



## DRAFT BASIC ASSESSMENT REPORT

THE PROPOSED RUDOLPH POWERLINE NEAR  
VILJOENSKROON, FREE STATE PROVINCE

4 September 2023

# BASIC ASSESSMENT REPORT

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## PROJECT DETAIL

**DESTEA Reference No. :** To be obtained

**Project Title :** Grid Connection Infrastructure for Rudolph Solar Power Plant near Vijoenskroon, Free State Province

**Authors :** Ms. Ayabulela Manjezi

**Reviewer :** Mrs. Carli van Niekerk

**Client :** Rudolph Solar Power Plant (Pty) Ltd.

**Report Status :** Draft Basic Assessment Report

**Submission date :** 6 September 2023

**When used as a reference this report should be cited as: Solis Environmental (2023). Draft Basic Assessment Report: Grid Connection Infrastructure for the Rudolph Solar Power Plant near Viljoenskroon, Free State Province**

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# BASIC ASSESSMENT REPORT



**destea**

department of  
economic, small business development,  
tourism and environmental affairs  
FREE STATE PROVINCE

(For official use only)

**File Reference Number:**

**Application Number:**

**Date Received:**


Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2014, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

## Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 as amended and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **07 April 2017**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.

13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.
14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included in the electronic copy of the report submitted to the competent authority.

## APPENDICES

### Appendix A: Maps

- Appendix A1: Locality Map
- Appendix A2: Regional Map
- Appendix A3: Footprint Map
- Appendix A4: Land Capability Map
- Appendix A5: Vegetation Map
- Appendix A6: Cumulative Impact Map
- Appendix A7: Protected Areas Map
- Appendix A8: Critical Biodiversity Map
- Appendix A9a: Sensitivity Map
- Appendix A9b: Sensitivity Map
- Appendix A9c: Sensitivity Map

### Appendix B: Photographs

### Appendix C: Facility Illustration(s)

### Appendix D: Specialist Report

- Appendix D1: Terrestrial Biodiversity Compliance Statement
- Appendix D2: Avifauna Impact Assessment
- Appendix D3: Visual Impact Assessment
- Appendix D4: Soil and Agricultural Potential Assessment
- Appendix D5: Heritage Impact Assessment
- Appendix D6: Palaeontological Impact Assessment
- Appendix D7: Wetland Assessment
- Appendix D8: Terms of Reference

### Appendix E: Public Participation Process

- Appendix E1: Press advertisements and Site Notice
- Appendix E2: Proof of correspondence
- Appendix E3: Comments and Response Report
- Appendix E4: Written Comments Received
- Appendix E5: List of I&APs

### Appendix F: Impact Assessment

### Appendix G: Environmental Management Programme (EMPr)

- Appendix G1: Rudolph Power Line Generic EMPr

Appendix G2: Rudolph Substation/Switching Station Generic EMPr

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

**GLOSSARY OF TERMS AND ACRONYMS**

BA	Basic Assessment
BAR	Basic Assessment Report
CEA	Cumulative Effects Assessment
DFFE	Department of Forestry, Fisheries and the Environment
DM	District Municipality
DMRE	Department of Mineral Resources and Energy
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
EP	Equator Principles
EPFI	Equator Principles Financial Institutions
Environmental impact	Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's environmental aspects.
GNR	Government Notice Regulation
I&AP	Interested and affected party
IDP	Integrated Development Plan
IFC	International Finance Corporation
IPP	Independent Power Producer
IRP	Integrated Resource Plan
kV	Kilo Volt
LM	Local Municipality
Mitigate	Activities designed to compensate for unavoidable environmental damage.
MW	Megawatt
NEMA	National Environmental Management Act No. 107 of 1998
NERSA	National Energy Regulator of South Africa
NWA	National Water Act No. 36 of 1998
PAOI	Project Area of Influence
PPP	Public Participation Process
PV	Photovoltaic
QDS	Quarter Degree Square

### CONTEXT FOR THE DEVELOPMENT

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

The Rudolph Grid Connection is proposed to specifically address the need to connect the proposed Rudolph solar energy facilities to the national grid which will enable the evacuation of the generated electricity from the solar energy facilities. An Application for Environmental Authorisation has been lodged for Rudolph PV facility with the National Department of Forestry, Fisheries, and the Environment (DFFE). The process being followed is a Basic Assessment Process, due to the development area falling within the Klerksdorp Renewable Energy Development Zone (REDZ).

The primary rationale for the proposed grid connection infrastructure is to enable the evacuation of the generated electricity from the Rudolph Solar PV to ultimately aid in achieving the goal of 42% share of all new installed generating capacity being derived from renewable energy forms, as targeted by DMRE (Integrated Resource Plan Update 2010-2030). The IRP also identifies the preferred generation technologies required to meet the expected demand growth up to 2030 and incorporates government objectives including affordable electricity, reduced greenhouse gas (GHG) emissions, reduced water consumption, diversified electricity generation sources and localisation and regional development. In terms of the Integrated Resource Plan Update (2019 IRP Update, 2010-2030), over the short term (of the next two or three years), clear guidelines arose; namely to continue with the current renewable bid programme with additional annual rounds of 1000 MW PV, with approximately 8.4GW of the renewable energy capacity planned to be installed from PV technologies over the next twenty years.

Rudolph Solar PV 1 is intended to form part of the Department of Mineral Resources and Energy's (DMREs) Renewable Energy Independent Power Producer Procurement (REIPPP) Programme or any other programmes/opportunities to generate and supply power in South Africa<sup>1</sup>. The REIPPP Programme aims to secure 14 725 Megawatts (MW) of new generation capacity from renewable energy sources, while simultaneously diversifying South Africa's electricity mix. According to the 2021 State of the Nation Address, Government will be initiating the procurement of an additional 11 800 MW of power from renewable energy, natural gas, battery storage and coal in line with the Integrated Resource Plan 2019 and fulfilling their commitments under the United Nations Framework Convention on Climate Change and its Paris Agreement which include the reduction of greenhouse gas emissions.

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<sup>1</sup> Should Rudolph Solar PV 1 not be successful in the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) process it could also be used for private off-take. However, the Applicant confirms that the main intention is to bid the proposed developments as part of the REIPPPP Programme. Government Gazette No. 44989, dated 12 August 2021, amended the threshold for self-generation facilities from 1MW to 100MW. This amendment allows an Independent Power Producer (IPP) of up to 150MW to sell electricity to an end-user customer who consumes the power itself.



## BASIC ASSESSMENT REPORT

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Eskom, our largest greenhouse gas emitter, has committed in principle to net zero emission by 2050 and to increase its renewable capacity.

Specific grid connection infrastructure is being proposed as part of the Rudolph Grid Connection which includes a network of infrastructure including up to 2 switching substation/s and a 132kV overhead power line that will connect the proposed Rudolph Solar PV 1 to the national grid via overhead power line which traverses a number of affected properties. Further associated infrastructure will include access roads and laydown areas.

The grid connection solution is being assessed within the development area of the PV area. This will provide some flexibility for the avoidance of sensitive environmental features and areas which may be present in close proximity to the proposed grid connection infrastructure. A 400m wide and 15.4km long grid connection corridor has been identified which will be assessed for the placement of the grid connection infrastructure.

Based on the grid connection infrastructure proposed to be developed, listed activities under Listing Notice 1 and Listing Notice 3 of the EIA Regulations are triggered. Listed activities are activities that are considered to have an impact on the environment and as such Environmental Authorisation is required to undertake such activities. As such, a Basic Assessment (BA) process and Application for Environmental Authorisation is being undertaken and lodged with the Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA).

### EXECUTIVE SUMMARY

Like many other small and developing municipalities in the country, the Moqhaka Local Municipality, within which the Rudolph PV 1 Project is proposed, faces a number of challenges in addressing the needs and improving the lives of the community. The Final Integrated Development Plan (2022-2027) of the Fezile Dabi District Municipality<sup>2</sup> states that it is the vision of the municipality to improve the lives of their citizens and progressively meet their economic, basic and social needs thereby restoring community confidence and trust in government. The municipality aims to achieve their key strategic goals, such as delivering quality basic services (i.e. electricity, water and sanitation) to their communities, stimulating local economic growth and to ensure sound financial management and viability within the municipality. The Moqhaka Local Municipality's Final Integrated Development Plan (2022-2027) indicates the specific key performance areas and priority areas of the municipality which include basic service delivery, good governance, local economic development and social and community development to name a few. The development of the Rudolph PV 1 project will contribute to the goals of the respective local and district municipalities that will be affected by the proposed development, albeit to a limited extent.

The Rudolph Solar PV (Pty) Ltd intends to generate up to 175MW electrical power through photovoltaic (PV) panels and respective associated infrastructure on the Remaining Extent of Farm Rudolph No. 48, within the Moqhaka Local Municipality area of jurisdiction. The total footprint of the project will be approximately 582 hectares (including supporting infrastructure on site). The properties

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<sup>2</sup>The Moqhaka Local Municipality falls within the Fezile Dabi District Municipality.

affected by the grid connection corridor include; Remaining Extent Bresiefontein No.173, Portion 1 of Kleinfontein No. 369, Remaining Extent of Uitval No. 457, RE of Farm Smaldeel No. 157, Remaining Extent of Paradys No. 137, Portion 1 of Jackalsfontein 443, Remaining Extent of Vlakfontein No. 15, Remaining Extent of Zaaiplaats No. 190, Portion 2 of Zaaiplaats No. 190 and Portion 3 of Zaaiplaats No. 190. The grid connection infrastructure includes a 132kV power line to connect the facility from a collector substation to the national grid by connecting into the existing 132/400kV Mercury Main Transmission Substation (MTS).

This Application for Environmental Authorisation and Basic Assessment process is for the grid connection solution, which comprises specific grid connection infrastructure, to enable the evacuation of the generated electricity from the proposed Rudolph Solar PV 1. The Applicant therefore seeks to develop a 132kV overhead power line and up to two (2) 132kV switching substation/s. As part of this Basic Assessment process, the Applicant has identified a 400m wide and 13.5km long grid connection corridor and 5ha assessment area for the switching substation/s for the placement of the proposed grid connection infrastructure. This approach was taken to ensure that the development footprint ultimately put forward for Environmental Authorisation within the larger grid connection corridor assessed is appropriate from an environmental perspective. This approach also provides an opportunity for the avoidance of sensitive environmental features and areas.

The EIA Regulations, 2014 (GNR.517, as amended in 2021) published in terms of the National Environmental Management Act (Act No. 107 of 1998) determine that an environmental authorisation is required for certain listed activities, which might have detrimental impacts on the environment. The following activities have been identified with special reference to the proposed development and are listed in the EIA Regulations:

- Activity 11(i) (GN.R. 327): *“The development of facilities or infrastructure for the transmission and distribution of electricity outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.”*
- Activity 14 (GN.R. 327): *“The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.”*
- Activity 27 (GN.R. 327): *“The clearance of 1 hectares or more, but less than 20 hectares of indigenous vegetation.”*
- Activity 28(ii) (GN.R. 327): *“Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture or afforestation on or after 1998 and where such development (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.”*
- Activity 4(b)(i)(ee)(GN.R 324): *“The development of a road wider than 4 metres with a reserve less than 13.5 metres in the (b) Free State, (i) outside urban areas, within (ee) critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.*
- Activity 10 (b)(i)(ee)(GN.R 324): *“The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres*

## BASIC ASSESSMENT REPORT

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*in the (b) Free State, (i) outside urban areas, within (bb) National Protected Area Expansion Strategy Focus areas, (ee) critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional.*

- Activity 12(b)(i)(iv) (GN.R 324): *“The clearance of an area of 300 square meters or more of indigenous vegetation in the (b) Free State Province, (i) within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004*

Being listed under Listing Notice 1 & 3 (Regulation 327 & 324) implies that the development is considered as potentially having a potential impact on the environment. Subsequently a ‘basic assessment process’ is required as described in Regulations 19 - 20. Solis Environmental has been appointed as the independent consultant to undertake the Basic Assessment (BA) for the grid connection infrastructure on behalf of Rudolph Solar PV (Pty) Ltd. Regulation 19 of the 2014 EIA Regulations (as amended) requires that a BA report must contain the information set out in Appendix 1 to the Regulations or comply with a protocol or minimum information requirements relevant to the application as identified and gazetted by the Minister in a government notice. Appendix 1 to GN. R. 326 requires that the environmental outcomes, impacts and residual risks of the proposed activity be set out in a Basic Assessment Report (BAR).

It has been determined that the proposed development will have a net positive impact for the area and will subsequently ensure the optimal utilisation of resources. This is due to the fact that the proposed grid connection infrastructure will enable the operation and evacuation of generated solar electricity into the national grid from an authorised Solar Power Plant. All negative environmental impacts can be effectively mitigated through the proposed mitigation measures and no residual negative impacts are foreseen. The potentially most significant environmental impacts associated with the development are briefly summarized below:

### **Impacts during the construction phase:**

Construction of the power line will potentially result in the following impacts: loss of irreplaceable resources in terms of indigenous vegetation and faunal movement corridors, habitat destruction within the project footprint, destruction, degradation and fragmentation of surrounding habitats, displacement / emigration of avifauna community (including Species of Conservation Concern) due to noise pollution, direct mortality from persecution or poaching of avifauna species and collection of eggs, direct mortality from increased vehicle and heavy machinery traffic, impacts to soil and agriculture, and disturbance and degradation of wetland vegetation, introduction and spread of alien and invasive vegetation. The impacts expected to occur during the construction phase will mainly have a significance of low and negligible with some impacts being considered as medium (with mitigation). No impacts of a high significance are expected to occur.

### **Impacts during the operational phase:**

The proposed power line, substation / switching station and associated servitude will require routine maintenance work throughout the operational phase. The negative impacts are generally associated

## BASIC ASSESSMENT REPORT

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with Loss of irreplaceable resources in terms of indigenous vegetation and faunal movement corridors, collisions with grid connection line, electrocution with Grid Connection Line, direct mortality from roadkills, persecution or poaching of avifauna species and collection of eggs, encroachment of Invasive Alien Plants into disturbed areas, visual impacts, impacts to soil and agriculture and wetlands. The significance of the expected impacts is considered to be medium and low, with no impacts of a high significance expected to occur (this being with the implementation of mitigation).

### **Impacts during the decommissioning phase:**

The photovoltaic solar energy facility has a lifespan of between 20 and 30 years from where the project and its associated infrastructure will be decommissioned or upgraded. If the solar plant is not decommissioned the power line and the substation / switching station is expected to have a lifespan of more than 40 years (with maintenance) and the infrastructure will only be decommissioned once it has reached the end of life, or if no longer required. Upon decommissioning, the power line and substation / switching station would be disassembled, and the components removed from site. The physical environment will benefit from the decommissioning of the infrastructure since the site will be restored to its natural state. During the decommissioning phase the following impacts are foreseen: Loss of irreplaceable resources in terms of indigenous vegetation and faunal movement corridors, direct mortality due to earthworks, vehicle collisions and persecution, continued habitat degradation due to Invasive Alien Plant encroachment and erosion.

### **Cumulative impacts:**

According to the Department of Forestry, Fisheries and Environment (DFFE) database twelve (12) solar PV plant applications have been submitted to the Department within the geographic area of the proposed development area. Given the location and proximity other solar projects and therefore their associated grid connection infrastructure within the Rudolph site, the potential for cumulative impacts is deemed to be medium to low. The potentially most significant cumulative impact during the construction phase relate to the loss or fragmentation of habitats, impacts on avifauna, temporary employment and the impact of construction workers on local communities and influx of job seekers. The potential cumulative effects during the operational phase relate to visual impacts, avifauna impacts and the development of infrastructure for the generation of clean, renewable energy. During the decommissioning phase, the generation of waste and visual intrusion may result in cumulative impacts.

In accordance with the EIA Regulations, this Draft BAR evaluates and rates each identified potential impact and identifies and recommends mitigation measures which will be required in order to ensure the reduction of the impact significance of negative impacts to acceptable levels and the avoidance of negative residual risks. This Draft BAR also contains information that is required by the competent authority (Free State Department of Small Business Development, Tourism and Environmental Affairs (DESTEA)) to consider the Application for Environmental Authorisation and to reach a decision contemplated in Regulation 20 of GNR 326. No fatal flaws or impacts with unacceptable levels of significance were identified. The impacts from the proposed development are expected to be at an acceptable level with the implementation of mitigation measures and therefore the project can be authorised subject to the implementation of the recommended mitigation measures.

## BASIC ASSESSMENT REPORT

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It must be noted that this is the Draft Basic Assessment Report for the project. This report has been made available to all registered I&APs for a 30-day review and comment period as per Regulation 19(1)(b) of the EIA Regulations 2014, as amended. The review period is from 6<sup>th</sup> of September to 9<sup>th</sup> of October 2023.

