



Draft Impact Report – Part 2 EA Amendment

14/12/16/3/3/2/614

**PROPOSED RENEWABLE ENERGY GENERATION PROJECT ON THE FARM RHODES
No. 269, KURUMAN RD, JOE MOROLONG LOCAL MUNICIPALITY,
JOHN TAALO GAETSEWE DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE**

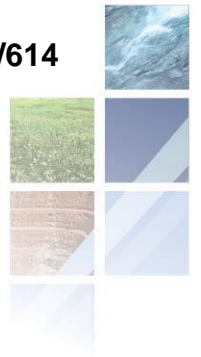
Short name: RHODES SOLAR PARK 1

September 2019

**Commissioned by: Mira Energy (Pty) Ltd
Document version 1.0 – Draft**



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Part 2 Amendment of Environmental Authorisation: Rhodes Solar Park 1 Energy Facility: Farm Rhodes No. 269, Kuruman RD, Joe Morolong Local Municipality, John Taolo Gaetsewe District Municipality, Northern Cape Province

September 2019

PROJECT APPLICANT

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Ms. M Marubini	Department of Agriculture, Forestry & Fisheries (DAFF)
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Head of Department: Mr. D. van Heerden	Northern Cape Department of Environment and Nature Conservation (DENC)
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	Registered Interested and Affected Parties

DOCUMENT HISTORY

Report No	Date	Version	Status
14/12/16/3/3/2/614	September 2019	1.0	Draft

PROJECT MAIN FEATURES**Project main features - Summary of information****General site information**

Site location	
Farm	RHODES 269 KURUMAN RD
Portion	(Portion 0)
Surveyor-general 21-digit site	C04100000000026900001
Local Municipality	Joe Morolong
District Municipality	John Taolo Gaetsewe
Province	Northern Cape

Property details	
Extent	1810.8314 hectares
Landowner	HAUMAN FAMILIE TRUST
Diagram deed number	G30/1947
Title deed number	T3472/2013
Registration date	20131030
Current land use	Farming

Site data (planned footprint)	
Geo-graphical co-ordinates	Latitude: 27° 08' 30" S - Longitude: 22° 58' 00" E
Altitude	1030 to 1045m amsl.
Ground slope	Flat

Adjacent farm portions	
Farm Portion Landowner	EAST 270 KURUMAN RD Remainder Portion Nicky Pretorius
Farm Portion Landowner	EAST 270 KURUMAN RD Portion 1 Sishen Iron Ore Company (Pty) Ltd
Farm Portion Landowner	EAST 270 KURUMAN RD (Portion 2) Nicky Pretorius
Farm Portion Landowner	GASESA 272 KURUMAN RD (Portion 1) Tsineng Communal Property Association
Farm Portion Landowner	MATLIPANI 222 KURUMAN RD (Portion 0) Adriaan Van Der Westhuizen
Farm Portion Landowner	BOWDEN 223 KURUMAN RD Reminder Portion Moshaweng Plaaslike Munisipaliteit
Farm Portion Landowner	DIKGATHLONG 268 KURUMAN RD Remainder Portion Hester Stols

Farm Portion Landowner	N'ÇHWANING 267 KURUMAN RD Remainder Portion Engela Reynecke
Farm Portion Landowner	GLORIA 266 KURUMAN RD (Portion 1) Assmang Ltd

PV power plant design specifications and connection to the Eskom grid (including amended specs)

Amendment Request Data	
Project name	RHODES SOLAR PARK 1
Technology	Photovoltaic power plant
Number of Phases	1
Maximum generating capacity at the delivery point	100 MW
Type of PV modules	Monocrystalline or Polycrystalline
Type of mounting system	Horizontal single-axis trackers (HSAT)

Technical specifications	
Installed power capacity - AC side	100 MW
Number of PV modules	Dependent on final size of plant and nominal power peak of a single PV module
Number of structures (PV arrays)	Dependent on final size of plant
Minimum structure height above ground level	0.5 m
Maximum structure height above ground level	4.5 m

Other information	
Fenced area	up to 210 ha
Footprint	up to 210 ha
PV power plant lifetime	25 - 30 years
Construction camp (temporary)	10 ha
Construction timeframe	up to 15 months

Site maps and GIS information

Status quo information - site	ESRI shapefiles
Site	Farm Rhodes 269 Kuruman RD, adjacent farm portions
Building and other structures	Boreholes
Agricultural field	Not applicable
Natural and endangered vegetation areas	Vegetation and sensitivity map, Gamagara Spruit, Kuruman Spruit
Cultural historical sites and elements	Not applicable
Contours with height references	2m contours
Slope analysis	2m contours
High potential agricultural areas	Not applicable
Eskom's substation(s) / power line(s)	Eskom Hotazel-Heuningvlei 132 kV power line, Eskom Hotazel-Umtu 132 kV power line, Eskom Umtu substation, Eskom Hotazel substation, Eskom Hotazel - Klipkop power line
Mines	Gloria mine (7km south west), Hotazel mine (8.9 km south), Kalagadi Manganese mine (11km south west), N' Çhwaning mine (9.2 kmwest)

Development proposal maps	ESRI shapefiles
Project site	Farm Rhodes 269 Kuruman RD
Access road and internal roads	access road, internal roads
Position of solar facilities	PV arrays
Permanent laydown area footprint	Alternative Location 1
Construction period laydown footprint	Construction camp
River, stream, drainage crossing	Not applicable
Substation and transformers	On-site HV substation
Connection routes	new sections of 132 kV power line,
Buildings	MV stations, control building, warehouses

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- Vegetation Map
- Sensitivity Map
- RH1SP_00.0_r0 Locality Map and Study Area for EIA
- RH1SP_01_r2 Layout plan on the Alternative Location 1 - PV power plant up to 100 MW

Annexure B Photos of the project site

Annexure C Letter from Ecologist – Impact – changes

Annexure D Amended Visual Impact Assessment

ABBREVIATIONS AND ACRONYMS

AGES	Africa Geo-Environmental and Engineering Services (Pty) Ltd
BID	Background Information Document
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CSP	Concentrating Solar Power
DEA	Department of Environmental Affairs
DEAT	Department of Environmental Affairs and Tourism
DENC	Northern Cape Department of Environment and Nature Conservation
DoE	Department of Energy
DWA	Department of Water Affairs
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIR	Environment Impact Assessment Report
EMP	Environmental Management Plan
ESS	Environmental Scoping Study
FIT	Feed in Tariffs
GHG	Green House Gases
GIS	Geographic Information Systems
GN	Government Notice
GWh	Giga Watt hour
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
IPP	Independent Power Producer
kV	kilovolt
MW	Mega Watt
MWp	Mega Watt peak
Mira Energy	Mira Energy (Pty) Ltd (applicant)
NEMA	National Environmental Management Act - Act no. 107 of 1998
NERSA	National Energy Regulator of South Africa
NHRA	National Heritage Resources Act - Act no. 25 of 1999
NWA	National Water Act - Act no. 36 of 1998
PoS	Plan of Study
Property	Farm Rhodes 269
Project	Rhodes Solar Park 1
Project company	Mira Energy (Pty) Ltd (applicant)
Project site	Farm Rhodes 269, Kuruman RD
PV	Photovoltaic
REFIT	Renewable Energy Feed-in Tariffs
RFP	Request for Qualification and Proposals for New Generation Capacity under the IPP Procurement Programme
SAHRA	South African Heritage Resources Agency
SANRAL	South African National Roads Agency Limited
SANS	South African National Standard
UPS	Uninterruptible Power Supply
Wp	Watt Peak

1. INTRODUCTION AND PURPOSE OF THE REPORT

Mira Energy (Pty) Ltd (Reg. No. 2012/016683/07) received Environmental Authorization (EA) on 12 November 2014 from the Department of Environmental Affairs (DEA) for the development and construction of the Rhodes Solar Park 1 (the Project), with associated infrastructure and structures (DEA Reference Number 14/12/16/3/3/2/614). The Project, located on the Farm Rhodes 269, Kuruman RD, in the Joe Morolong Local and John Taolo Gaetsewe District Municipalities, Northern Cape Province, 7 km North of Hotazel and 50 km North of Kathu, was submitted as a bid in Round 4.5 of the Renewable Energy Independent Power Producer (IPP) Procurement Programme (REIPPPP). An application to amend the authorization was submitted and was issued on 9 May 2017. This first amendment application was for the extension of the validity period of the EA.

