



GEOHYDROLOGY

GEOTECHNICAL

ENVIRONMENTAL

SOCIAL DEVELOPMENT

Final EIA Report

14/12/16/3/3/2/2099



**PROPOSED RENEWABLE ENERGY GENERATION PROJECT ON
THE FARM BLOMSKRAAL 216, VENTERSBURG RD,
MATJHABENG LOCAL MUNICIPALITY, LEJWELEPUTSWA
DISTRICT MUNICIPALITY, FREE STATE PROVINCE**
Short name: Virginia 1 Solar Park

01 February 2022

Commissioned by: Ursa Energy (Pty) Ltd
Document version 2.0 – Final
Compiled EA Grobler



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**PROJECT MAIN FEATURES IN COMPLIANCE WITH EIA GUIDELINES
SUMMARY OF INFORMATION INCLUDED IN THE REPORT**

GENERAL SITE INFORMATION

Site location and Property details

Farm	Blomskraal 216 Ventersburg RD
Portion	Portion 0
LPI code	F03500000000021600000
Overall Extent	4246.0575 hectares
Landowner	Forum trading 124 (Pty) Ltd
Diagram deed number	G001861
Title deed number	T6572/1981
Registration date	20020118
Current land use	Grazing, game farming and croplands

Site data

Latitude (center point)	28° 12' 45" S
Longitude (center point)	26° 59' 24" E
Altitude	1 345 to 1 410 m.a.m.s.l.
Ground slope	Gently undulating 2% average slope

Adjacent properties

Farm	Le Roux 717 Ventersburg RD
Portion	Portion 1
LPI code	F03500000000071700001
Landowner	
Current land use	Croplands & grazing
Farm	Junctiondrift 217 Ventersburg RD
Portion	Portion 0
LPI code	F03500000000021700000
Landowner	Pleasant View Farming (Pty) Ltd
Current land use	Grazing
Farm	Junctiondrift 217 Ventersburg RD
Portion	Portion 1
LPI code	F03500000000021700001
Landowner	Chris Botha Trust
Current land use	Croplands
Farm	Junctiondrift 217 Ventersburg RD
Portion	Portion 2
LPI code	F03500000000021700002
Landowner	Overberg Boerdery (Pty) Ltd
Current land use	Croplands
Farm	Junctiondrift 217 Ventersburg RD
Portion	Portion 3
LPI code	F03500000000021700003
Landowner	RSA
Current land use	Croplands

Farm Portion LPI code Landowner Current land use	Rooiheuvel 57 Ventersburg RD Portion 0 F03500000000005700000 Thys Delpont Trust Croplands
Farm Portion LPI code Landowner Current land use	Randjesfontein 297 Ventersburg RD Portion 0 F03500000000029700000 Mariette Trust Grazing
Farm Portion LPI code Landowner Current land use	De Barracks 356 Ventersburg RD Portion 0 F03500000000036600000 WP Wessels Croplands & grazing
Farm Portion LPI code Landowner Current land use	Annies Velden 478 Ventersburg RD Portion 0 F03500000000047800000 Tswelopele Trust Croplands & grazing
Farm Portion LPI code Landowner Current land use	Rustgevonden 285 Ventersburg RD Portion 0 F03500000000028500000 Thys Delpont Trust Croplands & grazing
Farm Portion LPI code Landowner Current land use	Vrede 389 Ventersburg RD Portion 0 F03500000000038900000 Overberg Boerdery (Pty) Ltd Croplands & grazing
Farm Portion LPI code Landowner Current land use	De Poort 378 Winburg RD Portion 0 F03500000000037800000 LM Trust Grazing
Farm Portion LPI code Landowner Current land use	Spes Bona 493 Winburg RD Portion 0 F03500000000049300000 Lekkerlewe Trust Grazing
Farm Portion LPI code Landowner Current land use	Quaggafontein 3 Winburg RD Portion 0 F035000000000300000 Forum trading 124 (Pty) Ltd Grazing
Farm Portion LPI code Landowner Current land use	Delaporte 887 Winburg RD Portion 0 F03500000000088700000 Forum trading 124 (Pty) Ltd Grazing

Farm	Palmietfontein 229 Winburg RD
Portion	Portion 0
LPI code	F03500000000022900000
Landowner	Forum trading 124 (Pty) Ltd
Current land use	Grazing
Farm	Detente 744 Ventersburg RD
Portion	Portion 0
LPI code	F03500000000074400000
Landowner	
Current land use	Grazing

PV POWER PLANT DESIGN SPECIFICATIONS AND CONNECTION TO THE ESKOM GRID

Project data	
Project name	VIRGINIA 1 SOLAR PARK
Technology	Photovoltaic power plant
Number of phases (if necessary)	1
Maximum generating capacity at the delivery point (Export Capacity)	up to 100 MW
Type of PV modules	Mono/Polycrystalline , mono-facial or bi-facial
Type of mounting system	fixed or horizontal single-axis trackers (SAT)
Expected annual energy production	up to 328.1 GWh/year with fixed mounting system up to 382.8 GWh/year with trackers
Expected Load factor	0.240 with fixed mounting system 0.280 with trackers
Expected Full net equivalent hours (EOH)	2100 h/year (Wh/Wp/y) with fixed mounting systems 2300 h/year (Wh/Wp/y) with trackers

