

PROJECT DETAIL

DEA Reference No.	:	14/12/1/3/3/1/1534
Project Title	:	Construction of a Power Line and Radio Mast as part of the Bokamoso Photovoltaic Solar Energy Facility near Leeudoringstad, North West Province
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Client	:	Bokamoso Energy (RF) (Pty) Ltd.
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BA	Basic Assessment
BAR	Basic Assessment Report
DEA	Department of Environmental Affairs
DM	District Municipality
DoE	Department of Energy
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
EP	Equator Principles
EPFI	Equator Principles Financial Institutions
Environmental impact	Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's environmental aspects.
GNR	Government Notice Regulation
I&AP	Interested and affected party
IDP	Integrated Development Plan
IFC	International Finance Corporation
IPP	Independent Power Producer
CoMLM	City of Matlosana Local Municipality
kV	Kilo Volt
Mitigate	Activities designed to compensate for unavoidable environmental damage.
MW	Megawatt
NEMA	National Environmental Management Act No. 107 of 1998
NERSA	National Energy Regulator of South Africa
NWA	National Water Act No. 36 of 1998
PPP	Public Participation Process
PV	Photovoltaic
REIPPP	Renewable Energy IPP Procurement Process
SAHRA	South African Heritage Resources Agency
SDF	Spatial Development Framework

CONTEXT FOR THE DEVELOPMENT

According to Eskom, the demand for electricity in South Africa has been growing at approximately 3% per annum. This growing demand, fueled by increasing economic growth and social development, is placing increasing pressure on South Africa's existing power generation capacity. Coupled with this, is the growing awareness of environmentally responsible development, the impacts of climate change and the need for sustainable development. The use of renewable energy technologies, as one of a mix of technologies needed to meet future energy consumption requirements is being investigated as part of the national Department of Energy's (DoE) long-term strategic planning and research process.

The primary rationale for the proposed solar photovoltaic (PV) facility is to add new generation capacity from renewable energy to the national electricity mix and to aid in achieving the goal of 42% share of all new installed generating capacity being derived from renewable energy forms, as targeted by DoE (Integrated Resource Plan Update 2010-2030). In terms of the Integrated Resource Plan Update (IRP Update, 2010-2030), over the short term (of the next two or three years), clear guidelines arose; namely to continue with the current renewable bid programme with additional annual rounds of 1000 MW PV, with approximately 8.4GW of the renewable energy capacity planned to be installed from PV technologies over the next twenty years.

To contribute towards this target and to stimulate the renewable energy industry in South Africa, the need to establish an appropriate market mechanism was identified, and the Renewable Energy IPP Procurement (REIPPP) process was announced in August 2012, with the intention of DoE to purchase 3,750MW of renewable energy from IPPs to be delivered to the national grid by end of 2016 under a 20-year Power Purchase Agreement to be signed with Eskom. The establishment of the REIPPP process in South Africa provides the opportunity for an increased contribution towards the sustained growth of the renewable energy sector in the country, the region and internationally, and promote competitiveness for renewable energy with conventional energies in the medium- and long-term.

In response to the above, Bokamoso Energy (RF) (Pty) Ltd. is in the process of developing a photovoltaic solar facility and associated infrastructure for the purpose of commercial electricity generation on an identified site located near Leeudoringstad in the North West Province. An EIA for Bokamoso was conducted in 2013/14 and the project obtained an environmental authorisation (EA) on 9 July 2014. Bokamoso was selected as a preferred bidder by the Department of Energy early in 2015. Construction of the Solar plant is said to start early in 2016; however, in order to reach Financial Close, a number of tasks are required to be completed, including outstanding environmental permitting and authorisation requirements. This application therefore relates to the development of a 132kV overhead power line connecting the Bokamoso PV Solar Facility to the Harrisburg-Leeubos 132kV power line and the construction of a 35m radio mast for communication purposes (refer to Figure 1 for the locality map). The power line and radio mast (Eskom requirement) infrastructure will become the property of Eskom SoC Ltd. after construction has been completed, and it was therefore required by Bokamoso Energy (RF) (Pty) Ltd. to apply for a separate EA from the one that was obtained in 2013/2014.

EXECUTIVE SUMMARY

The Matlosana Local Municipality Integrated Development Plan (IDP, 2015/16) indicates that the majority of the population derives their livelihoods from the informal sector including pensions, disability grants as well as seasonal work. The unemployment figures pose a mammoth challenge to Matlosana Local Municipality which enforces the need to develop more social support programmes and job creation initiatives that will reduce the unemployment rate significantly. The municipality is experiencing an influx of informal settlements, which compromises the municipality's ability to address basic services backlogs and improve the level of infrastructure development in its locality.

In response to the above a 75MW AC PV Solar facility, namely Bokamoso Solar Park was proposed and consequently approved on the farm Matjesspruit 145, Registration Division HP, North West situated within the Matlosana Local Municipality area of jurisdiction. This application relates to the connection of the approved project to the national grid via a 132kV overhead power line. The power line was already approved under the original EA granted 2013/2014 but due to the fact that the power line and radio mast infrastructure will become the property of Eskom SoC Ltd. after construction, a separate EA is required. The location of the power line remains unchanged from the location that was assessed and approved in 2013/14. The proposed location is on the northern portion of the Bokamoso site. The town of Leeudoringstad is located approximately 19km south west of the proposed development (refer to Figure 1 and 2 for the locality and regional map). The site was originally identified as being highly desirable due to its suitable climatic conditions, topography (i.e. in terms of slope), environmental conditions (i.e. agricultural potential, ecological sensitivity and archaeology), proximity to a grid connection point (i.e. for the purpose of electricity evacuation), as well as site access (i.e. to facilitate the movement of machinery, equipment, infrastructure and people during the construction phase).

The Environmental Impact Assessment (EIA) Regulations, 2014 (Regulation 982) determine that an environmental authorisation is required for certain listed activities, which might have detrimental effects on the environment. The following activities have been identified with special reference to the proposed power line and radio mast and are listed in the EIA Regulations:

- Activity 11(i) (GN.R. 983): *“The development of facilities or infrastructure for the transmission and distribution of electricity outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.”*
- Activity 27 (GN.R. 983): *“The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation...”*
- Activity 3 (GN.R. 985): *“The development of masts... of any material or type used for... radio transmission purposes where the mast... (b) will exceed 15 metres in height (e) in North West (i) Outside urban areas, in (ee) critical biodiversity areas as identified in bioregional plans...”*
- Activity 4(i)(ee) (GN.R. 985): *“The development of a road wider than 4 metres with a reserve less than 13.5 metres outside urban areas, in critical biodiversity areas (Terrestrial Type 1 and 2) as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plan.”*

- Activity 12 (GN.R. 985): *“The clearance of an area of 300 square metres or more of indigenous vegetation...(a) in North West (ii) within critical biodiversity areas identified in bioregional plans.”*

Being listed under Listing Notices 1 and 3 (Regulation 983 & 985) implies that the development is considered as potentially having an impact on the environment. Subsequently a ‘basic assessment process’ is required as described in Regulation 19. Environamics has been appointed as the independent consultant to undertake the EIA on Bokamoso Energy’s behalf.

Regulation 29 of the EIA Regulations requires that a basic assessment report must contain all the information that is necessary for a proper understanding of the nature of issues identified. The potential positive and negative impacts associated with the proposed activity have been identified. The potentially most significant environmental impacts associated with the development are briefly summarized below:

Impacts during the construction phase:

Construction of the access road to the proposed infrastructure and the construction of the foundations will potentially result in significant environmental impacts. The potentially most significant impacts relate to the impacts on the fauna and flora, existing services infrastructure, socio-economic impacts such as the provision of temporary employment and other economic benefits, impact of construction workers on local communities.

Impacts during the operational phase:

The proposed power line, associated servitude, radio mast and access road will require routine maintenance work throughout the operational phase of the facility. The negative impacts are generally associated with visual impacts. The operational phase will have a direct positive impact through the provision of additional electricity, evacuation and distribution of additional electricity and the generation of income to the local community.

Impacts during the decommissioning phase:

The photovoltaic solar energy facility has a lifespan of between 20 and 25 years from where the project and its associated infrastructure will be decommissioned or upgraded. If the solar plant is not decommissioned the power line and the mast is expected to have a lifespan of more than 40 years (with maintenance) and the infrastructure will only be decommissioned once it has reached the end of life, or if no longer required. Upon decommissioning, the power line and mast would be disassembled and the components removed from site. The physical environment will benefit from the decommissioning of the infrastructure since the site will be restored to its natural state.

Cumulative impacts:

It has been established that the following power lines or solar plants have been proposed in relative close proximity to the proposed activity, namely:

- The Harrisburg-Leeubos 132kV power line.

- The proposed Kabi Vaalkop solar III PV facility on a site near Orkney, North West Province(DEA/EIA/0000593/2011);

The Harrisburg-leeubos 132kV power line is located approximately 400m North West of the Bokamoso site while Kabi Vaalkop is located approximately 30 km to the east of the Bokamoso site. Given the location of Kabi Vaalkop in relation to the Bokamoso site, the potential for cumulative impacts are deemed to be low. However, the relative close proximity of the existing power line may result in a cumulative visual impact on the surrounding environment. The potentially most significant cumulative impact during the construction phase relate to the loss or fragmentation of indigenous natural fauna and flora, physical and chemical degradation of the soils by construction vehicles, the generation of waste, impact of construction workers on local communities, and the influx of job seekers. The potential cumulative effects during the operational phase relate to soil erosion, the establishment of a Community Trust, and the development of infrastructure for the generation of clean, renewable energy. During the decommissioning phase, the generation of waste may result in cumulative impacts.

Regulation 19 of the EIA Regulations determines that the environmental impacts and mitigation measures as well as the residual risks of the proposed activity will be set out in the Basic Assessment Report (BAR). This BA evaluates and rates each identified impact, and identifies mitigation measures which will be required. This BA also contains information that is necessary for the competent authority to consider the application and to reach a decision contemplated in Regulation 20.



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, 2014, 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, 2014 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 **08 December 2014**. 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 in the electronic copy of the report submitted to the competent authority.

SECTION A: ACTIVITY INFORMATION

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

YES **NO**

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

1. PROJECT DESCRIPTION

a) Describe the project associated with the listed activities applied for

THE LOCATION OF THE ACTIVITY AND PROPERTY DESCRIPTION

The activity entails the development of a 132kv overhead power line and 35m radio mast as part of the Bokamoso photovoltaic solar energy facility and associated infrastructure on the farm Matjesspruit 145, Registration Division HP, North West situated within the Matlosana Local Municipality area of jurisdiction. The proposed development is located in the North West Province (refer to Figure 2 for the regional map). The town of Leeudoringstad is located approximately 19km south west of the proposed development (refer to Figure 1 for the locality map).

The project entails the development of a 400m long 132kV overhead power line and 35m tall radio communication mast (including access roads) – refer to table 2.1 for general site information. The property on which the infrastructure is to be constructed will be leased by Bokamoso Energy (RF) (Pty) Ltd. from the property owner, JJ van Wyk Boerdery Trust and handed over to Eskom Holdings SoC Ltd. after construction. The life span of the infrastructure is estimate at a minimum of 20 years.

Table 2.1: General site information

Description of affected farm portion	The farm Matjesspruit 145, Registration Division HP, North West
21 Digit Surveyor General codes	T0HP00000000014500000
Title Deed	T057069/2003
Photographs of the site	Refer to the Plates
Type of technology	132kV Overhead power line & 35m tall radio communication mast
Structure Height	Power line ~32m, Radio mast ~ 35m
Surface area to be covered	Less than 19.9 hectares
Laydown area dimensions	Less than 19.9 hectares

The site is located adjacent the approved Bokamoso PV energy facility, which is bordered by farms. The site survey revealed that the site currently consists of grazing for cattle – refer to plates 1-13 for photographs of the development area. The property on which the power line and mast is to be established is owned by the JJ van Wyk Boerdery Trust.

ACTIVITIES ASSOCIATED WITH THE 132KV POWER LINE AND MAST

Construction phase:

The Bokamoso 132kV overhead power line will be approximately 400m in length, and would be constructed in a specific servitude of approximately 36m in width. The minimum vertical clearance to buildings, poles and structures not forming part of the power line must be 3.8m, while the minimum vertical clearance between the conductors and the ground is 6.7m. The minimum

distance between trees and shrubs and any bare phase conductor of a 132kV power line must be 4m, allowing for the possible sideways movement and swing of both the power line conductor and the tree or shrub. The structure to be utilised for the power line towers will be informed by the local geotechnical and topographical conditions as well as by specific requirements from Eskom. The footprint of each tower will be approximately 10mx10m (100m²) depending on the final structure to be used (suspension pole or bend structure). The 35m radio mast will be constructed next to the on-site substation.

An access road will need to be constructed and foundations for the proposed infrastructure will also need to be laid. Construction of the proposed power line and radio mast will take approximately 12 months to complete and, on completion, will be handed over to Eskom Holdings Soc Ltd. to operate and maintain.

Operational phase:

The proposed power line, associated servitude, radio mast and access road will require routine maintenance work throughout the operation period. The site will be accessed using the existing gravel road of the R502.

Decommissioning phase:

The photovoltaic solar energy facility has a lifespan of between 20 and 25 years from where the facility and its associated infrastructure will be decommissioned or upgraded. If the solar plant is not decommissioned the power line and mast is expected to have a lifespan of more than 40 years (with maintenance) and the infrastructure will only be decommissioned once it has reached the end of life, or if no longer required. Upon decommissioning, the power line would be disassembled and the components removed from site.

SERVICES PROVISION

Adequate provision of water will be a prerequisite for the development. Water for the proposed development will be obtained from ground water resources. It has been determined that the site falls within the C25 quaternary drainage region. This drainage region falls under Zone C, which refers to the size of the property on which the General Authorisation is applicable. According to the Revision of General Authorisations in terms of Section 39 of the National Water Act of 1998 (Act No. 36 of 1998), Zone C indicates that 75m³ of water per hectare may be taken from this drainage region per annum.

