

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS  
FINAL BASIC ASSESSMENT REPORT

PROPOSED KYNOCH ROOFTOP SOLAR ENERGY  
FACILITY IN ENDICOTT, GAUTENG PROVINCE

DEA REF No.: 14/12/16/3/3/1/1234

FINAL BASIC ASSESSMENT REPORT  
SUBMITTED TO DEA  
AUGUST 2014

Prepared for:

**Building Energy SpA**

Cape Quarter Piazza, Unit B103a  
72 Waterkant Street  
Cape Town  
8001



Prepared by:

*Savannah Environmental Pty Ltd*

1<sup>ST</sup> FLOOR, BLOCK 2,  
5 WOODLANDS DRIVE OFFICE PARK  
CNR WOODLANDS DRIVE &  
WESTERN SERVICE ROAD,  
WOODMEAD, GAUTENG  
P.O. BOX 148, SUNNINGHILL, 2157  
TELEPHONE : +27 (0)11 656 3237  
FACSIMILE : +27 (0)86 684 0547  
EMAIL : INFO@SAVANNAHSA.COM  
WWW.SAVANNAHSA.COM





## environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

(For official use only)

**File Reference Number:**

**Application Number:**

**Date Received:**


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

---

### Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **1 September 2012**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. 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.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.
14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included on the electronic copy of the report submitted to the competent authority.

## PROJECT DETAILS

---

<b>DEA Ref No.</b>	:	14/12/16/3/3/1/1234
<b>Title</b>	:	Environmental Basic Assessment Process <u>Final</u> Basic Assessment Report: Proposed Kynoch Rooftop Solar Energy Facility in Endicott, Gauteng Province.
<b>Authors</b>	:	Savannah Environmental Geraldine Mogashane Karen Jodas
<b>Applicant</b>	:	Building Energy SpA
<b>Report Status</b>	:	<u>Final Basic Assessment Report Submitted to DEA</u>

**When used as a reference this report should be cited as:** Savannah Environmental (2014) Final Basic Assessment Report: Proposed Kynoch Rooftop solar Energy Facility, in Endicott, Gauteng Province

**COPYRIGHT RESERVED**

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

## TABLE OF CONTENTS

	<b>PAGE</b>
<b>PROJECT DETAILS</b> .....	<b>i</b>
<b>TABLE OF CONTENTS</b> .....	<b>i</b>
<b>APPENDICES</b> .....	<b>iii</b>
<b>SUMMARY AND OVERVIEW OF THE PROPOSED PROJECT</b> .....	<b>1</b>
1.1 Need for the Proposed Development.....	3
1.2 Requirement for an Environmental Impact Assessment Process.....	4
1.3 Details of Environmental Assessment Practitioner and Expertise to conduct the Basic Assessment.....	4
<b>FINAL BASIC ASSESSMENT REPORT submitted to dea</b> .....	<b>6</b>
<b>SECTION A: ACTIVITY INFORMATION</b> .....	<b>7</b>
1. PROJECT DESCRIPTION.....	7
<i>Describe the project associated with the listed activities applied for.....</i>	<i>7</i>
<i>Provide a detailed description of the listed activities associated with the project as applied for</i> .....	<i>11</i>
2. FEASIBLE AND REASONABLE ALTERNATIVES .....	11
a) <i>Site alternatives</i> .....	12
b) <i>Layout alternatives</i> .....	14
c) <i>Technology alternatives</i> .....	14
d) <i>Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)...</i>	15
e) <i>No-go alternative</i> .....	15
3. PHYSICAL SIZE OF THE ACTIVITY .....	15
a) <i>Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):</i> .....	<i>15</i>
4. SITE ACCESS .....	16
5. LOCALITY MAP.....	16
6. LAYOUT/ROUTE PLAN .....	17
7. SENSITIVITY MAP .....	17
8. SITE PHOTOGRAPHS .....	18
9. FACILITY ILLUSTRATION .....	18
10. ACTIVITY MOTIVATION .....	19
11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES .....	25
12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT.....	32
a) <i>Solid waste management</i> .....	32
b) <i>Liquid effluent</i> .....	33
c) <i>Emissions into the atmosphere</i> .....	33
d) <i>Waste permit</i> .....	34
e) <i>Generation of noise</i> .....	34
13. WATER USE .....	34
14. ENERGY EFFICIENCY .....	35
<b>SECTION B: SITE/AREA/PROPERTY DESCRIPTION</b> .....	<b>36</b>
<b>SECTION C: PUBLIC PARTICIPATION</b> .....	<b>45</b>
ADVERTISEMENT and NOTICES .....	45
1. DETERMINATION OF APPROPRIATE MEASURES .....	45

---

2.	ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES .....	46
3.	COMMENTS AND RESPONSE REPORT.....	46
4.	AUTHORITY PARTICIPATION .....	47
5.	CONSULTATION WITH OTHER STAKEHOLDERS .....	47
<b>SECTION D: IMPACT ASSESSMENT.....</b>		<b>49</b>
1.	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 .....	49
2.	ENVIRONMENTAL IMPACT STATEMENT .....	54
<b>SECTION E. RECOMMENDATION OF PRACTITIONER.....</b>		<b>56</b>
<b>SECTION F: APPENDICES .....</b>		<b>59</b>

## APPENDICES

---

**Appendix A:** Site Plan(s)

**Appendix B:** Photographic Record

**Appendix C:** Facility Illustration(s)

**Appendix D:** Specialist Reports

**Appendix E:** Record of Public Involvement Process

» *Appendix E1: Site notices*

» *Appendix E2: Key stakeholders correspondence*

» *Appendix E3: Comments Received*

» *Appendix E4: Authority & Organs of State correspondence*

» *Appendix E5: Database*

» *Appendix E6: Minutes of Meetings*

» *Appendix E7 – Comments and Response report*

**Appendix F:** Impact Assessment

**Appendix G:** Environmental Management Programme (EMPr)

**Appendix H:** Details of EAP and expertise

**Appendix I:** Specialist's declaration of interest

**Appendix J:** Other information

## **SUMMARY AND OVERVIEW OF THE PROPOSED PROJECT**

---

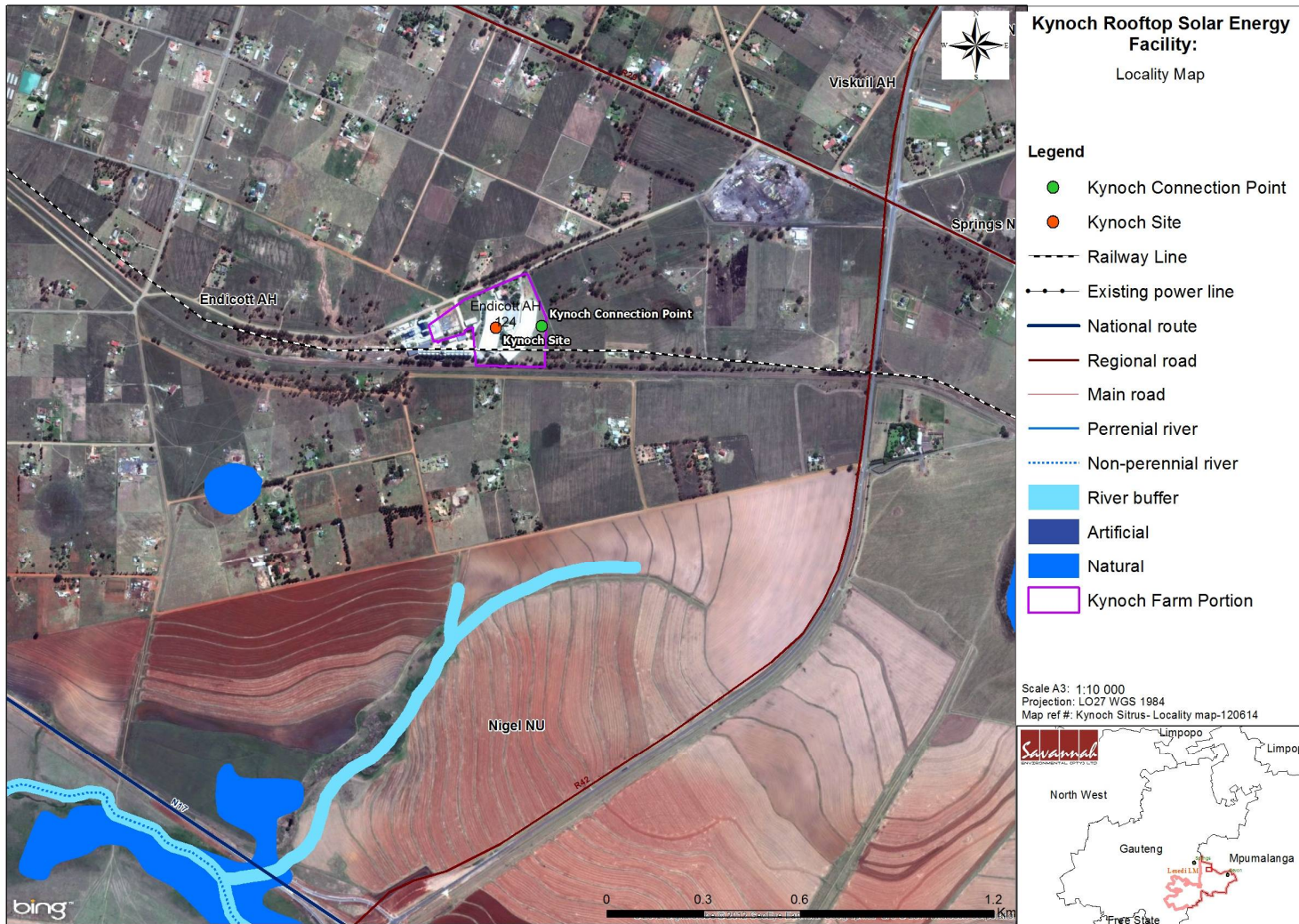
Building Energy SpA an Independent Power Producer (IPP) is proposing the establishment of a 1.8MW photovoltaic (PV) Roof Top Solar Energy facility on a warehouse located in Endicott, near Springs in the Gauteng Province. The project is referred to as the Kynoch Solar Energy Facility.

