

# **THE PROPOSED DOORNRIVIER 1 SOLAR PV FACILITY, PORTION 21 OF FARM DOORNRIVIER NO. 330, VIRGINIA, FREE STATE**



## **DRAFT SCOPING REPORT AND PLAN OF STUDY**

D:FFE REF: TBC

SEPTEMBER 2022

**KEREN ENERGY DOORNRIVIER 1 (PTY) LTD**

**PROPOSED DOORNRIVIER 1 SOLAR PV  
FACILITY, PORTION 21 OF FARM DOORNRIVIER  
NO. 330, VIRGINIA, FREE CAPE**

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## ACRONYMS

BGIS	Biodiversity Geographic Information System
CBA	Critical Biodiversity Area
DFFE	Department of Forestry, Fisheries and the Environment
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECA	Environment Conservation Act (Act No. 73 of 1989)
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMP	Environmental Management Programme
ESA	Ecological Support Area
EWR	Environmental Water Requirements
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
NEMA	National Environmental Management Act (Act No. 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act (Act No. 10 of 2004)
NHRA	National Heritage Resources Act (Act No. 25 of 1999)
NID	Notice of Intent to Develop
NWA	National Water Act
OESA	Other Ecological Support Area
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
VIA	Visual Impact Assessment
WULA	Water Use Licence Application

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# 1. INTRODUCTION

## 1.1 BACKGROUND

Consideration is being given to the development of a solar photovoltaic (PV) array on Portion 21 of Farm Doornrivier No. 330, Virginia, Free State, located approximately 4.5km south- west of Virginia.

The applicant is Keren Energy Doornrivier 1 (Pty) Ltd who will undertake the activity should it be approved. EnviroAfrica CC has been appointed by Keren Energy Doornrivier 1 (Pty) Ltd as the independent Environmental Assessment Practitioner (EAP) responsible for undertaking the relevant EIA and the Public Participation Process required in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA).

This Scoping Report, which will be submitted to the Department: Forestry, Fisheries and the Environment (DFFE) for consideration, forms part of the EIA process.

The purpose of this Draft Environmental Scoping Report is to describe the proposed project, the process followed to date, to present alternatives and to list issues identified for further study and comment by specialists.

Should the EIA process be authorised by DFFE, the Specialist Studies (noted in Section 8) will be undertaken and the significant issues (noted in Section 6) will be investigated and assessed during the next phase of this application.

## 1.2 DESCRIPTION OF THE PROPOSED ACTIVITY

Keren Energy Doornrivier 1 (Pty) Ltd is proposing the development of a solar photovoltaic (PV) array on Portion 21 of Farm Doornrivier No. 330, Virginia, Free State.

The proposed property covers an area of approximately 372ha, of which approximately 219ha will be developed for the PV array, consisting of single axis tracking systems, and associated infrastructure, allowing for the generation of approximately 88MW of alternating current.

The PV tables will be raised approximately 0.5m off the ground and will not exceed 3m in height at maximum tilt.

The PV facility will include sub-surface powerlines leading to a proposed switching station. The switching station will have a development footprint of approximately 1.5ha.

From the switching station, grid connection to the Eskom Theseus Substation will be via an approximately 3.16km long 132kV (or higher) overhead powerline (25m high monopole) that runs south-east (for 1.1km) towards the R730, then run parallel to the R730 for 2.06km towards the Theseus substation within an approved.