As indicated by Bokamoso Energy (RF) (Pty) Ltd. the estimated maximum amount of water required during construction for the solar plant and its associated infrastructure (power line and mast) is 200m³ per month during the 12 months of construction. The entire facility will cover an area of approximately 150 ha, which in effect means that a total amount of 11 250m³ of water may be abstracted per annum from the ground water resource without applying for a Water Use License. This means that the water use will only need to be registered with the Department of Water and Sanitation to obtain a General Authorisation regarding the abstraction of ground water.

A site visit was conducted on 17 September 2015 with the Department of Water and Sanitation (DWS) to confirm that a water use license will not be required for the small wetland patch located on the site – refer to Figure 5. The DWS is in the process of confirming the need for a water use license in order to develop within 500m of the wetland. An application for a General Authorisation, for the abstraction of water, has been submitted on 9 June 2015 with the Department of Water and Sanitation for the abstraction of water from ground water resources. The General Authorisation has been Granted by the Department of Water and Sanitation on 15 December

2015.

Water saving devices and technologies such as the use of dual flush toilets and low-flow taps, the management of storm water, the capture and use of rainwater from gutters and roofs would be considered by the developer. Furthermore, indigenous vegetation will be used during landscaping and the staff will be trained to implement good housekeeping techniques.

Portable chemical toilets will be utilized, and serviced by the local municipality. Solid waste will be disposed of at the Klerksdorp Regional landfill site. Hazardous waste (if any) will be removed to licensed landfill sites accepting such kinds of wastes. During the construction and operational phases household waste will be removed by the local municipality. The Matlosana Local Municipality has formally confirmed on 17 December 2013 that they have the capacity to provide the proposed development with these services for the lifetime of the project (20 years).

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

Detailed description of listed activities associated with the project	
Listed activity as described in GN R 983, 984 and 985	Description of project activity
<p><u>GNR. 983, 4 Dec. 2014, Activity 11(i):</u> <i>“The development of facilities or infrastructure for the transmission and distribution of electricity (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.”</i></p>	<p>Activity 11(i) is triggered since a 132kV power line would be constructed (400m in length) outside an urban area to connect the authorised Bokamoso Solar Energy Facility to the Harrisburg-Leeubos power line.</p>
<p><u>GNR. 983, 4 Dec. 2014, Activity 27:</u> <i>“The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation...”</i></p>	<p>Activity 27 is triggered since more than 1 hectare of indigenous vegetation will be removed.</p>
<p><u>GNR. 985, 4 Dec. 2014, Activity 3(b)(e)(i)(ee):</u> <i>“The development of masts...of any material or type used for ... radio transmission purposes where the mast..(b) will exceed 15 metres in height (e) in North West (i) Outside urban areas, in (ee) critical biodiversity areas as identified in bioregional plans...”</i></p>	<p>Activity 3(b)(e)(i)(ee) is triggered since a 35m tall radio communication mast will be constructed for communication to the solar facility.</p>
<p><u>GNR. 985, 4 Dec. 2014, Activity 4(e)(ii)(ee):</u> <i>“The development of a road wider than 4 metres with a reserve less than 13.5 metres (e) in North West (ii) outside urban areas in (ee) critical biodiversity areas as identified in bioregional plans...”</i></p>	<p>An internal site road network will be required to provide access to the proposed infrastructure. All site roads will require a width of approximately 4m. Therefore, activity 4(e)(ii)(ee) is triggered since the site is located outside an urban area and within a critical biodiversity area – namely the Vaal-Vet Sandy Grassland vegetation type (Mucina and Rutherford, 2006).</p>

<p><u>GNR. 985, 4 Dec 2014, Activity 12(ii):</u></p> <p><i>"The clearance of an area of 300 square metres or more of indigenous vegetation...(ii) within critical biodiversity areas identified in bioregional plans in the North West Province.</i></p>	<p>Activity 12(ii) is triggered since more than 300 square meters of indigenous vegetation will be cleared for the power line pylon footprints and access road. The power line corridor is situated within a critical biodiversity area – namely the Vaal-Vet Sandy Grassland vegetation type (Mucina and Rutherford, 2006).</p>
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2. FEASIBLE AND REASONABLE ALTERNATIVES

16. **"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—

17.

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

Describe alternatives that are considered in this application as required by Appendix 1 (3)(h), Regulation 2014. 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

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
<p>This alternative asks the question, if there is not, from an environmental perspective, a more suitable location for the proposed radio mast. This position is preferred because the radio mast has to be adjacent to the already approved on-site substation.</p>	27°09'21.97" S	26°23'55.86" E
Alternative 2		

Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

In the case of linear activities:

The purpose of the proposed 132kV power line is to connect the authorised Bokamoso Solar Energy facility with the Harrisburg-Leeubos power line. Only one route alternative is being considered, since the Harrisburg-Leeubos power line is the only existing power line within a radius of 500m and the route has already been approved by Eskom.

The proposed power line is approximately 400m long, and the proposed route of the power line is the shortest route from the on-site substation to the Harrisburg-Leeubos power line and is the preferred alternative for the developers and Eskom.

Alternative:

Alternative S1 (preferred)

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

Latitude (S):

Longitude (E):

27°09'25.75" S	26°23'59.63" E
27°09'21.97" S	26°23'55.86" E
27°09'17.63" S	26°23'52.03" E

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 of this form.

b) Lay-out alternatives

No layout alternatives have been assessed as part of the Basic Assessment for the placement of the power line towers and associated access roads, since it needs to be in line with technical specifications as per Eskom requirements.

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)

Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

c) Technology alternatives

Alternative 1 (preferred alternative) – Single Circuit Overhead Power line
<p>The use of single circuit overhead power lines to distribute electricity is considered the most appropriate technology and has been designed over many years for the existing environmental conditions and terrain as specified by Eskom Specifications and best international practice. Based on all current technologies available, single circuit overhead power lines are considered the most environmentally practicable technology available for the distribution of power. This option is considered appropriate for the following reasons:</p> <ul style="list-style-type: none"> • More cost effective installation costs • Less environmental damage during installation • More effective and cheaper maintenance costs over the lifetime of the power line
Alternative 2 – Double-circuit Overhead Power line
<p>Where sensitive environmental features are identified, and there is sufficient justification, Eskom will consider the use of double circuit (placing 2 power lines on either side of the same tower structure) to minimize impacts. However, the use of double-circuiting has a number of technical disadvantages:</p> <ul style="list-style-type: none"> • Faults or problems on one power line may mean that the other power line is also disabled during maintenance, and this will affect the quality of supply to an area. Larger and taller towers as well as more towers are required for double-circuit power lines.
Alternative 3 – Underground Cabling
<p>Underground cabling of high voltage power lines over long distances is not considered a feasible or environmentally practicable alternative for the following reasons:</p> <ul style="list-style-type: none"> • Underground cabling will incur significantly higher installation and maintenance costs. • It is more difficult and takes longer to isolate and repair faults on underground cables. • There is increased potential for faulting at the transition point from underground cable to overhead power line. • Underground cables require a larger area to be disturbed during construction and maintenance operations and hence have a bigger environmental disturbance footprint. • Underground cabling requires the disturbance of a greater area when it comes to agriculture and other compatible land uses as the entire servitude becomes available for use as opposed to just the area around the towers.

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

Alternatives with regards to the proposed structures
<p><u>Power line</u></p> <p>The choice of pylon structure to be used for the power line will be determined in consultation with Eskom and does not significantly affect the environmental impacts of the proposed development as provision has already been made for the visual, ecological and heritage impacts of erecting a power line. No defined structure has been confirmed at this stage and will depend on Eskom’s technical requirements. The 132kV line must be constructed according to the authorised standards for a power line approved by Eskom Holdings SoC Ltd. The structure to be utilised for the power line towers will also be informed by the local geotechnical and topographical conditions.</p> <p><u>Radio mast</u></p> <p>Two square, self-support tower design alternatives are considered for the radio mast which have been included in Appendix C. The Civil Aviation Authority does not require the structure to be marked or painted.</p>

Alternative 1 (preferred alternative) - Steel Lattice Towers
<p>The steel lattice towers provide the following advantages over the other tower types available:</p> <ul style="list-style-type: none"> • Enables multipath earthing which enhances the overall electrical performance of the power line. • Is visually less obtrusive than the mono-pole options. • Is more practicable than other options i.e. more cost effective and more practical to construct and maintain. • Is safer to work on than the monopole and wood pole structures. • Is more durable than the wood pole structures.
Alternative 2 – Steel Monopoles
<p>The steel monopole is considered less suitable than the steel lattice towers for the following reasons:</p> <ul style="list-style-type: none"> • Is visually more intrusive than the lattice towers. • Is more expensive than the lattice towers. • Requires more steel than the lattice towers. • Is more difficult to erect. • Is not as safe to work on as the lattice towers.
Alternative 3 – Wood poles
<p>Wood pole structures are only used in extreme circumstances where a visual impact needs to be avoided. Wood pole structures may be cheaper to produce and to construct, but they have one tenth of the lifespan of the metal counterparts and are far more susceptible to weather conditions which makes them less efficient and practicable. The wood pole structure is also more susceptible to having the cross arms burnt off by electrical faults as well as being susceptible to deformation with height.</p>

e) No-go alternative

This alternative considers the option of ‘do nothing’ and maintaining the status quo. The description provided in section B of this report could be considered the baseline conditions (status quo) to persist should the no-go alternative be preferred. The site is currently zoned for agricultural

land uses. Should the proposed activity not proceed, the site will remain unchanged and will continue to be used for low density cattle grazing (refer to plates for photographs of the site). However, the potential opportunity costs in terms of the successful operation of the Bokamoso PV Solar facility would be lost, since it will not be able to operate without the power line or the mast, which in turn will result in job losses and loss of economic growth in the area.

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 A1¹ (preferred activity alternative)
- Alternative A2 (if any)
- Alternative A3 (if any)

Size of the activity:

	m ²
	m ²
	m ²

or, for linear activities:

Alternative:

- Alternative A1 (preferred activity alternative)
- Alternative A2 (if any)
- Alternative A3 (if any)

Length of the activity:

Approximately 400m
m
m

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

Alternative:

- Alternative A1 (preferred activity alternative)
- Alternative A2 (if any)
- Alternative A3 (if any)

Size of the site/servitude:

Servitude = 36m
m ²
m ²

4. SITE ACCESS

Does ready access to the site exist?

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

YES	NO
	m

Describe the type of access road planned:

Access to the site will be obtained from the gravel road off the regional road (R502). An internal site road network to provide access to the power line and radio mast will also be required. All site roads will require a width between 5 and 6 meters.

¹ "Alternative A.." refer to activity, process, technology or other alternatives.

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.

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).

A locality map has been included as part of this report as **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 layout plan has been included as part of this report within **Appendix A & C**.

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 DWS);
- 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 is attached as **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.

Site photographs was taken from the centre of the site in the eight major compass directions and have been included as part of this report within **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 facility illustration has been included as part of this report within **Appendix C**.

10. ACTIVITY MOTIVATION

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

1. Is the activity permitted in terms of the property's existing land use rights?	YES	NO	Please explain
The current zoning of the site is "Agricultural". A rezoning application will thus be lodged to change the zoning to "Special".			

2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES	NO	Please explain
According to the North West Province Spatial Development Framework (2012), specific manufacturing sub-sectors with special reference to renewable energy manufacturing will help create new employment opportunities and sustain jobs by 2030, which will represent 22.7% of the total provincial employment. They encourage this sector to maintain an average growth rate of 8.7% between now and 2030 which will ensure a Gross Value Added (GVA) increase in this time.			
(b) Urban edge / Edge of Built environment for the area	YES	NO	Please explain
The proposed project falls outside the urban edge. It is not foreseen that the proposed development will result in urban sprawl.			
(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?).	YES	NO	Please explain
The Matlosana Local Municipality's Integrated Development Plan (IDP review, 2015/16) reveals the following relevant key priority areas for the municipality: municipal financial viability; growing unemployment; generally declining economic and social infrastructure; service backlogs; and lack of a proper Land Use Management System. The following key threats are also identified: uneven distribution of the benefits of economic growth; environmental degradation; high unemployment and poverty levels; large housing backlogs; lack of capital to provide and maintain services infrastructure. The IDP encourages sustainable development and seeks economic approaches that benefit the local environment and quality of life, rather than undermining it. The IDP (2015/16) argues that sustainable development provides a framework within which communities can use resources efficiently, create efficient infrastructure, protect and enhance their quality of life, and create new businesses to strengthen their economies. The proposed development is aligned with the objectives of the IDP and SDF of the Local Municipality.			
(d) Approved Structure Plan of the Municipality	YES	NO	Please explain
The proposed project entails electricity infrastructure, which is compatible with the City of Matlosana 2011/2015 IDP.			