The building is located on remainder of farm Endicott AH 124, which is located on Doris Road in the town of Endicott. The site is located in an industrial area, approximately 2km south of Vischkuil, 15km west of Springs and 18km south of Nigel. The site falls under the jurisdiction of the Lesedi Local Municipality and Sedibeng District Municipality in the Gauteng Province.

The purpose of the project is to generate electricity which will be fed-into the national electricity grid. The project will participate in the Department of Energy's Small Projects Renewable Energy Independent Power Producer Procurement (RE-IPPP) programme. The REIPPP Programme has been designed to contribute towards the South African government's renewable energy target of 17GW by 2030, and to stimulate the renewable energy industry in South Africa. The Small Projects Programme has been introduced to provide opportunities for local companies to become involved in this larger programme.

The Kynoch roof top Solar Energy Facility will have a development footprint of ~ 2 hectares, within which the following typical infrastructure will be established:

- » Arrays of photovoltaic (PV) panels with a capacity of up to 1.8MW.
- » Aluminium bar mountings to support the PV panels.
- » Cabling between the project components.
- » Inverters/Transformer enclosures.
- » Underground cables of ~ 50m in length to connect into a mini substation located adjacent to the site.



**Figure 1:** Locality map showing the site for the Kynoch 1.8MW Solar Energy Facility



## **1.1 Need for the Proposed Development**

Due to the exploitation of and large-scale reliance on non-renewable resources and the potential subsequent impacts on climate, there is increasing pressure globally to increase the share of renewable energy generation. South Africa currently depends on fossil fuels for the supply of approximately 90% of its primary energy needs. With economic development over the next several decades resulting in an ever increasing demand for energy, there is some uncertainty as to the availability of economically extractable coal reserves for future use. Furthermore, several of South Africa's coal-fired power stations are nearing the end of their economic life, require refurbishment, or have been recently returned to service (re-commissioned) at great expense (i.e. the Camden, Komati, and Grootvlei Power Stations).

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

Use of solar irradiation for electricity generation is essentially a non-consumptive use of a natural resource. A solar energy facility also qualifies as a Clean Development Mechanism (CDM) project (i.e. a financial mechanism developed to encourage the development of renewable technologies) as it meets all international requirements in this regard. The proposed warehouse roof top site was selected for the development of a solar energy facility based on its predicted climate (solar resource), suitable proximity in relation to the existing electricity grid, and minimum technical constraints from a construction and technical perspective. Building Energy considers this area, and specifically the demarcated building's roof top site, to be highly preferred for the proposed rooftop solar energy facility development.

The current land-use on the site is industrial. The development of the 1.8MW roof top solar energy facility will allow current activities within the building to continue while at the same time utilising the roof of the building for electricity generation from solar panels. Therefore the current land-use will be retained, while also generating renewable energy from the sun.

Surrounding communities would also benefit from the development through job creation, albeit limited. In addition, according to the DoE's bidding requirements, the developer must plan for a percentage of the profit per annum from the solar energy facility to feed back into the community through a social beneficiation scheme. Therefore there is a potential for creation of employment and business opportunities, and the opportunity for skills development for the local community

## **1.2 Requirement for an Environmental Impact Assessment Process**

In terms of the EIA Regulations published in terms of Section 24(5) of the National Environmental Management Act (NEMA, Act No. 107 of 1998), authorisation is required from the National Department of Environmental Affairs (DEA) as the competent authority, in consultation with the Gauteng Department of Agriculture and Rural Development (GDARD) for the establishment of the proposed solar energy facility. In terms of Sections 24 and 24D of NEMA, as read with the EIA Regulations of GN R544 – R546 (as amended), a Basic Assessment process is required to be undertaken for the proposed project.

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

## **1.3 Details of Environmental Assessment Practitioner and Expertise to conduct the Basic Assessment**

Building Energy SpA has appointed Savannah Environmental as the independent environmental consultant to undertake the Basic Assessment process and to identify and assess all the potential environmental impacts associated with the proposed project and propose appropriate mitigation and management measures in an Environmental Management Programme (EMPr) for the proposed solar energy facility. Neither Savannah Environmental, nor any of its specialist sub-consultants on this project are subsidiaries of, or are affiliated to Building Energy. Furthermore, Savannah Environmental does not have any interests in secondary developments that may arise out of the authorisation of the proposed project.

Savannah Environmental is a specialist environmental consultancy which provides a holistic environmental management service, including environmental assessment and planning to ensure compliance with relevant environmental legislation. Savannah

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

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

The EAPs from Savannah Environmental who are responsible for this project are:

- » Geraldine Mogashane (principal author of this report) holds a National Diploma in Environmental Management. She has 11 months of experience consulting in the environmental field. Her key focus is on environmental impact assessments, public participation, and environmental management plans and programmes.
- » Karen Jodas is a registered Professional Natural Scientist and holds a Master of Science degree. She has 17 years of experience consulting in the environmental field. Her key focus is on strategic environmental assessment and advice; management and co-ordination of environmental projects, which includes integration of environmental studies and environmental processes into larger engineering-based projects and ensuring compliance to legislation and guidelines; compliance reporting; the identification of environmental management solutions and mitigation/risk minimising measures; and strategy and guideline development. She is currently responsible for the project management of EIAs for several renewable energy projects across the country.

Curricula vitae for the Savannah Environmental project team are included in **Appendix H**.

---

**FINAL BASIC ASSESSMENT REPORT SUBMITTED TO DEA**

---

This Final Basic Assessment Report has been prepared by Savannah Environmental in order to assess the potential environmental impacts associated with the Kynoch Rooftop Solar Energy facility. This process is being undertaken in support of an application for environmental authorisation to the National Department of Environmental Affairs (DEA).

The draft Basic Assessment report was available for a 30-day period for review from **14 July 2014 – 13 August 2014** at the following locations:

- » Vischkuil Library – Cnr Doris & Melman Road, Endicott, 1574
- » [www.savannahSA.com/projects](http://www.savannahSA.com/projects)

As required in terms of Regulation 56(3), this final Basic Assessment report has been made available to registered interested and affected parties for comment and has also been submitted to DEA. I&APs have been advised to submit any additional comments directly to DEA with a copy submitted to Savannah Environmental in accordance with Regulation 56(6).

## SECTION A: ACTIVITY INFORMATION

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

NO ✓

If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

### 1. PROJECT DESCRIPTION

**Describe the project associated with the listed activities applied for**

Building Energy an Independent Power Producer (IPP) is proposing the establishment of a 1.8MW photovoltaic (PV) Roof Top Solar Energy facility on a warehouse located in Endicott, near Springs in the Gauteng Province. The project is referred to as the Kynoch Solar Energy Facility.

The Kynoch roof top Solar Energy Facility will have a development footprint of ~ 2hectares, within which the following typical infrastructure will be established:

- » Arrays of photovoltaic (PV) panels with a capacity of up to 1.8MW.
- » Aluminium bar mountings to support the PV panels.
- » Cabling between the project components.
- » Inverters/Transformer enclosures.
- » Underground cables of ~ 50m in length to connect into a mini substation located adjacent to the site.

The following features occur close to the site:

- » The N17 to springs is located ~2km to the west of the Kynoch site.
- » A railway line runs west to east along the southern boundary of the property on which the building is located.
- » The provincial boundary between Gauteng and Mpumalanga province occurs ~3km east of the site.
- » Aston Lake (a man-made dam) is located ~8km north-west of the site.

#### **Location**

The building on which the solar energy facility is proposed is located on remaining portion of farm Endicott AH 124 which is located on Doris Road in Endicott, Gauteng Province. The building is currently utilised as a warehouse for storage of storage of chemical products which are used for the production of fertilizers. The GPS co-ordinates of the site are as follows: 26°18'8.86" S; 28°35'40.43" E. The site is located approximately 2km south of Vischkuil, 15km west of Springs and 18km south of Nigel. The land is privately owned and zoned as industrial. The site is located within the jurisdiction of the Lesedi Local Municipality and Sedibeng District Municipality.

#### **Technology Description**

The use of solar power for electricity generation is deemed a non-consumptive use of natural resources which produces zero greenhouse gas emissions. Solar generated electricity is set to play a significant role in reaching the South African Government's renewable energy target of 17.8GW of renewable energy by 2030.

