GEOHYDROLOGY

GEOTECHNICAL

ENVIRONMENTAL

SOCIAL DEVELOPMENT

30 years of Purpose With Passion

Final EIA Report **14/12/16/3/3/2/2101**

PROPOSED RENEWABLE ENERGY GENERATION PROJECT ON THE FARM BLOMSKRAAL 216, VENTERSBURG RD, MATJHABENG LOCAL MUNICIPALITY, LEJWELEPUTSWA DISTRICT MUNICIPALITY, FREE STATE PROVINCE

Short name: Virginia 3 Solar Park

02 February 2022

Commissioned by: Volans Energy (Pty) Ltd
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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
Land Owner	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
Land Owner	
Current land use	Croplands & grazing
Farm	**Junctiondrift 217 Ventersburg RD**
Portion	**Portion 0**
LPI code	F03500000000021700000
Land Owner	Pleasant View Farming (Pty) Ltd
Current land use	Grazing
Farm	**Junctiondrift 217 Ventersburg RD**
Portion	**Portion 1**
LPI code	F03500000000021700001
Land Owner	Chris Botha Trust
Current land use	Croplands
Farm	**Junctiondrift 217 Ventersburg RD**
Portion	**Portion 2**
LPI code	F03500000000021700002
Land Owner	Overberg Boerdery (Pty) Ltd
Current land use	Croplands
Farm	**Junctiondrift 217 Ventersburg RD**
Portion	**Portion 3**
LPI code	F03500000000021700003
Land Owner	RSA
Current land use	Croplands

Farm	**Rooiheuwel 57 Ventersburg RD**
Portion	**Portion 0**
LPI code	F03500000000005700000
Landowner	Thys Delport Trust
Current land use	Croplands
Farm	**Randjesfontein 297 Ventersburg RD**
Portion	**Portion 0**
LPI code	F03500000000029700000
Landowner	Mariette Trust
Current land use	Grazing
Farm	**De Barracks 356 Ventersburg RD**
Portion	**Portion 0**
LPI code	F03500000000036600000
Landowner	WP Wessels
Current land use	Croplands & grazing
Farm	**Annies Velden 478 Ventersburg RD**
Portion	**Portion 0**
LPI code	F03500000000047800000
Landowner	Tswelopele Trust
Current land use	Croplands & grazing
Farm	**Rustgevonden 285 Ventersburg RD**
Portion	**Portion 0**
LPI code	F03500000000028500000
Landowner	Thys Delport Trust
Current land use	Croplands & grazing
Farm	**Vrede 389 Ventersburg RD**
Portion	**Portion 0**
LPI code	F03500000000038900000
Landowner	Overberg Boerdery (Pty) Ltd
Current land use	Croplands & grazing
Farm	**De Poort 378 Winburg RD**
Portion	**Portion 0**
LPI code	F03500000000037800000
Landowner	LM Trust
Current land use	Grazing
Farm	**Spes Bona 493 Winburg RD**
Portion	**Portion 0**
LPI code	F03500000000049300000
Landowner	Lekkerlewe Trust
Current land use	Grazing
Farm	**Quaggafontein 3 Winburg RD**
Portion	**Portion 0**
LPI code	F03500000000300000
Landowner	Forum trading 124 (Pty) Ltd
Current land use	Grazing
Farm	**Delaporte 887 Winburg RD**
Portion	**Portion 0**
LPI code	F03500000000088700000
Landowner	Forum trading 124 (Pty) Ltd
Current land use	Grazing

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

PV POWER PLANT DESIGN SPECIFICATIONS AND CONNECTION TO THE ESKOM GRID

Project data	
Project name	**VIRGINIA 3 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 247 hectares
PV power plant lifetime	approximately 35 years
Construction site (temporary)	approximately 10 hectares
Construction timeframe	15 to 24 months
Connection solution	
Virginia 3 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 will be conducted for the authorisation of the 132kV power line connection the on-site substation and switching station to the Eskom Theseus MTS	
Delivery point: voltage level	132 Kv
New HV substation inside the property - footprint	Approximately 10,000 m^2

Water requirements	
Water consumption	See paragraph 4.2.5 - water requirements

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 247 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
Voltage of overhead power lines	up to 25 m above the ground level
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 (point of connection): up to 100 MW
Area occupied by both permanent and construction laydown areas	Project footprint / fenced area is up to 247 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.

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.