# BASIC ASSESSMENT REPORT

## SECTION A: ACTIVITY INFORMATION

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

YES	NO
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If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

### 1. PROJECT DESCRIPTION

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

Rudolph Solar PV 1 (Pty) Ltd intends to develop a 175 MW photovoltaic solar facility and associated infrastructure on the Remaining Extent of the Farm Rudolph No. 48, situated within the Moqhaka Local Municipality area of jurisdiction. The town of Viljoenskroon is located approximately ~20km southeast of the proposed development. An Application has been lodged with the Department of Forestry, Fisheries and the Environment (DFFE) for the facility. The proposed project comprises of an approximately 15.4km long, 132kV overhead powerline to connect the Rudolph Solar PV1 energy facility from its on-site substation to the national grid via either the existing Mercury substation (preferred alternative) or the existing Zaaiplaats substation. The power line is assessed within a 400m wide corridor.

This Application for Environmental Authorisation and Basic Assessment process is for the grid connection solution to connect the abovementioned solar power plant to the national grid via a loop-in loop-out connection to the national grid via a single / double circuit overhead power line which traverse the affected property. The grid connection solution requires the development of specific grid connection infrastructure which includes a loop in loop out 132kV overhead power line and up to two (2) switching substation/s. For this Basic Assessment a larger grid connection corridor and switching substation assessment area has been identified within which the power line route and switching substation/s will be placed. The powerline is proposed to connect into the existing Eskom Mercury Substation. The corridor is approximately 400m wide and ~15.4km long and the assessment area for the switching substation/s is 5ha in extent and was assessed as part of the Basic Assessment process. Further associated infrastructure will include access roads and laydown areas.

Being listed under Listing Notice 1 (Regulation 327) and Listing Notice 3 (Regulation 324) implies that the development is considered as potentially having a potential impact on the environment. Subsequently a 'basic assessment process' is required as described in Regulations 19 - 20. Soli-Environmental has been appointed as the independent consultant to undertake the Basic Assessment (BA) for the grid connection infrastructure on behalf of Rudolph solar Power Plant (Pty) Ltd.

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

Regulations No. 326, 327, 325, 324 of 07 April 2017 and Regulation No. 517 of 11 June 2021 promulgated in terms of Section 24(5) and 44 of the National Environmental Management Act, (107 of 1998) determine that an Environmental Impact Assessment (EIA) process should be followed for certain listed activities, which might have a detrimental impact on the environment. According to Regulation No. 326 the purpose of the Regulations is: "...to regulate the procedure and criteria as contemplated in Chapter 5 of the Act relating to the preparation, evaluation, submission, processing and consideration of, and decision on, applications for environmental authorisations for the commencement of activities, subjected to environmental impact assessment, in order to avoid or mitigate detrimental impacts on the environment, and to optimise positive environmental impacts, and for matters pertaining thereto".

## BASIC ASSESSMENT REPORT

The EIA Regulations No. 324 & 327 outline the activities for which a Basic Assessment (BA) process should apply:

Listed activity as described in GN 327,325 and324	Description of project activity
<p><b><u>GN.R. 327 - Activity 11(i):</u></b>                      “The development of facilities or infrastructure for the transmission and distribution of electricity outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.”</p>	<p>The development of a 132kV single-circuit power line is required to enable the connection of the proposed Rudolph Solar Power Plant to the national grid network. A 400m wide and 15.4km long grid connection corridor is being assessed for the placement of the power line route and a larger development area is under assessment for the substation / switching station. The 132kV power line is proposed to connect into the existing Eskom Mercury Substation.</p>
<p><b><u>GN.R. 327 - Activity 12(ii)(a)(c):</u></b>                      “The development of (ii) infrastructure or structures with a physical footprint of 100 square meters or more (a) within a watercourse or (c) within 32 meters of a watercourse, measured from the edge of a watercourse.”</p>	<p>The proposed project will require the placement of linear infrastructure (i.e., overhead powerlines) will therefore be located within or within 32m of watercourses. The surface water features present includes artificial wetlands, drainage features and the Vaal River.</p>
<p><b><u>GN.R. 327 - Activity 24(ii):</u></b>                      “The development of a road (ii) with a reserve wider than 13.5 meters, or where no reserve exists where the road is wider than 8 meters.”</p>	<p>An access road will need to be constructed for the proposed 132kV Substation / switching station within the area under assessment. The internal access roads will vary between 6 and 12 meters in width.</p>
<p><b><u>GN.R. 327 - Activity 28:</u></b>                      “Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture or afforestation on or after 1998 and where such development (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.”</p>	<p>Activity 28(ii) is triggered as portions of the affected farm has been previously used for grazing and the property will be re-zoned to “special” use.</p>
<p><b><u>GN.R. 324 - Activity 4(b)(i)(ee):</u></b>                      “The development of a road wider than 4 metres with a reserve less than 13.5 metres in the (b) Free State, (i) outside urban areas, within (ee) critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.</p>	<p>An access road will need to be constructed for the proposed 132kV Substation / switching station within the area under assessment. The access road will be just over 8m. The 132kV power line will require a twin track gravel road up to 4m wide for construction and servicing/maintenance purposes.</p>

## BASIC ASSESSMENT REPORT

	<p>The project is located in the Free State Province, outside an urban area. The grid connection corridor and substation / switching station assessment area infringes into areas identified as CBA 1 and CBA 2 as per the Free State Biodiversity Plan (2015).</p>
<p><b><u>GN.R. 324 - Activity 10 (b)(i)(bb)(ee)(hh):</u></b>          “The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres in the (b) Free State, (i) outside urban areas, within (bb) National Protected Area Expansion Strategy Focus areas, (ee) critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans and (hh) areas within a watercourse or wetland; or within 100 metres from the edge of a watercourse or wetland.”</p>	<p>The proposed development will need to develop infrastructure for the storage and handling of dangerous goods (diesel and oil) in suitable containers with combined capacity of 80 cubic metres to be located in bunded areas at the construction camp, operation and maintenance buildings and substation/transformer stations.</p> <p>The project is located in the Free State Province, outside an urban area. The grid connection corridor and substation / switching station assessment area infringes into areas identified as CBA 1 and CBA 2 as per the Free State Biodiversity Plan (2015). Furthermore, various surface water features are present within the grid connection corridor that will need to be crossed by the service road (twin track gravel road up to 4m wide). Furthermore, surface water features are also located directly adjacent to the assessment area within which the substation / switching station will be located. The surface water features present includes artificial wetlands, drainage features and the Vaal River. The development of the grid infrastructure will therefore be located within or within 100m of watercourses and wetlands.</p>
<p><b><u>GN.R. 324 - Activity 12(b)(ii)(iv):</u></b>          “The clearance of an area of 300 square meters or more of indigenous vegetation in the (b) Free State (ii) within critical biodiversity areas identified in bioregional plans and (iv) areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.”</p>	<p>The development of the power line and substation / switching station, and associated infrastructure will require the clearance of indigenous vegetation within the Free State Province. The power line route will be 14.63km long.</p> <p>The grid connection corridor and substation / switching station assessment area infringes into areas identified as CBA 1 and CBA 2 as per the Free State Biodiversity Plan (2015). Furthermore, various surface water features are present within</p>



## BASIC ASSESSMENT REPORT

	<p>the grid connection corridor that will need to be crossed by the service road (twin track gravel road up to 4m wide). Furthermore, surface water features are also located directly adjacent to the assessment area within which the substation / switching station will be located. The surface water features present includes artificial wetlands, drainage features and the Vaal River. The development of the grid infrastructure will therefore be located within or within 100m of watercourses and wetlands.</p>
<p><b>GN.R. 324 - Activity 14(ii)(a)(c)(i)(ff):</b>          “The development of (ii) infrastructure or structures with a physical footprint of 10 square metres or more, where such development occurs (a) within a watercourse, or (c) within 32 meters of a watercourse, measured from the edge of a watercourse, within (b) the Free State, (i) outside urban areas, (ff) critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans</p>	<p>Various surface water features are present within the grid connection corridor that will need to be crossed by the service road (twin track gravel road up to 4m wide). Furthermore, surface water features are also located directly adjacent to the assessment area within which the substation / switching station will be located. The surface water features present includes artificial wetlands, drainage features and the Vaal River. The development of the grid infrastructure will therefore be located within or within 32m of watercourses and wetlands.</p> <p>The project is located within the Free State, outside an urban area). The grid connection corridor and substation / switching station assessment area infringes into areas identified as CBA 1 and CBA 2 as per the Free State Biodiversity Plan (2015).</p>

## 2. FEASIBLE AND REASONABLE ALTERNATIVES

“*alternatives*”, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

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

Describe alternatives that are considered in this application as required by Appendix 1 (3)(h) of GN 326, Regulation 2014 as amended. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) could be accomplished in the specific instance taking account of the

## BASIC ASSESSMENT REPORT

interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes, etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the, competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

### a) Site alternatives

<b>Alternative 1 (preferred alternative)</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
<p>A 400m wide and 15.4km long grid connection corridor and approximately 5ha assessment area for the switching substation/s has been identified and assessed for the placement of the grid connection infrastructure. The preferred grid connection corridor is also located in close proximity to the connection point on the national grid.</p> <p>As the corridor and assessment area are related to the proposed Rudolph solar energy facilities, no other grid connection corridor locations are being considered for the development.</p>	<p><b>Start:</b> 27° 0'53.25"S</p> <p><b>End:</b> 27° 0'5.87"S</p>	<p><b>Start:</b> 26°54'32.70"E</p> <p><b>End:</b> 26°49'6.73"E</p>
<b>Alternative 2</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
<b>Alternative 3</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)

In the case of linear activities:

#### Alternative: Power Line

Alternative S1 (preferred)

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

**Latitude (S):**

**Longitude (E):**

27° 0'53.25"S	26°54'32.70"E
27° 0'24.58"S	26°51'37.28"E
27° 0'5.87"S	26°49'6.73"E

Alternative S2 (if any)

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

27° 0'53.25"S	26°54'32.70"E
27° 0'24.58"S	26°51'37.28"E
27° 1'12.87"S	26°48'36.93"E

Alternative S3 (if any)

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


## BASIC ASSESSMENT REPORT

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For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

## BASIC ASSESSMENT REPORT

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A of this form.

### b) Lay-out alternatives

<b>Alternative 1 (preferred alternative)</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
The proposed power line is approximately 15.4km long, and the proposed route of the power line follows existing powerline servitudes. The route also avoids all environmental sensitivities identified by specialist studies. The Mercury substation is the preferred alternative due to available power capacity in the substation.	<b>Start:</b> 27° 0'53.25"S  <b>End:</b> 27° 0'5.87"S	<b>Start:</b> 26°54'32.70"E  <b>End:</b> 26°49'6.73"E
<b>Alternative 2</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
The alternative powerline route connects into the Zaaiplaats collection station. Although the route has a shorter route, the Zaaiplaats collection station is currently over capacitated with PV facilities within the area.	<b>Start:</b> 27° 0'53.25"S  <b>End:</b> 27° 1'12.87"S	<b>Start:</b> 26°54'32.70"E  <b>End:</b> 26°48'36.93"E
<b>Alternative 3</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)

### c) Technology alternatives

<b>Alternative 1 (preferred alternative)</b>
<p>A 132kV overhead distribution line is the preferred alternative for the applicant due to overhead lines being less costly to construct than underground lines. Therefore, the preference for overhead lines is mainly based on cost. Overhead lines allow high voltage operations, and the surrounding air provides the necessary electrical insulation to earth. Further, the surrounding air cools the conductors that produce heat due to lost energy.</p> <p>The overall weather conditions in the Free State Province are unlikely to cause damage and faults on the proposed overhead distribution power line. Nonetheless, if a fault occurs, it can be found quickly by visual means using a manual line patrol. Repair to overhead lines is relatively simple in most cases and the line can usually be put back into service within a few days. In terms of potential impacts associated with overhead distribution lines these include visual intrusion and threats to sensitive habitat (where applicable).</p> <p>Furthermore, overhead power lines also provide an opportunity for the avoidance of sensitive environmental features as the overhead lines can span on-ground environmental features to ensure conservation, therefore providing more flexibility in terms of mitigation of the associated on-ground disturbance. The following alternatives may be considered for the overhead power line:</p> <p><u>Single Circuit Overhead Power Line</u></p>

## BASIC ASSESSMENT REPORT

The use of single circuit overhead power lines to distribute electricity is considered the most appropriate technology and has been designed over many years for the existing environmental conditions and terrain as specified by Eskom Specifications and best international practice. Based on all current technologies available, single circuit overhead power lines are considered the most environmentally practicable technology available for the distribution of power. This option is considered appropriate for the following reasons:

- More cost-effective installation costs;
- Less environmental damage during installation; and
- More effective and cheaper maintenance costs over the lifetime of the power line.

The use of a single-circuit power line is preferred for the proposed project as it will meet the requirements to evacuate the generated solar electricity from the Rudolph SPP to the national grid.

### Alternative 2

#### Double Circuit Overhead Power Line

Where sensitive environmental features are identified, and there is sufficient justification, Eskom will consider the use of double circuit (placing 2 power lines on either side of the same tower structure) to minimise impacts. However, the use of double-circuiting has a number of technical disadvantages:

1. Faults or problems on one power line may mean that the other power line is also disabled during maintenance, and this will affect the quality of supply to an area. Larger and taller towers as well as more towers are required for double-circuit power lines.

The double-circuit overhead power line proves more feasible since the single circuit may not have the capacity to transmit the large amount of electricity generated from the plant and during maintenance the entire plant would not have to be off-line as one of the double circuit lines would still be able to supply electricity. The use of a double-circuit power line is not currently being considered for the development by the developer.

### Alternative 3

Underground Transmission Lines - Underground cables have generally used where it is impossible to use overhead lines for example because of space constraints. Underground cabling of high voltage power lines over long distances is not considered a feasible or environmentally practicable alternative for the following reasons:

- Underground cabling will incur significantly higher installation and maintenance costs.
- It is more difficult and takes longer to isolate and repair faults on underground cables.
- There is an increased potential for faults at the transition point from underground cable to overhead power line.
- Underground cables require a larger area to be disturbed during construction and maintenance operations and hence have a bigger environmental disturbance footprint.

## BASIC ASSESSMENT REPORT

- Underground cabling requires the disturbance of a greater area when it comes to agriculture and other compatible land uses as the entire servitude becomes available for use as opposed to just the area around the towers.

The use of an underground power line is not feasible for the proposed project due to the length of the line, which is ~9.2km long.

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

Alternative 1 (preferred alternative)
<p>The choice of pylon structure to be used for the power line will be determined in consultation with Eskom and does not significantly affect the environmental impacts of the proposed development as provision has already been made for the visual, ecological and heritage impacts of erecting a power line. No defined structure has been confirmed at this stage and will depend on Eskom's technical requirements. The 132kV line must be constructed according to the authorised standards for a power line approved by Eskom Holdings SoC Ltd. The structure to be utilised for the power line towers will also be informed by the local geotechnical and topographical conditions.</p> <p>A variety of different monopole pylon options could be required, depending on the location of the pylon within the route or at bends and how sharp the bend is.</p>
Alternative 2
Alternative 3

### e) No-go alternative

This alternative considers maintaining the current state, which involves keeping the grid connection corridor and substation/switching station development area, as well as the surrounding land, zoned for agricultural purposes. Without proceeding with the proposed activity, these areas will continue to be utilized for cattle grazing and maize cultivation.

The primary purpose of the proposed 132kV power line and substation/switching station is to establish a connection between the proposed Rudolph solar facility and the National Grid. However, if the status quo is upheld, it would lead to potential opportunity costs. The solar facility would be unable to operate without the power line and substation/switching station, resulting in job losses and hindering economic growth in the area. Choosing to maintain the status quo could mean forgoing the benefits that the successful operation of the solar facility would otherwise bring to the region.

Paragraphs 3 – 13 below should be completed for each alternative.

# BASIC ASSESSMENT REPORT

## 3. PHYSICAL SIZE OF THE ACTIVITY

a) Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

**Alternative:**

Alternative A1<sup>1</sup> (preferred activity alternative)  
Alternative A2 (if any)  
Alternative A3 (if any)

**Size of the activity:**

	m <sup>2</sup>
	m <sup>2</sup>
	m <sup>2</sup>

or, for linear activities:

**Alternative: Power Line**

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

**Length of the activity:**

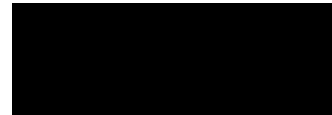
	15400m/15.4km
	14700m/14.4km

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

**Alternative:**

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

**Size of the site/servitude:**



## 4. SITE ACCESS

Does ready access to the site exist?

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

YES	
	m

Describe the type of access road planned:

The site has adequate access roads however the haul roads will be extended to ensure easy access on site. A twin track gravel road with a width of up to 4m will be required for the length of the power line route. Furthermore, a gravel road between 6m and 8m wide and 150m long will be constructed to provide access to the proposed 132kV substation / switching station.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

## 5. LOCALITY MAP

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.). The map must indicate the following:

The Locality and Regional Maps are included as Appendix A1 and A2, respectively.