Since the issuance of the original EA and taking into consideration the delays experienced in the REIPPPP, there has since been significant advancements in PV technology in more recent years and the PV panels already authorised in the original EA are no longer viable for the project in terms of the production and economic viability of the project. In addition, there are now more efficient panels available on the market. For this reason, a second application for an amendment of the EA was submitted to the DEA on 29 May 2019. Additional information was requested from the DEA and this information was submitted on 14 June 2019. This EA amendment application requested the amendment of the technical details of the project and included amendment to:

- The technology and height of panels (change in maximum height from 3.1m to 4.5m and change in minimum height from 0.7m to 0.5m) installed from the ground;
- The number of panels, which is dependent on the type of module used;
- The panel dimensions;
- Number of invertors;
- Change of use for the office/workshop.

On 27 June 2019, the DEA indicated that the application falls within the ambit of amendments to be applied for in terms of Part 2 of Chapter 5 of the EIA Regulations, 2014, as amended since the application is considered a change in scope due to the fact that there is a proposed increase of 1.4m in height of the panels. In this regard, this Part 2 amendment is therefore being applied for the following amendments from the original EA:

Component of table in EA: Electricity generating capacity

<u>Original Wording</u>	<u>Amended Wording</u>
75MW	100MW

Component of table in EA: Proposed technology and height of installed panels from ground level

<u>Original Wording</u>	<u>Amended Wording</u>
PV solar modules: thin-film PV modules or mono-crystalline or polycrystalline PV Modules	PV solar modules: Monocrystalline or polycrystalline module can be used
Mounting systems: fixed mounting systems or single-axis horizontal trackers (SAT)	Mounting systems: Single axis horizontal trackers HSAT
Maximum height (highest point of the PV arrays): 3.1m above the ground level	Maximum height (highest point of the PV arrays): 4.5m
Minimum height (lowest point of the PV arrays): 0.7m above the ground level.	Minimum height (lowest point of the PV arrays): 0.5m

Component of table in EA: Number of panels dependant on module to be used

<u>Original Wording</u>	<u>Amended Wording</u>
Number of PV modules depend on type and peak powers of the selected modules. Typical figures: Up to 638 900 thin film PV modules of 135 Wp each Up to 287 500 mono/polycrystalline PV modules of 300 Wp each	The number of PV modules cannot be evaluated at this stage because it strongly depends on the final size of the plant and the nominal power peak of a single PV module

Component of table in EA: Panel dimensions

<u>Original Wording</u>	<u>Amended Wording</u>
Thin film PV modules (typical): 1.0m x 1.4m x 0.01m Mono/polycrystalline PV modules (typical): 1.0mx2.0mx0.05m	Panel dimensions will depend on the panel module selected

Component of table in EA: Number of inverters

<u>Original Wording</u>	<u>Amended Wording</u>
The installed capacity AC side will be 75 MWac which can be achieved by means of 75 DC/AC inverters of 1000 kWac each (indicative)	The total number of inverters useful for reaching the AC installed capacity could vary mainly if centralized or string inverter solution is adopted.

Page 4 and 5 of EA: Width and length of internal roads

Removal of the co-ordinates specified for main internal road around the security fence as well as secondary internal roads.

The proposed amendments **do not** trigger any additional listed activities as they are within the original authorised development footprint.

This draft report is compiled to comply with Regulation 32(1)(a) of the EIA Regulations, 2014, as amended.

The Project will participate in a future round of the REIPPPP.

With the aim of identifying and assessing all potential environmental impacts related to the change in the development specifications, AGES Limpopo appointed a visual impact specialist to compile an amended report and to assess the impact of the change in the height of the solar panels.

The ecologist who conducted the ecological assessments during the EIA process was requested to assess the change in specifications (from 75MW to 100MW) and to make a statement regarding the impact of the changes, on the ecology of the development site.

AGES and any specialist consultants involved are in a position of independency from Mira Energy; therefore, they are not subsidiaries or affiliated to the latter. AGES and the specialist consultants have no secondary interest connected with the development of this project or of other projects which may originate from the authorization of the project.

MOTIVATION AND RATIONALE FOR THE PROPOSED AMENDMENTS OF THE RHODES SOLAR PARK 1

2. NEED AND DESIRABILITY OF THE PROPOSED PROJECT

South Africa's electricity supply still heavily relies upon coal power plants, whereas the current number of renewable energy power plants is limited. In the last few years, the demand for electricity in South Africa has been growing at a rate of approximately 3% per annum. These factors, if coupled with the rapid advancement in community development, have determined the growing consciousness of the significance of environmental impacts, climate change and the need for sustainable development. The use of renewable energy technologies is a sustainable way in which to meet future energy requirements.

The purpose of the Rhodes Solar Park 1 is to add new capacity for the generation of renewable electric energy to the national electricity supply in compliance with the REIPPPP and in order to meet the "sustainable growth" of the Northern Cape Province.

The use of solar radiation for power generation is considered as a non-consumptive use and a renewable natural resource which does not produce greenhouse gas emissions. The generation of renewable energy will contribute to the growth of South Africa's electricity market, which has been primarily dominated up to this date by coal-based power generation. With specific reference to photovoltaic energy, it is important to consider that South Africa has one of the highest levels of solar radiation in the world.