PV technology uses the energy from the sun to generate electricity through a process known as the "photovoltaic effect." Simply speaking, this refers to photons of light knocking electrons into a higher state of energy to create electricity. PV facilities are typically comprised of the following:

- » **PV cells** are made of silicone which act as semiconductors used to produce electricity through the photovoltaic effect. Individual PV cells are linked and placed behind a protective glass sheet to form a PV panel; several rows of which are established in order to generate the required amount of electricity.
- » **Inverters** are required to convert the electricity from direct to alternating current which can be evacuated into the National Eskom grid.
- » **Support structures** are required to mount the PV panels so to receive the maximum amount of solar radiation without the buffeting effects of the wind. The angle of the panel is dependent on the latitude of the proposed facility and may be adjusted to optimise for summer or winter solar radiation characteristics. In the case of a roof mounted structure the panels may be mounted parallel to the roof and not at the maximum effect angle.

It is proposed that the project utilises photovoltaic cells that will be mounted parallel to the roof of the warehouse in order to not change the shape of the building. The panels will be ~20cm in height.

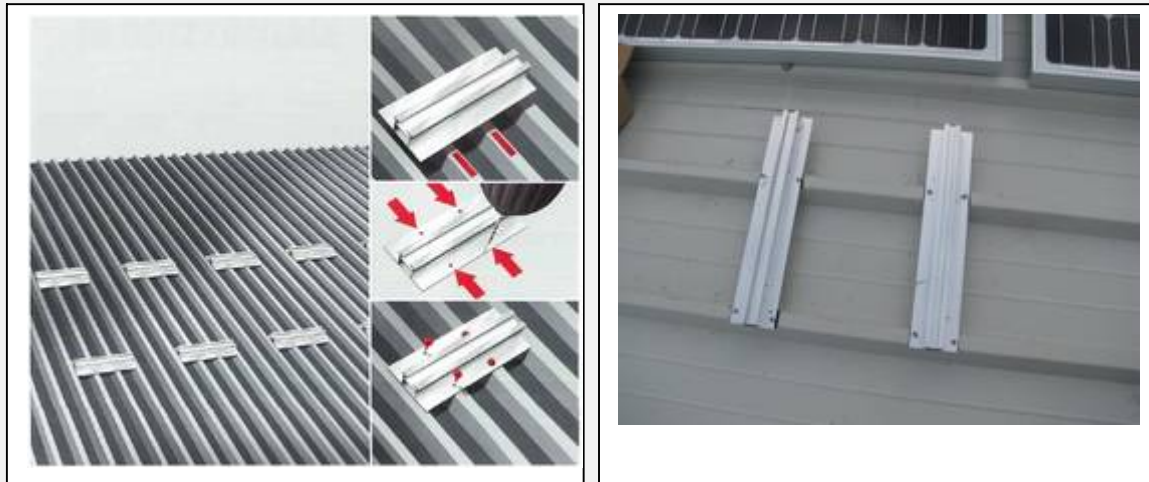
Modules are to be fixed to the rooftop with a simple aluminium clamp or bolts. Clamps or bolts guarantee high resistance to all forces that are found in a photovoltaic plant (accidental loads, snow loads, wind loads, etc.). The distance between module frame and roof cover can be considered as irrelevant, in this type of installation. Maximum load to be considered is 20Kg/m<sup>2</sup>.

Polycrystalline or monocrystalline silicon modules may be utilized for the solar panels. The proposed development is expected to be 1.8MW in capacity.

#### ***Photovoltaic Modules Mechanical Installation on Pitched Roofs***

To install modules on corrugated metal top cover on a pitched roof, a typical bearing structure for photovoltaic plant can be made by short (or long) aluminium bars, fixed by 4 rivets on the roof. Girdle waterproofing is installed between corrugated roofs and bars (EPDM strips). A 1.8MW plant needs ~8 200 short aluminium bars.

Modules are fixed to the aluminium bars with a simple aluminium clamp, avoiding drilling new holes to the system (refer to Figure 2). Clamps guarantee high resistance to every force that can be found in a photovoltaic plant (i.e. accidental loads, snow loads, wind loads, etc.).



**Figure 1:** Aluminium bars utilised to mount the PV Panels

#### ***Inverter Cabin Location and Installation***

Inverter cabins will be installed on the ground, as close as possible to the PV modules. The number of cabins depends of the power pick installation and the electrical configuration. For example, a 1.8MWp on one single roof typically needs only one inverter cabin. Typical inverter cabin dimension is 8m X 3m X 3m. Cabins are required to be reinforced with concrete foundations.

#### ***Electrical Connection between Combiner Boxes and Inverter***

From combiner boxes, DC cables run through a special cable tray, fixed on a wall, to the inverter cabin.

#### ***Project Life Cycle (Construction, Operations and/ Decommissioning Phase)***

The typical life cycle of a solar energy facility includes construction, operation and maintenance activities and possibly decommissioning of the plant (if required). These phases of the project are described below.

- » ***Construction phase:*** In order to construct the proposed project, a series of activities will need to be undertaken. The construction process for the solar energy facility will typically include the following:
  - i. Conduct Surveys: Prior to initiating construction, a number of surveys will be required including, but not limited to, a site survey and confirmation of the micro-siting footprint and grid connection.
  - ii. Undertake Site/ Roof Top Preparation.
  - iii. Transport of Components and Equipment to Site: The components and

equipment required for the construction of the proposed roof top facility will be brought to site in sections by means of national, provincial and local roads.

- iv. Erect PV Cells and Invertors: The PV cells will be arranged in arrays. The frames may be fixed onto the roof tops with the use of aluminium bars. Invertors will be installed on the ground to facilitate the connection between the solar energy facility and the Eskom electricity grid via underground cables between the building and an Eskom Substation
  - v. Establishment of Ancillary Infrastructure: Ancillary infrastructure may include a workshop and storage areas.
- » **Operation Phase:** The electricity that is generated from the PV panels will be converted by the on-site invertors and will feed-into the existing Eskom network via an existing mini substation located adjacent to the site. Each component within the solar energy facility will be operational except under circumstances of mechanical breakdown, unfavourable weather conditions or maintenance activities. Water may be required to wash the PV panels. The required water is planned to be sourced from the municipal supply.
- » **Decommissioning Phase:** The operation phase of the project is expected to have a lifespan of more than 20 years (with maintenance) and the PV facility infrastructure would only be decommissioned once it has reached the end of its economic life. If economically feasible/desirable, after 20 years, the individual components would be disassembled and replaced with more appropriate technology/ infrastructure available at that time. However, if not deemed so, then the roof top solar panels would be completely decommissioned and all components removed from the site.



**Provide a detailed description of the listed activities associated with the project as applied for**

The following listed activities are relevant to the proposed development:

<b>Listed activity as described in GN R.544, 545 and 546</b>	<b>Description of project activity</b>
GN R.544 Item 1: The construction of facilities or infrastructure for the generation of electricity where: (ii) The output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare.	The proposed PV facility will have an electricity export capacity of 1.8MW and will occupy an area greater than 1 hectare in extent.

**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 as required by Regulation 22(2)(h) of GN R.543. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) 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, competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives

include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. 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.

#### a) **Site alternatives**

A site alternative refers to the identification of more than one potential site which may be suitable for the establishment of a proposed project. Due to the nature of the development, the location of the project is largely dependent on technical factors such as solar irradiation (i.e. fuel source), climatic conditions, availability of space for rooftop solar panel installations and available grid connection. The proposed site was identified by the developer as being technically feasible on the basis of these considerations. A constraining factor in the placement of rooftop solar facilities is obtaining agreement with the owner of the building to allow the installation. Therefore, only one site (rooftop) was considered in this Basic Assessment and no site alternatives have been considered.

The following characteristics were considered in determining the feasibility of the proposed site:

- » **Solar Resource:** The site has been identified as an area of suitable irradiation, which indicates that the location of the project is appropriate for a solar energy facility.
- » **Grid Connection:** The project can connect into the grid via an existing substation located adjacent to the property, which has capacity to receive the electricity generated by the solar panels.
- » **Site Extent:** space is an important factor for the development of a PV facility. A roof top area of approximately 2ha would be required for the 1.8MW rooftop solar project. The space available on the roof top of the warehouse building is ~2 hectares in extent and will therefore be sufficient for the installation of the proposed facility, and should allow for the avoidance of any identified technical constraints in terms of the final design of the facility.
- » **Land availability and Site access:** The proposed rooftop would be available to the developer for the installation of the proposed project. The site is accessible via a gravel road (Station road), off the R29
- » **Environmental sensitivity:** Rooftop solar panels are located on top of buildings and no significant environmental impacts are expected to occur during the construction and operation of the project.

<b>Site Alternative 1 (preferred alternative)</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
The 1.8MW Kynoch Solar Energy Facility is expected to have a developmental footprint of ~2ha. The space available on the roof top of the warehouse building is ~ 2ha and will therefore be sufficient for the installation of the proposed facility and associated infrastructure. By virtue of the location of the proposed Kynoch Rooftop solar Energy Facility on a roof top of a building within an Industrial -zoned area, the site is regarded as "brownfields", which means that it has been previously developed either for industrial or commercial purposes and is of low environmental sensitivity. Therefore the proposed site is considered suitable for the development of the proposed rooftop PV facility.	26°18'8.86" S	28°35'40.43" E
<b>Alternative 2</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
<b>Alternative 3</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)

In the case of linear activities:

**Alternative:**

**Latitude (S):**

**Longitude (E):**

Alternative S1 (preferred)

- Starting point of the activity
- 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.

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A.

**b) Layout alternatives**

The PV panels will be located on the roof of a warehouse. No layout alternatives were assessed.