(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?)	YES	NO	Please explain
<p>No EMF has been compiled for the area. The North West Biodiversity Conservation Assessment can be used to guide priority areas in the terms of Conservation.</p> <p>According to the NWBCA The NW province is very rapidly approaching a critical threshold (60% natural habitat remaining) in the state of biodiversity within the province. Lack of capacity, resources and biodiversity information, and a significantly under representative protected area network in the province is hampering the province’s ability to effectively manage biodiversity in this rapidly changing landscape. This biodiversity assessment through the development of a critical biodiversity area map for the province is aimed at assisting biodiversity and land use managers and decision makers in this demanding task.</p>			
(f) Any other Plans (e.g. Guide Plan)	YES	NO	Please explain
<p>Besides the North West Biodiversity Conservation Assessment and the 2011-2017 IDP, no other plans are known to guide the development.</p>			
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)?	YES	NO	Please explain
<p>The purpose of the power line is to connect the authorised Bokamoso PV Solar Energy Facility to the electricity grid. The project is not specifically considered within the approved municipal SDF. However, the municipality identified basic service delivery such as electricity, job creation and economic growth as priorities within the SDF both locally and within the district municipality. The proposed development will assist in achieving these objectives.</p>			
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.)	YES	NO	Please explain
<p>The evacuation of additional power will serve to improve the stability of the national grid. The proposed project will also assist the government in achieving the goal of 17GW renewable energy production as part of the electricity generation technology mix by 2030.</p> <p>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 indirectly strengthen electricity supply in the area.</p> <p>Bokamoso Energy (Pty) Ltd. together with the City of Matlosana Municipality will also investigate the establishment of a Community Development Trust from which the community may benefit.</p>			

<p>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 E6.)</p>	YES	NO	Please explain
<p>The Matlosana Local Municipality has formally confirmed in a letter dated 17 December 2013 that they have the capacity to provide the proposed development with the relevant services for the lifetime of the project (20 years). The proposed power line will not lead to an increase of the services to be provided as the construction of the power line was included in the original EIA application.</p>			
<p>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 E6.)</p>	YES	NO	Please explain
<p>The proposed project is to be developed by a private developer and not the municipality. The power line will be owned and operated by Eskom. It therefore does not fall within the infrastructure planning of the municipality. It will not require any capacity for services such water and sanitation, but will however improve electricity supply in the area.</p>			
<p>7. Is this project part of a national programme to address an issue of national concern or importance?</p>	YES	NO	Please explain
<p>Within the policy framework, the development of renewable energy in South Africa is supported by the White Paper on Renewable Energy (November 2003). In order to meet the long-term goal of a sustainable renewable energy industry, a goal of 17.8GW of renewable by 2030 has been set by the Department of Energy (DoE) within the Integrated Resource Plan (IRP) 2010. This energy will be produced mainly from wind, solar, biomass, and small-scale hydro (with wind and solar comprising the bulk of the power generation capacity). This amounts to approximately 42% of all new power generation being derived from renewable energy forms by 2030. This is however dependant on the assumed learning rates and associated cost reductions from renewable options. The proposed Bokamoso PV Solar Energy Facility will feed directly into the national grid and the proposed power line and mast will facilitate this connection.</p>			
<p>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.)</p>	YES	NO	Please explain
<p>The Bokamoso PV Solar Energy Facility is an environmentally authorised project and was also selected as preferred bidder by the Department of Energy. In terms of Eskom's requirements, the solar energy facility is required to connect to the Harrisburg-Leeubos power line. The proposed power line corridor is considered to be the most feasible option for the location of this infrastructure, taking technical and environmental (social and biophysical) issues into consideration.</p>			

9. Is the development the best practicable environmental option for this land/site?	YES	NO	Please explain
<p>The Bokamoso PV Solar Energy Facility has already received Environmental Authorisation and is a preferred bidder project in terms of the REIPPPP. In terms of Eskom’s requirements, the solar energy facility is required to connect to the Harrisburg-Leeubos power line. The proposed power line route is considered to be the most feasible option for the location of this infrastructure, taking technical and environmental issues into consideration.</p>			
10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	YES	NO	Please explain
<p>The negative impacts associated with the proposed activity include localised impacts on vegetation, soil and land use and are expected to be limited to the development footprint, and are not considered to be of high significance (refer to section D). All impacts can be managed to an acceptable level, as outlined in the Environmental Management Programme.</p> <p>The benefit of constructing the power line and thereby connecting the Bokamoso PV Solar Energy Facility to the electricity grid outweighs any negative aspects relating to the construction and associated loss of land. The proposed project will facilitate the connection of the Bokamoso PV Solar Energy Facility to the national grid thereby facilitating the transmission of renewable energy and upliftment of the local community through social economic development initiatives. This will have a positive impact at a local, regional and national level.</p>			
11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES	NO	Please explain
<p>The proposed power line is associated with the authorised Bokamoso PV Solar Energy Facility. A limited number of applications for the development of PV solar facilities have been proposed in the Matlosana Local Municipality. The project will be one of the first solar power projects in the local municipality thereby setting precedents for future projects which (which will also require power lines).</p>			
12. Will any person's rights be negatively affected by the proposed activity/ies?	YES	NO	Please explain
<p>The proposed project will take place on privately owned land that is being leased by Bokamoso Energy (RF) (Pty) Ltd. for the lifetime of the project. However, after construction phase of the project, the power line and mast will become the property of Eskom Holdings SoC Ltd. No infrastructure will extend beyond the boundaries of the farm. Therefore, no rights of any other persons will be negatively affected.</p>			
13. Will the proposed activity/ies compromise the “urban edge” as defined by the local municipality?	YES	NO	Please explain
<p>The project is located approximately 19 km from the town of Leeudoringstad and will not comprise the urban edge, since people will still be residing in the nearby town.</p>			

14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	YES	NO	Please explain
<p>While the distribution network infrastructure is not specifically seen to be a SIP, the proposed power line and radio mast are part of the essential infrastructure required for a renewable energy project. The proposed development will form part of SIP 8: Green energy in support of the South African economy. Bokamoso PV Solar Energy Facility has already been selected as a preferred bidder project by the DoE.</p>			
15. What will the benefits be to society in general and to the local communities?	Please explain		
<p>The main purpose of the proposed power line and radio mast is to enable connection of the authorised Bokamoso PV Solar Energy Facility to connect to the electricity grid, which will have a positive economic impact at a local and regional level. As the solar energy facility is a Preferred bidder project, the social responsibility requirements of the IPP in terms of the REIPPPP will be realised.</p> <p>The primary benefit to society in general will be a reduction in the use of non-renewable resources for the generation of power, contributing to a sustainable environment and development.</p>			
Any other need and desirability considerations related to the proposed activity?	Please explain		

The power line and radio mast forms part of the electrical infrastructure of the authorised Bokamoso PV Solar Energy Facility and the proposed activity is a direct result of the growing demand for electricity and the need for renewable energy in South Africa. According to Eskom, the demand for electricity in South Africa has been growing at approximately 3% per annum. This growing demand, fuelled by increasing economic growth and social development, is placing increasing pressure on South Africa's existing power generation capacity. Coupled with this, is the growing awareness of environmental responsible development, the impacts of climate change and the need for sustainable development.

The facility's contribution towards sustainable development and the associated benefits to society in general is discussed below:

- Lesser dependence on fossil fuel generated power - The deployment of the facility will have a positive macro-economic impact by reducing South Africa's dependence on fossil fuel generated power and assisting the country in meeting its growing electricity demand.
- Increased surety of supply - By diversifying the sources of power in the country, the surety of supply will increase. The power demands of South Africa are ever increasing and by adding solar power this demand can be met, even exceeded without increasing pollution in relation to the use of fossil fuels. The project has the potential of "securing" economic activity by assisting in removing supply constraints if Eskom generation activities result in a supply shortfall. When supply is constrained it represents a limitation to economic growth. When a supply reserve is available, it represents an opportunity for economic growth.
- Local economic growth - The proposed project will contribute to local economic growth by supporting industry development in line with provincial and regional goals and ensuring advanced skills are drawn to the North West Province. The project will likely encounter widespread support from government, civil society and businesses, all of whom see potential opportunities for revenues, employment and business opportunities locally. The development of the photovoltaic solar facility will in turn lead to growth in tax revenues for local municipalities and sales of carbon credits, resulting in increased foreign direct investment.
- Lower costs of alternative energy - An increase in the number of solar facilities commissioned will eventually reduce the cost of the power generated through solar facilities. This will contribute to the country's objective of utilising more renewable energy and less fossil fuel based power sources. It will assist in achieving the goal to generate 10 000 GWh of electricity from renewable energy by 2015 and the reduction of South Africa's GHG emissions by approximately 34% below the current emissions baseline by 2020.
- Reduction in greenhouse gas emissions - The additional power supplied through solar energy will reduce the reliance on the combustion of fossil fuels to produce power. The South African electricity grid is predominantly coal-fired and therefore GHG emissions intensive (coal accounts for more than 92% of the fuel used in South Africa's electricity generation). The reduction of GHG emissions as a result of the project implementation will be achieved due to reduction of CO₂ emissions from combustion of fossil fuel at the existing grid-connected power plants and plants which would likely be built in the absence of the project activity.

- CDM Project - 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).
- Climate change mitigation - On a global scale, the project makes a contribution to greenhouse gas emission reduction and therefore contributes toward climate change mitigation.
- Reduced environmental impacts - The reduction in electricity consumed from the grid will not only result in a reduction in greenhouse gas emissions, but also the prevention of negative impacts associated with coal mining. For example, coal power requires high volumes of water, in areas of South Africa where water supply is already over-stretched and water availability is highly variable. Photovoltaic solar energy technology also does not produce the sulphur emissions, ash or coal mining concerns associated with conventional coal fired electricity generation technologies resulting in a relatively low level of environmental impacts. It is a clean technology which contributes toward a better quality environment for employees and nearby communities.
- Social benefits - The project activity is likely to have significant long-term, indirect positive social impacts that may extend to a regional and even national scale. The larger scale impacts are to be derived in the utilization of solar power and the experience gained through the construction and operation of the power plant. In future, this experience can be employed at other similar solar installations in South Africa.
- Provision of job opportunities - The main benefit of the proposed development operating in the area is that local companies or contractors will be hired for the duration of the construction period. The operational phase will provide permanent job opportunities to the local communities from the surrounding area since security guards and general labourers will be required on a full time basis. Approximately 325 employment opportunities will be created during the construction and operational phases of the authorised Bokamoso PV Solar Energy Facility.
- Indirect socio-economic benefits - The increase in the demand for services such as accommodation, transportation, security, general maintenance and catering will generate additional indirect socio-economic benefits for the local community members.

16. How does the project fit into the National Development Plan for 2030?	Please explain
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By 2030 South Africa aims to reduce carbon emissions, promote economic development and increase the GDP. The power line will assist the project in fitting into this vision since it aims to contribute towards the electricity supply through renewable resources. The solar facility with which the activities are associated will assist in reducing the country's carbon footprint, as it will be generating renewable energy, and will facilitate the infrastructure growth in the area through employment and infrastructure.

17. Please describe how the general objectives of Integrated Environmental Management (IEM) as set out in section 23 of NEMA have been taken into account.

The objectives of IEM as set out in section 23 of NEMA have been considered and integrated into this Basic Assessment Report and in the EMPr for the project. The potential impacts on the biophysical and socio-economic environments have been identified, assessed and evaluated, and mitigation measures have been proposed where applicable in the EMPr for the project. The BAR, through its consideration of project alternatives as well as identification and assessment of positive and negative impacts on the environment and the incorporation of mitigation measures to manage these impacts, will facilitate responsible decision making by the relevant authorities.

To guide the planning process for the proposed Bokamoso PV Extension, the following studies were commissioned:

- Heritage Impact assessment (**Appendix D1**).
- Ecological Fauna and Flora Habitat Survey (**Appendix D3**).
- Visual Impact Assessment (**Appendix D2**).

Through inputs from the EAP and specialists during the Basic Assessment process, sufficient information has been made available to ensure that all impacts to the surrounding environment have been adequately considered and incorporated into this report and into the EMPr for decision making. All public participation requirements in terms of the 2014 EIA Regulations will be met during the course of the Basic Assessment process.

18. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.

The principles of environmental management as set out in Section 2 of NEMA briefly relates to: ecosystems and biological diversity, prevention of pollution and degradation, protecting cultural heritage, waste management, resource use & equitable access, risk-averse and cautious approach, anticipating and preventing negative impacts, best practicable environmental option, environmental justice, participation & transparency, and inter-governmental co-ordination. These principles formed the basis for assessment of impacts throughout the EIA process.

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: Legislative context for the construction of photovoltaic solar plants

LEGISLATION	ADMINISTERING AUTHORITY	DATE	SUMMARY / IMPLICATIONS FOR PROPOSED DEVELOPMENT
The Constitution of South Africa (Act No. 108 of 1996)	National Government	1996	The Constitution is the supreme law of the Republic and all law and conduct must be consistent with the Constitution. The Chapter on the Bill of Rights contains a number of provisions, which are relevant to securing the protection of the environment. Section 24 states that “everyone has the right to (a) an environment that is not harmful to their health or well-being and (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that – (i) prevent pollution and ecological degradation; (ii) promote conservation; and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. The Constitution therefore, compels government to give effect to the people’s environmental right and places government under a legal duty to act as a responsible custodian of the countries environment. It compels government to pass legislation and use other measures to protect the environment, to prevent pollution and ecological degradation, promote conservation and secure sustainable development.
The National Environmental Management Act (Act No. 107 of 1998)	National and Provincial Department of Environmental Affairs	1998	<p>NEMA provides for co-operative governance by establishing principles and procedures for decision-makers on matters affecting the environment. An important function of the Act is to serve as an enabling Act for the promulgation of legislation to effectively address integrated environmental management. Some of the principles in the Act are accountability; affordability; cradle to grave management; equity; integration; open information; polluter pays; subsidiary; waste avoidance and minimisation; co-operative governance; sustainable development; and environmental protection and justice.</p> <p>The mandate for EIA lays with the National Environmental Management Act (107 of 1998) and the EIA Regulations No. 982, 983, 984, and 985 promulgated in terms of Section 24 of NEMA. The EIA Regulations determine that an Environmental Authorisation is required for certain listed activities, which might have a detrimental effect on the environment. This EIA was triggered by activity 11(i) and activity 27 listed in Regulation R983, and 3(b)(e)(i)(ee), 4(e)(ii)(ee) and 12(a)(ii) listed in Regulation R985, which requires a ‘basic assessment process.’</p>
The National Energy Act (Act No. 34 of 2008)	Department of Minerals and Energy	2008	One of the objectives of the National Energy Act was to promote diversity of supply of energy and its sources. In this regard, the preamble makes direct reference to renewable resources, including solar: “To ensure that diverse energy resources are available, in sustainable quantities, and at affordable

