demand in South Africa is increasing on a daily basis. This increase in demand means that the demand for electricity is getting greater, and thus more coal is being mined and combusted in order to supply electricity. Coal combustion is the primary source of electricity in South Africa, and it is a non-renewable resource, which is being depleted at a rapid rate. The cumulative impact of the no-go option, would place further demand on coal reserves and resources and the demand for coal would increase over time. The cumulative impact of the no-go option will then put unneeded pressure on non-renewable resources. The load shedding and black-outs throughout the country is evidence that if the no-go option is followed, it will continue and get more frequent.

The applicant Allied Power C.C is irrigating 1 200 hectares and cannot afford a summer crop like maize to stand for 10 hours without any irrigation. Maize uses 10mm a day in peak time. If a power failure occurs because of load shedding, it will lead to catastrophic consequences. The summer harvest will be lost, less grain will be delivered to the regional economy that will have a negative impact on the food delivery chain; major financial losses – can't pay back debt from the harvest and could probably lead to undesired retrenchments. For example;

Production costs for maize is ±R20 000/hectares, if you harvest and receive about R2000/ton you will break even and make no profit. For Allied Power C.C it is just not feasible to be without electricity.

## SECTION E. RECOMMENDATION OF PRACTITIONER

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

YES	NO
√	

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

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

It is hereby recommended that Allied Power C.C be granted an Environmental Authorization for the proposed development of a 10megawatts solar energy plant on an area of 19.8 hectares in size on the farm Liverpool 543 KQ portion 2 in the Koedoeskop district, Limpopo Province.

The proposed conditions for the site should be:

1. The development of the solar energy plant must be undertaken in accordance to the EMPr.
2. All mitigation measures and management conditions contained in the EMPr must be implemented before any onsite activity is to take place.
3. The development should only occur within the 19.8 hectares site identified.
4. If any Heritage findings of importance are exposed during the proposed development, the South African Heritage Resources Authority (SAHRA) must be informed immediately, all the development activities should be stopped and an accredited archaeologist with ASAPA should be notified and determine appropriate mitigation measures. A permit may be necessary (from SAHRA) to conduct any mitigation measures.
5. A 50m vegetation barrier must be left around the solar plant to diminish visual impact.

Is an EMPr attached?

YES	NO
√	

The EMPr must be attached as Appendix F.

## **SECTION F: APPENDIXES**

The following appendixes must be attached as appropriate:

Appendix A: Locality map

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

- Ecological Survey
- Heritage Assessment
- Palaeontological Survey
- Visual Impact Assessment
- Geotechnical Survey
- Permit from Department Forestry

Appendix E: Public Participation Process; Comments and responses report

Appendix F: Environmental Management Programme (EMPr).

Appendix G: Title Deed for Farm Liverpool 543 KQ portion 2.

Appendix H: Water use Certificate

Appendix I: Details of EAP and Declaration of Interest

**SECTION G: DECLARATION BY THE ENVIRONMENTAL ASSESSMENT PRACTITIONER**

I, \_\_\_\_\_ declare that I –

- (a) act as the independent environmental practitioner in this application;
- (b) do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2010;
- (c) do not have and will not have a vested interest in the proposed activity proceeding;
- (d) have no, and will not engage in, conflicting interests in the undertaking of the activity;
- (e) undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the Environmental Impact Assessment Regulations, 2006;
- (f) will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- (g) will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the Department in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the Department may be attached to the report without further amendment to the report;
- (h) will keep a register of all interested and affected parties that participated in a public participation process; and
- (i) will provide the Department with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.

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**Signature of the Environmental Assessment Practitioner:**

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**Name of company:**

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**Date:**