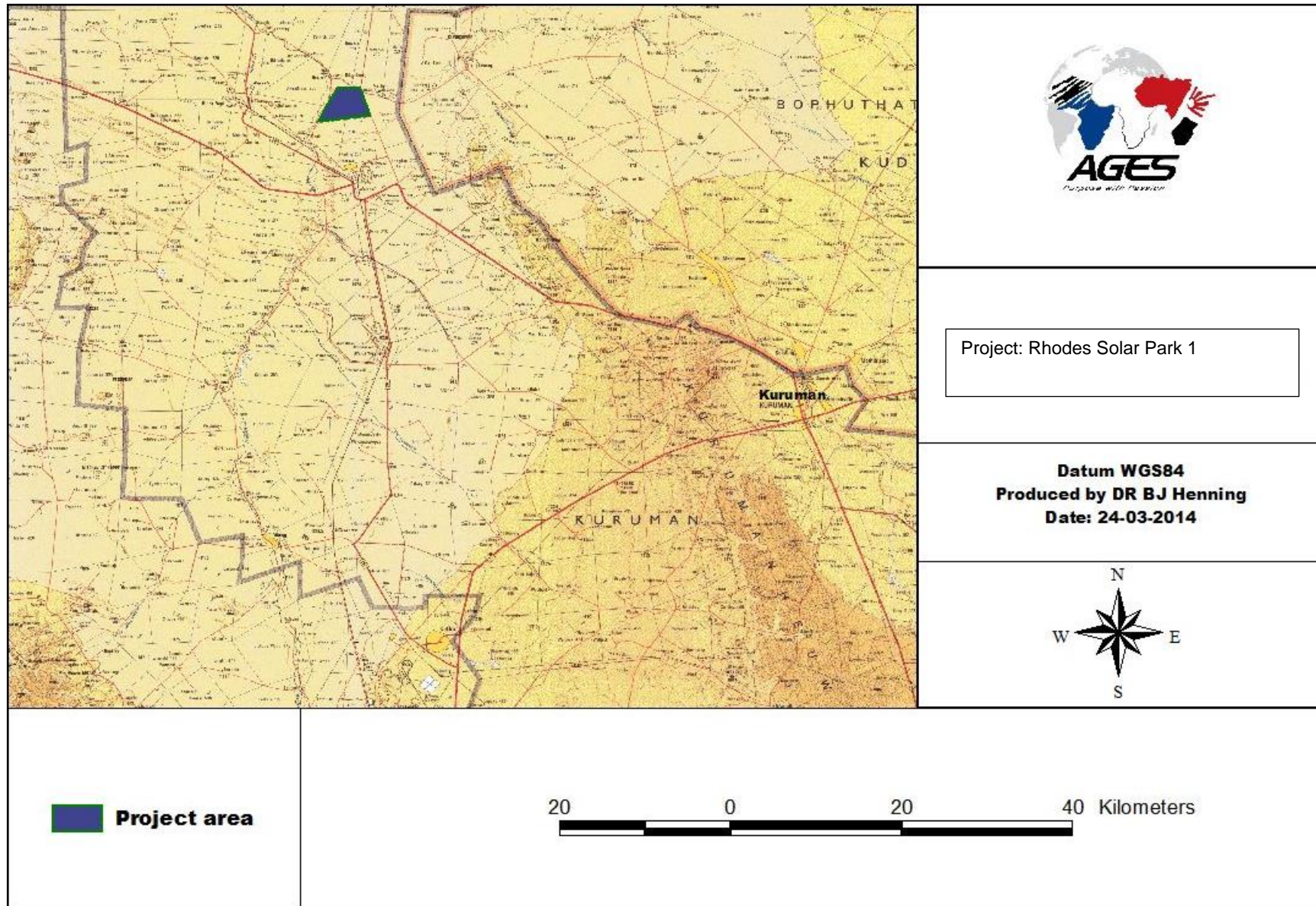


Figure 1: Locality map of the project site and study area for EIA

3. AUTHORITIES, LEGAL CONTEXT AND ADMINISTRATIVE REQUIREMENTS

The legislative and regulatory framework of reference for the solar power plant project includes statutory and non-statutory instruments by which National, Provincial and Local authorities exercise control throughout the development of the same project. The development and the environmental assessment process of a solar power plant project involve various authorities dealing with the different issues related to the project.

3.1. REGULATORY AUTHORITIES

3.1.1. National Authorities

At national level, the main regulatory authorities and agencies are:

- *Department of Energy (DoE)*: The DoE is competent and responsible for all policies related to energy, including renewable energy. Solar energy is contemplated and disciplined in the White Paper for Renewable Energy and the DoE constantly conducts research activities in this respect;
- *Department of Environmental Affairs (DEA)*: The DEA is competent and responsible for all environmental policies and is the controlling authority in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and EIA Regulations, 2014, as amended. The DEA is also the competent authority for the proposed project;
- *National Energy Regulator of South Africa (NERSA)*: NERSA is competent and responsible for regulating all aspects dealing with the electricity sector, in particular, issues the licence for independent power producers;
- *South African Heritage Resources Agency (SAHRA)*: SAHRA is responsible for the protection and the survey, in association with provincial authorities of listed or proclaimed sites, such as urban conservation areas, nature reserves and proclaimed scenic routes in terms of the National Heritages Resources Act (Act no. 25 of 1999);
- *South African National Roads Agency Limited (SANRAL)*: SANRAL is responsible for all National road routes.
- *Department of Water and Sanitation (DWS)*: The DWS's overall responsibility for and authority over the nation's water resources and their use, including the equitable allocation of water for beneficial use, the redistribution of water and international water matters.

3.1.2. Provincial Authorities

At provincial level, the main regulatory authority is the Northern Cape Department of Environment and Nature Conservation; this Department is responsible for environmental policies and is the Provincial authority in terms of NEMA and the EIA Regulations. The Department is also the commenting authority for the proposed project. The project should comply with the Northern Cape Nature Conservation Act (Act No. 9 of 2009).

3.1.3. Local Authorities

At a local level, the local and municipal authorities are the principal regulatory authorities responsible for planning, land use and the environment. In the Northern Cape Province, Municipalities and District Municipalities are involved in various aspects of planning and the environment related to solar energy facilities development. Under the terms of the Municipal System Act (Act no. 32 of 2000), all municipalities must go through an Integrated Development Planning (IDP) process in order to devise a five-year strategic development plan.

The identification of priority areas for conservation and their positioning within a planning framework of core, buffer, and transition areas is the subject of bioregional planning. The Spatial Development Framework (SDF) 2012 of the Joe Morolong Local Municipality has three main nodes where relatively higher economic activity takes place, namely Vanzylsrus, Hotazel and Blackrock. The proposed solar park is situated near Hotazel and Blackrock. It is stated in the SDF that investment should be focused on these areas to expand the node into a more diverse economic centre.

3.2. LEGISLATION, REGULATIONS AND GUIDELINES

A review of the relevant legislation involved in the proposed development is detailed in table 1 below.

Table 1: Review of relevant legislation

National Legislation	Sections applicable to the proposed project
Constitution of the Republic of South Africa (Act no. 108 of 1996)	<ul style="list-style-type: none"> • Bill of Rights (S2) • Rights to freedom of movement and residence (S22) • Environmental Rights (S24) • Property Rights (S25) • Access to information (S32) • Right to just administrative action (S33)
Fencing Act (Act no. 31 of 1963)	<ul style="list-style-type: none"> • Notice with reference to a boundary fence (S7) • Clearing bush for boundary fencing (S17) • Access to land for purpose of boundary fencing (S18)
Conservation of Agricultural Resources Act (Act no. 43 of 1983)	<ul style="list-style-type: none"> • Prohibition of the spreading of weeds (S5) • Classification of categories of weeds & invader plants and restrictions in terms of where these species may occur (Regulation 15 of GN R0148) • Requirement and methods to implement control measures for alien and invasive plant species (Regulation 15E of GN R0148)
Environment Conservation Act (Act no. 73 of 1989)	<ul style="list-style-type: none"> • National Noise Control Regulations (GN R154 dated 10 January 1992)
National Water Act (Act no. 36 of 1998)	<ul style="list-style-type: none"> • Entrustment of the National Government to the protection of water resources (S3) • Entitlement to use water (S4) - Schedule 1 provides the purposes which entitle a person to use water (reasonable domestic use, domestic gardening, animal watering, fire-fighting and recreational use) <ul style="list-style-type: none"> • Duty of Care to prevent and remedy effects of water pollution (S19) • Procedures to be followed in the event of an emergency incident which may impact on water resources (S20) • Definition of water use (S21) • Requirements for registration of water use (S26 & S34) • Definition of offences in terms of the Act (S151)
National Forests Act (Act no. 84 of 1998)	<ul style="list-style-type: none"> • Protected trees
National Environmental Management Act (Act no. 107 of 1998)	<ul style="list-style-type: none"> • Definition of National environmental principles (S2): strategic environmental management goals and objectives of government applicable within SA to actions of organs of state, which may significantly affect the environment • NEMA EIA Regulations, 2014, as amended.