<b>Alternative 1 (preferred alternative)</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
<b>Alternative 2</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
<b>Alternative 3</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)

**c) Technology alternatives**

<b>Alternative 1 (preferred alternative)</b>
As it is the intention of Building Energy to develop the proposed Kynoch Rooftop Solar Energy Facility project as part of the DoE's Small Scale REIPPP Programme, only renewable energy technologies are being considered. Solar energy is considered to be the most suitable renewable energy technology for this site, based on the site location, ambient conditions and energy resource availability (i.e. solar irradiation). The use of photovoltaic panels was determined as the most suitable option for the proposed rooftop site due to the low height of the panels. In addition other renewable energy technologies cannot be considered as they are not feasible. Very few technological options exist as far as PV technologies are concerned; those that are available are usually differentiated by weather and temperature conditions that prevail – so that optimality is obtained by the final choice. The construction, operation and decommissioning activities associated with the facility will also be the same irrespective of the technology chosen.

It is proposed that the project utilises photovoltaic cells that will be mounted parallel to the roof to avoid changing the shape of the building. The panels will be ~20cm in height. Polycrystalline or monocrystalline silicon modules may be utilised for the solar panels.
<b>Alternative 2</b>
<b>Alternative 3</b>

**d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)**

None applicable.

<b>Alternative 1 (preferred alternative)</b>
<b>Alternative 2</b>
<b>Alternative 3</b>

**e) No-go alternative**

This is the option of not implementing the proposed project. This alternative is assessed within this Basic Assessment Report.

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

**3. PHYSICAL SIZE OF THE ACTIVITY**

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

**Alternative:**

Alternative A1<sup>1</sup> (preferred activity alternative)  
 Alternative A2 (if any)  
 Alternative A3 (if any)

**Size of the activity:**

~20 000 m <sup>2</sup>
m <sup>2</sup>
m <sup>2</sup>

or, for linear activities:

<sup>1</sup> "Alternative A.." refer to activity, process, technology or other alternatives.

**Alternative:**

**Length of the activity:**

Alternative A1 (from alternative site 1)  
Alternative A2 (from alternative site 2)  
Alternative A3 (from alternative site 3)

M
M
M

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

**Alternative:**

**Size of the site/servitude:**

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>

**4. SITE ACCESS**

Does ready access to the site exist?

<b>YES ✓</b>	
M	

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

Describe the type of access road planned:

The site is accessible via a gravel road (Station road), off the R29.

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. **See Appendix A.**

**5. 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 accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s);
- road access from all major roads in the area;

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

An A3 Locality Map is attached within **Appendix A**.

## 6. LAYOUT/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:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

A detailed site plan(s) for each alternative activity is attached within **Appendix A**.

## 7. SENSITIVITY MAP

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWA);
- ridges;
- cultural and historical features;

- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in **Appendix A**.

A sensitivity map covering areas within 100m of the site is attached within **Appendix A**

## **8. 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 report. It must be supplemented with additional photographs of relevant features on the site, if applicable.

Colour photographs have been taken from the centre of the proposed site in the eight major compass directions. Annotated photographs are included in **Appendix B**.

## **9. FACILITY ILLUSTRATION**

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




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



## 10. ACTIVITY MOTIVATION

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

<b>1. Is the activity permitted in terms of the property's existing land use rights?</b>		<b>NO</b> ✓	Please explain
The current land-use on the site is industrial/commercial. The development of the 1.8MW rooftop solar energy facility will allow current activities within the building to continue while at the same time utilising the roof of the building for electricity generation from solar panels. Therefore the current land-use will be retained			
<b>2. Will the activity be in line with the following?</b>			
<b>(a) Provincial Spatial Development Framework (PSDF)</b>	<b>YES</b> ✓		Please explain
Some of the key objectives of the Gauteng Spatial Development Framework are to promote contained urban growth; enhance economic growth through enhancing key economic nodes; focus urban growth, stabilise/limit growth in economically non-viable areas and achieve growth on the land within the economic growth sphere; ensure preservation of rural areas and consolidation of tourism and agricultural activity; and increase accessibility and mobility. In addition the SDF aims to significantly reduce present rates of non-renewable energy usage. The proposed Kynoch Rooftop solar Energy Facility will connect to Eskom's electricity grid network thus increasing its capacity. The project is therefore in line with the developmental needs identified in Gauteng SDF.			
<b>(b) Urban edge / Edge of Built environment for the area</b>		<b>NO</b> ✓	Please explain
The proposed site falls outside the boundaries of an urban edge of the Lesedi LM. The proposed development will be constructed on the roof of an existing building on a land zoned as industrial. Therefore it will not compromise the urban edge set by the municipality.			
<b>(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).</b>	<b>Yes</b> ✓		Please explain
The Lesedi IDP (2013-2014) highlights the needs / issues within the municipal area such as infrastructure backlog, skills shortage, the need for more housing, early childhood development (ECD) and recreation facilities for the youth. The IDP mentions that the installation of free Solar Geysers are currently underway in Lesedi to alleviate poverty and to reduce the usage of electricity in the area. The development of the proposed 1.8MW photovoltaic (PV) Rooftop Solar Energy Facility in Edicott could indirectly contribute to some extent to the Lesedi Local Municipality achieving its			

development needs related to electricity supply and utilisation of renewable energy such as solar energy			
<b>(d) Approved Structure Plan of the Municipality</b>	<b>YES</b> ✓		Please explain
The SDF states that the Lesedi Local Municipality has a number of transportation corridors and potential development nodes (N3, N17, R42 and R23), which need to be defined and structured to create economic opportunities. The two major development corridors within the Lesedi Local Municipality are the N3 and the N17 Freeways. The Kynoch site is located ~2km from the N17. Vischkuil/Endicott are agricultural holding areas regarded as an emerging node. The development of the rooftop 1.8MW Solar Energy Facility will not impact on the spatial development within the municipality or conflict with the current SDF as it will not conflict or compete with the proposed land use in the area.			
<b>(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)</b>		<b>NO</b> ✓	Please explain
The Lesedi Local Municipality EMF (2007) identified environmental constraint zones within the municipal area, namely: <ul style="list-style-type: none"> <li>» Ecological and hydrological constraints</li> <li>» Topographical and geotechnical constraints</li> <li>» Agricultural potential constraints</li> </ul> <p>The Kynoch site does not occur within any of the above-mentioned environmental constraint zones as defined in the EMF. The site is therefore considered to be suitable for the development of the proposed roof top Solar Energy Facility</p>			
<b>(f) Any other Plans (e.g. Guide Plan)</b>	<b>YES</b>	<b>NO</b>	Please explain
N/A			
<b>3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?</b>	<b>YES</b> ✓		Please explain
The proposed rooftop solar energy facility will be mounted on top of the Kynoch warehouse building. The building is located in an industrial area and is used for storage of storage of chemical products which are used for the production of fertilizers. Although the proposed activity is not specifically considered within the IDP and SDF, it			

<p>does align with the municipality's efforts to identify the impacts of climate change in the municipality through the effective management of resources such as renewable energy.</p>		
<p><b>4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)</b></p>	<p>YES ✓</p>	<p>Please explain</p>
<p>The proposed activity is not necessarily a societal priority; however the proposed development will benefit the local community through job creation, skills development opportunities and training which will, in turn, assist in reducing poverty levels that the area is currently facing, and strengthen electricity supply for the area.</p>		
<p><b>5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</b></p>	<p>YES ✓</p>	<p>Please explain</p>
<p>The proposed solar facility will connect into the Eskom grid via an existing substation, which has capacity to receive electricity generated by the solar facility. All the services required for the project have been adequately provided for and, should any need for other services arise, the relevant authority will be communicated with.</p> <p>» Roads: An existing gravel road (Station road) off the R29 will be used to access the site.</p> <p>» Water: Water may be required to wash the PV panels. The required water is planned to be sourced from the municipal supply.</p> <p>» Electricity: The development will generate power, and will strength the local electricity supply as the electricity generated will be fed directly into the Eskom grid.</p>		
<p><b>6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</b></p>	<p>NO ✓</p>	<p>Please explain</p>
<p>The proposed project is to be developed by a private developer (i.e. Building Energy) and not the Local Municipality. It therefore does not fall within the infrastructure planning of the municipality. The solar panels will be constructed on the rooftop of an existing building. The construction of the solar panels will not place additional pressure</p>		

