



GEOHYDROLOGY

GEOTECHNICAL

ENVIRONMENTAL

SOCIAL DEVELOPMENT



Final BA Report

14/12/16/3/3/1/2444



FINAL BASIC ASSESSMENT REPORT FOR THE PROPOSED 3x132kV POWERLINES FOR THE CONNECTION OF THE VIRGINIA 1, 2 & 3 SOLAR PARKS TO THE ESKOM THESEUS SUBSTATION, LOCATED ON THE MATJHABENG AND MASILONYANA LOCAL MUNICIPALITIES, LEJWELEPUTSWA DISTRICT MUNICIPALITY, FREE STATE PROVINCE - Short name: Virginia 3x132kV Powerlines

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Commissioned by: Norma Energy (Pty) Ltd
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1 LOCATION OF ACTIVITY

1.1 SURVEYOR GENERAL 21-DIGIT CODES OF DEVELOPMENT AREAS

The new distribution powerlines (Virginia Powerlines) will consist of three 132 kV powerlines which will connect the proposed Virginia 1, 2 and 3 Solar Parks to the Eskom Theseus Main Transmission Substation (MTS).

The Virginia 1, 2 and 3 Solar Parks are proposed on Farm BLOMSKRAAL 216 Ventersburg RD, Matjhabeng Local Municipality, Lejweleputswa District Municipality, Free State Province; the environmental authorisation process of these photovoltaic projects is currently ongoing, with DFFE Reference 14/12/16/3/3/2/2099, 14/12/16/3/3/2/2100 and 14/12/16/3/3/2/2101.

The Eskom Theseus Main Transmission Substation (MTS) is located on Portion 6 of the Farm DOORN RIVIER 330 Theunissen RD, Masilonyana Local Municipality, Lejweleputswa District Municipality, Free State Province, 16 km North-East of the planned location of the Virginia 1, 2 and 3 Solar Parks.

The following properties fall in the “powerline study corridor for Basic Assessment” (500m wide) and will be crossed by three (3) powerlines, subject to the final alignment:

- Farm Blomskraal 216,
- Portion 3 of the Farm Detente 744,
- Portion 2 of the Farm Detente 744,
- Portion 1 of the Farm Detente 744,
- Remaining Extent of the Farm Detente 744,
- Remaining Extent of the Farm Le Roux 766,
- Portion 4 of the Farm Florida 633,
- Portion 27 of the Farm Welgelegen 382,
- Portion 24 of the Farm Welgelegen 382,
- Portion 2 of the Farm Welgelegen 382,
- Portion 3 of the Farm Bloemhoek 509,
- Portion 2 of the Farm Bloemhoek 509,
- Remaining Extent of the Farm Bloemhoek 509,
- Portion 21 of the Farm Doorn Rivier 330,
- Portion 11 of the Farm Doorn Rivier 330 and
- Portion 6 of the Farm Doorn Rivier 330,
- Portion 1 of the farm LE ROUX 717
- Portion 1 of the farm LE ROUX 766
- Portion 2 of the farm LE ROUX 766

The listed farms are located within the Matjhabeng and Masilonyana Local Municipalities, Lejweleputswa District Municipality, Free State Province.

Site location - Surveyor-general 21-digit site code:

F	0	3	5	0	0	0	8	0	0	0	0	0	2	1	6	0	0	0	0
F	0	3	5	0	0	0	8	0	0	0	0	0	7	4	4	0	0	0	3
F	0	3	5	0	0	0	8	0	0	0	0	0	7	4	4	0	0	0	2
F	0	3	5	0	0	0	8	0	0	0	0	0	7	4	4	0	0	0	1
F	0	3	5	0	0	0	8	0	0	0	0	0	7	4	4	0	0	0	0
F	0	3	5	0	0	0	8	0	0	0	0	0	7	6	6	0	0	0	0
F	0	3	5	0	0	0	8	0	0	0	0	0	6	3	3	0	0	0	4
F	0	3	5	0	0	0	8	0	0	0	0	0	3	8	2	0	0	0	7
F	0	3	5	0	0	0	8	0	0	0	0	0	3	8	2	0	0	0	4
F	0	3	5	0	0	0	8	0	0	0	0	0	3	8	2	0	0	0	2
F	0	3	3	0	0	0	3	0	0	0	0	0	5	0	9	0	0	0	3
F	0	3	3	0	0	0	3	0	0	0	0	0	5	0	9	0	0	0	2
F	0	3	3	0	0	0	3	0	0	0	0	0	5	0	9	0	0	0	0
F	0	3	3	0	0	0	3	0	0	0	0	0	3	3	0	0	0	0	1
F	0	3	3	0	0	0	3	0	0	0	0	0	3	3	0	0	0	0	1
F	0	3	3	0	0	0	3	0	0	0	0	0	3	3	0	0	0	0	6
F	0	3	3	0	0	0	3	0	0	0	0	0	7	1	7	0	0	0	1
F	0	3	3	0	0	0	3	0	0	0	0	0	7	6	6	0	0	0	1
F	0	3	3	0	0	0	3	0	0	0	0	0	7	6	6	0	0	0	2
1	2	3	4	5															

1.2 PHYSICAL ADDRESS AND FARM NAME

NORMA ENERGY (PTY) LTD is proposing the establishment of three (3) new 132kV powerlines for the connection of three (3) renewable energy generation facilities (Photovoltaic Power Plants) with associated infrastructure and structures on:

- **Farm BLOMSKRAAL 216 Ventersburg RD, Matjhabeng Local Municipality, Lejweleputswa District Municipality, Free State Province.**

The renewable Photovoltaic (PV) Power Plants will be connected to the Eskom grid via three new 132kV powerlines (Virginia Powerlines) between the three proposed solar parks and the Eskom Theseus Main Transmission Substation (MTS). The Eskom Theseus Main Transmission Substation (MTS) is located 16 km North-East of the project site, on Portion 6 of the Farm Doorn Rivier 330.

The name of the proposed facility will be VIRGINIA 3 x 132kV POWERLINES.

The geographical co-ordinates of the preliminary alignments of the 3 x 132 kV powerlines, within the project site of the solar parks and the 500 m wide powerline study corridor, are as follows:

Table 1. Geographical co-ordinates of the preliminary powerline alignments

Point Location	Virginia 1 powerline (latitude / longitude)	Virginia 2 powerline (latitude / longitude)	Virginia 3 powerline (latitude / longitude)
01 Start (on-site substation of the Solar Park)	28°12'54.60"S 26°58'31.90"E	28°13'07.70"S 26°59'22.50"E	28°12'05.70"S 27° 0'10.30"E
01bis turning point project site	N/A	N/A	28°12'19.50"S 26°59'03.30"E
02 turning point project site	28°12'52.50"S 26°58'29.70"E	28°13'9.90"S 26°59'2.50"E	28°12'49.10"S 26°58'28.60"E
03 turning point powerline study corridor	28°11'41.00"S 26°56'20.70"E	28°11'39.90"S 26°56'21.20"E	28°11'38.80"S 26°56'21.70"E
04 turning point powerline study corridor	28°11'31.80"S 26°55'33.00"E	28°11'30.70"S 26°55'33.40"E	28°11'29.60"S 26°55'33.90"E
05 turning point powerline study corridor	28°11'02.90"S 26°54'34.70"E	28°11'01.90"S 26°54'35.10"E	28°11'00.70"S 26°54'35.60"E
06 turning point powerline study corridor	28°10'48.60"S 26°52'39.60"E	28°10'47.50"S 26°52'40.80"E	28°10'46.50"S 26°52'42.00"E
07 turning point powerline study corridor	28°10'11.80"S 26°52'34.00"E	28°10'10.80"S 26°52'35.10"E	28°10'10.00"S 26°52'36.40"E
08 turning point powerline study corridor	28°09'33.20"S 26°49'53.40"E	28°09'31.70"S 26°49'52.90"E	28°09'30.40"S 26°49'52.40"E
09 Eskom Theseus MTS 132kV yard	28°09'33.20"S 26°49'44.90"E	28°09'33.20"S 26°49'44.90"E	28°09'33.20"S 26°49'44.90"E
Overall length	16.3 km	17.9 km	19.5 km

Norma Energy intends to include Virginia Powerlines as part of the submission of the three (3) Virginia Solar Parks, to the next **Window of the Renewable Energy Independent Power Producers Procurement Programme (REIPPP)**, to be issued by the Department of Mineral Resources and Energy ("DMRE").