	<ul style="list-style-type: none"> • Requirement for potential impact on the environment of listed activities to be considered, investigated, assessed and reported on to the competent authority • Duty of Care (S28): requirement that all reasonable measures are taken to prevent pollution or degradation from occurring, continuing and recurring, or, where this is not possible, to minimise and rectify pollution or degradation of the environment • Procedures to be followed in the event of an emergency incident which may impact on the environment (S30)
National Heritage Resources Act (Act no. 25 of 1999)	<ul style="list-style-type: none"> • SAHRA, in consultation with the Minister and the MEC of every province must establish a system of grading places and objects which form part of the national estate (S7) • Provision for the protection of all archaeological objects, paleontological sites and material and meteorites entrusted to the provincial heritage resources authority (S35) • Provision for the conservation and care of cemeteries and graves by SAHRA, where this is not responsibility of another authority (S36) • List of activities which require notification from developer to the responsible heritage resources authority, with details regarding location, nature, extent of proposed development (S38) • Requirement for the compilation of a Conservation Management Plan as well as permit from SAHRA for presentation of archaeological sites for promotion of tourism (S44)
National Environmental Management: Biodiversity Act (Act no. 10 of 2004)	<ul style="list-style-type: none"> • Provision for the Member of the Executive Council for Environmental Affairs/Minister to publish a list of threatened ecosystems and in need of protection (S52) • Provision for the Member of the Executive Council for Environmental Affairs/Minister to identify any process or activity which may threaten a listed ecosystem (S53) Provision for the Member of the Executive Council for Environmental Affairs/Minister to publish a list of: critical endangered species, endangered species, vulnerable species and protected species (S56(1) - see Government Gazette 29657 • Three government notices have been published up to the present date: GN R150 (Commencement of Threatened and Protected Species Regulations, 2007), GN R151 (Lists of critically endangered, vulnerable and protected species) and GN R152 (Threatened Protected Species Regulations)
National Environmental Management: Air Quality Act (Act no. 39 of 2004)	<ul style="list-style-type: none"> • Provision for measures in respect of dust control (S32) • Provision for measures to control noise (S34)
National Environmental Management: Waste Management Act (Act no. 59 of 2008)	<ul style="list-style-type: none"> • Waste management measures • Regulations and schedules • Listed activities which require a waste licence
Northern Cape Nature Conservation Act (Act No. 9 of 2009)	<ul style="list-style-type: none"> • Indigenous flora protected under this act • No hunting to take place without a permit
Occupational Health and Safety Act (Act No. 85 of 1993)	<ul style="list-style-type: none"> • Health and safety of all involved before and after construction must be protected.

Guideline Documents	Sections applicable to the proposed project
South African National Standard (SANS) 10328, Methods for environmental noise impact assessments in terms of NEMA no. 107 of 1998	<ul style="list-style-type: none"> • Impact of noise emanating from a proposed development may have on occupants of surrounding land by determining the rating level • Noise limits are based on the acceptable rating levels of ambient noise contained in SANS 10103
Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads	<ul style="list-style-type: none"> • The Guidelines outline rules and conditions related to transport of abnormal loads and vehicles on public roads and detailed procedures to be followed for the grant of exemption permits

Policies and White Papers	Sections applicable to the proposed project
The White Paper on the Energy Policy of the Republic of South Africa (December 1998)	<ul style="list-style-type: none"> • The White Paper supports investment in renewable energy initiatives, such as the proposed solar power plant project
The White Paper on Renewable Energy (November 2003)	<ul style="list-style-type: none"> • The White Paper outlines the Government's vision, policy, principles, strategic goals and objectives for the promotion and the implementation of renewable energy in South Africa
Integrated Resource Plan (IRP1) Integrated Resources Plan 2010-2030 (IRP 2010).	<ul style="list-style-type: none"> • The first Integrated Resource Plan (IRP1) was released in late 2009. Subsequently the DoE decided to undertake a detailed process to determine South Africa's 20-year electricity plan, called Integrated Resources Plan 2010-2030 (IRP 2010). • The IRP1 and the IRP 2010 outline the Government's vision, policy and strategy in matter of the use of energy resources and the current status of energy policies in South Africa.
Request for Qualification and Proposals For New Generation Capacity under IPP Procurement Programme (3 Aug 2011)	<ul style="list-style-type: none"> • The IPP Procurement Programme, issued on 3rd August 2011 by the DoE, envisages the commissioning of 3725 MW of renewable projects, 1450 MW with Solar PVc technology.
Equator Principles (July 2006)	<ul style="list-style-type: none"> • The Equator Principles provide that future developments with total project capital costs of US\$10 million or more shall be financed only if socially and environmentally sustainable

3.3. LISTED ACTIVITIES IN TERMS OF NEMA

The “listed activities” in terms of sections 24 and 24D of NEMA identified for the proposed development are detailed in table 2 below. These listed activities were included in Listing Notices 1 and 2 of GN R 544, 545 and 546 of the EIA Regulations of 2010. This EIA process was initiated before the 2014 EIA Regulations were published. **None of the EA amendments applied for will trigger any listed activities as included in Listing Notices 1, 2 & 3 of the EIA Regulations, 2014, as amended.**

Table 2: Listed Activities in terms of EIA Regulations 2010, which were approved in the original EA

Relevant notice	Activity No.	Activity Description
R.545, 18 June 2010	1	<i>The construction of facilities or infrastructure for the generation of electricity where the electricity output is 20 megawatts or more:</i> The PV facility is proposed to have a generation capacity of up to 75 MW. <i>Amendment application: increase in generating capacity from 75MW to 100MW.</i>
R.545, 18 June 2010	15	<i>Physical alteration of undeveloped, vacant or derelict land for, industrial use where the total area to be transformed is 20 hectares or more</i> The proposed PV Power Plant development footprint will be 210 ha within a farm portion measuring 1810.83 ha in size. <i>The development footprint will not increase as a result of amendments.</i>
R.544, 18 June 2010	10	<i>The construction of facilities or infrastructure for the transmission and distribution of electricity:</i> <i>(i) outside urban areas or industrial complexes with a capacity of more than 33 kilovolts but less than 275 kilovolts</i> The connection from the proposed solar park to the Eskom grid will be done according to the Eskom connection requirement / solution. <i>Connection still to be done according to Eskom connection requirement / solution.</i>
R.544, 18 June 2010	22	<i>The construction of a road, outside urban areas,</i> <i>(i) with a reserve wider than 13.5 metres</i> Internal roads will be maximum 8 m wide with a road reserve maximum 12.0 m wide. At the turning points / intersection points the road reserve may be wider than 13.5 m due to the shape of the intersection / turning points. <i>Road sizes will not change as a result of EA Amendments.</i>
R.546, 18 June 2010	14	<i>The clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation</i> <i>a) In Northern Cape: all areas outside urban areas.</i> The proposed PV Power Plant will be constructed and operated on a footprint up to 210 hectares on a farm portion measuring 1810.8314 hectares. The required footprint should be cleared from the existing trees. <i>The development footprint will not increase as a result of amendments.</i>

Eskom is the entity which assesses the connection solution and there will be liaising between Mira Energy, Eskom Transmission, Eskom Distribution and Eskom Land & Rights Department. A part of the connection infrastructure (the 132kV busbar of the on-site substation and the new 132kV power line) may be executed, owned and operated by Eskom.