<p>on the Municipality's infrastructure during construction or operation. The project will assist the municipality with their infrastructural planning priorities through assistance with the provision of increased capacity.</p>		
<p><b>7. Is this project part of a national programme to address an issue of national concern or importance?</b></p>	<p>YES ✓</p>	<p>Please explain</p>
<p>The current electricity imbalances in South Africa highlight the significant role that renewable energy can play in terms of power supplementation. Given that renewables can generally be deployed in a decentralised manner close to consumers, they offer the opportunity for improving grid strength and supply quality, while reducing expensive transmission and distribution losses. At present, South Africa is some way off from exploiting the diverse gains from renewable energy and from achieving a considerable market share in the industry. In order to meet the long-term goal of a sustainable renewable energy industry, a target of 17.8 GW of renewables by 2030 has been set by the Department of Energy (DoE) within the Integrated Resource Plan (IRP) 2010 and incorporated in the IPP Procurement Programme. This energy will be produced from various renewable energy technologies including solar energy facilities. The proposed project is to contribute towards this goal for renewable energy and is identified as a Strategic Infrastructure Project in terms of the South African National Infrastructure Plan.</p>		
<p><b>8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)</b></p>	<p>YES ✓</p>	<p>Please explain</p>
<p>» <i>Land use and grid connection:</i> The site for the proposed rooftop solar facility is zoned as industrial. The site itself is an existing warehouse. Grid connection is optimized due to the positioning of the facility to the mini substation located adjacent to the site.</p> <p>» <i>Site access and availability:</i> The land is privately owned and confirmed to be available for lease by the owner.</p> <p>» <i>Site access:</i> The site can be accessed via Station road, which is an existing gravel road off the R29</p> <p>» <i>Climatic conditions:</i> The economic viability of a photovoltaic plant is directly dependent on the annual direct solar irradiation values. A study of available radiation data shows that the proposed site is uniformly irradiated by the sun and considered suitable for the development of a PV facility.</p> <p>» <i>Gradient:</i> A level surface area is preferred for the installation of PV panels and specifically for PV technologies. It is proposed that the project utilises photovoltaic cells that will be mounted parallel to the roof in order to maintain the shape of the building.</p>		
<p><b>9. Is the development the best practicable environmental option for this land/site?</b></p>	<p>YES ✓</p>	<p>Please explain</p>
<p>By virtue of the proposed location of the site on a roof top of a building within an</p>		

<p>industrial area, the site is regarded as “brownfields,” which means that it has been previously developed. Therefore the identified site is considered suitable for the development of the rooftop PV facility. The potential for environmental impacts associated with the proposed roof top solar energy project is considered low. In addition, the site is easily accessed from existing roads.</p>		
<p><b>10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?</b></p>	<p>YES ✓</p>	<p>Please explain</p>
<p>The negative impacts associated with the proposed activity include impacts on traffic due to movement of construction vehicles as well as visual impacts. However these impacts are not considered to be of high significance due to the nature of the development site and surrounding area. All impacts can be managed and mitigated to acceptable levels, as outlined in the Environmental Management Programme.</p> <p>The positive impacts associated with the facility include i) an alternative income source for the landowner; ii) generation of electricity from a renewable resource also reduces reliance (albeit limited) on conventional power sources; iii) local economic upliftment and job creation. These positive impacts will extend beyond the boundary of the site and are expected to outweigh the negative impacts. In addition, the Kynoch site does not occur within any agricultural, geotechnical, hydrological or ecological constraint zone as defined in the EMF.</p>		
<p><b>11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?</b></p>	<p>NO ✓</p>	<p>Please explain</p>
<p>There are no known similar commercial solar energy facilities being applied for within the local municipality. No development precedent has been set which would see accumulation of similar power generation developments within a specific portion of the municipal area. Other similar facilities would need to be assessed on an individual basis.</p>		
<p><b>12. Will any person’s rights be negatively affected by the proposed activity/ies?</b></p>	<p>NO ✓</p>	<p>Please explain</p>
<p>The proposed development of the 1.8MW rooftop Solar Energy Facility will allow current activities within the building to continue while at the same time utilising the roof of the building for electricity generation from solar panels. Therefore the current land-use will be retained. Private landowners will be affected by the proposed project. These landowners have been consulted by the developer and are aware of the proposed project. Parties who might be interested in or affected by the construction of the facility are consulted with regards to the proposed project through the EIA process.</p>		
<p><b>13. Will the proposed activity/ies compromise the “urban edge” as defined by the local municipality?</b></p>	<p>NO ✓</p>	<p>Please explain</p>
<p>The proposed facility is located outside the urban edge and is within an existing industrial zone. The urban edge boundaries of the municipality will not be affected in any way. The proposed facility will not compromise the urban edge set by the</p>		

municipality.		
<b>14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?</b>	YES ✓	Please explain
<p>The proposed activity covers the objectives of Strategic Infrastructure Projects (SIPS) 8:</p> <ul style="list-style-type: none"> <li>SIP 8: Green energy of support of South African economy - Support sustainable green energy initiatives on a National scale through a diverse range of clean energy options envisaged in the Integrated Resource Plan (IRP 2010).</li> </ul>		
<b>15. What will the benefits be to society in general and to the local communities?</b>		Please explain
<p>Job opportunities, albeit limited, will be created during the construction and operation of the proposed facility. In addition, local and regional economic benefits would be realised through the additional revenue generated as a result of the proposed project (through direct and indirect job opportunities, local spend, local procurement, etc.).</p>		
<b>16. Any other need and desirability considerations related to the proposed activity?</b>		Please explain
No		
<b>17. How does the project fit into the National Development Plan for 2030?</b>		Please explain
<p>One of the objectives of the National Development Plan for 2030 is the transition to low carbon energy through speeding up and expanding renewable energy. This project will fit into this vision since it aims to contribute towards electricity supply through carbon-free methods.</p>		
<b>18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.</b>		
<p>The general objectives of Integrated Environmental Management have been taken into account for this Basic Assessment Report by means of identifying, predicting and evaluating the actual and potential impacts on the environment, socio-economic conditions and cultural heritage component. The risks, consequences, alternatives as well as options for mitigation of activities have also been considered with a view to minimise negative impacts, maximise benefits, and promote compliance with the principles of environmental management.</p>		
<b>19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.</b>		
<p>The principle of environmental management as set out in section of NEMA states that:</p> <ul style="list-style-type: none"> <li>» Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably;</li> <li>» Development must be sustainable socially (people), environmentally (planet) and economically (prosperity);and</li> <li>» Sustainable development requires the consideration of all the relevant factors,</li> </ul>		

From project perspective the development can be considered sustainable as it makes use of renewable energy resource and does not have a high significant impact on the environment.

These principles of sustainable development is further taken into account by including measures within the Environmental Management Programme (EMPr) to mitigate impacts that may occur thereby further reducing the environmental impacts. The EMPr would provide mitigation measures in terms of disturbance to ecosystems, loss of biodiversity, pollution and degradation to the environment, waste and stormwater management.

### **11. 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:

**Table 1:** List all legislation, policies and/or guidelines for the Kynoch Rooftop Solar Energy Facility

<b>Legislation</b>	<b>Applicable Requirements</b>	<b>Relevant Authority</b>	<b>Compliance requirements</b>
<b>National Legislation</b>			
National Environmental Management Act (Act No. 107 of 1998)	<ul style="list-style-type: none"> <li>» NEMA requires, inter alia, that:                             <ul style="list-style-type: none"> <li>* Development must be socially, environmentally, and economically sustainable.</li> <li>* Disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied.</li> <li>* A risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions.</li> </ul> </li> <li>» EIA Regulations have been promulgated in terms of Chapter 5. Activities which may not commence without an environmental authorisation are identified within these Regulations.</li> <li>» In terms of S24(1) of NEMA, the potential impact on the environment associated with these listed activities must be considered, investigated, assessed and reported on to the competent authority charged by NEMA with granting of the relevant</li> </ul>	<ul style="list-style-type: none"> <li>» National Department of Environmental Affairs</li> <li>» Gauteng Department of Agriculture and Rural Development (GDARD)</li> </ul>	<ul style="list-style-type: none"> <li>» The Final BA Report is to be submitted to the DEA for review and decision making.</li> <li>» GDARD will act as the commenting authority.</li> </ul>



<b>Legislation</b>	<b>Applicable Requirements</b>	<b>Relevant Authority</b>	<b>Compliance requirements</b>
	<p>environmental authorisation.</p> <ul style="list-style-type: none"> <li>» In terms of GNR 543 of 18 June 2010, a Basic Assessment Process is required to be undertaken for the proposed project.</li> </ul>		
National Environmental Management Act (Act No. 107 of 1998)	<ul style="list-style-type: none"> <li>» A project proponent is required to consider a project holistically and to consider the cumulative effect of potential impacts.</li> <li>» In terms of the Duty of Care provision in S28(1) the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to ensure that any pollution or degradation of the environment associated with a project is avoided, stopped or minimised.</li> </ul>	<ul style="list-style-type: none"> <li>» National Department of Environmental Affairs</li> </ul>	<ul style="list-style-type: none"> <li>» While no permitting or licensing requirements arise directly, the holistic consideration of the potential impacts of the proposed project has found application in the BA process.</li> <li>» The implementation of mitigation measures are included as part of the Draft EMPr and will continue to apply throughout the life cycle of the project.</li> </ul>
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)	<ul style="list-style-type: none"> <li>» The purpose of this Act is to reform the law regulating waste management in order to protect health and the environment by providing for the licensing and control of waste management activities. To set standards for waste management on the project</li> <li>» The Minister may by notice in the Gazette publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment.</li> </ul>	<ul style="list-style-type: none"> <li>» National Department of Environmental Affairs</li> <li>» GDARD</li> </ul>	<ul style="list-style-type: none"> <li>» As no waste disposal site is to be associated with the proposed project, no permit is required in this regard.</li> <li>» Waste handling, storage and disposal during construction and operation is required to be undertaken in accordance with the requirements of this Act, as detailed in the EMPr.</li> <li>» The volumes of waste to be generated and stored on the site during construction and operation of the power line will not require a waste license (provided these remain below the</li> </ul>