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s);
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

### 6. LAYOUT/ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

The Layout Map is included as Appendix A3 to the report.

### 7. SENSITIVITY MAP

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWS);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

The Sensitivity Map is included as Appendix A9 to the report.



## BASIC ASSESSMENT REPORT

### 8. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this report. It must be supplemented with additional photographs of relevant features on the site, if applicable.

Site photographs are included as Appendix B to this report.

### 9. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of at least 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

No facility illustrations are available for the grid infrastructure.

### 10. ACTIVITY MOTIVATION

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

<b>1. Is the activity permitted in terms of the property's existing land use rights?</b>	YES	NO	Please explain
The site is zoned for agriculture. However, the landowner has provided consent for the development of the solar energy facilities on the property, which includes the associated infrastructure, such as the grid connection solution. A rezoning process to change the land use from agriculture to special land use will be undertaken prior to construction to ensure the land use rights align with the proposed solar energy facilities, including the Rudolph Grid Connection.			
<b>2. Will the activity be in line with the following?</b>			
<b>(a) Provincial Spatial Development Framework (PSDF)</b>	YES	NO	Please explain
According to the Free State Provincial Growth and Development Strategy (Free State PSDF, 2013), sustainable economic development is considered the most effective solution to address the significant challenge of poverty in the Free State region. The PSDF aims to put sustainable development into practice, ensuring that the current generation's needs are met without compromising the ability of future generations to meet their own needs.			
Adhering to bioregional planning principles adapted to suit the specific requirements of the Free State, the PSDF aligns with various protocols, conventions, agreements, legislation, and policies at different planning levels, from international to local. Learning from past achievements and mistakes, it responds to present challenges while integrating traditional knowledge and international best practices and technology.			
The development of the Rudolph solar facility aligns with the framework outlined in the PSDF, leveraging its contributions and opportunities. The proposed grid connection solution will enable the efficient transfer of electricity generated by the solar power plant, contributing to the region's			

## BASIC ASSESSMENT REPORT

sustainable economic growth and development.			
<b>(b) Urban edge / Edge of Built environment for the area</b>	YES	NO	Please explain
The power line will run outside the urban edge.			
<b>(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g., would the approval of this application compromisethe integrity of the existing approved and credible municipal IDP and SDF?).</b>	YES	NO	Please explain
<p>The vision of the Moqhaka LM is to “...strive to be a Municipality that creates an enabling environment for socio-economic growth and sustainable development.”</p> <p>The Mission Statement is “To maintain and enhance quality of life by providing effective, efficient quality and affordable services equitably and facilitating sustainable socio-economic growth through active community participation.”</p> <p>The Mission Statement is “To maintain and enhance quality of life by providing effective, efficient quality and affordable services equitably and facilitating sustainable socio-economic growth through active community participation.”</p> <p>The vision and mission of the municipality have led to the conceptualisation of the following strategic objectives below:</p> <ul style="list-style-type: none"> <li>• Broaden access and improve quality of municipal services.</li> <li>• Create an environment that promotes the development of the local economy and facilitates job creation.</li> <li>• Build united, non-racial, integrated and safer communities.</li> <li>• Promote a culture of participatory and good governance.</li> <li>• Improved organisational cohesion and effectiveness.</li> <li>• Improve overall financial management by developing and implementing appropriate financial management policies, procedures, and systems.</li> </ul> <p>The Free State PSDF is a policy document that promotes a ‘developmental state’ in accordance with national and provincial legislation and directives. It aligns with the Free State Provincial Growth and Development Strategy which has committed the Free State to ‘building a prosperous, sustainable and growing provincial economy which reduces poverty and improves social development’.</p> <p>The PSDF includes comprehensive plans and strategies that collectively indicate which type of land-use should be promoted in the Province, where such land-use should take place, and how it should be implemented and managed. In broad terms, the PSDF:</p> <ul style="list-style-type: none"> <li>• Indicates the spatial implications of the core development objectives of the Free State Provincial Growth and Development Strategy.</li> <li>• Serves as a spatial plan that facilitates local economic development.</li> <li>• Lays down strategies, proposals and guidelines as it relates to sustainable development.</li> <li>• Facilitates cross-boundary co-operation between municipalities, adjoining provinces, and bordering countries.</li> <li>• Serves as a manual for integration and standardisation of the planning frameworks of all spheres of government in the Province.</li> </ul> <p>The Free State Provincial Growth and Development Strategy states that sustainable economic development is the only effective means by which the most significant challenge of the Free State, namely poverty, can be addressed. The PSDF gives practical effect to sustainable development, which is defined as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs.</p>			

## BASIC ASSESSMENT REPORT

The PSDF is prepared in accordance with bioregional planning principles that were adapted to suit the site-specific requirements of the Free State. It incorporates and complies with the relevant protocols, conventions, agreements, legislation and policy at all applicable levels of planning, ranging from the international to the local. The PSDF builds upon achievements and learns from mistakes of the past, reacts to the challenges of our time, incorporates the traditional knowledge of the people of the Free State, and builds upon international best-practice and technology.

The construction of the SPP and subsequent power line, therefore, aligns with the objectives of the local municipality and would not compromise the integrity of the IDP and SDF.

<b>(d) Approved Structure Plan of the Municipality</b>	<b>YES</b>	<b>NO</b>	Please explain
<p>The Moqhaka Local Municipality does not have an approved structure plan in place, but the according to the municipalities comprehensive Infrastructure Master (IM) plan:</p> <p>In order to achieve Moqhaka Local Municipality’s (MLM) vision, “to be an integrated developmental and viable local municipality”, and to give effect to the community driven Integrated Development Plan (IDP) process, specifically in the area of infrastructure development, the need was identified to develop a comprehensive Infrastructure Master plan (IM). The IM would then be used as a “road map” for the implementation of new infrastructural projects as well as the management of the operation and maintenance costs (O&amp;M) of existing infrastructure in a logical and a coordinated manner after the necessary social and economic analysis ensuring application of capital investment.</p> <p>As the first IM for MLM it would have a 30-year framework, up to 2039, with the intention of MLM undertaking regular updates say every 3-5 years, as the community’s needs and priorities changed. The IM would be aligned with MLM’s IDP, the Free State Growth and Developments Plan (FSGDP) and other priorities of the National Government. Sustainable development means development that allows present generations to meet their own needs without compromising the ability of future generations to meet their own needs. Integration means that all planning is guided by the need to cater for the three concepts of health, environment and development.</p> <p>The IM plan for the municipal area therefore identifies the need for renewable energy developments, specifically that of solar energy facilities, such as Rudolph SPP. The proposed grid connection solution will enable the evacuation of the generated electricity from the solar power plant mentioned above.</p>			
<b>(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)</b>	<b>YES</b>	<b>NO</b>	Please explain
<p>The Moqhaka Local Municipality does not have an EMF in place.</p>			
<b>(f) Any other Plans (e.g., Guide Plan)</b>	<b>YES</b>		Please explain
<p><b>The National Development Plan</b></p> <p>The National Development Plan (NDP 2030) aims to “eliminate poverty and reduce inequality by 2030” (RSA, undated). In order to eliminate or reduce inequality, the economy of South Africa needs to grow faster in order to benefit all South Africans. In May 2010 a draft national development plan</p>			

## BASIC ASSESSMENT REPORT

was drafted, which highlighted the nine (9) key challenges for South Africa. The highest priority areas according to the plan are considered to be the creation of employment opportunities and to improve the quality of national education. In this regard, the plan sets out three (3) priority areas, namely, to raise employment by a faster growing economy, improve the quality of education, and to build the capability of the state in order to play a more developmental and transformative role. One of the key challenges identified was that the economy is unsustainably resource intensive and the acceleration and expansion of renewable energy was identified as a key intervention strategy to address this challenge.

The development of the Rudolph SPP will contribute to the intervention strategy as identified within the plan. The proposed grid connection solution will enable the evacuation of the generated electricity from the solar power plant.

### **National Infrastructure Plan of South Africa (2012)**

In the year 2012 the South African Government adopted a National Infrastructure Plan (hereafter referred to as the Plan). The aim of this Plan is to transform the economic landscape, while strengthening the delivery of basic services and creating new employment opportunities. This Plan also supports the integration of African communities, and also sets out the challenges and enablers that our country needs in order to respond to the planning and development of infrastructure with regards to fostering economic growth (RSA, 2012). The Plan has developed eighteen (18) strategic integrated projects (further referred to as SIPs). These SIPs stretch over all nine (9) provinces, covering social and economic infrastructure, and projects that enhances development and growth. Of the eighteen (18), five (5) are geographically focused, three (3) spatial, three (3) energy, three (3) social infrastructure, two (2) knowledge, one (1) regional integration, and one (1) water and sanitation focused. The three (3) SIPs according to the Plan, which are energy focused and correlate to the proposed project are as follow:

- SIP 8: Green energy in support of the South African economy;
- SIP 9: Electricity generation to support socio-economic development; and
- SIP 10: Electricity transmission and distribution for all.

SIP 8 according to the Plan *“support sustainable green energy initiatives on a national scale through a diverse range of clean energy options as envisaged in the IRP 2010 and support bio-fuel production facilities”*. The purpose of SIP 9 according to the Plan is to *“accelerate the construction of new electricity generation capacity in accordance with the IRP 2010 to meet the needs of the economy and address historical imbalances”*. SIP 9 should also monitor the implementation of major projects such as new power stations like Medupi, Kusile and Ingula. Lastly, SIP 10 aims to *“expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development”* (RSA, 2012:20).

The development of the Rudolph SPP is in line with this plan as it proposes the generation of renewable energy from the solar resource which supports socio-economic development and will contribute to meeting the electricity demand of the country as set out in this plan. The proposed grid

## BASIC ASSESSMENT REPORT

connection solution will enable the evacuation of the generated electricity from the solar power plant.			
<b>3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e., is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?</b>	YES	NO	Please explain
<p>The following are the objectives for the Municipal SDF and Land Use Management System (LUMS), with specific reference to the following:</p> <ul style="list-style-type: none"> <li>• To create generative systems, i.e. encouraging the establishment of development which generates additional activities, variety and growth,</li> <li>• To promote incrementalism, i.e. acknowledging development as a continuous process and facilitating an ongoing development process</li> </ul> <p>The proposed grid connection solution will enable the evacuation of the generated electricity from the SPP to the national grid. The development has been considered within the timeframe of the IDP.</p>			
<b>4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g., development is a national priority, but within a specific local context it could be inappropriate.)</b>	YES	NO	Please explain
<p>Diversifying the sources of power in the country, the surety of supply will increase. The power demands of South Africa are ever increasing and by adding solar power this demand can be met, even exceeded without increasing pollution in relation to the use of fossil fuels. The project has the potential of “securing” economic activity by assisting in removing supply constraints if Eskom generation activities result in a supply shortfall. When supply is constrained, it represents a limitation to economic growth. When a supply reserve is available, it represents an opportunity for economic growth. The area is in need of a sustainable energy supply and the development of the proposed grid connection solution will enable the evacuation of the generated electricity from the Rudolph SPP to the national grid.</p>			
<b>5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</b>	YES	NO	Please explain
Confirmation of services will be sought by the Applicant from the municipality along with other permitting requirements following the Basic Assessment Process.			
<b>6. Is this development provided for in the infrastructure planning of the municipality, and if not, what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</b>	YES	NO	Please explain

## BASIC ASSESSMENT REPORT

<p>From a local perspective the need for renewable energy development within the municipal area and to expedite the supply thereof through large scale utility, has been specified in the Moqhaka Local Municipality Final Integrated Development Plan (IDP) 2022-2027. The development of the proposed grid connection solution for the Rudolph Solar PV 1 is required to enable evacuation of the generated electricity to the national grid.</p>			
<b>7. Is this project part of a national programme to address an issue of national concern or importance?</b>	<b>YES</b>	<b>NO</b>	Please explain
<p>The proposed Rudolph Solar PV 1 intends to take advantage of other generation programmes and opportunities and make the project available to private off takers and not form part of the Department of Mineral Resources and Energy's (DMREs) Renewable Energy Independent Power Producer Procurement (REIPPP) Programme. The development of the proposed grid connection solution is required to enable evacuation of the generated electricity to the national grid.</p>			
<b>8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)</b>	<b>YES</b>	<b>NO</b>	Please explain
<p>The proposed grid connection solution is considered to be the most feasible option for the location of this infrastructure, taking technical and environmental issues into consideration. The proposed grid connection corridor is approximately 15.4km long, and the proposed route of the power line follows an existing servitude line from the proposed Rudolph Solar PV 1 to the existing Eskom 132kV Mercury Substation.</p>			
<b>9. Is the development the best practicable environmental option for this land/site?</b>	<b>YES</b>	<b>NO</b>	Please explain
<p>The development of the proposed grid connection solution is required for the evacuation of generated electricity from the approved Rudolph Solar PV1. The route proposed is the preferred route by ESKOM, from a technical feasible perspective. Since the power line is a linear activity, only the allocated servitude will be utilized and the rest of the surrounding activities will be able to continue.</p>			
<b>10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?</b>	<b>YES</b>	<b>NO</b>	Please explain
<p>The reduction in electricity consumed from the grid will not only result in a reduction in greenhouse gas emissions, but also the prevention of negative impacts associated with coal mining. For example, coal power requires high volumes of water, in areas of South Africa where water supply is already over-stretched and water availability is highly variable. Photovoltaic solar energy technology also does not produce sulphur emissions, ash or coal mining concerns associated with conventional coal fired electricity generation technologies resulting in a relatively low level of environmental impacts. It is a clean technology which contributes toward a better-quality environment for employees and nearby communities.</p> <p>The project activity is likely to have significant long-term, indirect positive social impacts that may extend to a regional and even national scale. The larger scale impacts are to be derived in the utilisation of solar power and the experience gained through the construction and operation of the power plant (including the grid connection infrastructure). In future, this experience can be employed at other similar solar installations in South Africa.</p>			

## BASIC ASSESSMENT REPORT

<p>The main benefit of the proposed development operating in the area is that local companies or contractors will be hired for the duration of the construction period. The operational phase will provide permanent job opportunities to the local communities from the surrounding area since security guards and general laborer's will be required on a full-time basis.</p>			
<p><b>11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?</b></p>	YES	NO	Please explain
<p>Power lines are present within the local municipality for the transmission and distribution of electricity. The power line will not set a precedent for similar activities since it is regarded as essential infrastructure.</p>			
<p><b>12. Will any person's rights be negatively affected by the proposed activity/ies?</b></p>	YES	NO	Please explain
<p>Affected landowners have been consulted and will be informed about the availability of the DBAR.</p>			
<p><b>13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?</b></p>	YES	NO	Please explain
<p>The proposed development will not compromise the integrity of the urban edge of the local municipality.</p>			
<p><b>14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPs)?</b></p>	YES	NO	Please explain
<p>It is expected that the development of the power line will contribute to SIP 8 Green energy in support of the South African economy and SIP 9: Electricity generation to support socio-economic development.</p>			
<p><b>15. What will the benefits be to society in general and to the local communities?</b></p>			Please explain
<p>The deployment of the facilities, and the required proposed grid connection infrastructure, will have a positive macro-economic impact by reducing South Africa's dependence on fossil fuel generated power and assisting the country in meeting its growing electricity demand. By diversifying the sources of power in the country, the surety of supply will increase. The power demands of South Africa are ever increasing and by adding solar power this demand can be met, even exceeded without increasing pollution in relation to the use of fossil fuels. The project has the potential of "securing" economic activity by assisting in removing supply constraints if Eskom generation activities result in a supply shortfall. When supply is constrained, it represents a limitation to economic growth. When a supply reserve is available, it represents an opportunity for economic growth.</p> <p>The proposed project will contribute to local economic growth by supporting industry development in line with provincial and regional goals and ensuring advanced skills are drawn to the Free State Province. The project will likely encounter widespread support from government, civil society and businesses, all of whom see potential opportunities for revenues, employment and business opportunities locally. The development of the photovoltaic solar facilities and the proposed grid connection infrastructure will in turn lead to growth in tax revenues for local municipalities and sales of carbon credits, resulting in increased foreign direct investment.</p> <p>An increase in the number of solar facilities commissioned will eventually reduce the cost of the power generated through solar facilities. This will contribute to the country's objective of utilising more renewable energy and less fossil fuel-based power sources.</p>			

## BASIC ASSESSMENT REPORT

The additional power supplied through solar energy, proposed to be evacuated to the national grid via the proposed grid connection infrastructure, will reduce the reliance on the combustion of fossil fuels to produce power. The South African electricity grid is predominantly coal-fired and therefore GHG emissions intensive (coal accounts for more than 92% of the fuel used in South Africa's electricity generation). The reduction of GHG emissions as a result of the project implementation will be achieved due to a reduction of CO<sub>2</sub> emissions from combustion of fossil fuel at the existing grid-connected power plants and plants which would likely be built in the absence of the project activity.