4. PROJEC DESCRIPTION AND DETAILS OF THE AMENDMENTS BEING APPLIED FOR

4.1. AMENDMENTS BEING APPLIED FOR

The application for the amendment of the aforementioned EA include the following:

Component of table in EA: Electricity generating capacity

<u>Original Wording</u>	<u>Amended Wording</u>
75MW	100MW

Component of table in EA: Proposed technology and height of installed panels from ground level

<u>Original Wording</u>	<u>Amended Wording</u>
PV solar modules: thin-film PV modules or mono-crystalline or polycrystalline PV Modules	PV solar modules: Monocrystalline or polycrystalline module can be used
Mounting systems: fixed mounting systems or single-axis horizontal trackers (SAT)	Mounting systems: Single axis horizontal trackers HSAT
Maximum height (highest point of the PV arrays): 3.1m above the ground level	Maximum height (highest point of the PV arrays): 4.5m
Minimum height (lowest point of the PV arrays): 0.7m above the ground level.	Minimum height (lowest point of the PV arrays): 0.5m

Component of table in EA: Number of panels dependant on module to be used

<u>Original Wording</u>	<u>Amended Wording</u>
Number of PV modules depend on type and peak powers of the selected modules. Typical figures: Up to 638 900 thin film PV modules of 135 Wp each Up to 287 500 mono/polycrystalline PV modules of 300 Wp each	The number of PV modules cannot be evaluated at this stage because it strongly depends on the final size of the plant and the nominal power peak of a single PV module

Component of table in EA: Panel dimensions

<u>Original Wording</u>	<u>Amended Wording</u>
Thin film PV modules (typical): 1.0m x 1.4m x 0.01m Mono/polycrystalline PV modules (typical): 1.0mx2.0mx0.05m	Panel dimensions will depend on the panel module selected

Component of table in EA: Number of inverters

<u>Original Wording</u>	<u>Amended Wording</u>
The installed capacity AC side will be 75 MWac which can be achieved by means of 75 DC/AC inverters of 1000 kWac each (indicative)	The total number of inverters useful for reaching the AC installed capacity could vary mainly if centralized or string inverter solution is adopted.

Page 4 and 5 of EA: Width and length of internal roads

Removal of the co-ordinates specified for main internal road around the security fence as well as secondary internal roads.

4.1.1. Increase in generating capacity from 75MW to 100MW

The originally authorised PV panels planned to be used had a rated output power of 315Wp. Due to the time lag between the original application and receipt of EA and due to the advances in PV technology during the course of the last 5 years, the PV panels intended to be used now has a rated output power of 425Wp. There is a significant increase in output hence this means that the generating capacity of the plant can be increased, without increasing the development footprint.

Another way in which a 100MW PV plant can fit into an area previously planned for a 75MW PV plant is to minimize the spacing between adjacent structures (onto which the PV panels will be fixed). Thus, the use of panels with a higher output power as well as the reduction in spacing between the panels and the change in the configuration of the panels from landscape to portrait will allow a generating capacity of 100MW on the same development footprint. No increase to the development footprint is required.

4.1.2. Increase in maximum height of solar panels from 3.1m to 4.5m

The increase in the height is due to advances in tracker structures. As compared to previous tracker structures, with recent innovations, tracker structures can tilt to much steeper angles than in previous years i.e. the maximum tilt angles for tracker structures are expected to increase to up to 60°. Furthermore, the manner in which solar panels are mounted on tracker structures have also changed in certain scenarios, the panels can be mounted in portrait rather than landscape configuration, which would increase the maximum height of the panels. Effectively, with these two new changes in tracker design, the maximum height has increased.

4.2. PROJECT LAYOUT

The approved layout of the proposed development was the result of a comparative study of various layout alternatives and had been defined whilst considering the results of the specialist studies conducted during the previous EIA process. The main drivers of the approved layout were:

- to develop the PV power plant on the southern and eastern side of the Farm Rhodes 269 (1810.8314ha), since this area is flat and has a *low to medium* ecological sensitivity, while two streams (*Gamagara Spruit and Kuruman Spruit*) run along the western and northern boundaries of the property and is characterized by sand dunes (identified and described as Duneveld in the ecological report) to the north west of the farm;
- to include, as much as possible, the proposed footprint in the low ecological sensitivity areas, in order to reduce the amount of the medium ecological sensitivity areas to be cleared and as consequence, the number of protected trees to be removed;
- the proposed footprint has been located at a minimum distance of 50 m from the southern boundary and 150 m from the eastern boundary, so that the distance and the existing vegetation would be able to minimise the potential visual impact of the proposed development to the surrounding properties.

Changes in the layout will constitute, in essence, the configuration of the solar panels in order to increase the generating capacity of the solar park. Once the panels are in a portrait configuration the height will increase as the tracker system will allow the panels to tilt at a 60° angle. With the tilting of the solar panels and the portrait configuration, the height of the solar panels, at its highest will be 4.5m. All other components as included in the approved layout plan will stay the same. The development footprint size of 210 ha will not change.

An updated site lay out plan is included in Annexure A.

4.3. PRIMARY COMPONENTS

The PV plant, together with its connection infrastructures and structures will require the installation of the following equipment:

- Photovoltaic modules (monocrystalline or polycrystalline solar modules)
- Mounting systems (single-axis horizontal trackers) for the PV arrays and related foundations
- Internal cabling and string boxes
- Medium voltage stations, hosting DC/AC inverters and LV/MV power transformers
- Medium voltage receiving station(s)
- Workshop & warehouses
- One small on-site high-voltage substation with high-voltage power transformers, stepping up the voltage to the voltage of the Eskom grid (132 kV) and a 132 kV busbar with metering and protection devices and a control building (also called “switching station”) - to be located in the PV plant development area
- Two new small sections of 132 kV line allowing the Eskom “Hotazel - Heuningvlei” 132 kV power line to loop in and out of the 132kV busbar of the new on-site switching station
- Electrical system and UPS (Uninterruptible Power Supply) devices
- Lighting system
- Grounding system
- Access road and internal roads
- Fencing of the site and alarm and video-surveillance system
- Water access point and water extraction on-site borehole(s) point, water supply pipelines, water treatment facilities
- Sewage system

During the construction phase, the site may be provided with additional:

- Water access point and on-site borehole(s), water supply pipelines, water treatment facilities;
- Pre-fabricated buildings to serve as construction offices which will be removed at the end of construction at the discretion of the landowner.

4.3.1. Access road and internal roads

Access to the Rhodes Solar Park 1 will be from a local upgraded dirt road starting from the regional road R31, which runs parallel to the eastern boundary of the property.

Access point from the secondary road parallel to the eastern boundary of the property:

Latitude: 27° 08' 19.2" S

Longitude: 22° 58' 35.6" E

Gate at the PV plant security fence / footprint:

Latitude: 27° 08' 21.4" S

Longitude: 22° 58' 28.4" E

Internal roads will consist of gravel roads designed in accordance with engineering standards. The roads will have a width of 8.0 meters allowing for slow moving heavy vehicles. Once the solar farm is in operation, the internal roads will mainly be used for maintenance and inspections.

The vertical alignment of the roads will not present significant challenges due to the flatness of the terrain. The entire development will be contained inside a fenced area and the roads are not intended for public use.