			prices, to the South African economy, in support of economic growth and poverty alleviation, taking into account environmental management requirements (...); to provide for (...) increased generation and consumption of renewable energies..." (Preamble).
The National Water Act (Act No. 36 of 1998)	Department of Water Affairs (DWA)	1998	<p>Sustainability and equity are identified as central guiding principles in the protection, use, development, conservation, management and control of water resources. The intention of the Act is to promote the equitable access to water and the sustainable use of water, redress past racial and gender discrimination, and facilitate economic and social development. The Act provides the rights of access to basic water supply and sanitation, and environmentally, it provides for the protection of aquatic and associated ecosystems, the reduction and prevention of pollution and degradation of water resources.</p> <p>As this Act is founded on the principle that National Government has overall responsibility for and authority over water resource management, including the equitable allocation and beneficial use of water in the public interest, a person can only be entitled to use water if the use is permissible under the Act. Chapter 4 of the Act lays the basis for regulating water use.</p> <p>It has been determined that the site falls within the C25 quaternary drainage region, this drainage region falls under Zone C, which refers to the size of the property on which the General Authorisation is applicable. According to the Revision of General Authorisations in terms of Section 39 of the National Water Act of 1998 (Act No. 36 of 1998), Zone C indicates that 75m³ of water per hectare may be taken from these drainage regions per annum. A General Authorisation has been applied for on 9 June 2015 and granted by the Department of Water and Sanitation on 15 December 2015.</p> <p>A site visit was conducted on 17 September 2015 with the Department of Water and Sanitation (DWS) to confirm that a water use license will not be required for development to take place within 500m of the small wetland patch located on the site – refer to Figure 5. The DWS is in the process of confirming the need for a water use license.</p>
National Environmental Management: Waste Act (Act No. 59 of	Department of Environmental Affairs (DEA)	2008	NEMWA has been developed as part of the law reform process enacted through the White Paper on Integrated Pollution and Waste Management and the National Waste Management Strategy (NWMS). The objectives of the Act relate to the provision of measures to protect health, well-being and the environment, to ensure that people are aware of the impact of waste on their health, well-being and the environment, to provide for compliance with the measures, and to give effect to section 24 of the

2008)			<p>Constitution in order to secure an environment that is not harmful to health and well-being.</p> <p>Regulations No. R921 (of 2013) promulgated in terms of Section 19(1) of the National Environmental Management: Waste Act (59 of 2008) determine that no person may commence, undertake or conduct a waste management activity listed in this schedule unless a license is issued in respect of that activity. It is not envisaged that a waste permit will be required for the proposed development.</p>
National Environment Management: Air Quality Act (Act No. 39 of 2004)	Department of Environmental Affairs (DEA)	2004	<p>The object of this Act is to protect the environment by providing reasonable measures for the protection and enhancement of the quality of air in the Republic; the prevention of air pollution and ecological degradation; and securing ecologically sustainable development while promoting justifiable economic and social development.</p> <p>Regulations No. R248 (of 31 March 2010) promulgated in terms of Section 21(1)(a) of the National Environmental Management Act: Air Quality Act (39 of 2004) determine that an Atmospheric Emission License (AEL) is required for certain listed activities, which result in atmospheric emissions which have or may have a detrimental effect on the environment. The Regulation also sets out the minimum emission standards for the listed activities. It is not envisaged that an Atmospheric Emission License will be required for the proposed development.</p>
The National Heritage Resources Act (Act No. 25 of 1999)	South African Heritage Resources Agency (SAHRA)	1999	<p>The Act aims to introduce an integrated and interactive system for the management of the heritage resources, to promote good government at all levels, and empower civil society to nurture and conserve heritage resources so that they may be bequeathed to future generations and to lay down principles for governing heritage resources management throughout the Republic. It also aims to establish the South African Heritage Resources Agency together with its Council to co-ordinate and promote the management of heritage resources, to set norms and maintain essential national standards and to protect heritage resources, to provide for the protection and management of conservation-worthy places and areas by local authorities, and to provide for matters connected therewith.</p> <p>The Act protects and manages certain categories of heritage resources in South Africa. For the purposes of the Heritage Resources Act, a “heritage resource” includes any place or object of cultural significance. In this regard the Act makes provision for a person undertaking an activity listed in Section 28 of the Act to notify the resources authority. The resources authority may request that a heritage impact assessment be conducted if there is reason to believe that heritage resources will be affected.</p>

			A case file has been opened on SAHRIS and all relevant documents were submitted for their comments. No comments received to date.
Conservation of Agricultural Resources Act (Act No. 85 of 1983)	National and Provincial Government	1983	<p>The objective of the Act is to provide for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.</p> <p>Consent will be required from the Department of Agriculture in order to confirm that the proposed development is not located on high potential agricultural land and to approve the long term lease agreement.</p>
Notional Forests Act (Act No.84 of 1998)	Department of Agriculture, Forestry and Fisheries	1998	<p>In terms of S5(1) no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell donate or in any other manner acquire or dispose of any protected tree or any forest product derived from protected tree, except under a license granted by the Minister to an (applicant and subject to such period and conditions may be stipulated).</p> <p>This list of protected tree species was published in GN877 of 22 November 2013. No protected trees were recorded in the study area and therefore no permits are required.</p>
National Veld and Forest Fire Act (Act 101 of 1998)	Department of Agriculture, Forestry and Fisheries	1998	<p>This Act provides requirements for veld fire prevention through firebreaks and required measures for fire-fighting. Chapter 4 places a duty on landowners to prepare and maintain firebreaks, and Chapter 5 places a duty on all landowners to acquire equipment and have available personnel to fight fires.</p> <p>In terms of S12 the landowner would be obliged to burn firebreaks to ensure that should a veldfire occur on the property, that it does not spread to adjoining land. In terms of S12 the firebreaks would need to be wide and long enough to have a reasonable chance of preventing the fire from spreading, not causing erosion, and is reasonably free of flammable material. In terms of S17, the applicant must have such equipment, protective clothing, and trained personnel for extinguishing fires.</p> <p>While no permitting or licensing requirements arise from this legislation, this Act will find application during the operational phase of the project in terms of fire prevention and management.</p>

Table 2: Policy context for the construction of solar PV plants

POLICY	ADMINISTERING AUTHORITY	DATE	SUMMARY / IMPLICATIONS FOR PROPOSED DEVELOPMENT
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<p>The White Paper on the Energy Policy of the Republic of South Africa</p>	<p>Department of Minerals and Energy</p>	<p>1998</p>	<p>The White Paper on the Energy Policy of the Republic of South Africa establishes the international and national policy context for the energy sector, and identifies the following energy policy objectives:</p> <ul style="list-style-type: none"> • Increasing access to affordable energy services • Improving energy governance • Stimulating economic development • Managing energy-related environmental and health impacts • Securing supply through diversity • Energy policy priorities <p>The White Paper sets out the advantages of renewable energy and states that Government believes that renewables can in many cases provide the least cost energy service, particularly when social and environmental costs are included. The White Paper acknowledges that South Africa has neglected the development and implementation of renewable energy applications, despite the fact that the country’s renewable energy resource base is extensive and many appropriate applications exist.</p> <p>The White Paper notes that renewable energy applications have specific characteristics that need to be considered. Advantages include:</p> <ul style="list-style-type: none"> • Minimal environmental impacts in operation in comparison with traditional supply technologies; and • Generally lower running costs, and high labour intensities. <p>Disadvantages include:</p> <ul style="list-style-type: none"> • Higher capital costs in some cases; • Lower energy densities; and • Lower levels of availability, depending on specific conditions, especially with sun and wind based systems.
<p>The White Paper on Renewable Energy</p>	<p>Department of Minerals and Energy</p>	<p>2003</p>	<p>This White Paper on Renewable Energy supplements the <i>White Paper on Energy Policy</i>, which recognizes that the medium and long-term potential of renewable energy is significant. This Paper sets out Government’s vision, policy principles, strategic goals and objectives for promoting and implementing renewable energy in South Africa.</p> <p>The White Paper notes that while South Africa is well-endowed with renewable energy resources that</p>

			<p>have the potential to become sustainable alternatives to fossil fuels, these have thus far remained largely untapped. Government’s long-term goal is the establishment of a renewable energy industry producing modern energy carriers that will offer in future years a sustainable, fully non-subsidised alternative to fossil fuels. The medium-term (10-year) target set in the White Paper is: <i>10 000 GWh (0.8 Mtoe) renewable energy contribution to final energy consumption by 2013, to be produced mainly from biomass, wind, solar and small-scale hydro. The renewable energy is to be utilised for power generation and non-electric technologies such as solar water heating and bio-fuels. This is approximately 4% (1667 MW) of the projected electricity demand for 2013 (41539 MW)</i> (Executive Summary, ix).</p>
<p>Integrated Resource Plan (IRP) for South Africa</p>	<p>Department of Minerals and Energy</p>	<p>2010-2030</p>	<p>The current iteration of the Integrated Resource Plan (IRP) for South Africa, after a first round of public participation in June 2010, led to the Revised Balanced Scenario (RBS) that was published in October 2010. The document outlines the proposed generation new build fleet for South Africa for the period 2010 to 2030. This scenario was derived based on the cost-optimal solution for new build options, which was then “balanced” in accordance with qualitative measures such as local job creation. In addition to all existing and committed power plants, the RBS included a nuclear fleet of 9,6GW; 6,3GW of coal; 11,4GW of renewables; and 11,0GW of other generation sources.</p> <p>A second round of public participation was conducted in November/December 2010, which led to several changes to the IRP model assumptions. The main changes were the disaggregation of renewable energy technologies to explicitly display solar photovoltaic (PV), concentrated solar power (CSP) and wind options; the inclusion of learning rates, which mainly affected renewable; and the adjustment of investment costs for nuclear units (a possible increase of 40%).</p> <p>Additional cost-optimal scenarios were generated based on the changes. The outcomes of these scenarios, in conjunction with the following policy considerations, led to the Policy-Adjusted IRP:</p> <ul style="list-style-type: none"> • The installation of renewable was brought forward in order to accelerate a local industry; • To account for the uncertainties associated with the costs of renewable and fuels, a nuclear fleet of 9,6GW was included in the IRP; • The emission constraint of the RBS (275 million tons of carbon dioxide per year after 2024) was maintained; and • Energy efficiency demand-side management (EEDSM) measures were maintained at the level of the RBS. <p>The Policy-Adjusted IRP includes the same amount of coal and nuclear new builds as the RBS, while</p>

			reflecting recent developments with respect to prices for renewable. In addition to all existing and committed power plants (including 10GW committed coal), the plan includes 9,6GW of nuclear; 6,3GW of coal; 17,8GW of renewable; and 8,9GW of other generation sources. The Policy-Adjusted IRP has therefore resulted in an increase in the contribution from renewable from 11,4 GW to 17,8 GW.
North West Province Growth and Development Strategy	North West Provincial Government	2004 - 2014	<p>The Strategy (PGDS) provides a framework for integrated and sustainable growth and economic development for the province and its people over the next ten years. It addresses the formulation of a common vision, goals and objectives of what should be achieved and how the provincial government and its social partners should achieve its objectives.</p> <p>The PGDS notes that the NWP is a medium-size province, covering ~10% of the total national surface area, accounting for ~8% of the national population, and contributing ~7% to the national economy. With the exception of the mining sector (~23.5% of provincial GDP in 2002), private sector activity in the NWP is very modest. Other development challenges include low population densities; inadequate infrastructure, and enormous service delivery backlogs; a predominantly poor population with high levels of illiteracy and dependency; great inequalities between rich and poor, and disparities between urban and rural; and the HIV/Aids pandemic.</p> <p>Both the primary immediate and long term objectives of the PGDS are therefore to address poverty and unemployment, while simultaneously improving the low level of expertise and skills. Additional objectives include promoting equal and fair access to opportunities and assets; enhancing competitiveness, profitability and SMME development; and ensuring sustainable development.</p>
Dr. Kenneth Kaunda District Municipality Integrated Development Plan (IDP)	Dr. Kenneth Kaunda District Municipality	2012 - 2016	<p>The Strategic Planning Workshop of the DR Kenneth Kaunda District Municipality mapped out the strategic direction the municipality was taking. The following are the key (general) strategic goals and objectives adopted:</p> <ul style="list-style-type: none"> • To promote physical infrastructure development and services • To promote socio-economic development • To provide environmental health services • To ensure disaster risk management • To promote integrated transport services • To promote community safety • To ensure internal municipal excellence

			These goals are in support of the 5-year strategic agenda for local government and in cognisance of the strategic imperatives facing the district (IDP, 2012/16:72).
City of Matlosana Integrated Development Plan (IDP) Review	City of Matlosana Local Municipality	2015/2016	The Matlosana Local Municipality's Integrated Development Plan (IDP, 2015/16) reveals the following relevant key priority areas for the municipality: municipal financial viability; growing unemployment; generally declining economic and social infrastructure; service backlogs; and lack of a proper Land Use Management System. The following key threats are also identified: uneven distribution of the benefits of economic growth; environmental degradation; high unemployment and poverty levels; large housing backlogs; lack of capital to provide and maintain services infrastructure. The IDP encourages sustainable development and seeks economic approaches that benefit the local environment and quality of life, rather than undermining it. Sustainable development provides a framework within which communities can use resources efficiently, create efficient infrastructure, protect and enhance their quality of life, and create new businesses to strengthen their economies (IDP, 2015/16).
Klerksdorp Spatial Development Framework (SDF)	City of Matlosana Local Municipality	2014	The Klerksdorp SDF aims to provide general direction and guide decision-making and action on all land related matters. The SDF provides spatial guidance in the form of maps and spatial development plans.

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

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

YES	NO
See estimates below	

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

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

The table below provides an estimate of the amount of solid waste that will be generated during the construction phase of the project.