The reduction in electricity consumed from the grid will not only result in a reduction in greenhouse gas emissions, but also the prevention of negative impacts associated with coal mining. For example, coal power requires high volumes of water, in areas of South Africa where water supply is already over-stretched and water availability is highly variable. Photovoltaic solar energy technology also does not produce the sulphur emissions, ash or coal mining concerns associated with conventional coal fired electricity generation technologies resulting in a relatively low level of environmental impacts. It is a clean technology which contributes toward a better-quality environment for employees and nearby communities. Furthermore, the development of one grid connection solution with specific grid connection infrastructure for an authorised solar power plant provides an opportunity to consolidate linear infrastructure and the associated disturbance within the landscape to enable evacuation to the national grid. This is seen as the main need for the project.

The project activity is likely to have significant long-term, indirect positive social impacts that may extend to a regional and even national scale. The larger scale impacts are to be derived in the utilisation of solar power and the experience gained through the construction and operation of the power plant (including the grid connection infrastructure). In future, this experience can be employed at other similar solar installations in South Africa.

The main benefit of the proposed development operating in the area is that local companies or contractors will be hired for the duration of the construction period. The operational phase will provide permanent job opportunities to the local communities from the surrounding area since security guards and general labourers will be required on a full-time basis.

The development of the power line will enable the Rudolph solar PV 1 to evacuate the electricity generated to the grid. Therefore, the need for the power line directly correlates to the need for solar energy facility.

**16. Any other need and desirability considerations related to the proposed activity?**

Please explain

On a global scale, the project makes a contribution to greenhouse gas emission reduction and therefore contributes toward climate change mitigation.

The increase in the demand for services such as accommodation, transportation, security, general maintenance and catering will generate additional indirect socio-economic benefits for the local community members.

The proposed development in this specific area will generate alternative land use income through



## BASIC ASSESSMENT REPORT

rental, which will have a positive impact on agriculture. It will provide the farming enterprise with increased cash flow.

**17. How does the project fit into the National Development Plan for 2030?**

Please explain

The National Development Plan aims to “eliminate poverty and reduce inequality by 2030” (RSA, undated). In order to eliminate or reduce inequality, the economy of South Africa needs to grow faster in order to benefit all South Africans. In May 2010 a draft national development plan was drafted, which highlighted the nine (9) key challenges for South Africa. The highest priority areas according to the plan are considered to be the creation of employment opportunities and to improve the quality of national education. In this regard, the plan sets out three (3) priority areas, namely to raise employment by a faster growing economy, improve the quality of education, and to build the capability of the state in order to play a more developmental and transformative role. One of the key challenges identified was that the economy is unsustainably resource intensive and the acceleration and expansion of renewable energy was identified as a key intervention strategy to address this challenge.

The development of the grid connection solution and the Rudolph solar facility will contribute to the intervention strategy as identified within the plan.

**18. Please describe how the general objectives of Integrated Environmental Management asset out in section 23 of NEMA have been taken into account.**

The objectives listed in Section 23 of NEMA have been considered and met through:

- Identifying, predicting and evaluating the potential positive and negative impacts on the environment associated with the proposed power line as part of this Basic Assessment process.
- Undertaking of independent specialist studies to inform the impact assessment, including impacts on the biophysical, visual and heritage/cultural environments.
- Consideration has been given to the mitigation hierarchy which has led the Applicant to place the site on which the expansion will take place in an area that avoids the environmental sensitivities present within the affected property.
- A public participation process has been undertaken as per the requirements of the EIA Regulations in order to ensure all I&APs and stakeholders are afforded the opportunity to participate in decisions that affect their environment.
- The Environmental Management Programme provides appropriate mitigation measures for the reduction of the negative impact significance to acceptable levels.

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

Principles of section 2 of NEMA have been considered throughout this Basic Assessment process in order to ensure that the proposed development will be appropriate from both an environmental and social perspective and that the proposed power line will be sustainable without having a detrimental impact on the biophysical and social environments.

## BASIC ASSESSMENT REPORT

### 11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

LEGISLATION	ADMINISTERING AUTHORITY	DATE	SUMMARY / IMPLICATIONS FOR PROPOSED DEVELOPMENT
<b>The Constitution of South Africa (Act No. 108 of 1996)</b>	National Government	1996	<p>The Constitution is the supreme law of the Republic, and all law and conduct must be consistent with the Constitution. The Chapter on the Bill of Rights contains a number of provisions, which are relevant to securing the protection of the environment. Section 24 states that “everyone has the right to (a) an environment that is not harmful to their health or well-being and (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that – (i) prevent pollution and ecological degradation; (ii) promote conservation; and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. The Constitution, therefore, compels government to give effect to the people’s environmental right and places government under a legal duty to act as a responsible custodian of the country’s environment. It compels government to pass legislation and use other measures to protect the environment, to prevent pollution and ecological degradation, promote conservation and secure sustainable development.</p> <p>The development of the Rudolph SPP and the proposed grid connection solution, as well as the aspects related thereto considers the creation of an environment which is not harmful or degraded through the implementation of appropriate mitigation measures.</p>
<b>The National Environmental Management Act (Act No. 107 of 1998)</b>	National and Provincial Department of Forestry, Fisheries and the Environment	1998	<p>NEMA provides for co-operative governance by establishing principles and procedures for decision-makers on matters affecting the environment. An important function of the Act is to serve as an enabling Act for the promulgation of legislation to effectively address integrated environmental management. Some of the principles in the Act are accountability; affordability; cradle to grave management; equity; integration; open information; polluter pays; subsidiary; waste avoidance and minimisation; co-operative governance; sustainable development; and environmental protection and justice.</p>

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## BASIC ASSESSMENT REPORT

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The mandate for EIA lays with the National Environmental Management Act (107 of 1998) and the EIA Regulations No. 324, 325, 326, and 327 promulgated in terms of Section 24 of NEMA. The EIA Regulations determine that an Environmental Authorisation is required for certain listed activities, which might have a detrimental effect on the environment.

The BA process undertaken for the grid connection solution as part of the authorised/proposed SPP are in-line with the requirements of NEMA for the Application for Environmental Authorisation.'

<b>The National Energy Act (Act No. 34 of 2008)</b>	Department of Mineral Resources and Energy	2008	One of the objectives of the National Energy Act was to promote diversity of supply of energy and its sources. In this regard, the preamble makes direct reference to renewable resources, including solar: "To ensure that diverse energy resources are available, in sustainable quantities, and at affordable prices, to the South African economy, in support of economic growth and poverty alleviation, taking into account environmental management requirements (...); to provide for (...) increased generation and consumption of renewable energies..." (Preamble).
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Considering that the Rudolph SPP is proposed to make use of PV technology and the solar resource for the generation of electricity (with the generated electricity to be evacuated through the proposed grid connection solution), the proposed project is in-line with the Act.

<b>The National Water Act (Act No. 36 of 1998)</b>	Department of Water and Sanitation (DWS)	1998	Sustainability and equity are identified as central guiding principles in the protection, use, development, conservation, management and control of water resources. The intention of the Act is to promote the equitable access to water and the sustainable use of water, redress past racial and gender discrimination, and facilitate economic and social development. The Act provides the rights of access to basic water supply and sanitation, and environmentally, it provides for the protection of aquatic and associated ecosystems, the reduction and prevention of pollution and degradation of water resources.
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As this Act is founded on the principle that National Government has overall responsibility for and authority over water resource management, including the equitable allocation and beneficial use of water in the public interest, a person can only be entitled to use water if the use is permissible

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## BASIC ASSESSMENT REPORT

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under the Act. Chapter 4 of the Act lays the basis for regulating water use.

A water use license will be required for the project due to the presence of a wetland within the grid connection corridor and therefore the National Water Act will be applicable in terms of obtaining the relevant license.

<b>National Environmental Management: Waste Act (Act No. 59 of 2008)</b>	Department of Forestry, Fisheries and the Environment (DFFE)	2008	<p>NEMWA has been developed as part of the law reform process enacted through the White Paper on Integrated Pollution and Waste Management and the National Waste Management Strategy (NWMS). The objectives of the Act relate to the provision of measures to protect health, well-being and the environment, to ensure that people are aware of the impact of waste on their health, well-being and the environment, to provide for compliance with the measures, and to give effect to section 24 of the Constitution in order to secure an environment that is not harmful to health and well-being.</p> <p>Regulations No. R921 (of 2013) promulgated in terms of Section 19(1) of the National Environmental Management: Waste Act (59 of 2008) determine that no person may commence, undertake or conduct a waste management activity listed in this schedule unless a license is issued in respect of that activity. It is not envisaged that a waste permit will be required for the proposed development.</p>
<b>National Environment Management: Air Quality Act (Act No. 39 of 2004)</b>	Department of Forestry, Fisheries and the Environment (DFFE)	2004	<p>The object of this Act is to protect the environment by providing reasonable measures for the protection and enhancement of the quality of air in the Republic; the prevention of air pollution and ecological degradation; and securing ecologically sustainable development while promoting justifiable economic and social development.</p> <p>Regulations No. R248 (of 31 March 2010) promulgated in terms of Section 21(1)(a) of the National Environmental Management Act: Air Quality Act (39 of 2004) determine that an Atmospheric Emission License (AEL) is required for certain listed activities, which result in atmospheric emissions which have or may have a detrimental effect on the environment. The Regulation also sets out the minimum emission standards for the listed activities. It is not envisaged that an Atmospheric Emission License will be required for the proposed development.</p>

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## BASIC ASSESSMENT REPORT

<b>The National Heritage Resources Act (Act No. 25 of 1999)</b>	South African Heritage Resources Agency (SAHRA) and the Free State Provincial Heritage Resources Authority	1999	<p>The Act aims to introduce an integrated and interactive system for the management of heritage resources, to promote good governance at all levels, and empower civil society to nurture and conserve heritage resources so that they may be bequeathed to future generations and to lay down principles for governing heritage resources management throughout the Republic. It also aims to establish the South African Heritage Resources Agency together with its Council to co-ordinate and promote the management of heritage resources, to set norms and maintain essential national standards and to protect heritage resources, to provide for the protection and management of conservation-worthy places and areas by local authorities, and to provide for matters connected therewith.</p> <p>The Act protects and manages certain categories of heritage resources in South Africa. For the purposes of the Heritage Resources Act, a “heritage resource” includes any place or object of cultural significance. In this regard the Act makes provision for a person undertaking an activity listed in Section 28 of the Act to notify the resources authority. The resources authority may request that a heritage impact assessment be conducted if there is reason to believe that heritage resources will be affected.</p> <p>A case file has been opened on SAHRIS for the proposed project and all relevant documents were submitted for their comments and approval. The Heritage Impact Assessment and Palaeontological Impact Assessment undertaken for the solar power plant is included as Appendices to this report.</p>
<b>Conservation of Agricultural Resources Act (Act No. 85 of 1983)</b>	National and Provincial Government	1983	<p>The objective of the Act is to provide for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.</p> <p>Consent will be required from the Department of Agriculture, Forestry and Fisheries (now known as the Department of Forestry, Fisheries and the Environment) in order to confirm that the proposed development is not located on high potential agricultural land and to approve the long-term lease agreement.</p>

## BASIC ASSESSMENT REPORT

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A Soil and Agricultural Potential Assessment has been undertaken for the grid connection corridor and is included as Appendix D4 of this Draft BAR.

<b>The National Forests Act, 1998 (Act 84 of 1998)</b>	Department of Forestry, Fisheries and the Environment (DFFE)	1998	<p>The purposes of this Act are to:</p> <ul style="list-style-type: none"><li>(a) promote the sustainable management and development of forests for the benefit of all;</li><li>(b) create the conditions necessary to restructure forestry in State forests;</li><li>(c) provide special measures for the protection of certain forests and trees;</li><li>(d) promote the sustainable use of forests for environmental, economic, educational, recreational, cultural, health and spiritual purposes.</li><li>(e) promote community forestry;</li><li>(f) promote greater participation in all aspects of forestry and the forest products industry by persons disadvantaged by unfair discrimination.</li></ul> <p>Section 12(1) read with s15(1) of the NFA stated that the Minister may declare a particular tree, group of trees, woodland; or trees belonging to a particular species, to be a protected tree, group of trees, woodland or species. A list of protected tree species was gazetted in GN 635 of 6 December 2019. The effect of the declaration is that no person may (a) cut, disturb, damage or destroy; or (b) possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, or any forest product derived from a protected tree, except under a license granted by the Minister; or in terms of an exemption published by the Minister in the Gazette.</p>
<b>Free State Nature Conservation Ordinance, 1969 (Act 8 of 1969)</b>	Free State Province Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA)	1969	<p>The Act provides for the conservation of fauna and flora and the hunting of animals causing damage and for matters incidental thereto. This includes wild animals, fish, indigenous plants, as well as nature reserves. The Act also provides for the permitting of the disturbance of such species.</p>

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## BASIC ASSESSMENT REPORT

<b>The White Paper on the Energy Policy of the Republic of South Africa</b>	Department of Mineral Resources and Energy	1998	<p>The White Paper on the Energy Policy of the Republic of South Africa establishes the international and national policy context for the energy sector, and identifies the following energy policy objectives:</p> <ul style="list-style-type: none"><li>• Increasing access to affordable energy services</li><li>• Improving energy governance</li><li>• Stimulating economic development</li><li>• Managing energy-related environmental and health impacts</li><li>• Securing supply through diversity</li><li>• Energy policy priorities</li></ul> <p>The White Paper sets out the advantages of renewable energy and states that Government believes that renewables can in many cases provide the least cost energy service, particularly when social and environmental costs are included. The White Paper acknowledges that South Africa has neglected the development and implementation of renewable energy applications, despite the fact that the country's renewable energy resource base is extensive and many appropriate applications exist.</p> <p>The White Paper notes that renewable energy applications have specific characteristics that need to be considered. Advantages include:</p> <ul style="list-style-type: none"><li>• Minimal environmental impacts in operation in comparison with traditional supply technologies; and</li><li>• Generally lower running costs, and high labour intensities.</li></ul>
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## BASIC ASSESSMENT REPORT

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Disadvantages include:

- Higher capital costs in some cases;
- Lower energy densities; and
- Lower levels of availability, depending on specific conditions, especially with sun and wind-based systems.

The proposed grid connection solution for the Rudolph SPP is in line with this policy as it proposes the generation of renewable energy from the solar resource, as well as the evacuation of the generated electricity.

**The White  
Paper on  
Renewable  
Energy**

Department of Mineral  
Resources and Energy

2003

This White Paper on Renewable Energy supplements the *White Paper on Energy Policy*, which recognizes that the medium and long-term potential of renewable energy is significant. This Paper sets out Government's vision, policy principles, strategic goals and objectives for promoting and implementing renewable energy in South Africa.

The White Paper notes that while South Africa is well-endowed with renewable energy resources that have the potential to become sustainable alternatives to fossil fuels, these have thus far remained largely untapped. Government's long-term goal is the establishment of a renewable energy industry producing modern energy carriers that will offer in future years a sustainable, fully non-subsidised alternative to fossil fuels. The medium-term (10-year) target set in the White Paper is: *10 000 GWh (0.8 Mtoe) renewable energy contribution to final energy consumption by 2013, to be produced mainly from biomass, wind, solar and small-scale hydro. The renewable energy is to be utilised for power generation and non-electric technologies such as solar water heating and bio-fuels. This is approximately 4% (1667 MW) of the projected electricity demand for 2013 (41539 MW)* (Executive Summary, ix).

The Rudolph SPP in line with this paper as it proposes the generation of renewable energy from the solar resource, the proposed grid connection solution will enable the evacuation of the generated electricity.