4.3.2. Lighting system

The lighting of the MV stations and of the on-site HV substation will be on only in case of intrusion/emergency or necessity to reach the MV stations / HV substation during the night.

During the night, the video-surveillance system will use infra-red (or micro-wave) video-cameras, which do not need a lighting system (which could reduce the functioning). Only streetlamps along internal roads, for the stretch from the main access up to the HV substation inside the property, may be switched on at night.

4.3.3. Water requirements during operations

Storage tanks will be sized in order to provide a reserve of water approximately 200m³. During operation, water is only required for the operational team on site (sanitary use), as well as for the cleaning of the solar panels which is done a few times during the year. Further water consumption may be only for routine washing of vehicles and other similar uses.

The daily water requirement will be approximately 3,000 litres/day over 12 months for sanitary use (i.e. 90,000 l/month and 1,095 m³/year).

The water consumption will increase up to 74,000 litres/day during the cleaning of the solar modules (71,000 litres/day for cleaning activity and 3,000 for sanitary use), which will last less than a month and will occur twice per year during the dry period. Indeed, PV modules are conceived as self-cleaning with the rain.

It is proposed that 90,000 litres of water will be stored in storage tanks for fire, emergency and washing of panels twice a year.

There will not be an increase in water requirements as a result of the change in the increase in the generating capacity and/or the increase in the height of the solar panels.

5. STATUS QUO OF THE RECEIVING ENVIRONMENT

The receiving environment has been described using a combination of specialist inputs, on-site observations, a review of existing literature and utilizing Geographic Information Systems (GIS) planning tools.

5.1. PROPERTY DESCRIPTION AND CURRENT LAND USE

The proposed development will stretch over a part of the Farm Rhodes 269, Kuruman RD, Joe Morolong Local Municipality, John Taolo Gaetsewe District Municipality, Northern Cape Province. The farm is 1810.8314 ha in extent and the current land use is farming and game farming. Farm portions close to the project site are mainly used for farming purpose. South and West of the project site, several manganese mines are under operation or under construction, as the Hotazel mine, the Kalagadi Manganese mine (under construction) and Assmang mines.

5.2. ENVIRONMENTAL FEATURES

5.2.1. Climate

Hotazel is a summer rainfall area and has an average rainfall of approximately 223mm per year. Minimum rainfall of 0mm is in June and the maximum rainfall of 50mm is in February. The average daily maximum temperature is 33.2°C during summer and 19.1°C in winter. The coldest temperature occurs during July with an average night temperature of 1°C. The climate is considered semi-arid.

5.2.2. Topography and drainage

The eastern portion of the property is underlain by a plain land facet with a gentle undulating to flat topography with a gradient of 1.5%. The average elevation is 1042 m amsl, with the lowest point 1040 m amsl and the highest point 1045 m amsl. The western portion of the property consists of undulating vegetated dunes with an elevation difference of 8 m over 250 m. The permeability of the sand is high, so the rainfall penetrates the soil immediately. Sheet wash occurs along preferred pathways but the water sinks into the ground after some distance. No pans or wetland areas was identified on site. Sub surface drainage is expected to occur towards the Gamagara River.

5.2.3. Soils and geology

The site is underlain by unconsolidated recent aeolian sand of the Kalahari Formation (Qs). The unconsolidated recent deposits vary in thickness of as little as 3 m to over 17 m thick overlying calcrete and clay. Competent bedrock occurs at depths of 21m to 37m.

No shallow groundwater conditions were encountered in any of the trial pits on site.

No mining activities (past or present) occurred in the property. Nearby mining activities (e.g. at the Gloria Manganese Mine) is unlikely to impact on the geotechnical aspects of the project.

5.2.4. Geo-hydrology

The property is located on a local watershed on the boundary between the Quaternary Catchment Areas (QCA) D41K and D41L, within the Lower Vaal Water Management Area (WMA). The estimated annual groundwater recharge (11.07 mm/m² per annum) from an average annual precipitation of 391 mm falling on the development area (210 ha) results in 23,247 m³ of water available. The maximum annual water requirements are 2795 m³ / year during the operational phase, therefore the scale of abstraction relative to recharge is 12.0% (Category A).

5.2.5. Ecology (fauna & flora)

An Ecological Impact Assessment was conducted by during the previous EIA process, to verify the ecological sensitivity and ecological components of the site at ground level. The development site lies within the Savanna biome which is the largest biome in Southern Africa. It is characterized by a grassy ground layer and a distinct upper layer of woody plants (trees and shrubs). The most recent classification of the area by Mucina & Rutherford (2006) shows that the sites forms part of the Kathu Bushveld and Gordonia Duneveld vegetation types.

The proposed development is planned on a landscape that varies from slightly undulating plains to moderately undulating terrain associated with dunes. The property is currently managed as a livestock farm. The vegetation units on the site vary according to soil characteristics, topography and land-use. Most of the site is characterized by microphyllous woodland that varies in density and species composition. No major drainage features occur on site, although the Kuruman and Gamagara Rivers occur to the north and west of the site, respectively.

The ecologist was requested to write a statement to indicate whether the two proposed changes to the development will have any significant impacts on the ecology of the area.

He indicated that the increase in capacity and the increase in height of the solar panels will **NOT** have a significant negative impact on the proposed development. This statement letter is included in Annexure C. The recommendations and mitigating measures included in the Ecological Impact Assessment included in the Final EIA Report of the previous application process, should still be implemented.

5.2.6. Visual

During the previous EIA process, a Visual Impact Assessment was conducted to determine the visual impact of the proposed solar park. It was stated that for a project of this magnitude, a large impact would occur within a distance of 2km from the proposed development structures, an intermediate impact up to 5km, a small impact up to 10km. An impact further than this would be regarded as negligible. Visually Sensitive Receptors (VSRs) with a large impact includes the farmsteads of Rhodes, Bowden and Matlipani, as well as main road travellers (especially along the Secondary road of the R31) as well as hunting activities on the farm Rhodes.

The Amended Visual Impact Assessment Review Report (VIA) is included in Annexure D.

The VIA Report indicated that the visual resource value (which describes the landscape character of the area) can still be described as moderate as a result of mining areas nearby.

The visual receptors that were identified included residents from Rhodes, Bowden and East Farmsteads, the Ga-Sesa community and viewers travelling along the local road located to the east of the Project site. The Rhodes farm and sections along the local road was considered to be the most sensitive since viewers will have a fore-to middle ground view that will be clear to partially obstructed. The relevance of the visual impact is very substantial but due to the dense vegetation and the slightly undulating topography the relevance was considered to be substantial.

The Bowden and East farms will have a middle ground view that will be partially obstructed. Views from the farms was considered to be moderately sensitive. The other visual receptors that were identified are further than 5km from the Project site and the Solar Park will therefore be in the background of views, these were considered less sensitive.

Impacts during the construction and decommissioning phases will not change. The Significance of the visual impact would be Moderate for the construction and decommissioning phases and High for the operational phase. With the necessary mitigating factors the Significance of the visual impact during the construction phase, would be Low, as opposed to moderate without mitigation. With the relevant implementation of mitigation measures, the Significance of the visual impact during the operational phase will be moderate as opposed to high, without mitigation factors.

It is therefore important that the integrity of the existing vegetation as well as the other proposed mitigation measures be correctly and effectively implemented.

6. PUBLIC PARTICIPATION PROCESS

The process for an application for amendments to be applied for in terms of Part 2 is described in Regulations 31 and 32 of the EIA Regulations, 2014, as amended.