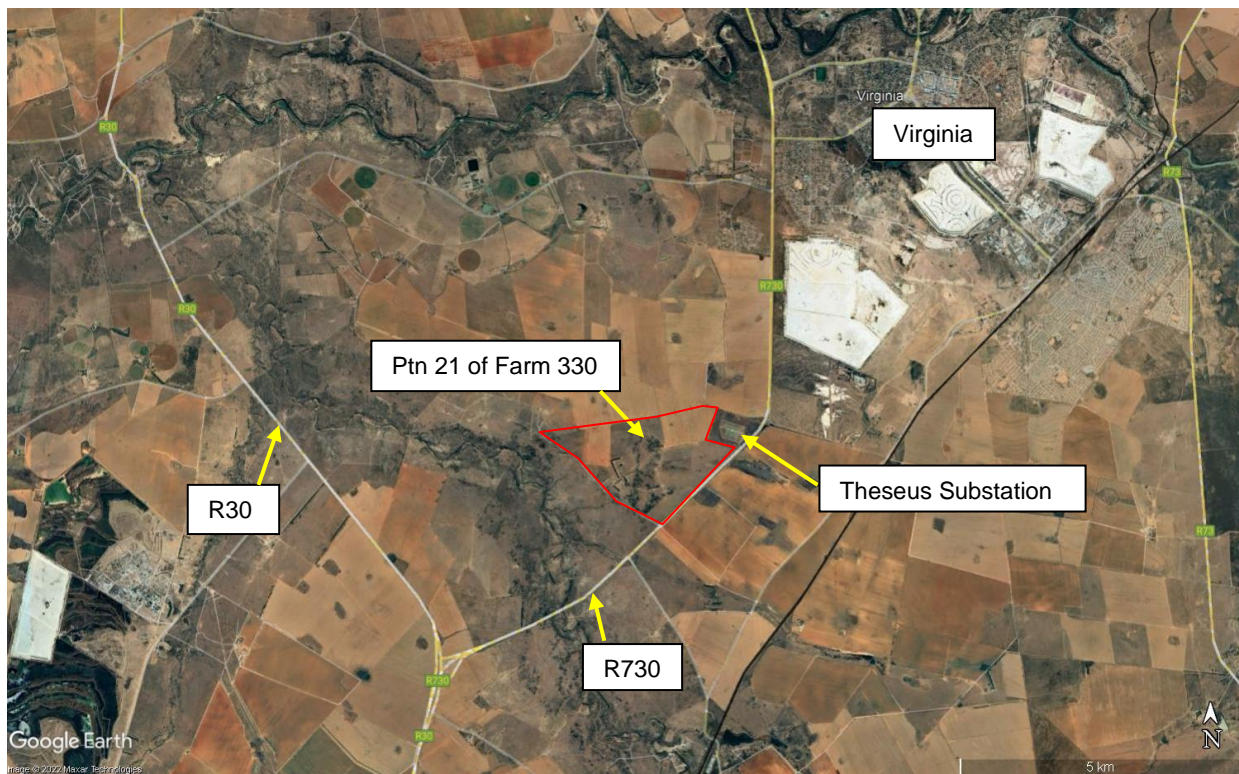
Associated infrastructure includes the internal access roads, office buildings with ablutions, maintenance sheds, inverter-transformer stations on concrete pads, battery storage banks/containers, sub-surface powerlines leading to grid connection to the Eskom Theseus Substation. A construction and operational laydown area is also included. The entire site will be fenced off.

There is a connection to Doornrivier on the Sedibeng pipeline running parallel with the R730 road. Water will be distributed to the proposed switching station.

Water will be applied for industrial purposes, and an application/letter must be submitted to Sedibeng Water for approval. Water will mostly be utilized for drinking purposes and washing of solar panels every two or three months or less. The diameter of the pipelines will be 75mm or smaller.

The site is located approximately 4.5km south-west of Virginia, 26km north, north-east of Theunissen, and is adjacent to the R730. Access to the site is via the access road from the R730.

Site co-ordinates: Approximate central point: 28° 09' 57.10" S, 26° 48' 50.20" E.



**Figure 1:** Google Earth image showing the locality of the proposed site (indicated by the red polygon).

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## 2. NEED AND DESIRABILITY

In terms of the National Environmental Management Act, as amended, EIA 2014 regulations the Scoping/EIA report must provide a description of the need and desirability of the proposed activity. The consideration of “need and desirability” in EIA decision-making requires the consideration of the strategic context of the development proposal along with the broader societal needs and the public interest.

While the concept of need and desirability relates to the *type* of development being proposed, essentially, the concept of need and desirability can be explained in terms of the general meaning of its two components in which *need* refers to *time* and *desirability* to *place* – i.e. is this the right time and is it the right place for locating the type of land-use/activity being proposed? Need and desirability can be equated to *wise use of land* – i.e. the question of what is the most sustainable use of land.

### 2.1 NEED

As per the Department of Mineral Resources and Energy, in line with the national commitment to transition to a low carbon economy, the Integrated Resource Plan (IRP 2010 - 2030) which was promulgated in May 2011 set a target of 17 800 MW of renewable energy to be achieved by 2030 in respect of the electricity generation mix.

The proposed development is therefore in line with the Department of Energy’s IRPs aim to provide a long-term, cost-effective strategy to meet the electricity demand in South Africa, and objective of increased electricity supply through renewable sources.

According to the Matjhabeng Municipality Integrated Development Plan (IDP)(2017 - 2022), the main economic activities in the Lejweleputswa District happened in the primary sector and the tertiary sector. The primary sector in Lejweleputswa is driven by agriculture and mining. Matjhabeng is the largest municipality in the District and it contains most of the mining activities, especially gold mining.