<b>Legislation</b>	<b>Applicable Requirements</b>	<b>Relevant Authority</b>	<b>Compliance requirements</b>
	<ul style="list-style-type: none"> <li>» In terms of the regulations published in terms of this Act (GN 921 of 29 November 2013), a Basic Assessment or Environmental Impact Assessment is required to be undertaken for identified listed activities.</li> <li>» Any person who stores waste must at least take steps, unless otherwise provided by this Act, to ensure that               <ul style="list-style-type: none"> <li>(a) The containers in which any waste is stored, are intact and not corroded or in any other way rendered unfit for the safe storage of waste;</li> <li>(b) Adequate measures are taken to prevent accidental spillage or leaking;</li> <li>(c) The waste cannot be blown away;</li> <li>(d) Nuisances such as odour, visual impacts and breeding of vectors do not arise; and</li> <li>(e) Pollution of the environment and harm to health are prevented.</li> </ul> </li> </ul>		<p>prescribed thresholds detailed in GNR 921).</p>
National Environmental Management: Air Quality Act (Act No. 39 of 2004)	<ul style="list-style-type: none"> <li>» S18, S19 and S20 of the Act allow certain areas to be declared and managed as "priority areas"</li> <li>» Declaration of controlled emitters (Part 3 of Act) and controlled fuels (Part 4 of Act) with relevant emission standards</li> <li>» The Act provides that an air quality</li> </ul>	<ul style="list-style-type: none"> <li>» National Department of Environmental Affairs</li> <li>» GDARD</li> </ul>	<ul style="list-style-type: none"> <li>» While no permitting or licensing requirements arise from this legislation, this Act will find application during the construction phase of the project. It is expected that there will be short term dust generation and emissions from vehicles and machinery movements along the gravel access road</li> </ul>

<b>Legislation</b>	<b>Applicable Requirements</b>	<b>Relevant Authority</b>	<b>Compliance requirements</b>
	officer may require any person to submit an atmospheric impact report if there is reasonable suspicion that the person has failed to comply with the Act.		
Environment Conservation Act (Act No. 73 of 1989)	» National Noise Control Regulations (GN R154 dated 10 January 1992)	» National Department of Environmental Affairs » Local Authorities	» There is no requirement for a noise permit in terms of the legislation. »
Hazardous Substances Act (Act No. 15 of 1973)	» This Act regulates the control of substances that may cause injury, or ill health, or death due to their toxic, corrosive, irritant, strongly sensitising, or inflammable nature or the generation of pressure thereby in certain instances and for the control of certain electronic products. To provide for the rating of such substances or products in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, modification, disposal or dumping of such substances and products. » Group I and II: Any substance or mixture of a substance that might by reason of its toxic, corrosive etc., nature or because it generates pressure through decomposition, heat or other means, cause extreme risk of	» Department of Health	» It is necessary to identify and list all the Group I, II, III, and IV hazardous substances that may be on the site and in what operational context they are used, stored or handled.

<b>Legislation</b>	<b>Applicable Requirements</b>	<b>Relevant Authority</b>	<b>Compliance requirements</b>
	<p>injury etc., can be declared to be Group I or Group II hazardous substance;</p> <ul style="list-style-type: none"> <li>» Group IV: any electronic product;</li> <li>» Group V: any radioactive material.</li> <li>» The use, conveyance, or storage of any hazardous substance (such as distillate fuel) is prohibited without an appropriate license being in force.</li> </ul>		
<p>National Road Traffic Act (Act No 93 of 1996)</p>	<p>The Technical Recommendations for Highways (TRH 11): "Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads" outline the rules and conditions which apply to the transport of abnormal loads and vehicles on public roads and the detailed procedures to be followed in applying for exemption permits are described and discussed.</p> <p>Legal axle load limits and the restrictions imposed on abnormally heavy loads are discussed in relation to the damaging effect on road pavements, bridges and culverts.</p> <ul style="list-style-type: none"> <li>» The general conditions, limitations and escort requirements for abnormally dimensioned loads and vehicles are</li> </ul>	<ul style="list-style-type: none"> <li>» Provincial Department of Transport (provincial roads)</li> <li>» South African National Roads Agency Limited (national roads)</li> </ul>	<p>An abnormal load/vehicle permit may be required to transport the various components to site for construction. These include:</p> <ul style="list-style-type: none"> <li>» Route clearances and permits will be required for vehicles carrying abnormally heavy or abnormally dimensioned loads.</li> <li>» Transport vehicles exceeding the dimensional limitations (length) of 22m.</li> <li>» Depending on the trailer configuration and height when loaded, some of the power station components may not meet specified dimensional limitations (height and width).</li> </ul>

<b>Legislation</b>	<b>Applicable Requirements</b>	<b>Relevant Authority</b>	<b>Compliance requirements</b>
	<p>also discussed and reference is made to speed restrictions, power/mass ratio, mass distribution and general operating conditions for abnormal loads and vehicles. Provision is also made for the granting of permits for all other exemptions from the requirements of the National Road Traffic Act and the relevant Regulations.</p>		

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

### a) Solid waste management

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

<b>YES</b> ✓	
Unknown	

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

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

Construction waste will be disposed of at the nearest licensed municipal landfill site.

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

In order to comply with legal requirements should there be excess solid construction waste after recycling options have been exhausted, the waste will be trucked to landfill.

Will the activity produce solid waste during its operational phase?

	<b>NO</b> ✓
n/a	

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

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

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

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

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

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?

	<b>NO</b> ✓
--	-------------

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

Is the activity that is being applied for a solid waste handling or treatment facility? **NO** ✓

If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

**b) Liquid effluent**

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system? **NO** ✓

If YES, what estimated quantity will be produced per month? m<sup>3</sup>

Will the activity produce any effluent that will be treated and/or disposed of on site? **NO** ✓

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

Will the activity produce effluent that will be treated and/or disposed of at another facility? **NO** ✓

If YES, provide the particulars of the facility:

<b>Facility name:</b>			
<b>Contact person:</b>			
<b>Postal address:</b>			
<b>Postal code:</b>			
<b>Telephone:</b>		<b>Cell:</b>	
<b>E-mail:</b>		<b>Fax:</b>	

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

**c) Emissions into the atmosphere**

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities? **NO** ✓

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

If YES, the applicant must 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:

During construction minimal dust (the packaging facility has been paved) and vehicle emissions will be generated. The contractor is required to adhere to the mitigation measures stipulated in the Environmental Management Programme and the National Dust Control Regulations (1 November 2013) in terms of dust abatement and control.

PV facility converts solar energy into electricity, and consume no fuel during operation. PV facility produces an insignificant quantity of greenhouse gases over their lifecycle when compared to conventional coal-fired power stations. The operational phase of a solar facility produces no carbon dioxide, sulphur dioxide, mercury, particulates, or any other type of air pollution.

**d) Waste permit**

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?

	<b>NO</b> ✓
--	----------------

If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

**e) Generation of noise**

Will the activity generate noise?

	<b>NO</b> ✓

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:

A limited amount of noise will be generated during the construction phase of the facility due to movement of heavy vehicles in the area. The noise will not exceed acceptable limits. The operation phase will not generate noise.

**13. WATER USE**

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

<b>Municipal</b> ✓	Water board	Groundwater	River, stream, dam or lake	Other	The activity will not use water
--------------------	-------------	-------------	----------------------------	-------	---------------------------------

Water will be sourced directly from the property owner due to low water use requirement for installation of rooftop PV



If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

<b>NO</b> ✓

#### 14. ENERGY EFFICIENCY

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

The activity is in itself an activity that is proposed to generate electricity from a cleaner alternative energy source (i.e. solar radiation).

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

The activity is in itself an activity that is proposed to generate electricity from a cleaner alternative energy source (i.e. solar radiation).

**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 B and indicate the area, which is covered by each copy No. on the Site Plan.

Section B 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?  **NO** ✓

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

<b>Property description/physical address:</b>	<b>Province</b>	Gauteng Province
	<b>District Municipality</b>	Sedibeng District Municipality
	<b>Local Municipality</b>	Lesedi Local Municipality
	<b>Ward Number(s)</b>	12
	<b>Farm name and number</b>	Endicott AH 124
	<b>Portion number</b>	0
	<b>SG Code</b>	TOIR02300000012400000

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

<b>Current land-use zoning as per local municipality IDP/records:</b>	Industrial
---	------------

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?  **NO** ✓

### 1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

#### Alternative S1:

<b>Flat</b> ✓	1:50	-	1:20	-	1:15	-	1:10	-	1:7,5	-	Steeper than 1:5
	1:20		1:15		1:10		1:7,5		1:5		

#### Alternative S2 (if any):

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

#### Alternative S3 (if any):

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

### 2. LOCATION IN LANDSCAPE

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

2.1 Ridgeline	<input type="checkbox"/>	2.4 Closed valley	<input type="checkbox"/>	2.7 Undulating plain / low hills	<input type="checkbox"/>
2.2 Plateau	<input type="checkbox"/>	2.5 Open valley	<input type="checkbox"/>	2.8 Dune	<input type="checkbox"/>
2.3 Side slope of hill/mountain	<input type="checkbox"/>	<b>2.6 Plain</b>	<input checked="" type="checkbox"/>	2.9 Seafront	<input type="checkbox"/>

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

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

	<b>Alternative S1:</b>	<b>Alternative S2 (if any):</b>	<b>Alternative S3 (if any):</b>
Shallow water table (less than 1.5m deep)	<b>NO</b> ✓	YES NO	YES NO
Dolomite, sinkhole or doline areas	<b>NO</b> ✓	YES NO	YES NO
Seasonally wet soils (often close to water bodies)	<b>NO</b> ✓	YES NO	YES NO
Unstable rocky slopes or steep slopes with loose soil	<b>NO</b> ✓	YES NO	YES NO
Dispersive soils (soils that dissolve in water)	<b>NO</b> ✓	YES NO	YES NO

Soils with high clay content (clay fraction more than 40%)		<b>NO</b> ✓	YES	NO	YES	NO
Any other unstable soil or geological feature		<b>NO</b> ✓	YES	NO	YES	NO
An area sensitive to erosion		<b>NO</b> ✓	YES	NO	YES	NO

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

**4. GROUND COVER**

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

Natural veld - good condition <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	<b>Paved surface</b> ✓	<b>Building or other structure</b> ✓	<b>Bare soil (Access road)</b> ✓

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.