The first phase of the process includes the compilation of a draft Impact Report, which should reflect the following:

- an assessment of all impacts related to the proposed change;
- advantages and disadvantages associated with the proposed change; and
- measures to ensure avoidance, management and mitigation of impacts associated with such proposed change; and
- any changes to the EMPr.

The second phase is the draft impact report which should be subjected to a public participation process. The availability of the draft report will be advertised in one locally published newspaper as well as poster notifications, on-site. The report will be made available for a 30-day commenting period. Potential and identified I&APs will be informed of the availability of the report. The draft impact report will also be submitted to the DEA for comments. The application form will be submitted simultaneously with the draft report, to the DEA.

Once the 30-day period has lapsed the final impact report will be amended and updated to include all comments received during the commenting period.

The final impact report will be submitted to the DEA for approval.

7. IMPACT ASSESSMENT: METHODOLOGY USED FOR THE IDENTIFICATION AND ASSESSMENT OF THE IMPACTS

The potential environmental impacts identified in the study have been quantified and the significance of the impacts has been assessed according to the criteria set out below. Each impact has been assessed and rated. The assessment of the data, where possible, has been based on broadly accepted scientific principles and techniques. In defect, judgements and assessments are necessarily based on the consultant's professional expertise and experience.

7.1. PROJECT PHASING

For the purpose of assessing these impacts, the project has been divided into phases from which impacting activities can be identified:

- **Planning**
- **Site clearing & construction phase**
- **Operational phase**

The project is still in the planning phase and although an EA was obtained, site clearing, and construction has not commenced.

The amendments to the EA include the increase in height of the solar panels in order to increase the generating capacity. The impacts expected, will only be applicable to the operational phase.

7.2. ASSESSMENT CRITERIA

The terms of reference for the study include criteria for the description and assessment of environmental impacts. These criteria are drawn from the Integrated Environmental Management Guidelines Series, Guideline 5: Assessment of Alternatives and Impacts, published by the Department of Environmental Affairs and Tourism in terms of the Environmental Impact Assessment. These criteria include:

Table 3: Impact Assessment Criteria

Nature of impact This is an appraisal of the type of effect the proposed activity would have on the affected environmental component. The description should include what is being affected, and how.		
Extent The physical and spatial size of the impact.	Site	The impact could affect the whole, or a measurable portion of the above-mentioned properties.
	Local	The impacted area extends only as far as the activity, e.g. a footprint.
	Regional	The impact could affect the area including the neighbouring farms, the transport routes and the adjoining towns.
Duration The lifetime of the impact; this is measured in the context of the lifetime of the proposed base.	Short term	The impact will either disappear with mitigation or will be mitigated through natural process in a span shorter than any of the phases.
	Medium term	The impact will last up to the end of the phases, where after it will be entirely negated.
	Long term	The impact will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter.
	Permanent	The only class of impact, which will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient.
Intensity	Low	The impact alters the affected environment in such a way that the natural processes or functions are not affected.
	Medium	The affected environment is altered, but function and process continue, albeit in a modified way.
	High	Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.
Probability This describes the likelihood of the impacts actually occurring. The impact may occur for any length of time during the life cycle of the activity, and not at any given time.	Improbable	The possibility of the impact occurring is very low, due either to the circumstances, design or experience.
	Probable	There is a possibility that the impact will occur to the extent that provisions must be made therefore.

	Highly probable	It is most likely that the impacts will occur at some or other stage of the development. Plans must be drawn up before the undertaking of the activity.
	Definite	The impact will take place regardless of any prevention plans, and there can only be relied on mitigation actions or contingency plans to contain the effect.
Determination of significance. Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required.	No significance	The impact is not substantial and does not require any mitigation action.
	Low	The impact is of little importance, but may require limited mitigation.
	Medium	The impact is of importance and therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.
	High	The impact is of great importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.

The general approach to this study has been guided by the principles of Integrated Environmental Management (IEM). In accordance with the IEM Guidelines issued by the DEA, an open, approach, which encourages accountable decision-making, has been adopted. The underpinning transparent principles of IEM require:

- informed decision-making;
- accountability for information on which decisions are made;
- a broad interpretation of the term “environment”;
- an open participatory approach in the planning of proposals;
- consultation with I&APs;
- due consideration of alternatives;
- an attempt to mitigate negative impacts and enhance positive impacts of proposals;
- an attempt to ensure that the social costs of development proposals are outweighed by the social benefits;
- democratic regard for individual rights and obligations;
- compliance with these principles during all stages of the planning, implementation and decommissioning of proposals; and
- the opportunity for public and specialist input in the decision-making process.

This report is guided by the requirements of the EIA Regulations, 2014, as amended in terms of the National Environmental Management Act, 1998 (Act No. 107, 1998).

8. POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

8.1. POTENTIAL IMPACTS

Potential impacts associated with the construction and operational phases of Rhodes Solar Park 1 together with its connection infrastructure were outlined and evaluated during the previous EIA process for which Environmental Authorization was issued.

The identification of impacts is based on:

- legal and administrative requirements;
- the nature of the proposed change in activity and specifications;
- the nature of the receiving environment;
- specialist studies and inputs;

Potential impacts associated with the proposed amendments may include:

- Impacts on ecology;
- Visual impacts.

8.2. CUMULATIVE IMPACTS

A number of mitigation measures are proposed which will lead to the impacts that may result from the establishment of the Rhodes Solar Park 1 to be low. The cumulative impacts of each of the possible impacts are assessed hereunder.

8.3. SPECIALIST STUDIES

Due to the nature of the changes in the specifications of the proposed development, a visual impact assessment specialist was requested to assess the visual impact of the increase in the height of the solar panels. The public participation process to be followed will provide valuable information in the identification of other issues which need to be addressed. The specialist studies which have been conducted and attached to this Impact Report are the following:

- Ecological Statement (Annexure C)
- Amended Visual Impact Assessment (Annexure D)

8.4. IMPACTS & MITIGATION MEASURES

8.4.1. Construction & Operational Phases Impacts and Mitigation Measures

All possible impacts that could have been predicted in both the construction and operational phases of the PV plant were addressed in the previous EIA process. Specific mitigation measures were proposed, and the significance of these impacts were described with and without the mitigation measures.

In this report, only impacts and mitigation measures applicable to impacts as a result of the change in specification, will be addressed.

8.4.1.1. Impact of the Project on the ecology (fauna & flora) of the area

Planning and construction phase

The removal of natural vegetation and destruction of habitat will have a negative effect on the biodiversity. However, considering that the development footprint remains the same, the conclusion is that the impacts on the biodiversity and soil potential will remain the same as discussed in the following reports, which formed part of the previous EIA process:

- An Environmental Report on the Ecology (Flora and Fauna) for the Proposed Renewable Energy Generation Project on the Farm Rhodes 269, Northern Cape Province
- An Environmental Report on the Soils, Land Use, Agricultural Potential and Land Capability for the Proposed Renewable Energy Generation Project on the Farm Rhodes 269, Northern Cape Province

The medium-high sensitivity area (Duneveld) located on the western and northern side of the project site should remain undeveloped, in compliance with requirements included in the Ecological Report. The original EA specified a 200m buffer around the Duneveld vegetation type. The 200m buffer was delineated and the project falls outside the Duneveld and 200m buffer zone.