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## BASIC ASSESSMENT REPORT

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<b>Integrated Resource Plan (IRP) for South Africa</b>	Department of Mineral Resources and Energy	2010-2030	<p>The Integrated Resource Plan (IRP) for electricity 2010 – 2030 is a subset of the IEP and constitutes South Africa’s National electricity plan. The primary objective of the IRP is to determine the long-term electricity demand and detail how this demand should be met in terms of generating capacity, type, timing and cost. The IRP also serves as input to other planning functions, including amongst others, economic development and funding, and environmental and social policy formulation.</p> <p>The current iteration of the IRP led to the Revised Balanced Scenario (RBS) that was published in October 2010. Following a round of public participation which was conducted in November / December 2010, several changes were made to the IRP model assumptions. The document outlines the proposed generation new-build fleet for South Africa for the period 2010 to 2030. This scenario was derived based on a cost-optimal solution for new-build options (considering the direct costs of new build power plants), which was then “balanced” in accordance with qualitative measures such as local job creation.</p> <p>The Policy-Adjusted IRP reflected recent developments with respect to prices for renewables. In addition to all existing and committed power plants, the plan includes 9.6GW of nuclear, 6.25GW of coal, 17.8GW of renewables, and approximately 8.9GW of other generation sources such as hydro, and gas. Besides capacity additions, several assumptions have changed since the promulgation of IRP 2010–2030. Key assumptions that changed include the electricity demand projection, Eskom’s existing plant performance, as well as new technology costs. These changes necessitated the review and update of the IRP which resulted in the draft IRP 2018. According to the South African Energy Sector Overview (2021), there is currently 1 723MW of installed PV capacity, while an additional 2 600MW from wind and solar has been rewarded as part of Bid window 5.</p> <p>The Rudolph SPP is in line with this plan as it proposes the generation of renewable energy from the solar resource and will contribute to the energy mix of the country as set out in this plan. The proposed grid connection solution will enable the evacuation of the generated electricity from</p>
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## BASIC ASSESSMENT REPORT

			the authorised Rudolph solar power plant mentioned above.
<b>National Development Plan of 2030</b>	The Presidency: National Planning Commission	-	<p>The National Development Plan aims to “eliminate poverty and reduce inequality by 2030” (RSA, undated). In order to eliminate or reduce inequality, the economy of South Africa needs to grow faster in order to benefit all South Africans. In May 2010 a draft national development plan was drafted, which highlighted the nine (9) key challenges for South Africa. The highest priority areas according to the plan are considered to be the creation of employment opportunities and to improve the quality of national education. In this regard, the plan sets out three (3) priority areas, namely to raise employment by a faster growing economy, improve the quality of education, and to build the capability of the state in order to play a more developmental and transformative role. One of the key challenges identified was that the economy is unsustainably resource intensive and the acceleration and expansion of renewable energy was identified as a key intervention strategy to address this challenge.</p> <p>The development of the grid connection solution and the Rudolph SPP will contribute to the intervention strategy as identified within the plan.</p>
<b>National Infrastructure Plan of South Africa</b>	Presidential Infrastructure Coordinating Commission	2012	<p>In the year 2012 the South African Government adopted a National Infrastructure Plan (hereafter referred to as the Plan). The aim of this Plan is to transform the economic landscape, while strengthening the delivery of basic services and creating new employment opportunities. This Plan also supports the integration of African communities, and also sets out the challenges and enablers that our country needs in order to respond to the planning and development of infrastructure with regards to fostering economic growth (RSA, 2012). The Plan has developed eighteen (18) strategic integrated projects (further referred to as SIPs). These SIPs stretch over all nine (9) provinces, covering social and economic infrastructure, and projects that enhances development and growth. Of the eighteen (18), five (5) are geographically focused, three (3) spatial, three (3) energy, three (3) social infrastructure, two (2) knowledge, one (1) regional integration, and one (1) water and sanitation focused. The three (3) SIPs according to the Plan, which are energy focused and correlate to the proposed project (including the solar power plant which the power line is required to cater for) are as follow:</p>

## BASIC ASSESSMENT REPORT

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- SIP 8: Green energy in support of the South African economy;
- SIP 9: Electricity generation to support socio-economic development; and
- SIP 10: Electricity transmission and distribution for all.

SIP 8 according to the Plan “support sustainable green energy initiatives on a national scale through a diverse range of clean energy options as envisaged in the IRP 2010 and support bio-fuel production facilities”. The purpose of SIP 9 according to the Plan is to “accelerate the construction of new electricity generation capacity in accordance with the IRP 2010 to meet the needs of the economy and address historical imbalances”. SIP 9 should also monitor the implementation of major projects such as new power stations like Medupi, Kusile and Ingula. Lastly, SIP 10’s aim is to “expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development” (RSA, 2012:20).

The Rudolph SPP is in line with this plan as it proposes the generation of renewable energy from the solar resource which supports socio-economic development and will contribute to meeting the electricity demand of the country as set out in this plan. The proposed grid connection solution will enable the evacuation of the generated electricity from the solar power plant mentioned above.

**New Growth  
Path  
Framework**

Department of Economic  
Development

-

The New Growth Path was developed after 16 years of South Africa’s democracy, to respond to emerging opportunities and risks while building on policies. This framework provides a dynamic vision on how to collectively achieve a more developed, equitable and democratic society and economy. This framework mainly reflects the commitment of the South African Government to create employment opportunities for its people in all economic policies (RSA, 2011b).

This framework sets out the markers for job creation and growth and also identify where there are viable changes in the character and structure of production, in order to create a more inclusive, greener economy on the long-term. It is stated in the framework that in order for this framework to reach its objectives, the Government is committed to:

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## BASIC ASSESSMENT REPORT

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- Identify the possible areas of employment creation; and
- Develop a policy to facilitate employment creation especially with regards to social equity, sustainable employment and growth in the creation of employment activities (RSA, 2011b).

This framework also identifies investments in five key areas, one of which is energy. This framework also states that the green economy is a priority area, which includes the construction and investment of renewable energy technologies like solar (RSA, 2011b). In this regard it will also assist creating employment opportunities over the medium- and long-term.

Considering that the construction of and investment in renewable energy is a key area identified within the framework, the Rudolph SPP is considered to be in-line with the framework. The proposed grid connection solution will enable the evacuation of the generated electricity from the SPP mentioned above.

<b>Climate Change Bill</b>	National Department of Environmental Affairs (now known as the Department of Forestry, Fisheries and the Environment)	2018	<p>On 08 June 2018 the Minister of Environmental Affairs published the Climate Change Bill (“the Bill”) for public comment. The Bill provides a framework for climate change regulation in South Africa aimed at governing South Africa’s sustainable transition to a climate resilient, low carbon economy and society. The Bill provides a procedural outline that will be developed through the creation of frameworks and plans. The following objectives are set within the Bill:</p> <ul style="list-style-type: none"><li>• Provide for the coordinated and integrated response to climate change and its impacts by all spheres of government in accordance with the principles of cooperative governance;</li><li>• Provide for the effective management of inevitable climate change impacts through enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to building social, economic, and environmental resilience</li></ul>
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## BASIC ASSESSMENT REPORT

and an adequate national adaptation response in the context of the global climate change response;

- Make a fair contribution to the global effort to stabilise greenhouse gas concentrations in the atmosphere at a level that avoids dangerous anthropogenic interference with the climate system within a timeframe and in a manner that enables economic, employment, social and environmental development to proceed in a sustainable manner.

The Rudolph Solar PV comprises a renewable energy generation facility and would not result in the generation or release of emissions during its operation. The proposed grid connection solution will enable the evacuation of the generated electricity from the SPP mentioned above.

<b>Strategic Integrated Projects (SIPs)</b>	The Presidential Infrastructure Coordinating Committee	2010 - 2030	<p>The Presidential Infrastructure Coordinating Committee (PICC) is integrating and phasing investment plans across 18 Strategic Infrastructure Projects (SIPs) which have five core functions: to unlock opportunity, transform the economic landscape, create new jobs, strengthen the delivery of basic services and support the integration of African economies. A balanced approach is being fostered through greening of the economy, boosting energy security, promoting integrated municipal infrastructure investment, facilitating integrated urban development, accelerating skills development, investing in rural development and enabling regional integration. SIP 8 and 9 of the energy SIPs supports the development of the solar energy facility:</p> <ul style="list-style-type: none"> <li>• SIP 8: Green energy in support of the South African economy: Support sustainable green energy initiatives on a national scale through a diverse range of clean energy options as envisaged in the Integrated Resource Plan (IRP 2010 – 2030) and supports bio-fuel production facilities.</li> <li>• SIP 9: Electricity generation to support socio-economic development: The proposed Springbok Solar Power Plant is a potential SIP 9 Project as electricity will be generated and social and economic upliftment, development and growth will take place within the surrounding communities. It would become a SIP 9 project if selected as a Preferred Bidder project by the Department of Mineral Resources and Energy. SIP 9 supports the</li> </ul>
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## BASIC ASSESSMENT REPORT

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acceleration of the construction of new electricity generation capacity in accordance with the IRP 2010 to meet the needs of the economy and address historical imbalances.

Rudolph SPP could be registered as SIP projects. The project would then contribute to the above-mentioned SIPs. The proposed grid connection solution will enable the evacuation of the generated electricity from the SPP mentioned above.

<b>Strategic Environmental Assessment (SEA) for wind and solar PV Energy in South Africa</b>	Department of Forestry, Fisheries and the Environment	2014	<p>The then Department of Forestry, Fisheries and the Environment (DFFE) has committed to contribute to the implementation of the National Development Plan and National Infrastructure Plan by undertaking Strategic Environmental Assessments (SEAs) to identify adaptive processes that integrate the regulatory environmental requirements for Strategic Integrated Projects (SIPs) while safeguarding the environment. The wind and solar photovoltaic (PV) SEA were accordingly commissioned by DEA in support of SIP 8, which aims to facilitate the implementation of sustainable green energy initiatives.</p> <p>This SEA identifies areas where large scale wind and solar PV energy facilities can be developed in terms of SIP 8 and in a manner that limits significant negative impacts on the environment, while yielding the highest possible socio-economic benefits to the country. These areas are referred to as Renewable Energy Development Zones (REDZs).</p> <p>The REDZs also provide priority areas for investment into the electricity grid. Currently one of the greatest challenges to renewable energy development in South Africa is the saturation of existing grid infrastructure and the difficulties in expanding the grid. Proactive investment in grid infrastructure is the likely to be the most important factor determining the success of REDZs. Although it is intended for the SEA to facilitate proactive grid investment in REDZs, such investment should not be limited to these areas. Suitable wind and solar PV development should still be promoted across the country and any proposed development must be evaluated on its own merit.</p> <p>The Rudolph Solar PV is not located within a REDZ.</p>
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**Free State  
Provincial  
Spatial  
Development  
Framework  
(PSDF)**

Free State Provincial  
Government

2012

The Free State PSDF is a policy document that promotes a 'developmental state' in accordance with national and provincial legislation and directives. It aligns with the Free State Provincial Growth and Development Strategy which has committed the Free State to 'building a prosperous, sustainable and growing provincial economy which reduces poverty and improves social development'.

The PSDF includes comprehensive plans and strategies that collectively indicate which type of land-use should be promoted in the province, where such land-use should take place, and how it should be implemented and managed. In broad terms, the PSDF:

- Indicates the spatial implications of the core development objectives of the Free State Provincial Growth and Development Strategy.
- Serves as a spatial plan that facilitates local economic development.
- Lays down strategies, proposals and guidelines as it relates to sustainable development.
- Facilitates cross-boundary co-operation between municipalities, adjoining provinces, and bordering countries.
- Serves as a manual for integration and standardisation of the planning frameworks of all spheres of government in the province.

The Free State Provincial Growth and Development Strategy states that sustainable economic development is the only effective means by which the most significant challenge of the Free State, namely poverty, can be addressed is. The PSDF gives practical effect to sustainable development, which is defined as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs.

The PSDF is prepared in accordance with bioregional planning principles that were adapted to suit the site-specific requirements of the Free State. It incorporates and complies with the relevant protocols, conventions, agreements, legislation and policy at all applicable levels of

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## BASIC ASSESSMENT REPORT

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planning, ranging from international to the local level.

The PSDF builds upon achievements and learns from mistakes of the past, reacts to the challenges, incorporates the traditional knowledge of the people of the Free State, and builds upon international best-practice and technology.

The development of the Rudolph Solar PV is in-line with the framework based on the contributions and opportunities presented by a development of this nature. The proposed grid connection solution will enable the evacuation of the generated electricity from the SPP mentioned above.

<b>Fezile Dabi District Municipality Reviewed Final Integrated Development Plan (IDP)</b>	Fezile Dabi District Municipality	2022 - 2027	<p>The long-term vision of the Fezile Dabi DM is: “Improving the lives of citizens and progressively meeting their basic, social and economic needs, thereby restoring community confidence and trust in government”.</p> <p>The above stated vision defines what Fezile Dabi District Municipality would like to attain over medium to long-term, and for that achievement to effectively materialise, their mission is that: “Fezile Dabi District Municipality will strive to be a more responsive and accountable municipality towards sustainable development”.</p> <p>Of the eighteen (18) SIPs that are contained in the National Infrastructure Plan (NIP), there are eight which impact on the Fezile Dabi District and therefore need to be recognised and where appropriate; the municipality’s plans will be aligned with these SIPs in an effort to respond to national government’s service delivery initiatives. Furthermore, work is to be done to align key cross-cutting areas, namely human settlement planning and skills development in line with each of the Strategic Infrastructure Projects, especially:</p> <ul style="list-style-type: none"><li>• Green Energy in support of the South African economy (SIP 8): Supporting sustainable green energy initiatives on a national scale through a diverse range of clean energy options as envisaged in the Integrated Resource Plan (IRP 2010).</li><li>• Electricity Generation to support socio-economic development (SIP 9): acceleration of the construction of new electricity generation capacity in accordance with the IRP 2010 to meet the needs of the economy; and addressing historical imbalances.</li></ul>
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## BASIC ASSESSMENT REPORT

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<b>Moqhaka Local Municipality Final Integrated Development Plan (IDP)</b>	<b>Moqhaka Local Municipality</b>	2022-2027	<p>The vision of the Moqhaka LM is to “...strive to <i>be a Municipality that creates an enabling environment for socio-economic growth and sustainable development.</i>”</p> <p>The Mission Statement is “<i>To maintain and enhance quality of life by providing effective, efficient quality and affordable services equitably and facilitating sustainable socio-economic growth through active community participation.</i>”</p> <p>The vision and mission of the municipality have led to the conceptualisation of the following strategic objectives below:</p> <ul style="list-style-type: none"><li>• Broaden access and improve quality of municipal services.</li><li>• Create an environment that promotes the development of the local economy and facilitates job creation.</li><li>• Build united, non-racial, integrated and safer communities.</li><li>• Promote a culture of participatory and good governance.</li><li>• Improved organisational cohesion and effectiveness.</li><li>• Improve overall financial management by developing and implementing appropriate financial management policies, procedures, and systems.</li></ul> <p>The development of Rudolph Solar PV 1 Project will contribute to the local economy of the area and therefore assist (albeit to a limited extent) with socio-economic growth and therefore contribute to the strategic objectives of the LM.</p>
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## BASIC ASSESSMENT REPORT

### 12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

#### a) Solid waste management

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

YES	NO
Unknown	

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

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

All solid waste collected shall be disposed of at registered/licensed landfill facility. Waste skip containers and lidded waste collection bins will be maintained on site and the contractor will arrange for them to be collected regularly and transported to a licensed facility. Under no circumstances will waste be burned or buried on site. Hazardous materials and contaminants will be stored carefully within an approved bunded area/hazardous waste storage to prevent contamination until disposed of at a licensed landfill site.

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

All solid waste will be disposed of at a licensed/registered landfill site. Where a registered waste site is not available close to the construction site, the Contractor shall provide a method statement with regard to waste management.

Will the activity produce solid waste during its operational phase?

YES	NO
N/A	

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

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

N/A

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

N/A

Where will the solid waste be disposed of if it does not feed into a municipal waste stream (describe)?

N/A

*If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.*

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?

YES	NO
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If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

Is the activity that is being applied for a solid waste handling or treatment facility?

YES	NO
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If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

#### b) Liquid effluent

## BASIC ASSESSMENT REPORT

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	YES	NO
If YES, what estimated quantity will be produced per month?	N/A	
Will the activity produce any effluent that will be treated and/or disposed of on site?	YES	NO
<i>If YES, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.</i>		

Will the activity produce effluent that will be treated and/or disposed of at another facility? 

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

Facility name:

Contact person:

Postal address:

Postal code:

Telephone:

E-mail:

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

Wastewater will not be generated by the grid connection infrastructure.

### c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?	YES	NO
If YES, is it controlled by any legislation of any sphere of government?	N/A	

If YES, the applicant must consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If NO, describe the emissions in terms of type and concentration: \_\_\_\_\_

Other than exhaust emissions and dust associated with construction phase activities, the activity will not release emissions into the atmosphere.

### d) Waste permit

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

YES	NO
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If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

### e) Generation of noise

Will the activity generate noise?	YES	NO
If YES, is it controlled by any legislation of any sphere of government?	YES	NO
Describe the noise in terms of type and level:		

## BASIC ASSESSMENT REPORT

The construction phase of the project will generate some temporary noise pollution and disturbances to the receiving community. However, these effects can be minimized by limiting construction hours to minimize disruption to the town and farming community.

Once operational, the power line will produce a low hissing noise known as corona. The intensity of this noise will vary based on weather conditions. In dry weather, the corona noise level will be similar to the typical ambient noise level in the environment.

### 13. WATER USE

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

<input type="checkbox"/> Municipal	<input type="checkbox"/> Water board	<input checked="" type="checkbox"/> Groundwater	<input type="checkbox"/> River, stream, dam or lake	<input type="checkbox"/> Other	<input type="checkbox"/> The activity will not use water
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**Since the Rudolph Grid Connection is intended to support the planned Rudolph PV 1 solar energy installations, water required for these facilities will be sourced from their own water resources. It is probable that the water needed for the proposed solar energy facilities will come either from underground water sources or will be gathered using water trucks from an authorized water service provider and then stored on the premises in conservancy tanks.**

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?