Waste Type	Amount
Domestic waste (Food, food packaging)	4 loads x 200 litre drums per week
Packaging waste (Card boxes, plastic, wood, cable drums & steel)	1500 loads of 16m ³ for 6 months
Ferrous & non-ferrous metal scrap	70 ton
Construction debris and rubble	30 ton
Dead vegetation	100 ton
Lithium batteries, dry cell	1 ton
Fluorescent tubes, bulbs, transformer waste	3 ton
All Electrical wastes such as Cables, Insulation material	15 ton
Oil, oil sludge, lubricating oil	1 ton

Construction waste will most likely consist of spoil material from excavation activities as well as metal and cabling offcuts. The waste will be collected and stored in suitable receptacles to be collected by the Matlosana Local Municipality. The waste will then be transported to the nearest registered landfill. If possible and feasible, all waste generated on site during the construction phase must be separated into glass, plastic, paper, metal and wood to be recycled. Hazardous waste (if any) has to be removed by a contractor to a registered landfill site, accepting such kinds of waste.

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

The waste will be disposed of at the nearest Landfill Site, the Matlosana Local Municipality confirmed in the services letter that this will be Klerksdorp Regional landfill.

Will the activity produce solid waste during its operational phase?

YES	NO
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)?

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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?

YES	NO
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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?

YES	NO
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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?

YES	NO
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If YES, what estimated quantity will be produced per month?

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

YES	NO
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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?

YES	NO
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If YES, provide the particulars of the facility:

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

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

N/A

c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?

YES	NO
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If YES, is it controlled by any legislation of any sphere of government?

YES	NO
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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 the construction phase, it is expected that there will be short-term dust generation and emissions from vehicles and machinery. The dust and emissions will have a medium- to short- term duration and have limited impact in terms of extent and severity. The extent of the impact will be restricted to the mast and power line servitudes and its immediate surroundings within approximately 500m of the site. Appropriate dust suppression measures will be implemented to reduce the impacts. It is recommended that construction vehicles be regularly serviced and kept in good mechanical condition to minimise possible exhaust emissions.

d) Waste permit

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

YES	NO
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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?

YES	NO
YES	NO

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

Describe the noise in terms of type and level:

Short term noise impacts are anticipated during the construction phase of the project. It is however anticipated that the noise will be localised and contained within the construction area and its immediate surroundings. Construction will also be limited to working hours 7am – 6pm. During the operational phase there will be no noise generated.

13. WATER USE

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

Municipal	Water board	Groundwater	River, stream, dam or lake	Other	The activity will not use water
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The power line will obtain water from the Bokamoso PV Solar Energy Facility during the construction phase. No water is required during the operational phase of the project. As indicated previously the estimated maximum amount of water required during construction for the solar plant and its associated infrastructure (power line and mast) is 200m³ per month during the 12 months of construction.

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:

200 m ³ -250 m ³ litres	
YES	NO

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.

It has been determined that the site falls within the C25 quaternary drainage region, this drainage region falls under Zone C, which refers to the size of the property on which the General Authorisation is applicable. According to the Revision of General Authorisations in terms of Section 39 of the National Water Act of 1998 (Act No. 36 of 1998), Zone C indicates that 75m³ of water per hectare may be taken from these drainage regions per annum.

An application for a General Authorisation has been made with the Department of Water and Sanitation on 9 June 2015 and has been granted by the department on 15 December 2015. Proof of submission and Authorisation is included in Appendix J.

14. ENERGY EFFICIENCY

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

Electricity use will be limited, and will primarily be related to the lighting of the facility and domestic use like lighting for offices and the control room. Design measures such as the use of energy saving light bulbs would be considered by the developer. Furthermore, the design of the PV Arrays takes the position of the optimum solar radiation into account in order to efficiently capture the solar energy.

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

N/A

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

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

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

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

- Has a specialist been consulted to assist with the completion of this section? **YES** **NO**
If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

Property description/physical address:

Province	North West Province
District Municipality	Dr Kenenth Kaunda District Municipality
Local Municipality	Matlosana Local Municipality
Ward Number(s)	Ward 6
Farm name and number	Farm Matjesspruit No. 145
Portion number	0
SG Code	TOHP00000000014500000

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.

Current land-use zoning as per local municipality IDP/records:

The proposed site is currently zoned as Agricultural land and is in the process of being changed to 'Special'.

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

Is a change of land-use or a consent use application required? **YES** **NO**

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

The project area is situated at an elevation of between approximately 1300 and 1280 meters above mean sea level (mamsl) with the highest elevation occurring at the north-western portions of the project area and the lowest elevation in the south-eastern portions. Very little topographical changes occur on the project area with a calculated slope of 0.8% towards the south-east (calculated from the 20 meter contours of the 1:50 000 topographical map).

Alternative S1:

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

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

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

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

2.1 Ridgeline	<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"/>	2.6 Plain	<input checked="" type="checkbox"/>	2.9 Seafront	<input type="checkbox"/>
2.10 At sea	<input type="checkbox"/>				<input type="checkbox"/>

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

A Geotechnical Assessment (refer to Appendix D4) was conducted in 2014 (as per condition of the original EA) order to determine the area's suitability for the proposed development of a photovoltaic plant. According to the published 1:250 000 geological map the project area is wholly underlain by amygdaloidal Andesite. The presence of dolomite or limestone is not indicated/encountered within the vicinity of the project site. The results of the investigation revealed the following:

Soil and Rock Conditions

In broad terms a fairly consistent soil profile was observed throughout the proposed solar park area. From egl. the typical soil profile consisted of a fairly thin layer of transported, mostly aeolian, silty sand, underlain by residual andesite, where pedocretes were often encountered at the top parts of the residual material. Andesite boulders were encountered in some test pits at shallow depth. Andesite outcrops were found in some areas across the site. Black clay was found in the south of the site.

Groundwater

No ground water seepage was recorded in any of the test pits. The permanent ground water level is anticipated to be deep in this area. It is anticipated no seepage will be encountered during conventional construction. Although seepage may occur directly after precipitation events.

Expansive, Dispersive and Collapsible Soils

The soils on site consist predominantly of residual sand and gravel. Laboratory results do indicate the residual andesite to have a collapsible grain structure and that the material might be subjected to heave with an increase in moisture content. The layer of residual andesite does however become more granular and less weathered with depth, where collapse settlement and heave will be less. The possible effect of differential settlement under load due to collapse settlement and the possible heave that might occur with changes in moisture content, will have to be considered when considering possible founding solutions.

The black clay found in the south-eastern part of the site is thought to be potentially expansive and the veneer of transported aeolian sand might have a collapsible grain structure. It is therefore recommended that the proposed foundations are placed below these horizons or alternatively these horizons are removed and replaced with more competent materials.

There does not appear any significant geotechnical constraints to developing the site. It was however indicated that the south eastern part of the site is unsuitable for development as it is classified as a wetland area.

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

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

In terms of vegetation type the site falls within the Vaal-Vet Sandy Grassland vegetation type (Mucina and Rutherford, 2006). Vaal-Vet Sandy Grassland vegetation covers areas of the North-West and Free State Provinces. The region is characterised by plains-dominated landscape with some scattered, slightly irregular undulating plains and hills. The conservation status of this vegetation type is described by Mucina and Rutherford (2006) as ‘endangered’ due to cultivation and grazing pressure. The development if approved should therefore be planned carefully and the footprint restricted to the small area allocated as such.

The Habitat Survey (refer to Appendix D3) confirmed that vegetation at the site is in fair condition for the vegetation type but may be disturbed in some areas. No wetlands appear to be present at the site, apart from a small wetland patch (0.05 ha) at the south eastern extreme of the original Bokamoso Site, probably caused by the elevation of the dirt road next to the fence on a flat plain. The Department of Water and Sanitation have been consulted, and a Water Use License Application is not required for the wetland patch.

A moderate diversity of indigenous plant species and animal species appears to be present at the site proposed for development. No loss of particularly sensitive habitat of particular conservation importance is anticipated if the site is developed. No loss of corridors or connectivity of ecosystems is anticipated if the sites are developed. There appears to be no threat to any protected tree species at the site (National Forests Act No. 84 of 1998). It is unlikely that there will be a loss of any plant species of particular high conservation priority, i.e. threatened or near threatened species, if the site is developed.

It is highly unlikely that there would be a threat to any threatened animal species or any other animal species of particular conservation concern at the site and no loss of corridors or connectivity of ecosystems are anticipated if the sites are developed.

5. SURFACE WATER

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

Perennial River	YES	NO	UNSURE
Non-Perennial River	YES	NO	UNSURE
Permanent Wetland	YES	NO	UNSURE
Seasonal Wetland	YES	NO	UNSURE
Artificial Wetland	YES	NO	UNSURE
Estuarine / Lagoonal wetland	YES	NO	UNSURE

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

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

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

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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:

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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:

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

Critical Biodiversity Area (as per provincial conservation plan)	YES	NO
Core area of a protected area?	YES	NO
Buffer area of a protected area?	YES	NO
Planned expansion area of an existing protected area?	YES	NO
Existing offset area associated with a previous Environmental Authorisation?	YES	NO

Buffer area of the SKA?	YES	NO
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If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

The site falls within a critical patch with an ecosystem status of endangered. Remaining patches larger than 5ha of provincially endangered and vulnerable ecosystems (vegetation types) i.e. the amount remaining of this vegetation type is less than 60%. According to the North West Province Biodiversity Conservation Assessment Technical Report, any further transformation of these vegetation types should be limited to existing transformed or heavily degraded areas.

The site also falls within an area classified as a Biodiversity Development Node. These are potential biodiversity or nature-based industry development nodes identified through the systematic biodiversity assessment. Nodes coincide with areas of important remaining or intact biodiversity that contributes significantly towards achieving biodiversity conservation goals e.g. achieving targets, economic development. In most cases these are the last remaining areas in the landscape where extensive reserve networks can be developed as other areas are heavily transformed and are thus better suited to stewardship type conservation. It should however be noted that the areas indicated are broad indications of areas for biodiversity development.

A portion of the proposed site is located within a provincial-level biodiversity corridor network aimed at retaining connectivity between all geographic areas in the province. However, the Ecological Fauna and Flora habitat survey confirmed that the vegetation at the site is in fair condition, with some bare areas which could be indicative of ecological disturbances and that no loss of particularly sensitive habitat of particular conservation importance or loss of corridors or connectivity of ecosystems is anticipated if the sites are developed.

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:	YES	NO
	Uncertain	

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:

Special attention was given to the identification of possible cultural or heritage resources on site. The initial site investigation concluded that there are no obvious heritage resources located on the site earmarked for development. However, a Heritage Impact Assessment has been conducted to ensure that there would be no impact on cultural or historical features as a result of the proposed development (refer to Appendix D1).

The study found that the habitation of the larger geographical area took place since Early Stone Age times. According to Breutz (1959), stone tools dating to all phases of the Stone Age are found frequently in the region, especially in the vicinity of watercourses and hills. However, the largest legacy dating to the Stone Age are the numerous sites with rock engravings found in the region. Some of the farms in the region are known to have rock engravings, e.g. Klerksdrift to the east of the study area.

As yet, no sites dating to the Early Iron Age have been reported from the region and most sites date to the Late Iron Age. According to Breutz (1959) stone walled sites dating to the Late Iron Age and which can be linked to the Tswana occupation of the area, are found on a number of farms in the region, e.g. Waai Hoek and Brul Pan. However, the historic most important one, named Dithakong, is located some distance to the north-west. This site was first visited by early travellers such as Lichtenstein and John Campbell in the early part of the 19th century. The town of Leeudoringstad was founded in 1918 on the farm Rietkuil. Its name derives from a railway station Leeuwdoorns, which was the scene of a dynamite explosion in 1932.

The remains of a number of old farm labourer homesteads are found in close proximity to the proposed site. According to Mr. I Makwe, these people left the area during the late 1960. Many of them were family members as well as co-workers. These structures are located outside the propose development.

Apart from the formal cemeteries that occur in municipal areas (towns or villages), some quite informal, i.e. without fencing, can be expected to occur anywhere. Most of these cemeteries, irrespective of the fact that they are for land owner or farm labourers, are family orientated. They therefore serve as important 'documents' linking people directly by name to the land.

An informal burial place with approximately 15 graves is found in close proximity to the proposed site. Although the graves are only marked with stone cairns and have no headstones, Mr. I Makwe, claim to know most of the buried people as many are related to him. This feature is located outside the proposed development area. However, is recommended that it is fenced off with danger tape during the construction period in order to prevent accidental damage.

As no sites, features or objects of cultural heritage significance were identified in the study area, there would be no impact from the proposed development.

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

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

YES	NO
YES	NO

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.

According to the 2015/16 Matlosana Local Municipality's draft IDP review the municipal area comprises a total area of 3 162km² and is located in the South-eastern part of the North-West Province. The municipal area covers the central part of the of the Southern District municipal area and is bordered by Tlokwe (Potchefstroom) municipal area in the east, Maquassi Hills municipal area in the west, Ventersdorp Local Municipality in the north-east and the Free State Province in the south.

Level of unemployment:

The official unemployment rate in both the Dr. Kenneth Kaunda District Municipality (DKKDM) and the City of Matlosana Local Municipality (CoMLM) decreased for the ten-year period between 2001 and 2011. In the DKKDM the rate fell from 39.1 % to 29.7 %, a decrease of 9.4 %. In the CoMLM the unemployment rate decreased from 40 % to 32.7 %, a decrease of 7.3 %. Youth unemployment in both the DKKDM and CoMLM also dropped over the same period. However, the youth unemployment rate in the CoMLM remains high at 43.1 %. This is likely to be due to the decline in the role of the mining sector and the subsequent loss of employment opportunities in this sector.

Economic profile of local municipality:

Between 1996-2004, the City of Matlosana's economy shrunk by an annual average of 0.39% per annum due to declining fortunes in gold mining. This growth is less for Southern District Municipality than the National growth rate.

In terms of the income distribution of households, most of the growth has taken place in poor and middle income households, reflecting the increase in unemployment and poverty that had been the result of the negative growth that the city has experienced since 1996.