Technical specifications	
Installed power capacity - AC side	up to 125 MW
Installed power capacity - DC side	up to 156 MW
Minimum structure height above ground level	1.0 m
Maximum structure height above ground level	4.5 m

Other technical information	
Footprint, including internal roads	Up to 245 hectares
PV power plant lifetime	approximately 35 years
Construction site (temporary)	approximately 10 hectares
Construction timeframe	15 to 24 months

Connection solution
Virginia 1 Solar Park will be connected to the 132 kV busbar of the **Eskom Theseus 400 kV / 132 kV Main Transmission Substation (MTS)** via a new 132 kV power line up to 20 km long. A separate Basic Assessment is conducted for the authorisation of the 132kV power line connection the on-site substation and switching station to Eskom Theseus MTS

Delivery point: voltage level	132 Kv
New HV substation inside the property - footprint	Approximately 10,000 m ²

Technical details of the proposed facility	
Component	Description/Dimensions
Height of PV structures	1.0 - 4.5 m above ground
Surface area to be covered (including associated infrastructure like roads)	Project footprint / fenced area is up to 245 ha. Surface area (within the project footprint) covered by PV modules, internal roads, MV stations, HV substation and BESS is up to 122 ha (cover ratio up to 0.5)
Voltage of overhead power lines	132kV
Capacity of the facility	Installed power capacity - DC side (PV modules): up to 156 MWp Installed power capacity - AC side (inverters): up to 125 MW Maximum Export Capacity (connection point): up to 100 MW
Area occupied by both permanent and construction laydown areas	Project footprint / fenced area is up to 245 ha. Surface area (within the project footprint) covered by PV modules, internal roads, MV stations, HV substation and BESS is up to 122 ha (cover ratio up to 0.5) The construction camp (temporary) will be up to 10 ha in extent, within the project footprint
Additional infrastructure	Battery Energy Storage System (BESS) up to 10 ha within the Project footprint / fenced area
Access roads	The project footprint / development area will have direct access from the regional road R70 which cross the property along the North-Western to South-Eastern direction. The access road from the regional road R70 will be 460 m long and up to 8.0 m wide, with a road reserve up to 13.5 m. – During construction phase, access road may have a road reserve wider than 13.5 m (up to 16.0 m) to allow the transportation of abnormal goods (e.g. power transformers, etc.).

1 NEED/DESIRABILITY OF THE PROJECT

The proposed solar park will assist the Eskom grid to meet the high energy demand related to the mining and industrial activities conducted in the Virginia and Welkom areas. Furthermore, being a renewable energy project, which does not generate greenhouse gases and it will assist to compensate the greenhouse gas emissions arising from these mining and industrial activities.

The purpose of the proposed Virginia 1 Solar Park is to add new capacity for the generation of electrical energy to the national electricity supply, in compliance with the Minister of Energy's Determinations and in order to meet the "electricity consumptions' growth" of the Free State Province.

2 ENVIRONMENTAL IMPACT STATEMENT

2.1 SUMMARY KEY FINDINGS OF THE EIA

It can be concluded that there will be environmental impacts including cumulative impacts as a result of the proposed development of the Virginia PV Solar facility. However, all the impacts can be mitigated to an extent which would make the development possible. Most of the impacts can be avoided and potential impacted areas such as the heritage site will be demarcated as no-go areas, therefore limiting the possible negative environmental impacts to an acceptable level.

3 FINAL PROPOSED ALTERNATIVES RESPONDING TO IMPACT MANAGEMENT MEASURES, AVOIDANCE AND MITIGATION MEASURES IDENTIFIED IN ASSESSMENT

The preferred alternative was identified after all possible negative impacts were mapped and demarcated as no-go zones.

In order to minimize negative environmental impacts, there are areas that are not available for future developments of any kind. In order to mitigate for most of the negative impacts, avoidance seemed to be the best option in terms of the main issues, including:

- Visual impacts
- Bird collisions - limit occurrences
- Impacts on soils
- Impacts on biodiversity
- Degradation of archaeological sites/paleontology.
- Impacts on Traffic

4 REASONED OPINION FOR AUTHORISATION OF ACTIVITY AND CONDITIONS IN RESPECT OF THAT AUTHORISATION

It is the opinion of the EAP that the environmental impacts associated with the proposed development were identified and that the mitigation measures proposed to mitigate the negative impacts will decrease the environmental negative impacts to acceptable levels.

The EAP respectfully request comments from the competent authority to enable AGES to compile the Final Impact Assessment Report.

5 PERIOD OF ENVIRONMENTAL AUTHORISATION AND DATE OF CONCLUSION OF ACTIVITY

The period for which the EA is required is for 10 Years from date of Environmental Authorisation.

The date on which the activity will be concluded is in 10 years from date of Environmental Authorisation. Post construction monitoring must be done for at least 2 Years after finalisation of construction.