**5. SURFACE WATER**

Indicate the surface water present on and or adjacent to the site and alternative sites?

Perennial River		<b>NO</b> ✓	
Non-Perennial River		<b>NO</b> ✓	
Permanent Wetland		<b>NO</b> ✓	
Seasonal Wetland		<b>NO</b> ✓	
Artificial Wetland		<b>NO</b> ✓	
Estuarine / Lagoonal wetland		<b>NO</b> ✓	

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

--

## 6. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that 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:

Natural area	Dam or reservoir	Polo fields
<b>Low density residential</b> ✓	Hospital/medical centre	Filling station <sup>H</sup>
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential <sup>A</sup>	Church	<b>Agriculture</b> ✓
Retail commercial & warehousing	Old age home	River, stream or wetland
<b>Light industrial</b>	Sewage treatment plant <sup>A</sup>	Nature conservation area
Medium industrial <sup>AN</sup>	Train station or shunting yard <sup>N</sup>	Mountain, koppie or ridge
Heavy industrial <sup>AN</sup>	<b>Railway line</b> <sup>N</sup> ✓	Museum
Power station	Major road (4 lanes or more) <sup>N</sup>	Historical building
Office/consulting room	Airport <sup>N</sup>	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam <sup>A</sup>	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	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?

A railway line runs west to east along the southern boundary of the property on which the building is located and will not be affected by the proposed activity.
--

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

--

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

--

Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan)		<b>NO✓</b>
Core area of a protected area?		<b>NO✓</b>
Buffer area of a protected area?		<b>NO✓</b>
Planned expansion area of an existing protected area?		<b>NO✓</b>
Existing offset area associated with a previous Environmental Authorisation?		<b>NO✓</b>
Buffer area of the SKA?		<b>NO✓</b>

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

## 7. CULTURAL/HISTORICAL FEATURES

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

	<b>NO✓</b>

--

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

The proposed activity is proposed on a rooftop, as such no sites of archaeological significance will be destroyed.
--

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

	<b>NO✓</b>
--	------------

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

	<b>NO✓</b>
--	------------

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

## 8. SOCIO-ECONOMIC CHARACTER

### a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

#### Level of unemployment:

Decades of distorted development in the area has manifested in highly skewed distribution of income and wealth. The unemployment rate among the economically active sector of the community is approximately 25.9%.

#### Economic profile of local municipality:

The Gross Geographic Product of Lesedi Local Municipality is largely dependent on manufacturing (38.8), community services (29.4%) and financial services (18.6) and collectively these three sectors constitute 86.8% of GGP of Lesedi Local Municipality

#### Level of education:

The 2011 South African census indicates that the student population of the Lesedi LM comprised 24.3% of the total population. This is slightly lower than in the Sedibeng DM and Gauteng Province, where the student population makes up 24.7% and 25.2% of the total population respectively. The higher proportions of students are enrolled in ordinary school (grade R to 12) in the Lesedi LM than in wider region. This is attributed to the proportionally higher number of children and youth in the Lesedi LM, as well as lower demand for higher education. The lower rate of higher education enrolment in the Lesedi LM is not however entirely due to socio-economic factors, but is likely as a result of the lack of tertiary education facilities in the Municipality. Thus, the vast majority of the local students enrolled in Universities or College will be relocated to other places.

### b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R35 million	
What is the expected yearly income that will be generated by or as a result of the activity?	To be determined	
Will the activity contribute to service infrastructure?	YES	
Is the activity a public amenity?		NO
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	25	

What is the expected value of the employment opportunities during the development and construction phase?	To be determined
What percentage of this will accrue to previously disadvantaged individuals?	Tendering obligations for awarded projects within the REIPPP Programme focus on previously disadvantaged individuals with respect to Small Medium Enterprise (SME) participation, Enterprise Development, Preferential Procurement, Local Content sourcing and BBBEE.
How many permanent new employment opportunities will be created during the operational phase of the activity?	6
What is the expected current value of the employment opportunities during the first 10 years?	To be determined.
What percentage of this will accrue to previously disadvantaged individuals?	2,5%

## 9. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult <http://bgis.sanbi.org> or [BGIShelp@sanbi.org](mailto:BGIShelp@sanbi.org). Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

- a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)**

Systematic Biodiversity Planning				If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Category	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	
Critical Biodiversity Area (CBA)				



**b) Indicate and describe the habitat condition on site**

<b>Habitat Condition</b>	<b>Percentage of habitat condition class (adding up to 100%)</b>	<b>Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).</b>
Natural	%	
Near Natural (includes areas with low to moderate level of alien invasive plants)	%	
Degraded (includes areas heavily invaded by alien plants)	%	
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	100%	The proposed activity is proposed on a rooftop of a warehouse. The site has been transformed by urban development.

**c) Complete the table to indicate:**

- (i) the type of vegetation, including its ecosystem status, present on the site; and
- (ii) whether an aquatic ecosystem is present on site.

<b>Terrestrial Ecosystems</b>		<b>Aquatic Ecosystems</b>			
<b>Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)</b>	Critical	Wetland (including rivers, depressions, channelled and unchannelled wetlands, flats, seeps pans, and artificial wetlands)		Estuary	Coastline
	Endangered				
	Vulnerable				
	Least Threatened	<b>NO</b> ✓	<b>NO</b> ✓	<b>NO</b> ✓	<b>NO</b> ✓

- d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)**

The proposed activity is to be constructed on a rooftop of a building. There is no remaining natural or indigenous vegetation on the proposed site, as the site has been transformed by development.

## SECTION C: PUBLIC PARTICIPATION

### ADVERTISEMENT and NOTICES

<b>Publication name</b>	Springs Advertiser	
<b>Date published</b>	17 July 2014	
<b>Site notice position</b>	<b>Latitude</b>	<b>Longitude</b>
	26°18'4.44"S	28°35'43.17"E
<b>Date placed</b>	07 July 2014	

Include proof of the placement of notices in **Appendix E1**.

#### 1. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 54(2)(e) and 54(7) of GN R.543.

- » A2 site notices were be placed at the entrance of the proposed
- » Information leaflets were placed at the Vischkuil Public library.
- » A notification letter was be sent to interested and affected parties (I&APs), stakeholders and organs of state informing them of the proposed project and inviting them to become involved in the Basic Assessment process.
- » An advert was placed in Springs Advertiser newspaper.
- » A Meeting was held with representative of the Lesedi Local Municipality on the 8<sup>th</sup> of July 2014. Minutes of the meeting are attached in Appendix E6.
- » Notification letters were sent out to adjacent land owners to notify them of the process.
- » A notification letter was sent out to registered I&APs, stakeholders and organs of state to inform them of the availability of the Draft Basic Assessment Report.

Key stakeholders (other than organs of state) identified in terms of Regulation 54(2)(b) of GN R.543:

<b>Title, Name and Surname</b>	<b>Affiliation/ key stakeholder status</b>	<b>Contact details (tel number or e-mail address)</b>
Jackson Mahumani	Security Officer (Kynoch)	
Sphiwe Skosana	Adjacent land owner	
Siyabonga Khumalo	Adjacent land owner (tenant)	
J. Cronje	CMI Business Enterprise (Adjacent land woner)	
RH Barker	Plant Manager (Kynoch)	
Mr.s Mabena	Employee at Kynoch	

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
T Mugari	Interested and Affected party	
Frank Nel	Production Supervisor (Kynoch)	
T.K Moloji	Vischkuil Library	

- » Site notices (English and Afrikaans) were placed at the entrance of the site.
- » Adverts were placed in the Springs Advertiser (local newspapers) to notify the public of the proposed project, request registration of Interested and Affected Parties and advertise the comment period of the Draft Basic Assessment Report.
- » A Background Information leaflet and reply forms were placed at Vischkuil Public Library and distributed to I&APs in the surrounding area.

Include proof that the key stakeholder received written notification of the proposed activities as **Appendix E2**. This proof may include any of the following:

- » e-mail delivery reports;
- » registered mail receipts;
- » courier waybills;
- » signed acknowledgements of receipt; and/or
- » or any other proof as agreed upon by the competent authority.

## 2. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
<u>Mr Mninimuzi Ncala of Lesedi Local Municipality mentioned that the site is hazardous in nature as ammonia is stored at the site.</u>	<u>The relevant health and safety procedures will be implemented during construction and operation of this project.</u>
<u>Department of Energy has gone through the report and are satisfied with the report and would like to be kept informed with the progress of the report.</u>	<u>The DoE is registered as an I&amp;AP on the project's database and will be kept informed of the progress of the project.</u>

## 3. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as **Appendix E3**.

All comments received during the public review period of the Draft Basic Assessment report, as well as responses provided are captured and recorded with the Comments and Responses Report attached in **Appendix E7**.