YES	NO

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

A water use license will be required in terms of the NWA should construction need to take place inside / near any of the wetlands and for the abstraction of water from boreholes. It has been confirmed by the Wetland Assessment that a General Authorisation is required for the proposed development. The licensing process will be undertaken as part of the authorised Rudolph solar facility water use licensing process.

### 14. ENERGY EFFICIENCY

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

The proposed power line will function in evacuating power generated by the solar facility into the Eskom grid through the Mercury Substation.

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

The proposed development will not consume power, but rather evacuate generated electricity.

## BASIC ASSESSMENT REPORT

### SECTION B: SITE/AREA/PROPERTY DESCRIPTION

**Important notes:**

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

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

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

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

<b>YES</b>	<b>NO</b>
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If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

**Property description/physical address:**

<b>Province</b>	Free State Province
<b>District Municipality</b>	Fezile Dabi District Municipality
<b>Local Municipality</b>	Moqhaka Local Municipality
<b>Ward Number(s)</b>	
<b>Farm name and number</b>	<ul style="list-style-type: none"> <li>• Remaining Extent Bresiefontein No.173</li> <li>• Portion 1 of Kleinfontein No. 369</li> <li>• Remaining Extent of Uitval No. 457</li> <li>• RE of Farm Smaldeel No. 157.</li> <li>• Remaining Extent of Paradys No. 137</li> <li>• Portion 1 of Jackalsfontein 443</li> <li>• Remaining Extent of Vlakfontein No. 15</li> <li>• Remaining Extent of Zaaiplaats No. 190</li> <li>• Portion 2 of Zaaiplaats No. 190</li> <li>• Portion 3 of Zaaiplaats No. 190</li> </ul>
<b>SG Code</b>	F03600000000017300000 F03600000000036900000 F03600000000045700000 F03600000000015700000 F03600000000044300000 F03600000000015000000 F03600000000019000000 F03600000000019000000 F03600000000019000000

## BASIC ASSESSMENT REPORT

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Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

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

The grid connection corridor is located approximately 25km from the town of Viljoenskroon which is in a rural area and characterised by farms, linear infrastructure (i.e. roads) and mining activities. The site survey revealed that the site is currently used for grazing for cattle, maize cultivation and mining activities.

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

Is a change of land-use or a consent use application required?

YES	NO
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# BASIC ASSESSMENT REPORT

## 1. GRADIENT OF THE SITE Indicate the

general gradient of the site. **Alternative S1:**

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

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

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

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

2.1 Ridgeline	<input checked="" type="checkbox"/>	2.4 Closed valley	<input type="checkbox"/>	2.7 Undulating plain / low hills	<input checked="" type="checkbox"/>
2.2 Plateau	<input type="checkbox"/>	2.5 Open valley	<input type="checkbox"/>	2.8 Dune	<input type="checkbox"/>
2.3 Side slope of hill/mountain	<input type="checkbox"/>	2.6 Plain	<input type="checkbox"/>	2.9 Seafront	<input type="checkbox"/>
2.10 At sea	<input type="checkbox"/>				

## 3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

## BASIC ASSESSMENT REPORT

### 4. GROUNDCOVER

Indicate the types of groundcover present on the site. The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Natural veld - good condition <sup>E</sup>	<b>Natural veld with scattered aliens<sup>E</sup></b>	Natural veld with heavy alien infestation <sup>E</sup>	Veld dominated by alien species <sup>E</sup>	Gardens
Sport field	<b>Cultivated land</b>	Paved surface	Building or other structure	Bare soil

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

### 5. SURFACE WATER

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

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

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

<p><b>Wetland</b></p> <p>According to the Wetland Impact Assessment, the site lies to the south of the Vaal River within the Middle Vaal Management Area (Quaternary Catchments C24B and C70K).</p> <p>The freshwater features in the wider study area consist primarily of Vaal, Renoster and Olifantsvlei Rivers, as well as valley bottom wetlands, seeps and depression wetland areas. The Olifantsvlei River arises near Viljoenskroon while the larger Renoster River originates near Paradysville, further to the south-east of the site. Both rivers drain northwards to join the Vaal River approximately 3 km north-east of the site.</p> <p>The watercourses and wetland areas are relatively disturbed and are in general surrounded and impacted by agricultural activities. The seasonal wetlands have however been more significantly impacted by agricultural activities which have extended into most of the wetlands and only avoided the more significant wetland areas. Where the wetlands have been avoided, they still comprise mostly indigenous moist grassland vegetation with localised invasions of alien plants where there has been more disturbance.</p>
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## BASIC ASSESSMENT REPORT

### 6. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

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

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

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

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

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

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

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

## BASIC ASSESSMENT REPORT

A Critical Biodiversity Map is included as Appendix A8 to this report.

### 7. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain:

YES	NO
UNCERTAIN	



If uncertain, conduct a specialist investigation by a recognised specialist in the field (archaeology or palaeontology) to establish whether there is such a feature(s) present on or close to the site. Briefly explain the findings of the specialist:



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

YES	NO
YES	NO

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

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

### 8. SOCIO-ECONOMIC CHARACTER

#### a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

Level of unemployment:

Unemployment is without a doubt one of the biggest challenges facing the Free State Province. During the period 2007 to 2016, the unemployment rate in the Free State averaged 29.6%. The Fezile Dabi District's unemployment rate averaged 44.4% during the same period. The biggest employers in the municipality of Moqhaka in 2016 were trade (22%), community services (20%), agriculture (12%), manufacturing (12%) and private households (13%). On the other hand, the smallest employers were finance (7%), transport (5%), and construction (6%).

The table below shows the economic status of Moqhaka Local Municipality over 6 years.

Year	Unemployment Rate (%)
2013/14	22
2014/15	23
2015/16	24
2016/17	24
2017/18	27
2018/19	27

## BASIC ASSESSMENT REPORT

Economic profile of local municipality:

Within the Moqhaka Local Municipality Households with access to piped (tap) water inside the dwelling and yard showed a positive movement and increased from 76.6% in 1996 to 94.2% in 2011, whilst piped water outside the yard decreased 6.8% over the same period. Significant progress has also been made in respect of access to sanitation whereby households with flush/chemical toilets increased from 53.6% in 1996 to 88.5% in 2011. The percentage of households living in formal dwellings has increased from 72.1% in 1996 to 89.2% in 2011, whilst the percentage of households living in informal dwellings has decreased by 11.8% over the same period. The community Survey of 2016 indicates that that the percentage of households living in formal dwellings have decreased with 3.3% and the number of households living in informal dwellings have increased with 2.7%.

Similar to the broader Free State Province, there's an ongoing trend of rural-to-urban migration in the area. The rural population is mainly engaged in agriculture. The local population distribution leans toward urban living (78% urban, 22% rural). Moqhaka appears less urbanized compared to other districts in Fezile Dabi. However, this is due to the inclusion of Vierfontein, Renovaal villages, Vaal Reefs hostel complex, and informal settlement populations in Moqhaka's rural count.

The 2016 Community Survey have released a poverty headcount. The poverty measures used below are based on the South African Multidimensional Poverty Index (SAMPI). The SAMPI is an index that is constructed using eleven indicators across four dimensions, namely health, education, living standards and economic activity. The poverty headcount shows the proportion of households that are considered to be "multidimensional poor" in the defined area. The intensity of poverty is the average proportion of indicators in which multidimensional poor households are deprived

Level of education:

Education plays a pivotal role in community development. The level of education influences growth and economic productivity of a region. There is a positive correlation between a higher level of education and the level of development, and standard of living. Education levels in any given population will influence both economic and human development.

In terms of the education levels for the area, 46.9% of the population have completed Grade 9 or higher and 22% have completed Matric or higher.

### b) Socio-economic value of the activity

**It must be noted that the information provided below is for the entire Mulilo Solar Power Plant Cluster as the grid infrastructure proposed will form part of the larger authorised facility and will be constructed and operated as such.**

What is the expected capital value of the activity on completion?

R 13.56  
billion

What is the expected yearly income that will be generated by or as a result of the activity?

Unknown at this stage

## BASIC ASSESSMENT REPORT

Will the activity contribute to service infrastructure?	<b>YES</b>	<b>NO</b>
Is the activity a public amenity?	<b>YES</b>	<b>NO</b>
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	~ 210	
What is the expected value of the employment opportunities during the development and construction phase?	Unknown at this stage	
What percentage of this will accrue to previously disadvantaged individuals?	Unknown at this stage	
How many permanent new employment opportunities will be created during the operational phase of the activity?	~ 14	
What is the expected current value of the employment opportunities during the first 10 years?	Unknown at this stage	
What percentage of this will accrue to previously disadvantaged individuals?	Unknown at this stage	

## BASIC ASSESSMENT REPORT

### 9. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult <http://bgis.sanbi.org> or [BGIShelp@sanbi.org](mailto:BGIShelp@sanbi.org). Information is also available on compact disc (cd) from the Biodiversity-GISUnit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

- a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)

Systematic Biodiversity Planning Category				If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NMR)	According to the 2015 Free State CBA and ESA map dataset the grid connection corridor The project area overlaps with CBA1 & 2, an ESA1 & 2, ONA and degraded areas. No concern has been raised by the ecological specialist regarding the placement of the grid connection infrastructure within these layers.

- b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	0%	N/A
Near Natural (includes areas with low to moderate level of alien invasive plants)	100%	<p>According to the land type database (Land Type Survey Staff, 1972 - 2006), the site is characterised by the Bc25 land type. This land type is generally moderately deep to deep (&gt;500 mm), loamy fine sand to loam overlying loam associated with very shallow soils and rock outcrops. The site falls within an area that is classified as a Protected Agricultural Area.</p> <p>The topography is mainly flat to rolling, but also includes mountainous regions and the Escarpment (Mucina &amp; Rutherford, 2006). The Vaal-Vet Sandy Grassland is considered to be Endangered with a conservation target of 24% (Mucina &amp; Rutherford, 2006). The area occurs on a plains-dominated landscape with some scattered, slightly irregular undulating plains and hills (Mucina &amp; Rutherford, 2006). With regards to the plant types, the area consists</p>

## BASIC ASSESSMENT REPORT

		mainly of low-tussock grasslands with an abundant karroid element (Mucina & Rutherford, 2006)
Degraded (includes areas heavily invaded by alien plants)	0%	N/A
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	0%	N/A

**c) Complete the table to indicate:**

- (i) the type of vegetation, including its ecosystem status, present on the site; and
- (ii) whether an aquatic ecosystem is present on site.

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

**d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)**

**Terrestrial Ecosystems:**

A Terrestrial Biodiversity impact assessment was undertaken for the proposed project which discusses the fauna, flora, topography as well as the landscape features identified within the project area. The Rudolph Solar PV 1 and Grid is situated within the Vaal-Vet Sandy Grassland and Rand Highveld Grassland Bioregions. The topography is mainly flat to rolling, but also includes mountainous regions and the Escarpment (Mucina & Rutherford, 2006). The Vaal-Vet Sandy Grassland is considered to be Endangered with a conservation target of 24% (Mucina & Rutherford, 2006). The area occurs on a plains-dominated landscape with some scattered, slightly irregular undulating plains and hills (Mucina & Rutherford, 2006). With regards to the plant types, the area consists mainly of low-tussock grasslands with an abundant karroid element (Mucina & Rutherford, 2006). This bioregion mainly occurs in the North-West and Free State Provinces at altitudes of 1 260 to 1 360 m (Mucina & Rutherford, 2006). The Rand Highveld Grassland occurs on highly variable landscapes with extensive sloping plains and a series of ridges slightly elevated over undulating surrounding plains. The vegetation is species-rich, wiry, sour grassland alternating with low, sour shrubland on rocky outcrops and steeper slopes. This vegetation type can be found in Gauteng, North-West, Free State and Mpumalanga Provinces, between rocky ridges from Pretoria to Witbank, extending onto ridges in the Stoffberg and Roosenekal regions as well as west of Krugersdorp centred in the vicinity of Derby and

## BASIC ASSESSMENT REPORT

Potchefstroom, extending southwards and north-eastwards from there (Mucina & Rutherford, 2006). Important plant taxa are those species that have a high abundance, a frequent occurrence or are prominent in the landscape within a particular vegetation type (Mucina & Rutherford, 2006). According to Mucina and Rutherford (2006), this vegetation type is classified as Endangered. The national target for conservation protection for both these vegetation types is 24%, but only a few patches are protected in statutory reserves (Kwaggavoetpad, Van Riebeeck Park, Bronkhorstspuit, Boskop Dam Nature Reserves) and in private conservation areas (e.g. Doornkop, Zemvelo, Rhenosterpoort and Mpopomeni). Almost half of this vegetation type has been transformed mostly by cultivation, plantations, urbanisation or dam-building. Cultivation may also have had an impact on an additional portion of the surface area of the unit where old lands are currently classified as grasslands in land-cover classifications and poor land management has led to degradation of significant portions of the remainder of this unit.

### **Aquatic Ecosystems:**

According to the Wetland Impact Assessment, the site lies to the south of the Vaal River within the Middle Vaal Management Area (Quaternary Catchments C24B and C70K). The wider study area is relatively flat, with the low hill of Paradyskop occurring within the site. The general drainage on the site is towards the Olifantsvlei and Renoster Rivers to the east, as well as the Vaal River to the north.

The freshwater features in the wider study area consist primarily of Vaal, Renoster and Olifantsvlei Rivers, as well as valley bottom wetlands, seeps and depression wetland areas. The Olifantsvlei River arises near Viljoenskroon while the larger Renoster River originates near Paradysville, further to the south-east of the site. Both rivers drain northwards to join the Vaal River approximately 3 km north-east of the site. The watercourses and wetland areas are relatively disturbed and are in general surrounded and impacted by agricultural activities. The seasonal wetlands have however been more significantly impacted by agricultural activities which have extended into most of the wetlands and only avoided the more significant wetland areas. Where the wetlands have been avoided, they still comprise mostly indigenous moist grassland vegetation with localised invasions of alien plants where there has been more disturbance.

# BASIC ASSESSMENT REPORT

## SECTION C: PUBLIC PARTICIPATION

### 1. ADVERTISEMENT AND NOTICE

Publication name	Klerksdorp Record	
Date published	21 July 2023	
Site notice position	Latitude	Longitude
	26° 58'57.70"S	26°54'33.20"E
Date placed	6 July 2023	

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

### 2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN 326

The details of the measures taken to include all potential I&APs are described in detail in Appendix E (public participation) to this report.

Key stakeholders (other than organs of state) identified in terms of Regulation 41(2)(b) of GN 326

The list of interested and affected parties is included as Appendix E5 to this report.

Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

The proof of notification is described in detail in Appendix E2 (public participation) to this report.

### 3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
Vrystat Landbou (Jack Armour) requested a KMZ file of the properties affected by the proposed grid layout.	The KMZ file has been sent to the I&AP.
Email & Letter ESKOM (Mr John Geeringh) requested a KMZ file of the properties affected by the proposed grid layout.	The KMZ file has been sent to the I&AP.
Department of Forestry, Fisheries and the Environment Directorate: Biodiversity Conservation (Kamogelo Mathetja) requested a KMZ file of the properties affected by the	The KMZ file has been sent to the I&AP.



## BASIC ASSESSMENT REPORT

proposed grid layout.

### 4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3.

The comments and response report is included as Appendix E3 to this report.

### 5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

The list of interested and affected parties is included as Appendix E5 to this report.

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

The proof of notification is described in detail in Appendix E2 (public participation) to this report.

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

Eskom and the SKA Project Office (now referred to as the South African Radio Astronomy Observatory (SARAO)) have been included in the list of Organs of State. Refer to the list of interested and affected parties is included as Appendix E5 to this report.

### 6. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for any activities (linear or other) where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub-regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

A list of registered I&APs must be included as appendix E5.

Copies of any correspondence and minutes of any meetings held must be included in Appendix E6.

The details of the measures taken to include all potential I&APs are described in detail in Appendix E (public participation) to this report.

### SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014 as amended and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

#### **1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES**

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.

The impact assessment methodology proposed for this development is based on the principle of activities, aspects and impacts. Activities are the physical activities that are carried out during the project during design, construction, operations and decommissioning of the development proposed for the site; Environmental aspects are elements of the activities that interact with the environment and include biophysical and socio-economic elements. Impacts are defined as changes in the biophysical or socio-economic environment as a result of the aspects. Each impact identified is given a significance rating.