8.4.1.2. Visual impacts

Construction phase

During the previous EIA process it was found that the natural aesthetic character of the site will be changed, although the Eskom“ Hotazel - Heuningvlei” 132 kV power line crossing the project site, have already changed the visual characteristics of the site. For this application there are no changes in the impacts as was identified and assessed in the previous EIA process.

Operational phase

Buildings and the solar modules have a visual impact on the surrounding areas. The increase in height from 3.1m to 4.5m (solar panels) had to be considered.

ALTERNATIVE LOCATION 1 (the preferred and authorised location)										
Project Phase	Impact: Visual disturbance								Significance	
	Activity/ Aspect	Specific impact	Severity	Duration	Extent	Frequency	Probability	With Mitigation	Without Mitigation	
								With Mitigation	Without Mitigation	
Construction	Buildings & panels	Visual	Low	High	Low-Medium	High	High	Low-Medium	Medium	
	Lights	Visual	Low	Medium	Low-medium	Medium-high	High	Low-Medium	Medium	
Operation	Buildings and panels – 3.1 m (current authorization)	Visual	Medium	High	Medium	High	High	Medium	Medium-High	

ALTERNATIVE LOCATION 1 (the preferred and authorised location)										
Project Phase	Impact: Visual disturbance								Significance	
	Activity/ Aspect	Specific impact	Severity	Duration	Extent	Frequency	Probability	With Mitigation	Without Mitigation	
								With Mitigation	Without Mitigation	
	Buildings and panels – 4.5m (amended height applied for – to be authorized)	Visual	High	High	Medium	High	High	Medium	High	
	Lights	Nuisance	Low	High	Low-medium	Medium-High	High	Low-Medium	Medium	
	Electrical lines	Visual	Low	High	Low	High	High	Low-Medium	Low-Medium	
Cumulative Impacts	Increased in visibility of yet another solar park in the area	Increased visual intrusion and nuisance	Medium-High	Medium	Medium	Low-Medium	High	Low-Medium	Medium	

Mitigation measures included in previous EIA Report

- Install light fixtures that provide precisely directed illumination to reduce light “spillage” beyond the immediate surrounds of the project site.
- Minimise the number of light fixtures to the bare minimum and connecting these lights to motion sensors can also considered in reducing light pollution.
- A video-surveillance system using infrared or microwave video cameras, which do not need a switched-on lighting system, is recommended.
- Earth works should be executed in such a way that only the footprint and a small “construction buffer zone” around the proposed components are exposed.
- Natural occurring vegetation, (indigenous vegetation) should be retained as far as possible,
- Cumulative impacts will be low as it was possible to mitigate the visual impact at Rhodes Solar Park 1 successfully as a result of the natural characteristics of the area.

Mitigation measures revised and added to improve mitigation

- Natural occurring vegetation, (indigenous vegetation) should be retained as far as possible, especially vegetation along the boundary of the project site:
 - Along the local road – eastern boundary;
 - Along the southern boundary;
- Incorporate cleared vegetation into a rehabilitation plan. This should be done in conjunction with the ecologist, visual Impact and any other relevant specialists.
- Cleared vegetation could be planted in areas that have line of sight from visual receptors.
- Ensure that dust suppressing techniques are in place at all times. This could include regular wetting of the soil or application of dust suppressing agents. Regular wetting of soil should be used as a last resort due to low availability of water within the study area.
- Minimise the clearance of existing vegetation. Cleared areas should re-vegetated.

- Implement correct and effective stormwater management measures which would reduce the potential and amount of erosion. This would consecutively result in reducing the loss of valuable topsoil and vegetation habitat.
- Farmsteads and houses identified on the farm Rhodes and East are not permanently occupied. The landowners do not reside there permanently and therefore the impact will only be applicable when visiting the farm.

9. POTENTIALLY SIGNIFICANT IMPACTS

Impacts with a rating of Medium-high or High are impacts which are regarded as potentially significant, rated without any mitigation measures. In this impact assessment, the following impact was regarded as potentially significant impacts:

- i. Visual Impact.

This impact will now briefly be discussed.

9.1. Cumulative impacts

- i. The visual impact can have a cumulative effect if mitigation measures are not properly implemented.

9.2. Nature of impact

- i. This impact can have a negative impact on the sense of place of the surrounding areas.

9.3. Extent and duration of impact

- i. The extent is on the development area as well as surrounding properties. The duration is for the life of the development.

9.4. Probability of occurrence

- i. The probability is possible.

9.5. Degree to which impact can be reversed

- i. This impact is reversible as the solar park can be decommissioned and the area can be restored to its natural state.

9.6. Degree to which impact can cause irreplaceable loss of resource

- i. The negative visual impact will not cause the irreplaceable loss of any resources in the area.

9.7. Degree to which impact can be mitigated

- i. Successful mitigation is possible

10. CONCLUSIONS AND RECOMMENDATIONS

This Draft Impact Report describes the amendments which are being applied for, which constitutes a Part 2 Amendment Application in terms of Regulation 31 of the EIA Regulations, 2014, as amended, for the development of Rhodes Solar Park 1.

The purpose of this report is to provide the relevant authorities and interested and affected parties with sufficient information regarding the potential impacts of the changes to the development, which was previously authorized. Amendments to the original EA being applied for include:

Component of table in EA: Electricity generating capacity

<u>Original Wording</u>	<u>Amended Wording</u>
75MW	100MW

Component of table in EA: Proposed technology and height of installed panels from ground level

<u>Original Wording</u>	<u>Amended Wording</u>
PV solar modules: thin-film PV modules or mono-crystalline or polycrystalline PV Modules	PV solar modules: Monocrystalline or polycrystalline module can be used
Mounting systems: fixed mounting systems or single-axis horizontal trackers (SAT)	Mounting systems: Single axis horizontal trackers HSAT
Maximum height (highest point of the PV arrays): 3.1m above the ground level	Maximum height (highest point of the PV arrays): 4.5m
Minimum height (lowest point of the PV arrays): 0.7m above the ground level.	Minimum height (lowest point of the PV arrays): 0.5m

Component of table in EA: Number of panels dependant on module to be used

<u>Original Wording</u>	<u>Amended Wording</u>
Number of PV modules depend on type and peak powers of the selected modules. Typical figures: Up to 638 900 thin film PV modules of 135 Wp each Up to 287 500 mono/polycrystalline PV modules of 300 Wp each	The number of PV modules cannot be evaluated at this stage because it strongly depends on the final size of the plant and the nominal power peak of a single PV module

Component of table in EA: Panel dimensions

<u>Original Wording</u>	<u>Amended Wording</u>
Thin film PV modules (typical): 1.0m x 1.4m x 0.01m Mono/polycrystalline PV modules (typical): 1.0mx2.0mx0.05m	Panel dimensions will depend on the panel module selected

Component of table in EA: Number of inverters

Original Wording	Amended Wording
The installed capacity AC side will be 75 MWac which can be achieved by means of 75 DC/AC inverters of 1000 kWac each (indicative)	The total number of inverters useful for reaching the AC installed capacity could vary mainly if centralized or string inverter solution is adopted.

Page 4 and 5 of EA: Width and length of internal roads

Removal of the co-ordinates specified for main internal road around the security fence as well as secondary internal roads.

The potentially significant negative impacts that have been identified should be mitigated through the implementation of the mitigation measures highlighted in this report. It is suggested that the proposed mitigation measures, will effectively lower the impacts to acceptable levels.

It is the professional opinion of AGES that the proposed changes to the development specifications do not present any fatal flaws in terms of negative impacts to the environment and therefore will not have any significant detrimental impacts to render the project unfeasible.