Sectoral contribution of the City of Matlosana:

- Agricultural 27%
- Mining 64%
- Manufacturing 39%
- Trade 61%
- Services 55%
- Construction 75%
- Transport 49%

Level of education:

The education levels in both the DKKDM and CoMLM also improved, with the percentage of the population over 20 years of age with no schooling dropping in the DKKDM decreasing from 16.9 1% to 10 %. For the CoMLM the decrease was from 14.3 % to 7.9 %. The percentage of the population over the age of 20 with matric also increased in both the DKKDM and CoMLM, from

20.9 % to 26.8 % in the DKKDM and 22.1 % to 28.2 % in the CoMLM.

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R 400 million for the power line and radio mast infrastructure.
What is the expected yearly income that will be generated by or as a result of the activity?	150-250mIn ZAR p/a. Dependent on exchange rate, technology and tariff bid
Will the activity contribute to service infrastructure?	YES NO
Is the activity a public amenity?	YES NO
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	220 low-skilled and 120 semi-skilled 60 skilled over a period of 18-24 months.
What is the expected value of the employment opportunities during the development and construction phase?	Construction phase: R74-98 Million over the 18-24-month period.
What percentage of this will accrue to previously disadvantaged individuals?	55%
How many permanent new employment opportunities will be created during the operational phase of the activity?	20 low-skilled, 5 semi-skilled and 3 skilled over a period of 20 years.
What is the expected current value of the employment opportunities during the first 10 years?	2years construction R 98 Million and 8-years operation R 33.88 Million = R 131 880 000
What percentage of this will accrue to previously disadvantaged individuals?	Construction: 26% Operation: 49%

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. 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 A 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 Category	If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
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<p style="text-align: center;">Critical Biodiversity Area (CBA)</p>	<p style="text-align: center;">Ecological Support Area (ESA)</p>	<p style="text-align: center;">Other Natural Area (ONA)</p>	<p style="text-align: center;">No Natural Area Remaining (NNR)</p>	<p>The site falls within a critical patch with an ecosystem status of endangered and vulnerable. Remaining patches larger than 5ha of provincially endangered and vulnerable ecosystems (vegetation types) is less than 60%. Any further transformation of these vegetation types should be limited to existing transformed or heavily degraded areas.</p> <p>The site also falls within an area classified as a Biodiversity Development Node. These are potential biodiversity or nature-based industry development nodes identified through the systematic biodiversity assessment. Nodes coincide with areas of important remaining or intact biodiversity that contributes significantly towards achieving biodiversity conservation goals (e.g. achieving targets, economic development). In most cases these are the last remaining areas in the landscape where extensive reserve networks can be developed as other areas are heavily transformed and are thus better suited to stewardship type conservation. It should however be noted that the areas indicated are notional indicating broadly areas for biodiversity development.</p> <p>A portion of the proposed site is located within a provincial-level biodiversity corridor network aimed at retaining connectivity between all geographic areas in the province. However, the Ecological Fauna and Flora habitat survey confirmed that the vegetation at the site is in fair condition for the vegetation type, with some bare areas which could be indicative of ecological disturbances and that no loss of particularly sensitive habitat of particular conservation importance or loss of corridors or connectivity of ecosystems is anticipated if the sites are developed.</p>
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b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (Including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc.).
Natural	5%	Transformation has occurred due to grazing of the natural veld.
Near Natural (includes areas with low to moderate level of alien invasive plants)	85%	A moderate diversity of indigenous plant species and animal species appears to be present at the site proposed for development.
Degraded (includes areas heavily invaded by alien plants)	5%	Vegetation at the site is in fair condition, maybe somewhat disturbed in some areas.
Transformed (includes cultivation, dams, urban, plantation, roads, etc.)	5%	Roads and fencing are present on site.

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.

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

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)

Ecological habitat and landscape features

In terms of vegetation type the site falls within the Vaal-Vet Sandy Grassland vegetation type (Mucina and Rutherford, 2006). Vaal-Vet Sandy Grassland vegetation covers areas of the North-West and Free State Provinces. The region is characterised by plains-dominated landscape with some scattered, slightly irregular undulating plains and hills. The conservation status of this vegetation type is described by Mucina and Rutherford (2006) as 'endangered' due to cultivation and grazing pressure. The development if approved should therefore be planned carefully and the

footprint restricted to the small area allocated as such.

The Habitat Survey (refer to Appendix D3) confirmed that vegetation at the site is in fair condition for the vegetation type. No wetlands appear to be present at the site proposed for the power line, apart from a small wetland patch (0.05 ha) at the south eastern extreme of the Original Bokamoso Site.

A moderate diversity of indigenous plant species and animal species appears to be present at the site proposed for development. No loss of particularly sensitive habitat of particular conservation importance is anticipated if the site is developed. No loss of corridors or connectivity of ecosystems is anticipated if the sites are developed. There appears to be no threat to any protected tree species at the site (National Forests Act No. 84 of 1998). It is unlikely that there will be a loss of any plant species of particular high conservation priority, i.e. threatened or near threatened species, if the site is developed.

It is highly unlikely that there would be a threat to any threatened animal species or any other animal species of particular conservation concern at the site.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	Stellalander	
Date published	11 November 2015	
Site notice position	Latitude	Longitude
	27°08'54.45" S	26°23'42.61" E
Date placed	13 November 2015	

Include proof of the placement of the relevant advertisements and notices in Appendix E1.

2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN 982.

The public participation process included the publishing of a notice regarding the proposed project in the local newspaper on 11 November 2015. Site notices were placed on site on 11 November 2015 and notification letters were distributed to identified I&APs on 11 November 2015. Affected and neighbouring landowners have been notified via registered post on 11 November 2015.

All I&AP's were invited to attend the public meeting held at Leeudoringstad Guest House on Wednesday 20 January 2016 at 17:00. The public meeting was an opportunity to share information regarding the proposed development and provide I&APs with an opportunity to raise any issues and provide comments. An advertisement was placed in English in the local newspaper (Stellalander) on 13 January 2016 to notify the public of the public meeting. All stakeholders were also directly informed of the public meeting via email on 7 January 2016.

Mr. J.J. van Wyk and Ms. E.F. van Wyk attended the meeting. Refer to Appendix E7 for the minutes of the meeting and the Power Point presentation.

Key stakeholders (other than organs of state) identified in terms of Regulation 41(2)(b) of GN 982

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
Mr. Buks van Wyk	JJ van Wyk Boerder Trust	Buksvanwyk1@telkomsa.net
Ds. Martin Jordaan	Leeudoringstad Rate Payers	P.O. Box 2972 Leeudoringstad 2640
	Wessa	info@wessanorth.co.za
Mr. Chris Isherwood	Civil Aviation Authority	isherwoodC@caa.co.za
Dr. Adrian Tiplady	Square Kilometre Array (SKA)	atiplady@ska.ac.za
Mr. Jacob Grobler	HC Grobler Trust (Surrounding land owner)	Japie.grobler@senwes.co.za
Mr. Viljoen	Surrounding land owner	hansie@suidwes.co.za
Mr. M. M. Grobler	Surrounding land owner	PO Box 1104 Bothaville

9660

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.

Proof that the key stakeholders received written notification of the proposed project is included in **Appendix E2**.

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

To date the following comments were received:

Summary of main issues raised by I&APs	Summary of response from EAP
In an email dated 18 November 2015, Me. Andersen registered as an I&AP and requested BID documents.	In an email dated 23 November 2015 the EAP indicated that Me. Andersen has been registered as an I&AP and that the BID documents she requested have been attached to the email.
In an email dated 24 November 2015, Me. Andersen thanked us for the registration and documentation and indicated that she does not have any comments, but requested the developer's contact details.	In an email dated 24 November 2015 the EAP responded by asking what Me. Andersen's intention is with the contact details.
On 14 January 2016 the North West Department of Rural, Environment and Agricultural Development (READ) indicated that the department has received the request to comment on the Environmental Impact Assessment Process for Environmental Authorisation on 18 December 2015 and that we are requested to submit a Draft hard copy with reference number NWP/DMR/60/2015 to the assigned case officer, Mrs. Thembekile Makuwa.	A hard copy was sent to the Department on 18 December 2015.
On 23 February 2016 the North West Department of Rural, Environment and Agricultural Development (READ) indicated that they have no objections to the submission of the Basic Assessment Report to the Department of Environmental Affairs on condition that issues raised will be addressed in the Final BAR.	No response.
Mr. Buks VanWyk stated in an email dated 7	In an email dated 7 January 2016, the EAP

January 2016 that there will be two people attending the public meeting of 20 January 2016 at Leeudoringstad Guest House.	thanked Mr. Van Wyk for the response and asked Mr. Van Wyk to provide contact information for the two attendees.
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4. 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.

Comments received are included in the Comments and response report contained in Appendix E3 .
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5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Organization	Contact person	Postal address	E-mail address	Contact details	Date submitted	Date feedback received
The Municipality in which jurisdiction the development is located – Regulation 54(2)(b)(v)						
Matlosana Local Municipality	Municipal Manager: Mr. E.T. Motsemme	PO Box 99 Klerksdorp 2570	dnkosi@klerksdorp.org	018 487 8009 (t) 018 462 1652 (f)	22/09/2015 via email 07/01/2016 Via email	No feedback received
Municipal councilor of the ward in which the site is located – Regulation 54(2)(b)(iv)						
Matlosana Local Municipality	Councilor: Mr. K.M. Khaue	PO Box 99 Klerksdorp 2570	dnkosi@klerksdorp.org	018 487 8009 (t) 018 462 1652 (f)	22/09/2015 via email 07/01/2016 Via email	No feedback received
Organs of state having jurisdiction – Regulation 54(2)(b)(vi)						
NW Department of Economic Development, Environment, Conservation and Tourism	Ms.Skosana & Ms. Mosadi	Private Bag X2039 Mmabatho 2735	oskosana@nwpg.gov.za mosadim@nwpg.gov.za	018 389 5156 (t) 082 748 1180 (Cell)	22/09/2015 via email 07/01/2016 Via email	14/01/2016 & 23/01/2016
Department of Water Affairs and Forestry	Mr. Abe Abrahams	Private Bag X6101 Kimberley 8300	abrahamsa@dwa.gov.za & mazwir@dwa.gov.za	051 405 9000 (t) 051 448 1115 (f)	22/09/2015 via email 07/01/2016 Via email	No feedback received
Department of Agriculture	Ms. Mashudu Marubini	Private Bag X120 Pretoria	MashuduMa@daff.gov.za	012 319 7634 (t) 012 319 7619 (f)	22/09/2015 via email	No feedback received

		0001			07/01/2016 Via email	
Department of Energy	Director General: Ms. Nelly Magubane	Private Bag X19 Arcadia 0007	kate.modise@energy.gov.za	012 444 4256 (t) 086 581 8505 (f)	22/09/2015 via email 07/01/2016 Via email	No feedback received
Department of Mineral Resources	Mr. Pieter Swart	Private Bag A1 Klerksdorp 2570	Pieter.swart@dmr.gov.za	018 487 4300 (t)	22/09/2015 via email	No feedback received
South African Heritage Resources Agency (SAHRA)	Ms. Kathryn Smuts	PO Box 4637 Cape Town 8000	phine@sahra.org.za	021 462 4502 (t) 021 462 4509 (f)	22/09/2015 via email 07/01/2016 Via email	No feedback received
North West Provincial Heritage Authority (PHRA)	Mr. Mosiane	Private Bag X90 Mmabatho 2735	mosianem@nwpg.gov.za	018 388 2826 (t) 086 621 1240 (f)	22/09/2015 via email 07/01/2016 Via email	No feedback received
Department of Transport	Ms. Mulangaphuma	-	MulangaL@dot.gov.za	012 309 3000 (t) 012 328 3194	22/09/2015 via email 07/01/2016 Via email	No feedback received
Department of Communications	Mr. Claude Nadasen	-	claudio@doc.gov.za / Pta@live.co.za	Tel: 012 - 427 8161 Fax: 012 362 6915 Cell: 082 376 7164	22/09/2015 via email 07/01/2016 Via email	No feedback received
Other– Regulation 54(2)(b)(vii)						
Dr. Kenneth Kaunda District Municipality	The Municipal Manager: Mr. Matlakala Matthews	Private Bag X5017 Klerksdorp 2574	-	018 473 8016 (t) 018 473 2938 (f)	22/09/2015 via registered post	No feedback received
Leeudoringstad	Ds. Martin	PO Box 2972	-	-	22/09/2015	No feedback

Ratepayers Association	Jordaan	Leeudoringstad 2640			via registered post	received
ESKOM	Ms. Katlego Motlha, Mr. Muller, Mr. Leask, Mr. Marais, Mr. Masimola & Mr. Motitswe	PO Box 1091 Johannesburg 2001	MotlhaKN@eskom.co.za MullerV@eskom.co.za ; kevin.leask@eskom.co.za ; Ronald.marais@eskom.co.za ; masemola@eskom.co.za ; hope.masango@eskom.co.za	-	22/09/2015 via email 07/01/2016 Via email	No feedback received
NERSA	Ms. Andile Gxasheka	PO Box 40343, Arcadia, 0007	andile.gxasheka@nersa.org.za & nokuthula.nkosi@nersa.org.za	012 401 4775 (t) 012 401 4700 (f)	22/09/2015 via email 07/01/2016 Via email	No feedback received
PRASA	Mr. Tony Games	Private Bag X101 Braamfontein 2017	gmbongwe@prasa.com	-	22/09/2015 via email 07/01/2016 Via email	No feedback received
SANRAL	Ms. Tiyiselani Mashele	Private Bag X17 Lynwood Ridge Pretoria 0040	mashelet@nra.co.za	-	22/09/2015 via email 07/01/2016 Via email	No feedback received
WESSA	-	PO Box 435, Ferdale, 2160	info@wessanorth.co.za & se@museumsnc.co.za	011 462 5663 (t)	22/09/2015 via email 07/01/2016 Via email	No feedback received
Civil Aviation Authority	Mr. Chris Isherwood	Private Bag X73 Halfway House 1685	isherwoodC@caa.co.za	011 545 1028 (t) 011 545 1282 (f)	22/09/2015 via email 07/01/2016 Via email	No feedback received

SENTECH	-	Private Bag X06 Honeydew 2040	support@sentech.co.za	0860 736 832 (t) 086 743 4411 (f)	22/09/2015 via email 07/01/2016 Via email	No feedback received
Square Kilometre Array (SKA)	Dr. Adrian Tiplady	PO Box 522940 Saxonwold 2132	atiplady@ska.ac.za	011 442 2434 (t) 011 442 2454 (f)	22/09/2015 via email 07/01/2016 Via email	No feedback received

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

Proof that the Authorities and Organs of State received written notification of the proposed project is included in Appendix E2.