## BASIC ASSESSMENT REPORT

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

Low significance	<span style="background-color: yellow; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span>	Medium significance	<span style="background-color: orange; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span>	High significance	<span style="background-color: red; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span>	Positive impact	<span style="background-color: green; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span>
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### Construction Phase

SPECIALIST STUDY	IMPACT	PRE-MITIGATION RATING	POST MITIGATION RATING	SUMMARY OF MITIGATION MEASURES
Terrestrial Biodiversity Impact Assessment (Appendix E2)	Destruction, loss and fragmentation of habitats (including wetlands), ecosystems and the vegetation community.	Negative High	Negative medium	<ul style="list-style-type: none"> <li>All development areas must be clearly demarcated. No Very High SEI areas should be disturbed at all.</li> <li>Areas of indigenous vegetation outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. The construction area must be fenced off and no ingress into other areas allowed.</li> <li>All activities must make use of existing roads and tracks as far as practically and feasibly possible. No new roads or servitudes should be constructed where existing infrastructure can be used.</li> <li>Apply for a permit to relocate (where possible) protected plant species to similar habitat recommended by a specialist. Where Protected plants are located within the fenced area but outside the development area, these must be marked and not disturbed (as far as practicable).</li> <li>All laydown areas, chemical toilets etc. should be restricted to disturbed areas where possible. Any materials may not be stored for extended periods of time and must be removed from the project area once the construction phase has been concluded. Use of re-usable/recyclable materials are recommended.</li> <li>Areas that have been disturbed during construction, but will not undergo development, must be revegetated with indigenous vegetation dominant in the area.</li> <li>A spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. Drip trays or any form of</li> </ul>

## BASIC ASSESSMENT REPORT

				<p>oil absorbent material must be placed underneath vehicles/machinery and equipment susceptible of leakages.</p> <ul style="list-style-type: none"> <li>• A stormwater management plan must be developed and applied to the site.</li> </ul>
	Introduction of IAP species and invasive fauna.	Negative medium	Negative low	<ul style="list-style-type: none"> <li>• The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas thereby causing further encroachment of invasive species.</li> <li>• An alien invasive plant management plan must be developed and applied to the site.</li> </ul>
	Displacement of the indigenous faunal community (including SCC) due to habitat loss, direct mortalities, and disturbance (road collisions, noise, dust, light, vibration, and poaching).	Negative medium	Negative low	<ul style="list-style-type: none"> <li>• A qualified environmental control officer must be on site when construction begins to identify fauna species that will be directly disturbed and to relocate protected fauna/flora that are found during the construction activities. The area must be walked through prior to construction to ensure no faunal species remain in the habitat and get killed. Should animals not move out of the area on their own relevant specialists must be contacted to advise on how the species can be relocated.</li> <li>• Noise must be kept to an absolute minimum during the evenings and at night to minimize all possible disturbances to nocturnal mammals</li> <li>• No trapping, killing, or poisoning of any wildlife is to be allowed</li> <li>• Fencing mitigations include the following: <ul style="list-style-type: none"> <li>○ Top 2 strands must be smooth wire</li> <li>○ Routinely re-tension loose wires</li> <li>○ Minimum 30cm between wires</li> <li>○ Place markers on fences</li> </ul> </li> <li>• Fauna should be kept out of the PV area by employing low and high electrified strands top prevent small and large mammal ingress.</li> <li>• Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all areas of construction. This includes wetting of exposed soft soil surfaces. No non-environmentally friendly suppressants may be used as this could result in the pollution of water sources.</li> <li>• All personnel to undergo Environmental Awareness Training. A signed</li> </ul>

## BASIC ASSESSMENT REPORT

				<p>register of attendance must be kept for proof. Discussions are required on sensitive environmental receptors within the project area to inform contractors and site staff of the presence of species, their identification, conservation status and importance, biology, habitat requirements and management requirements within the Environmental Authorisation and the EMPr.</p>
Wetland Impact Assessment (Appendix E3)	Disturbance of aquatic habitat; water quality impacts.	Negative low	Negative low	<ul style="list-style-type: none"> <li>• The recommended buffers between the delineated aquatic ecosystems and all the proposed project activities should be maintained.</li> <li>• If the construction and operation of the PV modules does not require modification to the topography, topsoils or removal of indigenous grassland such that wetland functionality within these degraded wetland areas could be retained, the modules could be placed within the wetland areas mapped as being of low sensitivity.</li> <li>• Clearing of indigenous vegetation should not take place within the aquatic features and the recommended buffers.</li> <li>• The existing road infrastructure should be utilised as far as possible to minimise the overall disturbance.</li> <li>• During the construction phase, site management must be undertaken at the laydown and construction sites. This should specifically address on-site stormwater management and prevention of pollution measures from any potential pollution sources during construction activities such as hydrocarbon spills.</li> <li>• Any stormwater that does arise within the construction sites must be handled appropriately to trap sediments and reduce flow velocities.</li> </ul>
Avifaunal Impact Assessment (Appendix E4)	Vegetation clearing and brush cutting of vegetation for the associated infrastructure will lead to direct habitat loss.	Negative medium	Negative low	<ul style="list-style-type: none"> <li>• Indigenous herbaceous and graminoid vegetation should be maintained under the connection grid to maintain biodiversity and prevent soil erosion—Environmental Officer (EO) to supervise and oversee vegetation clearing activities.</li> <li>• Once confirmed, avoid ‘High’ SEI water resources, including appropriate buffers.</li> <li>• Compile and implement a Rehabilitation Plan from the onset of the project.</li> <li>• Consult a fire expert and compile and implement a Fire Management</li> </ul>
	Increased human presence can lead to	Negative medium	Negative low	

## BASIC ASSESSMENT REPORT

	poaching and the increase in vehicle traffic may lead to roadkill			<p>Plan to minimise the risk of veld fires around the project site.</p> <ul style="list-style-type: none"> <li>• A Solid Waste Management Plan must be developed and implemented to avoid impacts on surrounding habitats.</li> <li>• Applying covers on phases or grounds where adequate separation is not feasible. Examples of covers include insulator/conductor covers, bushing covers, arrester covers, cutout covers, and jumper wire covers.</li> <li>• Fencing mitigations: <ul style="list-style-type: none"> <li>○ Top 2 strands must be smooth wire.</li> <li>○ Routinely retention loose wires.</li> <li>○ Minimum 30 cm between wires</li> </ul> </li> </ul> <p>Environmental Awareness Training for all staff and contractors. Hunting of species must be made a punishable offence. This is especially pertinent to avifauna SCC.</p>
	displacement of avifaunal species,	Negative medium	Negative low	
Agricultural Impact Assessment (Appendix E1)	Loss of land capability	Negative low	Negative low	<ul style="list-style-type: none"> <li>• A system of storm water management, which will prevent erosion on and downstream of the site, will be an inherent part of the engineering design on site.</li> <li>• Any excavations done during the construction phase, in areas that will be re-vegetated at the end of the construction phase, must separate the upper 30 cm of topsoil from the rest of the excavation spoils and store it in a separate stockpile. When the excavation is back-filled, the topsoil must be back-filled last, so that it remains at the surface. Topsoil should only be stripped in areas that are excavated. Across the majority of the site, including construction lay down areas, it will be much more effective for rehabilitation, to retain the topsoil in place. If levelling requires significant cutting, topsoil should be temporarily stockpiled and then re-spread after cutting, so that there is a covering of topsoil over the entire cut surface. It will be advantageous to have topsoil and vegetation cover below the panels during the operational phase to control dust and erosion</li> </ul>
	Soil erosion	Negative low	Negative low	
Heritage Impact Assessment (Appendix E7)	Loss or damage to sites, features or objects of cultural heritage significance	Negative low	Negative low	<ul style="list-style-type: none"> <li>• A no development buffer area of 100m must be implemented around site Site002, the grave located in the northern section of the site.</li> <li>• A Heritage Agreement and Conservation Management Plan be developed for the ongoing management of these resources.</li> </ul>

## BASIC ASSESSMENT REPORT

				<ul style="list-style-type: none"> <li>Should any buried archaeological resources or human remains or burials be uncovered during the course of development activities, work must cease in the vicinity of these finds. The South African Heritage Resources Agency (SAHRA) must be contacted immediately in order to determine an appropriate way forward.</li> </ul>
Palaeontological Impact Assessment (Appendix E7)	Destroy or permanently seal-in fossils at or below the surface that are then no longer available for scientific study	Negative medium	Negative low	<ul style="list-style-type: none"> <li>If Palaeontological Heritage is uncovered during surface clearing and excavations the <b>Chance find Protocol</b> attached should be implemented immediately. Fossil discoveries ought to be protected and the ECO/site manager must report to South African Heritage Resources Agency (SAHRA) (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za) so that mitigation (recording and collection) can be carried out.</li> <li>Preceding any collection of fossil material, the specialist would need to apply for a collection permit from SAHRA. Fossil material must be curated in an accredited collection (museum or university collection), while all fieldwork and reports should meet the minimum standards for palaeontological impact studies suggested by SAHRA.</li> </ul>
Visual Impact Assessment (Appendix E5)	Visual impact of construction activities of the solar facility	Negative Low	Negative Low	<ul style="list-style-type: none"> <li>Good housekeeping to reduce impacts that could cause a nuisance.</li> <li>Dust suppression</li> <li>proper waste collection</li> <li>clean and neat site camp/office</li> <li>shade net to block views towards site camp/office</li> <li>Retain the vegetation, especially along the boundary of the site</li> </ul>
Social Impact Assessment (Appendix E6)	The creation of local employment, business opportunities, and opportunities for skills development and on-site training.	Positive High	Positive High	<p>Enhancement:</p> <ul style="list-style-type: none"> <li>The project proponents of the Rudolph SEF should liaise with the Local Municipality to establish a local skills database of companies for the associated area. This skills database should be made available to the contractors before the commencement of the construction phase to establish the extent of the potential service providers in the Local Municipality.</li> <li>The key stakeholders, local authorities and the community need to be</li> </ul>

## BASIC ASSESSMENT REPORT

				<p>informed regarding the outcome of the decision of the proposed Rudolph SEF. Local service providers should be notified of the tender process and assisted in this regard. The potential employment opportunities and the employment procedure that the project proponent intends to follow should also be clearly communicated before the commencement of the construction phase.</p> <ul style="list-style-type: none"> <li>• Reasonable and practical efforts should be made by the project proponent to appoint local contractors by implementing a 'locals first' policy. However, due to the technical nature of this project it is likely that skilled positions will be filled by people from outside the local areas.</li> <li>• Efforts should be made to employ local contractors first, and also contractors that are compliant with the Broad Based Black Economic Empowerment (BBBEE) criteria.</li> <li>• The recruitment selection process should also seek to promote gender equality.</li> <li>• If feasible, training and skills development programmes for the local workers should be initiated prior to the construction phase of the Rudolph SEF.</li> </ul>
	The maximising of opportunities to local and regional SMMEs and other business for service delivery.	Positive medium	Positive medium	<ul style="list-style-type: none"> <li>• The LM, in conjunction with the local business sector and representatives from the local hospitality industry, should identify strategies aimed at maximising the potential benefits associated with the project.</li> </ul>
	The provision of technical support to local farmers and the municipality.	Positive low	Positive low	<p>Enhancement:</p> <ul style="list-style-type: none"> <li>• Workshops and private consultations with the local farmers and the LOCAL MUNICIPALITY should be held to inform the and provide advice regarding the installation of solar energy facilities and the costs associated with it</li> </ul>
	The presence of construction workers on-site and in the	Negative low	Negative low	<ul style="list-style-type: none"> <li>• The project proponent needs to develop a code of conduct which must be signed by appointed construction workers prior to the construction phase. The code of conduct should clearly outline the acceptable behaviour and</li> </ul>



## BASIC ASSESSMENT REPORT

	impacted area and communities			<p>activities of construction workers. In doing so construction workers will be legally informed and held liable for any damages or losses. It is however important that dismissals or fines must comply with the South African labour legislation.</p> <ul style="list-style-type: none"> <li>• The proposed site for the Rudolph SEF should be clearly fenced off to effectively monitor the movement of construction workers in the vicinity of the project site.</li> <li>• The project proponent needs to arrange transportation for the construction workers on a daily basis, especially for low and semi-skilled construction workers, in order to enable the proponent to effectively monitor the movement of construction workers to and from the project site. Where necessary arrangements need to be made by the project proponents to enable construction workers to return to their hometowns over weekends/on a regular basis to reduce the potential risks posed to local family structures and social networks.</li> </ul>
	In-migration of people (non-local workforce and jobseekers).	Negative low	Negative low	<ul style="list-style-type: none"> <li>• As stated above a 'locals first' policy should be implemented by the project proponents, where the local community of Viljoenskroon should be employed first, specifically for un-skilled and low-skilled employment opportunities.</li> <li>• A policy that no employment opportunities will be available at the gate, should be implemented by the project proponent.</li> <li>• The proposed construction site for the Rudolph SEF should be clearly fenced off for potential security risks in this regard.</li> <li>• Although the significance of this impact is likely to be low, the influx of job seekers cannot be avoided or prevented.</li> </ul>
	The presence of construction workers on-site and in the impacted areas and communities.	Negative low	Negative low	<ul style="list-style-type: none"> <li>• The project proponent and appointed contractors need to develop a code of conduct which must be signed by construction workers prior to the construction phase. The code of conduct should clearly outline the acceptable behaviour and activities of construction workers. In doing so the construction workers will be legally informed and held liable for any damages/theft. Construction workers found guilty of such an offence should be charged and dismissed, however it is important that dismissals or fines must comply with the South African labour legislation.</li> </ul>

## BASIC ASSESSMENT REPORT

				<ul style="list-style-type: none"> <li>• The project proponent must enter into an agreement with the farmer prior to the construction phase, whereby the damages/losses to farming property/infrastructure be compensated for, if it can be proven to be associated with the construction activities of the proposed SEF.</li> <li>• All farm gates must be closed after passing through.</li> </ul>
	Safety risk of farmers, risk of livestock theft and theft of farming infrastructure.	Negative low	Negative low	<ul style="list-style-type: none"> <li>• The proposed construction site for the Rudolph SEF should be clearly fenced off and the movement of construction workers should be limited to the vicinity of the construction site.</li> <li>• The project proponent/appointed contractors should provide transportation to the construction workers on a daily basis. This will ensure the potential risk regarding the trespassing of construction workers on farmers' properties, be reduced.</li> <li>• No staff should be accommodated over-night on the construction site, except for the presence of security staff throughout the night on site.</li> <li>• The project proponent should hold the appointed contractors liable for the compensation to farmers for any damages or losses that can be associated with the construction phase of the proposed project. This should also be included in the code of conduct signed by all key stakeholders.</li> <li>• Procedures regarding waste management on the construction site should be clearly outlined in the Environmental Management Programme (EMPr), to reduce the risk it poses to livestock.</li> </ul>
	Potential impact of heavy vehicles and construction related activities, damage to roads and dust pollution.	Negative low	Negative low	<ul style="list-style-type: none"> <li>• The movement of construction vehicles on the site should be confined to agreed access road/s.</li> <li>• The movement of construction vehicles on the site should be confined to agreed access road/s.</li> <li>• All damages to the roads must be repaired by the contractor during the construction phase, and the costs associated with the damage must be borne by the contractor.</li> <li>• Measures for dust suppression should be implemented on a regular basis to minimize potential dust pollution. Examples of measures include wetting of gravel roads.</li> <li>• Vehicles that are used for the transportation of loose building materials,</li> </ul>

## BASIC ASSESSMENT REPORT

				<ul style="list-style-type: none"> <li>for example sand, should be fitted with covers to avoid any spillage.</li> <li>The appointed contractors should ensure that all vehicles are road-worthy and that the drivers of all vehicles have the relevant licensing documents. The drivers must be made aware of the speed limits and potential road safety issues.</li> <li>All vehicles related to the construction related activities should adhere to the speed limits.</li> </ul>
	Increased risk of potential veld fires	Negative medium	Negative medium	<ul style="list-style-type: none"> <li>Controlled firebreaks must be implemented by the contractor around the perimeters of the construction site.</li> <li>No construction staff should be accommodated on the site over-night except for the presence of security personnel.</li> <li>No smoking should be permitted on the site.</li> <li>The appointed contractor should ensure that no open fires for the use of cooking or heating should be allowed, except for designated areas.</li> <li>Adequate fire-fighting equipment should be provided by the contractors and should be readily available and serviced on a regular basis. Additionally, all staff should be training in fire-fighting and how to use the related fire-fighting equipment.</li> <li>The appointed contractors should ensure that any construction related activities that might pose potential fire risks, for example welding and grinding, are confined to the designated areas and that it is properly managed. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high-risk dry, windy winter months.</li> </ul>
Traffic Impact Assessment (Appendix E9)	Increase in traffic volumes, for both light and heavy vehicles, influencing traffic congestion and road safety	Negative Low	N/A	<ul style="list-style-type: none"> <li>All operations and maintenance vehicles must be roadworthy, and drivers must have the relevant licences for the type of vehicles they are operating, and</li> <li>All vehicle drivers need to strictly adhere to the rules of the road.</li> </ul>

### Operational Phase

SPECIALIST	IMPACT	PRE-MITIGATION	POST MITIGATION	SUMMARY OF MITIGATION MEASURES
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## BASIC ASSESSMENT REPORT