#### 4. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Database with the Organs of state details is attached within **Appendix E5**

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address

- Gauteng Department of Agriculture and Rural Development
- South African Heritage Resources Agency (SAHRA)
- Gauteng Provincial Heritage Resources Authority
- Gauteng Department of Public Works, Roads and Transport
- Lesedi Local Municipality
- Sedibeng District Municipality
- SANRAL
- Eskom
- Department of Energy
- National Department of Agriculture, Forestry and Fisheries
- Department of Water Affairs
- Civil Aviation Authority
- Square Kilometre Array

Include proof that the Authorities and Organs of State received written notification of the proposed activities as **Appendix E4**.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

#### 5. CONSULTATION WITH OTHER STAKEHOLDERS

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

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

A list of registered I&APs is included as **Appendix E5**.

Copies of all correspondence and minutes of meetings held are included in **Appendix E6**. The meeting held was as follows:

<u>Date</u>	<u>Person</u>	<u>Organisation</u>
08 July 2014	Mr Mnimuzi Ncala	Lesedi Local Municipality

.

## **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. 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**

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts 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. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A (2) of this report.

A summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase and decommissioning phases of the proposed Kynoch Solar Energy Facility is provided in the table below

.

Activity	Impact summary	Significance	Proposed mitigation
<b>Alternative 1 (preferred alternative)</b>			
Construction of PV facility and associated infrastructure	<b>Direct impacts:</b>		
	<u>Visual</u> Potential visual impact on sensitive receptors	Low due to existing infrastructure	» Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads.
	<u>Social</u> » Influx of construction workers employed on the project and job seekers; » Impact of heavy vehicles, including damage to roads, » Safety, noise and dust (minimal dust generation is anticipated) impacts; » Job creation	Low due scale of proposed infrastructure	» The movement of construction workers on and off the site should be closely managed and monitored by the contractors. » Incoming and outgoing vehicles should be monitored to control traffic » Use dust suppressant measures in all access roads throughout the construction phase » Employ local staff, as far as possible. » Attempt to provide skills development/ training for local employees.
	<b>Indirect impacts:</b>		
	<u>Social</u> Creation of employment and business opportunities.	Low due to the scale of the project	» Maximise use of local labour for low to semi-skilled jobs as far as possible
	<b>Cumulative impacts:</b> The overall cumulative impacts on visual and social will be low considering the location of the proposed Solar Energy Facility on a rooftop.	low	None
Operation of	<b>Direct impacts:</b>		



Activity	Impact summary	Significance	Proposed mitigation
facility and associated infrastructure	<u>Visual</u> Potential visual impact on sensitive receptors	Low due to existing infrastructure present on site	On-going maintenance of the facility to minimise the potential of visual impacts
	<u>Social</u> Reduction to the number of employed people from construction period to operation	Low due to the size of the project	Training, skills development and retaining the use of local labour
	<b>Indirect impacts:</b> None	None	None
	<b>Cumulative impacts:</b> None	None	None
Alternative 2			
	<i>Direct impacts:</i>		
	<i>Indirect impacts:</i>		
	<i>Cumulative impacts:</i>		
	<i>Direct impacts:</i>		
	<i>Indirect impacts:</i>		
	<i>Cumulative impacts:</i>		
Alternative 3			
	<i>Direct impacts:</i>		
	<i>Indirect impacts:</i>		

Activity	Impact summary	Significance	Proposed mitigation
	<i>Cumulative impacts:</i>		
	<i>Direct impacts:</i>		
	<i>Indirect impacts:</i>		
	<i>Cumulative impacts:</i>		
<p><b>No-go option</b>                      If the project does not proceed, there will still be a need for alternative energy projects to supplement the current power requirements of the country. The site will remain unchanged and there will be no opportunities for temporary and permanent employment created through this project. The no-go option is therefore not preferred.</p>			
	<b>Direct impacts:</b>		
	<p><i>Lost opportunity for renewable energy:</i>                      The no-development option would result in the lost opportunity for South Africa to supplement its current energy needs with clean, renewable energy.</p> <p><i>Impact on local community:</i>                      The No-Development option would also result in the loss of the benefits to the local community and economy associated with the project</p>	<p>Low due to the limited scale of the project</p>	<p>Implement the project in order to strengthen the electricity grid.</p>

Activity	Impact summary	Significance	Proposed mitigation
	development and creation of employment opportunities		
	<b>Indirect impacts:</b> Continued impacts on climate change due to use of conventional power generation sources to meet the electricity demand in the country	Low due to the limited scale of the project	Implement construction of project in order to strengthen the electricity grid through renewable resources
	<b>Cumulative impacts:</b> Contributing to further unemployment and unsustainable ways to produce electricity	Low due to the limited scale of the project	Implement construction of project in order to strengthen the electricity grid through renewable resource.

A complete impact assessment in terms of Regulation 22(2)(i) of GN R.543 must be included as **Appendix F**

## 2. 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.

The site is proposed on the roof top of a warehouse, within an industrial environment and therefore does not occur within an environmentally sensitive area. The Kynoch rooftop solar energy facility will have minimal environmental impacts.

- » **Visual Impact:** It is not expected that the proposed infrastructure will significantly alter the existing visual impacts associated with the existing building. Visual impacts of the proposed development will be of a **low significance**. The potential visual impacts associated with the proposed development should therefore not influence the outcome of the project decision-making.
- » **Social:** the proposed Kynoch Rooftop solar Energy Facility will have a positive impact on the social environment through the creation of employment and transfer of skills to the local people.
- » **Cumulative impacts:** the cumulative impacts on visual will be very low considering the existing infrastructure (i.e. the existing warehouse) on the site.

Through the implementation of the EMPr (refer Appendix G), it is expected that impacts associated with the construction and operation of the proposed Kynoch Rooftop solar Energy Facility will be low and can be further mitigated to acceptable levels.

It is the conclusion of the Environmental Assessment Practitioner that the establishment of the Kynoch Rooftop solar Energy Facility is considered acceptable from an environmental perspective.

### Alternative B

### Alternative C

### No-go alternative (compulsory)

This is the option of not undertaking the proposed activity (i.e. construction of the rooftop solar facility) and retaining the status quo. The option will result in no impacts occurring on the biophysical environment as a result of the proposed activity. The land use for the proposed site is industrial/commercial. Due to the nature of the proposed project (i.e. rooftop) the land use will not be impacted.

The no-go option will result in the proposed rooftop solar facility not being constructed, Failure to add the proposed electricity to the national grid would most likely result in additional consumption of fossil fuels to achieve the same level of electrical generation at other locations in the country. This is because the electricity demand in South Africa is increasing and is placing increasing pressure on the country's existing power generation capacity. There is therefore a need for additional electricity generation options to be developed throughout the country.

At present, South Africa is some way off from exploiting the diverse gains from renewable energy and from achieving a considerable market share in the renewable energy industry. South Africa's electricity supply remains heavily dominated by coal based power generation, with the country's significant renewable energy potential largely untapped to date.

The support for renewable energy policy is guided by the need to address climate change as well as a rationale that South Africa has a very attractive range of renewable resources, particularly solar and wind and that renewable applications are in fact the least-cost energy service in many cases - and more so when social and environmental costs are taken into account. The development of renewable energy as part of South Africa's electricity generation mix is supported by National Policy through the Integrated Resource Plan (IRP) 2010.

The 'do nothing' alternative will not assist the South African government in addressing climate change, in reaching the set targets for renewable energy as detailed in the IRP, nor will it assist in supplying the increasing electricity demand within the country. In addition the Gauteng Province power supply will be deprived of an opportunity to benefit from the additional generated power being evacuated directly into the Provinces' grid. This is considered to be a lost opportunity on a national scale. **The 'do nothing alternative is, therefore, not a preferred alternative**

## 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 ✓

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

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

Based on the location of the solar facility on rooftop of a building, the 1.8MW Kynoch Roof Top Solar Energy Facility is considered to be environmentally and socially feasible. There are no environmental fatal flaws associated with the development of the rooftop solar energy facility on the identified site. The development of the proposed rooftop solar energy facility is a desirable state in terms of utilisation of space and environmental sustainability within an urban environment.

### **Mitigation - Design, Construction, and Decommissioning Phases:**

- » All relevant practical and reasonable mitigation measures detailed within this report must be implemented.
- » The draft Environmental Management Programme (EMPr) as contained within Appendix G of this report should form part of the contract with the Contractors appointed to construct and maintain the proposed solar energy facility, and will be used to ensure compliance with environmental specifications and management measures. The implementation of this EMPr for all life cycle phases of the proposed project is considered to be key in achieving the appropriate environmental management standards as detailed for this project.
- » Reduce and control construction dust through the use of approved dust suppression techniques as and when required (i.e. whenever dust pollution becomes apparent).
- » Train and make use of local labour as far as possible.

### **Mitigation - Operation Phase:**

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

- » On-going maintenance of the facility to minimise the potential for visual impacts.

» Training, skills development and the use of local labour as far as possible.

Is an EMPr attached?

YES ✓

The EMPr must be attached as **Appendix G**.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as **Appendix H**.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in **Appendix I**.

Any other information relevant to this application and not previously included must be attached in **Appendix J**.

\_\_\_\_\_  
NAME OF EAP

\_\_\_\_\_  
SIGNATURE OF EAP

\_\_\_\_\_  
DATE



## **SECTION F: APPENDICES**

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Other information