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

6. 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 any meetings held are included in **Appendix E6**.

Minutes of the meeting held is included in **Appendix E7**.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014 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 may likely occur as a result of the construction, operational and decommissioning phase of the proposed 132kV power line and radio mast associated with the Bokamoso PV Solar Energy Facility is provided below.

Preferred Site Layout Impact Assessment

For ease of reference the significance of the impacts are colour-coded as follow:

Low significance		Medium significance		High significance		Positive impact	
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Activity	Impact summary	Significance after mitigation	Proposed mitigation
CONSTRUCTION PHASE			
<p><u>Site clearing and preparation</u> The proposed 132kV power line will connect to the Harrisburg-Leeubos power line. Power line tower footprints and any new access roads will need to be cleared of vegetation and some areas may need to be levelled.</p> <p>A small area next to the proposed PV site will be cleared for the erection of the radio mast.</p> <p><u>Civil works</u> The main civil works are:</p> <ul style="list-style-type: none"> • Tower pegging • Terrain levelling if necessary– Levelling will be minimal as the potential site chosen is relatively flat. • Construction of foundations for pylons and radio mast. • Construction of access and inside roads/paths – existing paths will be used where reasonably possible. Additionally, the turning circle for trucks will also be taken into consideration. • Assembly and erection of towers. • Stringing of conductors. 	<p>Direct impacts:</p> <ul style="list-style-type: none"> ▪ Loss or fragmentation of indigenous natural fauna and flora. 	Medium	<ul style="list-style-type: none"> ▪ If the development is approved, contractors must ensure that no animal species are disturbed, trapped, hunted or killed. ▪ The site should be fenced off prior to commencement of construction activities. ▪ The footprint associated with the construction related activities (access roads, construction platforms, workshop etc.) should be confined to the fenced off area and minimised where possible. ▪ An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase. ▪ All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop area etc., should be rehabilitated at the end of the construction phase. ▪ The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed. ▪ The implementation of the Rehabilitation Programme should be monitored by the ECO.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> • None. 	N/A	
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> ▪ The loss of numerous portion of endangered vegetation may have a cumulative impact. 	Medium	
	<p>Direct impacts:</p> <ul style="list-style-type: none"> ▪ Loss or fragmentation of habitats. 	Low	
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> • None. 	N/A	
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> ▪ These types of developments are not located in ecological sensitive areas. 	Low	
	<p>Direct impacts:</p> <ul style="list-style-type: none"> ▪ Disturbance of soils and existing land 	Low	

Activity	Impact summary	Significance after mitigation	Proposed mitigation
	use (soil compaction).		<ul style="list-style-type: none"> ▪ All waste generated on site during construction should be stored in waste bins and removed from site on a regular basis. ▪ Vehicles accessing the site should regularly be checked for fuel and oil spills. In case of spillage, the contaminated soil should be removed and transported to a designated waste site. ▪ No broken or old batteries or components of the PV plant should be dumped on or around the site but should be removed immediately and taken to a special chemical waste facility.
	Indirect impacts: <ul style="list-style-type: none"> • None. 	N/A	
	Cumulative impacts: <ul style="list-style-type: none"> ▪ Should these impacts occur, there may be a cumulative impact on storm water runoff in the study area. 	Low	
	Direct impacts: <ul style="list-style-type: none"> ▪ Physical and chemical degradation of the soils by construction vehicles (hydrocarbon spills). 	Low	
	Indirect impacts: <ul style="list-style-type: none"> • None. 	N/A	
	Cumulative impacts: <ul style="list-style-type: none"> • Should these impacts occur, there may be a cumulative impact on soils in the study area. 	Medium	
	Direct impacts: <ul style="list-style-type: none"> ▪ Impacts of the geology on the proposed development. 	Low	<ul style="list-style-type: none"> ▪ It is expected that some of the material within the study area may be suitable for building construction purposes. It is suggested that the material be tested for this specific use, if required. ▪ It is suggested that a suitably qualified engineering geologist or geotechnical engineer inspect all foundation trenches prior to construction in order to identify and evaluate any soil characteristics in variance with that found during the detailed geotechnical investigation.
	Indirect impacts: <ul style="list-style-type: none"> • None. 	N/A	
	Cumulative impacts: <ul style="list-style-type: none"> ▪ Negligible cumulative impact. 	N/A	

Activity	Impact summary	Significance after mitigation	Proposed mitigation
	Direct impacts: <ul style="list-style-type: none"> ▪ Temporary noise disturbance. 	Low	<ul style="list-style-type: none"> ▪ During construction care should be taken to ensure that noise from construction vehicles and plant equipment does not intrude on the surrounding residential areas. ▪ Plant equipment such as generators, compressors, concrete mixers as well as vehicles should be kept in good operating order and where appropriate have effective exhaust mufflers.
	Indirect impacts: <ul style="list-style-type: none"> • None. 	N/A	
	Cumulative impacts: <ul style="list-style-type: none"> ▪ Negligible to no cumulative effects. 	N/A	
	Direct impacts: <ul style="list-style-type: none"> ▪ Generation of waste - general waste, construction waste, sewage and grey water. 	Low	<ul style="list-style-type: none"> ▪ All waste generated on site should be stored in waste bins and removed from site on a regular basis. ▪ Remove waste to a licensed landfill site. ▪ If possible and feasible, all waste generated on site must be separated into glass, plastic, paper, metal and wood to be recycled.
	Indirect impacts: <ul style="list-style-type: none"> • None. 	N/A	
	Cumulative impacts: <ul style="list-style-type: none"> ▪ An additional demand for landfill space could result in significant cumulative impacts if services become unstable or unavailable, which in turn would negatively impact on the local community. 	Medium	
	Direct impacts: <ul style="list-style-type: none"> ▪ Impacts on heritage resources. 	Low	<ul style="list-style-type: none"> ▪ The informal burial place must be fenced off with danger tape during the construction period in order to prevent accidental damage. ▪ If archaeological sites or graves are exposed during construction work, it should immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.
	Indirect impacts: <ul style="list-style-type: none"> • None. 	N/A	
	Cumulative impacts: <ul style="list-style-type: none"> ▪ Should these impacts occur, there may be a cumulative impact on the 	Low	

Activity	Impact summary	Significance after mitigation	Proposed mitigation
	<p>preservation of heritage objects in the area.</p>		
	<p>Direct impacts:</p> <ul style="list-style-type: none"> ▪ Temporary employment and other economic benefits (business opportunities and skills development). 	Medium	<p>In order to enhance local employment and business opportunities associated with the construction phase the following measures should be implemented:</p> <p><u>Employment</u></p> <ul style="list-style-type: none"> ▪ Where reasonable and practical Bokamoso Energy should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. Due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area. ▪ Where feasible, efforts should be made to employ local contractors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria. ▪ Before the construction phase commences, it is suggested that Bokamoso Energy should meet with representatives from the CoMLM to establish the existence of a skills database for the area. If such as database exists it should be made available to the contractors appointed for the construction phase. It is suggested that the local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that Bokamoso Energy intends following for the construction phase of the project. ▪ Where feasible a training and skills development programmes for local workers should be initiated prior to the initiation of the construction phase. ▪ The recruitment selection process should seek to promote gender equality and the employment of women wherever possible. <p><u>Business</u></p> <ul style="list-style-type: none"> ▪ It is suggested that Bokamoso Energy should liaise with the CoMLM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g. construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction contractors. These companies should be notified of the tender process and invited to bid for project-related work; ▪ Where possible, Bokamoso Energy should assist local BBBEE companies to complete and submit the required tender forms and associated information. ▪ The CoMLM, in conjunction with the local business sector and representatives from the local hospitality industry, should identify strategies aimed at maximising the potential benefits associated with the project.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> • None. 	N/A	
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> ▪ The community will have an opportunity to better their social and economic well-being, since they will have the opportunity to upgrade and improve skills levels in the area. 	Low	

Activity	Impact summary	Significance after mitigation	Proposed mitigation
	Direct impacts: <ul style="list-style-type: none"> ▪ Visual intrusion. 	Low	<ul style="list-style-type: none"> ▪ Dust suppression is important as dust will raise the visibility of the development. ▪ New road construction should be minimised and existing roads should be used where possible. ▪ The contractor should maintain good housekeeping on site to avoid litter and minimise waste. ▪ Although there are no readily erodible slopes on the site, erosion risks should be assessed and minimised as erosion scarring can create areas of strong visual contrast with the surrounding vegetation, which can often be seen from long distances since they will be exposed against the hill slopes. ▪ Fires and fire hazards need to be managed appropriately. ▪ Maintain the general appearance of the servitude as a whole. ▪ Consolidation of infrastructure.
	Indirect impacts: <ul style="list-style-type: none"> • None. 	N/A	
	Cumulative impacts: <ul style="list-style-type: none"> ▪ The construction of the solar plant and associated infrastructure will increase the cumulative visual impact of industrial type infrastructure in the region. 	Low	
	Direct impacts: <ul style="list-style-type: none"> • None. 	N/A	
	Indirect impacts: <ul style="list-style-type: none"> ▪ Increase in construction vehicle. 	Low	
	Cumulative impacts: <ul style="list-style-type: none"> ▪ If damage to roads is not repaired, then this will affect the farming activities in the area and result in higher maintenance costs for vehicles of local farmers and other road users. The costs will be borne by road users who were no responsible for the damage. 	Low	
	Direct impacts: <ul style="list-style-type: none"> • None. 	N/A	<ul style="list-style-type: none"> ▪ Where reasonable and practical possible Bokamoso Energy should make it a requirement for contractors to implement a ‘locals first’ policy for construction jobs, specifically for semi and low-skilled job categories. ▪ It is suggested that Bokamoso Energy should consider the need for establishing a Monitoring Forum (MF) in order to monitor the construction phase and the implementation of the recommended mitigation measures. The MF should be established before the construction phase commences, and should include key stakeholders,
	Indirect impacts: <ul style="list-style-type: none"> ▪ Impact of construction workers on local communities. 	Medium	

Activity	Impact summary	Significance after mitigation	Proposed mitigation
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> ▪ Impacts on family and community relations that may, in some cases, persist for a long period of time. Also in cases where unplanned / unwanted pregnancies occur or members of the community are infected by an STD, specifically HIV and or AIDS, the impacts may be permanent and have long term to permanent cumulative impacts on the affected individuals and/or their families and the community. 	Medium	<p>including representatives from the CoMLM, farmers and the contractor(s). The MF should also be briefed on the potential risks to the local community and farm workers associated with construction workers.</p> <ul style="list-style-type: none"> ▪ If the suggestions above is followed, it is suggested, Bokamoso Energy and the contractor(s) should, in consultation with representatives from the MF, develop a code of conduct for the construction phase. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be dismissed. All dismissals must comply with the South African labour legislation. ▪ It is suggested that Bokamoso Energy and the contractor should implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase. ▪ The construction area should be fenced off before construction commences and no workers should be permitted to leave the fenced off area. ▪ It is suggested that the contractor should provide transport to and from the site on a daily basis for low and semi-skilled construction workers. This will enable the contractor to effectively manage and monitor the movement of construction workers on and off the site. ▪ Where necessary, the contractors should make the necessary arrangements to enable low and semi-skilled workers from outside the area to return home over weekends and/ or on a regular basis. This would reduce the risk posed to local family structures and social networks. ▪ It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.
	<p>Direct impacts:</p> <ul style="list-style-type: none"> • None. <p>Indirect impacts:</p> <ul style="list-style-type: none"> ▪ Influx of job seekers. <p>Cumulative impacts:</p> <ul style="list-style-type: none"> ▪ Impacts on family and community relations that may, in some cases, persist for a long period of time. Also in cases where unplanned / unwanted 	<p>N/A</p> <p>Low</p> <p>Medium</p>	<ul style="list-style-type: none"> ▪ Where reasonably and practicably possible, Bokamoso Energy should implement a “locals first” policy, specifically with regard to unskilled and low skilled opportunities. ▪ Bokamoso Energy should implement a policy that no employment will be available at the gate.