STUDY		RATING	RATING	
Terrestrial Biodiversity Impact Assessment (Appendix E2)	Continued fragmentation and degradation of natural habitats and ecosystems (including wetlands).	Negative medium	Negative low	<ul style="list-style-type: none"> <li>• The clearing of vegetation must be minimized where possible. All activities must be restricted to within the authorised areas. It is recommended that areas to be developed be specifically and responsibly demarcated so that during the construction phase only the demarcated areas be impacted upon.</li> <li>• Existing access routes, especially roads, must be made use of.</li> <li>• Any materials may not be stored for extended periods of time and must be removed from the PAOI once the construction phase has been concluded. No permanent construction phase structures should be permitted. Construction buildings should preferably be prefabricated or constructed of re-usable/recyclable materials. No storage of vehicles or equipment will be allowed outside of the designated laydown areas.</li> <li>• Areas that are denuded during construction need to be re-vegetated with indigenous vegetation according to a habitat rehabilitation plan, to prevent erosion during flood and wind events and to promote the regeneration of functional habitat. This will also reduce the likelihood of encroachment by invasive alien plant species. All grazing mammals must be kept out of the areas that have recently been re-planted.</li> <li>• A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site.                         <ul style="list-style-type: none"> <li>○ Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery</li> </ul> </li> </ul>

BASIC ASSESSMENT REPORT

				<p>and equipment when not in use.</p> <ul style="list-style-type: none"> <li>○ No servicing of equipment on site unless necessary.</li> <li>○ All contaminated soil / yard st1 shall be treated in situ or removed and be placed in containers.</li> <li>○ Appropriately contain any generator diesel storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them from leaking and entering the environment.</li> <li>○ Construction activities and vehicles could cause spillages of lubricants, fuels and waste material negatively affecting the functioning of the ecosystem.</li> <li>○ All vehicles and equipment must be maintained, and all re-fuelling and servicing of equipment is to take place in demarcated areas outside of the project area.</li> </ul> <ul style="list-style-type: none"> <li>● It must be made an offence for any staff to take/ bring any plant species into/out of any portion of the project area. No plant species whether indigenous or exotic should be brought into/taken from the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants.</li> <li>● A fire management plan needs to be compiled and implemented to restrict the impact fire would have on the surrounding areas.</li> </ul>
	Continuing spread of IAP and weed species.	Negative medium	Negative low	<ul style="list-style-type: none"> <li>● An Invasive Alien Plant Management Plan must be compiled and implemented. This should regularly be updated to reflect the annual changed in IAP composition.</li> <li>● The footprint area of the construction should be kept to a minimum. The footprint area must be clearly</li> </ul>

## BASIC ASSESSMENT REPORT

				<p>demarcated to avoid unnecessary disturbances to adjacent areas. Footprints of the roads must be kept to prescribed widths.</p> <ul style="list-style-type: none"> <li>Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site. A location specific waste management plan must be put in place to limit the presence of rodents and pests and waste must not be allowed to enter surrounding areas.</li> <li>A pest control plan must be put in place and implemented; it is imperative that poisons not be used to control pests due to the likely occasional presence of SCC.</li> </ul>
	<p>Ongoing displacement and direct mortalities of the faunal community (including SCC) due to continued disturbance (road collisions, noise, light, dust, vibration, poaching, etc.)</p>	<p>Negative medium</p>	<p>Negative low</p>	<ul style="list-style-type: none"> <li>The areas to be disturbed must be specifically and responsibly demarcated to prevent the movement of staff or any individual into the surrounding environments, signs must be put up to enforce this.</li> <li>Noise must be kept to an absolute minimum during the evenings and at night to minimize all possible disturbances to reptile species and nocturnal mammals.</li> <li>No trapping, killing, or poisoning of any wildlife is to be allowed and</li> <li>Signs must be put up to enforce this. Monitoring must take place in this regard.</li> <li>Outside lighting should be designed and limited to minimize impacts on fauna. All outside lighting should be directed away from any sensitive areas. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (green/red) lights should be used wherever possible.</li> <li>All construction and maintenance motor vehicle</li> </ul>

## BASIC ASSESSMENT REPORT

				<p>operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. Speed limits must be enforced to ensure that road killings and erosion is limited.</p> <ul style="list-style-type: none"> <li>• Schedule activities and operations during least sensitive periods, to avoid migration, nesting, and breeding seasons.</li> <li>• Fencing mitigations:             <ul style="list-style-type: none"> <li>○ Top 2 strands must be smooth wire</li> <li>○ Routinely re-tension loose wires</li> <li>○ Minimum 30cm between wires</li> </ul> </li> <li>• Place markers on fences.</li> <li>• Use environmentally friendly cleaning and dust suppressant products.</li> </ul>
<p>Wetland Impact Assessment (Appendix E3)</p>	<p>Degradation of the ecological condition of aquatic ecosystems; modification of flow and water quality; erosion; and alien vegetation invasion in aquatic features</p>	<p>Negative medium</p>	<p>Negative low</p>	<ul style="list-style-type: none"> <li>• Alien plant growth and signs of erosion should be monitored on an ongoing basis to ensure that the disturbed areas do not become infested with invasive alien plants or eroded. Observed invasive alien plant growth should be cleared from the sites regularly according to measures as laid out in the EMP for the project.</li> <li>• Stormwater runoff infrastructure must be designed to mitigate both the flow and water quality impacts of any stormwater leaving developed areas. The runoff should rather be dissipated over a broad area covered by natural vegetation or managed using appropriate shaping with berms, channels and swales.</li> <li>• Should any erosion features develop, they should be stabilised as soon as possible.</li> <li>• Any water supply, sanitation services as well as solid waste management services required for the</li> </ul>

## BASIC ASSESSMENT REPORT

				sites should preferably be provided by an off-site service provider.
Visual Impact Assessment (Appendix E5)	Alteration to the visual quality of the residents staying on the farms surrounding the study site	Negative medium	Negative low	<ul style="list-style-type: none"> <li>● Good housekeeping to reduce impacts that could cause a nuisance.                             <ul style="list-style-type: none"> <li>○ Dust suppression</li> </ul> </li> <li>● Building should be painted a 'natural' colour.</li> <li>● Vegetate the areas that were exposed during the construction phase.</li> <li>● Retain the vegetation, especially along the boundary of the site</li> </ul>
Social Impact Assessment (Appendix E6)	The creation of local employment and business opportunities, as well as opportunities for skills development and on-site training.	Positive medium	Positive medium	<ul style="list-style-type: none"> <li>● The enhancement measures suggested in the construction phase should have already been implemented prior to the implementation phase.</li> <li>● Skills development programmes and training should be provided and implemented to maximise the number of employment opportunities for the local communities.</li> <li>● The project proponent together with the Local Municipality should explore the option for establishing a Community Development Trust.</li> <li>● The project proponent and the local municipalities, together with the Tourism Centre, need to explore the possibility of establishing a visitor centre for the proposed project.</li> <li>● The potential opportunities for local content, procurement as well as community shareholding should be explored and maximised</li> </ul>
	The potential up- and downstream economic opportunities for the local community associated with the operational phase	Positive medium	Positive medium	<ul style="list-style-type: none"> <li>● The enhancement measures suggested in the construction phase presented earlier should have already been implemented prior to the implementation phase.</li> <li>● The project proponent together with the Local Municipality should explore the option for establishing a Community Development Trust.</li> </ul>



## BASIC ASSESSMENT REPORT

				<ul style="list-style-type: none"> <li>• The project proponent and the local municipalities, together with the Tourism Centre, need to explore the possibility of establishing a visitor centre for the proposed project.</li> <li>• The potential opportunities for local content, procurement as well as community shareholding should be explored and maximised</li> </ul>
	The establishment of renewable energy infrastructure and the generation of clean, renewable energy for South Africa	Positive medium	Positive medium	<ul style="list-style-type: none"> <li>• The establishment of a renewable energy facility like the proposed Mooiwater SEF can be regarded as a mitigation measure itself in terms of the country's high energy demand.</li> <li>• Utilise the proposed Mooiwater SEF to promote and possibly increase the country's contributions towards renewable energy to supply the national energy grid. - Implementation of training and skills development programmes by the project proponents for the local communities to maximise the amount of local people employed during the operational phase.</li> <li>• Maximise the exposure of the proposed Mooiwater SEF to the public through extensive communication, advertisement and the establishment of a visitor centre</li> </ul>
	The generation of additional income for landowners representing a significant benefit for the affected farmer	Positive low	Positive medium	<ul style="list-style-type: none"> <li>• Lease agreements between the project proponent and the affected landowners should be implemented.</li> </ul>
	The potential positive impacts associated with the establishment of a Community Trust.	Positive medium	Positive medium	<ul style="list-style-type: none"> <li>• The potential trustees to sit on a Community Trust need to be identified with the assistance of the Local Municipality. The structure of this trust and the trustees also need to be established to ensure that the Trust is also not mismanaged.</li> <li>• There should be clear criteria for the identification and</li> </ul>

## BASIC ASSESSMENT REPORT

					<p>funding of projects/initiatives in the area; the benefits of projects should be aimed at the whole community.</p> <ul style="list-style-type: none"> <li>There must be strict financial management controls in place to manage the funds generated for a Community Trust for the proposed SEF financial management controls that could be implemented can include annual audits</li> </ul>	
	Visual impact and impact on sense of place.	Negative medium		Negative low		<ul style="list-style-type: none"> <li>The recommendations contained in the Visual Impact Assessment (VIA) report should be consulted and implemented during the operational phase. The measures aimed at addressing the impact of aviation lights at night should specifically also be addressed</li> </ul>
	Impact on the tourism industry.	Negative low	Positive low	Negative low	Positive low	<ul style="list-style-type: none"> <li>The recommendations contained in the Visual Impact Assessment (VIA) report should be consulted and implemented during the operational phase.</li> <li>The project proponents should also consider the establishment of a visitor centre for the proposed Mooiwater SEF.</li> </ul>
	Potential loss of productive farmland.	Negative low		Negative low		<ul style="list-style-type: none"> <li>The proposed mitigation measures for the construction phase should have been implemented.</li> <li>The project proponents should consider the establishment of a rehabilitation fund. This fund can be utilised for the rehabilitation of the proposed SEF in the decommissioning phase</li> </ul>

### Decommissioning Phase

SPECIALIST STUDY	IMPACT	PRE-MITIGATION RATING	POST MITIGATION RATING	SUMMARY OF MITIGATION MEASURES
Wetland Impact Assessment	Disturbance of aquatic habitat; water quality	Negative low	Negative low	<ul style="list-style-type: none"> <li>The recommended buffers between the delineated aquatic ecosystems and all the proposed project activities should be maintained.</li> </ul>

## BASIC ASSESSMENT REPORT

(Appendix E3)	impacts			<ul style="list-style-type: none"> <li>• Clearing of indigenous vegetation should not take place within the aquatic features and the recommended buffers.</li> <li>• The existing road infrastructure should be utilised as far as possible to minimise the overall disturbance.</li> <li>• During the decommissioning phase, site management must be undertaken. This should specifically address on-site stormwater management and prevention of pollution from any potential pollution sources during activities such as hydrocarbon spills.</li> <li>• Any stormwater that does arise within the site must be handled appropriately to trap sediments and reduce flow velocities.</li> </ul>
Social Impact Assessment (Appendix E6)	The loss of employment opportunities and associated income.	Negative medium	Negative low	<ul style="list-style-type: none"> <li>• Retrenchment packages should be provided to all retrenched staff when the Rudolph SEF is decommissioned. This information must also be included in the staff's contracts and communicated in advance.</li> <li>• An Environmental Rehabilitation Trust Fund should be established to cover all the costs associated with the decommissioning phase and the rehabilitation of the impacted areas. The funds should be funded by a percentage of the revenue generated from the sale of the energy to the national grid over the 20–25 years lifespan of the proposed SEF.</li> <li>• All related infrastructures associated with the proposed Rudolph SEF should be dismantled and transported off-site.</li> </ul>
Traffic Impact Assessment (Appendix E9)	Increase in traffic influencing traffic congestion and road safe	Negative Low	N/A	<ul style="list-style-type: none"> <li>• All operations and maintenance vehicles must be roadworthy, and drivers must have the relevant licences for the type of vehicles they are operating, and</li> <li>• All vehicle drivers need to strictly adhere to the rules of the road.</li> </ul>

A complete impact assessment in terms of Regulation 19(3) of GN 326 must be included as Appendix F.

## 2. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

### Alternative A (preferred alternative)

When considering the impact assessment undertaken for the proposed grid connection solution in terms of the preferred alternative to connect the Rudolph SPP it is confirmed that all impacts associated with the development throughout the various development phases (i.e. construction, operation and decommissioning) can be mitigated to acceptable levels of significance through the implementation of the recommended mitigation measures provided. All impacts expected to occur will have a medium or low significance following the implementation of the mitigation measures, and no negative impacts of a high significance are expected to occur.

During construction it is expected that direct and temporary impacts will occur (i.e. short-term). The probability of occurrence will be definite in most cases. During operation it is expected that direct and indirect impacts will occur which will be of a long-term duration, and the probability of occurrence will be probable and definite in most cases. The impacts expected during the decommissioning phase will also be direct and temporary, with the impacts being very similar to what is expected during the construction phase.

When considering the siting and the location of the proposed development footprint (400m wide and 15.4km long) is confirmed that the power line is the most technically viable route from The Rudolph solar energy facility to the National Grid via the Mercury substation which has generation capacity. The Applicant has utilised the opportunity to avoid environmental sensitive features within the site through the careful placement of the proposed infrastructure.

Considering the above the EAP confirms that the development of proposed grid connection solution to connect the Rudolph SPP is considered as environmentally appropriate and will not lead to any detrimental impacts on the environment. No fatal flaws have been identified.

This alternative is therefore considered as preferred from an environmental suitability perspective

### Alternative B

When considering the impact assessment undertaken for the proposed grid connection solution in terms of the alternative route assessed to connect the Rudolph SPP to the Zaaiplaats substation it is confirmed that all impacts associated with the development throughout the various development phases (i.e. construction, operation and decommissioning) can be mitigated to acceptable levels of significance through the implementation of the recommended mitigation measures provided. All impacts expected to occur will have a medium or low significance following the implementation of the mitigation measures, and no negative impacts of a high significance is expected to occur. However, the Zaaiplaats substation is currently over capacitated by neighbouring PV facilities in the area. Making Alternative A the preferred grid route.

### Alternative C

## BASIC ASSESSMENT REPORT

N/A

### **No-go alternative (compulsory)**

This alternative considers maintaining the current state, which involves keeping the grid connection corridor and substation/switching station development area, as well as the surrounding land, zoned for agricultural and mining purposes. Without proceeding with the proposed activity, these areas will continue to be utilized for cattle grazing and maize cultivation.

The primary purpose of the proposed 132kV power line and substation/switching station is to establish a connection between the proposed Rudolph SPP and the National Grid. However, if the status quo is upheld, it would lead to potential opportunity costs. The SPP would be unable to operate without the power line and substation/switching station, resulting in job losses and hindering economic growth in the area. Choosing to maintain the status quo could mean forgoing the benefits that the successful operation of the SPP would otherwise bring to the region.

## BASIC ASSESSMENT REPORT

### SECTION E. RECOMMENDATION OF PRACTITIONER

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

YES

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

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

It is the opinion of the independent EAP that the proposed development will have a net positive impact for the area and will subsequently ensure the optimal utilisation of resources through enabling the operation of the Rudolph Solar PV 1. All negative environmental impacts can be effectively mitigated through the proposed mitigation measures, and the significance of the impacts can be reduced to either medium or low significance. Based on the contents of the report it is proposed that an environmental authorisation be issued, which states (amongst other general conditions) that the grid connection solution to connect the Rudolph Solar PV 1 to the national grid via a 132kV single-circuit overhead power line (and the associated service road) and 132kV substation / switching station within a 400m wide corridor in the Free State Province be approved subject to the following conditions:

- Alternative A for the grid connection corridor must be authorised, with the 132kV substation / switching station and all associated infrastructure, including the access roads.
- Implementation of the proposed mitigation measures set out in the EMPr(s).
- Implementation of the proposed mitigation measures set out in the specialist studies.
- The proposed grid connection infrastructure must comply with all relevant national environmental laws and regulations.
- All actions and task allocated in the EMPr(s) should not be neglected and a copy of the EMPr should be made available onsite at all times.
- Should archaeologically sites or graves be exposed during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.
- The wetlands and the associated 100m buffer must be avoided.
- The period for which the Environmental Authorisation is required is 10 years.

YES

## BASIC ASSESSMENT REPORT

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Is an EMPr attached?

The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the BasicAssessment process must be included as Appendix H.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

Ayabulela Manjezi

\_\_\_\_\_  
NAME OF EAP



\_\_\_\_\_  
SIGNATURE OF EAP

4 September 2023

\_\_\_\_\_  
DATE

## **SECTION F: APPENDIXES**

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information

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