In order to develop the proposed infrastructure, Norma Energy must undertake a Basic Assessment (BA) process and acquire environmental authorization from the National Department of Forestry, Fisheries and the Environment, (DFFE), in consultation with the Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA), in terms of the EIA Regulations, 2014 published on 4 December 2014, as amended under section 24(5) and 44 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA).

Norma Energy is the applicant for the Virginia Powerlines (the proposed project). The Virginia Powerlines route was based on the locality of the proposed three Virginia Solar Plants and the locality of the Eskom Theseus Substation. The proposed route / powerline study corridor (500 m wide) is also based on current Eskom infrastructure as well as the natural topography of the area. The proposed three (3) x 132kV Virginia Powerlines will be 16 to 20 km long, depending on the exact location of the on-site substations of the three solar parks on farm Blomskraal 216 Ventersburg RD.

Frequent shortages in electricity, fluctuations in supply and low voltages are currently experienced in South Africa. Therefore, the presence of new Photovoltaic Power Plants and associated infrastructure (Virginia Powerlines) in the Virginia area, could contribute towards increasing the availability and improving the reliability of the Eskom network. The proposed solar projects and associated Virginia Powerlines will assist the Eskom grid to meet the high energy demand in the Welkom area, where several mining activities are currently undertaken.

The independent Environmental Assessment Practitioners (EAP's) which have been appointed for the undertaking of the detailed environmental studies in compliance with the 2014 EIA Regulations, as amended, are AGES Limpopo (Pty) Ltd (AGES).

With the aim of identifying and assessing all potential environmental impacts related to the development as well as suggesting possible mitigation measures and alternatives, AGES has appointed specialist sub-consultants to compile detailed reports and to study the activities necessary for the assessment of the specific impacts related to their field of expertise.

AGES and the other specialist consultants are in a position of independency from Norma Energy and 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.

The characteristics, the technology and the extent of the Virginia Powerlines is defined and evaluated in the Final Basic Assessment Report and its annexures.

2 ENVIRONMENTAL IMPACT STATEMENT

2.1 SUMMARY KEY FINDINGS OF THE BASIC ASSESSMENT

It can be concluded that there will be environmental impacts as a result of the proposed development of the Virginia Powerlines. However, all the impacts can be mitigated to some extent. Most of the impacts can be avoided and potential impacted areas will be demarcated as no-go areas, therefore limiting the possible negative environmental impacts to an acceptable level.

2.2 CUMULATIVE ENVIRONMENTAL IMPACT STATEMENT

Taking into account all the findings of the specialist assessments on the proposed construction of the powerlines and comparing the cumulative impact assessment the cumulative impacts all rated as Low-Medium or Medium.

- The botanist confirmed that the cumulative impacts on the flora of the area will be Low Negative, both during the construction and operational phases. Provided that the proposed development and layout plans are consistent with the sensitivity map and take all the mitigation measures into consideration stipulated in this report, the planned development can be supported.
- The avian specialist confirmed that the cumulative impacts will be Low with implemented mitigation at both alternatives during the construction and operational phases.
- The remains of a later Historical Period settlement – probably a compound of farmworkers houses – was found on the farm Florida within the power line corridor (**Site Exigo-VSPL-HP01**). The site is poorly preserved, of medium-low significance.
- The cumulative impacts on paleontology might even be positive if fossils are found, rescued, and preserved.

The cumulative impacts are not of such a significance that it will prevent the development from taking place. It is proposed that the development can proceed.

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 soil, Impacts on biodiversity and Degradation of archaeological sites/ paleontology

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 Basic 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.