Activity	Impact summary	Significance after mitigation	Proposed mitigation
	<p>pregnancies occur or members of the community are infected by an STD, specifically HIV and or AIDS, the impacts may be permanent and have long term to permanent cumulative impacts on the affected individuals and/or their families and the community.</p>		
	<p>Direct impacts:</p> <ul style="list-style-type: none"> • None. 	N/A	<ul style="list-style-type: none"> ▪ It is suggested that Bokamoso Energy should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for, should Bokamoso act negligently. The agreement should be signed before the construction phase commences. ▪ The construction area should be fenced off prior to the commencement of the construction phase or as soon as possible after the commencement of the construction phase. The movement of construction workers on the site should be confined to the fenced off area. ▪ It is suggested that contractors appointed by Bokamoso Energy should provide daily transport for low and semi-skilled workers to and from the site. This would reduce the potential risk of trespassing on the remainder of the farm and adjacent properties. ▪ Bokamoso Energy should consider the option of establishing a MF (see above) that includes local farmers and develop a Code of Conduct for construction workers. This committee should be established prior to commencement of the construction phase. The Code of Conduct should be signed by the proponent and the contractors before the contractors move onto site. ▪ Bokamoso Energy should hold contractors liable for compensating farmers in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors and neighbouring landowners. The agreement should also cover loses and costs associated with fires caused by construction workers or construction related activities (see below). ▪ The Environmental Management Programme (EMPr) should outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested. ▪ Contractors appointed by Bokamoso Energy must ensure that all workers are informed at the outset of the construction phase of the conditions contained on the Code of Conduct, specifically
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> ▪ Risk to safety, livestock and farm infrastructure. 	Low	
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> ▪ Negligible cumulative effects, provided losses are compensated for. 	N/A	

Activity	Impact summary	Significance after mitigation	Proposed mitigation
			<p>consequences of stock theft and trespassing on adjacent farms.</p> <ul style="list-style-type: none"> ▪ Contractors appointed by Bokamoso Energy must ensure that construction workers who are found guilty of trespassing, stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation. ▪ The housing of construction workers on the site should be strictly limited to security personnel.
	<p>Direct impacts:</p> <ul style="list-style-type: none"> • None. 	N/A	<ul style="list-style-type: none"> ▪ It is suggested that Bokamoso Energy should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for should Bokamoso act negligently. The agreement should be signed before the construction phase commences. ▪ A fire-break should be constructed around the perimeter of the site prior to the commencement of the construction phase. ▪ Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas. ▪ Contractor to ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high risk dry, windy winter months. ▪ Contractor to provide adequate fire fighting equipment on-site, including a fire fighting vehicle. ▪ Contractor to provide fire-fighting training to selected construction staff. ▪ No construction staff, with the exception of security staff, to be accommodated on site overnight. ▪ As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the fire fighting costs borne by farmers and local authorities.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> ▪ Increased risks of grass fires. 	Low	
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> ▪ Negligible cumulative effects, provided losses are compensated for. 	N/A	
OPERATIONAL PHASE			
<p><u>Connection to the grid</u> - Connecting the array to the electrical grid requires transformation of the voltage from 480V to 33,000V to 132,000V. The normal components and dimensions of a distribution rated electrical substation will be required. Output voltage from the inverter is 480V and this is fed into step up</p>	<p>Direct impacts:</p> <ul style="list-style-type: none"> ▪ Soil erosion 	Low	<ul style="list-style-type: none"> ▪ To avoid soil erosion, it will be a good practice to design storm water canals into which the water from the panels can be channeled. These canals should reduce the speed of the water and allow the water to drain slowly onto the land. ▪ Another important measure is to avoid stripping land surfaces of existing vegetation by only allowing vehicles to travel on existing roads
	<p>Indirect impacts:</p>	N/A	

Activity	Impact summary	Significance after mitigation	Proposed mitigation
<p>transformers to 132kV (via 33kV). A new substation will be required on the site to step the voltage up to 132kV, after which the power will be evacuated to the national grid. The generation from the facility will tie in with the Harrisburg-Leeubos 132kV power line.</p> <p><u>Roads</u> – Ready access already exist from the regional road (R502). However, an internal site road network to provide access to the power line and associated infrastructure will be required. All site roads will require a width of approximately 4m. Drainage trenches along the side of the internal road network will be installed.</p> <p><u>Fencing</u> - For health, safety and security reasons, the facility will be required to be fenced off from the surrounding farm.</p>	<ul style="list-style-type: none"> None. 		and not create new roads.
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> Should these impacts occur, there will be a cumulative impact on the air and water resources in the study area in terms of pollution. 	Medium	
	<p>Direct impacts:</p> <ul style="list-style-type: none"> Change in land use 	Low	<ul style="list-style-type: none"> The proponent should investigate the option of establishing a Rehabilitation Fund to be used to rehabilitate the area once the proposed facility has been decommissioned. The fund should be funded by revenue generated during the operational phase of the project. The motivation for the establishment of a Rehabilitation Fund is based on the experience from the mining sector where many mines on closure have not set aside sufficient funds for closure and decommissioning.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> None. 	N/A	
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> Overall loss of farmland could affect the livelihoods of the affected farmers, their families, and the workers on the farms and their families. However, disturbed areas can be rehabilitated. 	Low	
	<p>Direct impacts:</p> <ul style="list-style-type: none"> None. 	N/A	<ul style="list-style-type: none"> Mitigation should take place during the construction phase to ensure that the footprint within intact habitat is kept to a minimum. This would be best achieved through minimizing disturbance of intact habitats as well as construction in the winter months when conditions are dry and more resilient to disturbance. Where there are any roads within the intact fragment, there should be regular monitoring for alien plants within the development footprint. This can take place annually for the first two years after construction and particular attention should be paid to any woody aliens that may have established.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> Alien plants are likely to invade the site as a result of the disturbance created during construction. 	Low	
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> Alien invasion would contribute to cumulative habitat degradation in the area, but if alien species are controlled, then cumulative impacts from alien species would not be significant. 	Low	

Activity	Impact summary	Significance after mitigation	Proposed mitigation
	Direct impacts: <ul style="list-style-type: none"> ▪ Electrocution of birds whilst perched or roosting on pylons or towers. 	Low	<ul style="list-style-type: none"> ▪ Only Eskom approved, bird friendly pylon structures must be used for the entire length of the power line.
	Indirect impacts: <ul style="list-style-type: none"> ▪ Potential loss of species. 	Low	
	Cumulative impacts: <ul style="list-style-type: none"> ▪ A possible cumulative electrocution impact could arise if other power lines are constructed in the area. 	Low	
	Direct impacts: <ul style="list-style-type: none"> ▪ Bird mortality due to collision with the proposed 132kV power line. 	Low	<ul style="list-style-type: none"> ▪ Bird Flight Diverters (BFD) must be installed along the entire length of the power line. BFD must be installed on the full span of the earth wire. ▪ Light and dark coloured devices must be alternated so as to provide contrast against both dark and light backgrounds respectively. These devices must be installed as soon as the earth wire is strung. It will be the responsibility of the line operator to ensure that these devices are maintained in working order and replaced where necessary.
	Indirect impacts: <ul style="list-style-type: none"> • None. 	N/A	
	Cumulative impacts: <ul style="list-style-type: none"> ▪ The cumulative collision impact will arise if new power lines associated with renewable energy facilities are proposed in the area. 	Low	
Direct impacts: <ul style="list-style-type: none"> ▪ Visual intrusion of the power line and radio mast. 	Medium	<ul style="list-style-type: none"> ▪ The power plants area and surrounds must be kept clean, tidy and well maintained to reduce negative visual impacts. ▪ Rehabilitation of surrounding areas must take place with indigenous species. ▪ Surrounding roads must be well maintained. ▪ Regular maintenance of exteriors and associated infrastructure must be undertaken. ▪ Infrastructure should be consolidated. 	
Indirect impacts: <ul style="list-style-type: none"> • None. 	N/A		
Cumulative impacts: <ul style="list-style-type: none"> ▪ The construction of the solar plant and 	Low		

Activity	Impact summary	Significance after mitigation	Proposed mitigation
	<p>associated infrastructure will increase the cumulative visual impact of industrial type infrastructure in the region. However, this is not yet relevant in light of relatively low level occurrence of such infrastructure.</p>		
	<p>Direct impacts:</p> <ul style="list-style-type: none"> ▪ None. 	Medium	<ul style="list-style-type: none"> ▪ No mitigation measure required.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> ▪ Generation of additional electricity. 	N/A	
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> ▪ The evacuation of generated electricity into the Eskom grid will strengthen and stabilize the grid (especially in the local area). 	Low	
	<p>Direct impacts:</p> <ul style="list-style-type: none"> ▪ None. 	Medium	
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> • Establishment of a Community Trust. 	N/A	
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> ▪ Promotion of social and economic development and improvement in the overall well-being of the community. 	Medium	

² Bokamoso Energy has already as part of the REIPPP bid submission contemplated a Community Trust which will own 5% of the equity stake.

Activity	Impact summary	Significance after mitigation	Proposed mitigation
			from the plant.
	Direct impacts: <ul style="list-style-type: none"> • None. 	N/A	<ul style="list-style-type: none"> ▪ None required since the potential impacts are insignificant.
	Indirect impacts: <ul style="list-style-type: none"> ▪ Change in the sense of place. 	Low	
	Cumulative impacts: <ul style="list-style-type: none"> ▪ The construction of the solar plant and associated infrastructure will increase the cumulative change in the sense of place due to industrial type infrastructure in the region. However this is not yet relevant in light of relatively low level occurrence of such infrastructure. 	Low	
	Direct impacts: <ul style="list-style-type: none"> • None. 	N/A	<ul style="list-style-type: none"> ▪ None required since the potential impacts are insignificant.
	Indirect impacts: <ul style="list-style-type: none"> ▪ Financial implications to tourism in the area. 	Low	
	Cumulative impacts: <ul style="list-style-type: none"> ▪ Negligible cumulative impact. 	N/A	
	Direct impacts: <ul style="list-style-type: none"> • None. 	N/A	<ul style="list-style-type: none"> ▪ Use the project to promote and increase the contribution of renewable energy to the national energy supply. ▪ Maximise the public's exposure to the project via an extensive communication and advertising programme. ▪ It is suggested that Bokamoso Energy, implement a training and skills development programme for locals during the first 5 years of the operational phase. The aim of the programme should be to maximise the number of South African's employed during the operational phase
	Indirect impacts: <ul style="list-style-type: none"> ▪ Development of infrastructure for the generation of clean, renewable energy. 	Low	

Activity	Impact summary	Significance after mitigation	Proposed mitigation
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> ▪ Reduce carbon emissions via the use of renewable energy and associated benefits in terms of global warming and climate change. 	Medium	of the project.
DECOMMISSIONING PHASE			
<p><u>Dismantlement of infrastructure</u> During the decommissioning phase the Power line dismantled.</p> <p><u>Rehabilitation of biophysical environment</u> The biophysical environment will be rehabilitated.</p>	<p>Direct impacts:</p> <ul style="list-style-type: none"> ▪ Rehabilitation of the physical environment. 	Low	<ul style="list-style-type: none"> ▪ No mitigation measures required.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> • None. 	N/A	
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> ▪ The impact would result in negligible to no cumulative effects. 	N/A	
	<p>Direct impacts:</p> <ul style="list-style-type: none"> ▪ Generation of waste. 	Low	<ul style="list-style-type: none"> ▪ Waste to be accommodated at a licensed landfill site.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> • None. 		
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> ▪ An additional demand on municipal services could result in significant cumulative impacts with regards to the availability of landfill space. 	Medium	
NO-GO OPTION			

Activity	Impact summary	Significance after mitigation	Proposed mitigation
<p>This is the option of not constructing the proposed power line or mast. This option will result in limited or no impacts occurring on the environment. However, should the infrastructure not be constructed as proposed, this will result in the situation where the authorised Bokamoso PV Solar Energy Facility cannot be connected to the electricity grid. This is an undesirable option for the project as it will pose negative impacts on the solar energy facility development. In addition, it will result in a situation where the electricity generated from the authorised solar energy facility would not be fed into the national grid resulting in the loss of additional power generation capacity. The negative impacts of the no go alternative are considered to outweigh the positive impacts of this alternative. The no go option is therefore not preferred.</p>	<p>Direct impacts:</p> <ul style="list-style-type: none"> Bokamoso Solar Energy facility will not be able evacuate a total of 75 MW of energy. 	Medium	<ul style="list-style-type: none"> No mitigation measures available.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> Socio-economic impacts such as job losses and loss of economic opportunities. 	Low	
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> None. 	N/A	

A complete impact assessment in terms of Regulation 19(3) of GN 983 is 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.

Alternative A (preferred alternative)

Based on the contents of the report the following key environmental issues were identified, which were addressed in this Basic Assessment report:

- Impacts during the construction phase:
 - Loss or fragmentation of indigenous natural fauna and flora (– Medium)
 - Temporary employment and other economic benefits (+ Medium)
 - Impact of construction workers on local communities (- Medium for specific individuals who may be affected by STDs etc.)
- Impacts during the operational phase, which include:
 - Visual intrusion (- Medium)
 - Generation of additional electricity (+ Medium)
 - The establishment of a community trust (+ Medium)
- The potential most significant cumulative impacts relate to:
- Cumulative effects during the construction phase:
 - Loss or fragmentation of indigenous natural fauna and flora (- Medium)
 - Physical and chemical degradation of the soils by construction vehicles (hydrocarbon spills) (- Medium)
 - Generation of waste - general waste, construction waste, sewage and grey water (- Medium)
 - Impact of construction workers on local communities (- Medium)
 - Influx of job seekers (-Medium)
- Cumulative effects during the operational Phase:
 - Soil erosion (- Medium)
 - Establishment of a Community Trust (+ Medium)
 - Development of infrastructure for the generation of clean, renewable energy (+ Medium)
- Cumulative effects during the decommissioning phase:
 - Generation of waste.

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Alternative B

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Alternative C

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No-go alternative (compulsory)

The no go option is therefore not preferred.
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SECTION E. RECOMMENDATION OF PRACTITIONER

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

YES

NO

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

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

It is the opinion of the independent EAP that the proposed development will have a net positive impact for the area and will subsequently ensure the optimal utilisation of resources. All negative environmental impacts can further be effectively mitigated through the proposed mitigation measures. Based on the contents of the report it is proposed that an environmental authorisation be issued, which states (amongst other general conditions) that the Bokamoso Energy Power Line and Radio Mast and its associated infrastructure, Registration Division HP, North West be approved subject to the following conditions:

- Implementation of the proposed mitigation measures set out in the EMPr.
- Implementation of the proposed mitigation measures set out in the specialist studies.
- The proposed power line must comply with all relevant national environmental laws and regulations.
- All actions and task allocated in the EMP should not be neglected and a copy of the EMP

Is an EMPr attached?

YES

NO

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

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