According to the Matjhabeng Municipality Spatial Development Framework (2020/21 to 2024/25), the bulk electrical network is well established around the Matjhabeng area. Eskom serves all mines and all townships in the municipal area and thus there is sufficient bulk infrastructure available to serve the whole area. Main challenge however remains an aging electrical infrastructure in particular in towns where the municipality is provider.

According to the DFFE Screening Tool Report (**Appendix 5**), no intersections with Environmental Management Framework areas was found.

### 2.2 DESIRABILITY

The following factors determine the desirability of the area for the proposed development.

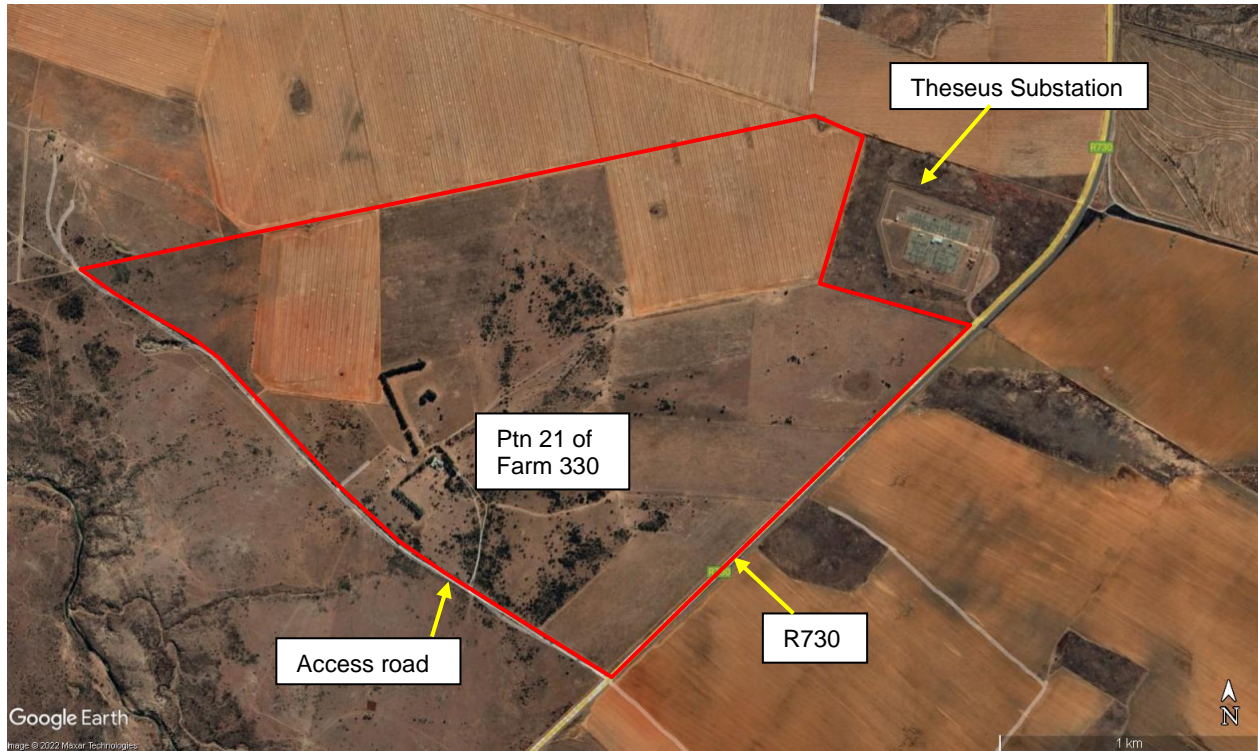
#### 2.2.1 Location and Accessibility

The site is located on Remainder of Portion 21 of Farm Doornrivier No. 330, approximately 4.5km south-west of Virginia, adjacent to the R730, and directly adjacent to the Theseus Substation.



Parts of the property have been disturbed by current and past agricultural activities, either through cultivation (maize) or livestock grazing. Portions of the property, especially the central parts and around the existing farmstead, are generally natural or near natural (see Figure 2 below).

The topography is also ideal, as the property is generally flat, with very little gradient.



**Figure 2:** Google Earth image of the proposed property (indicated by the red polygon).

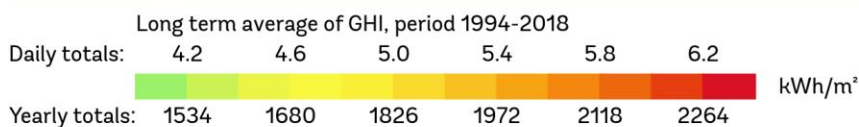
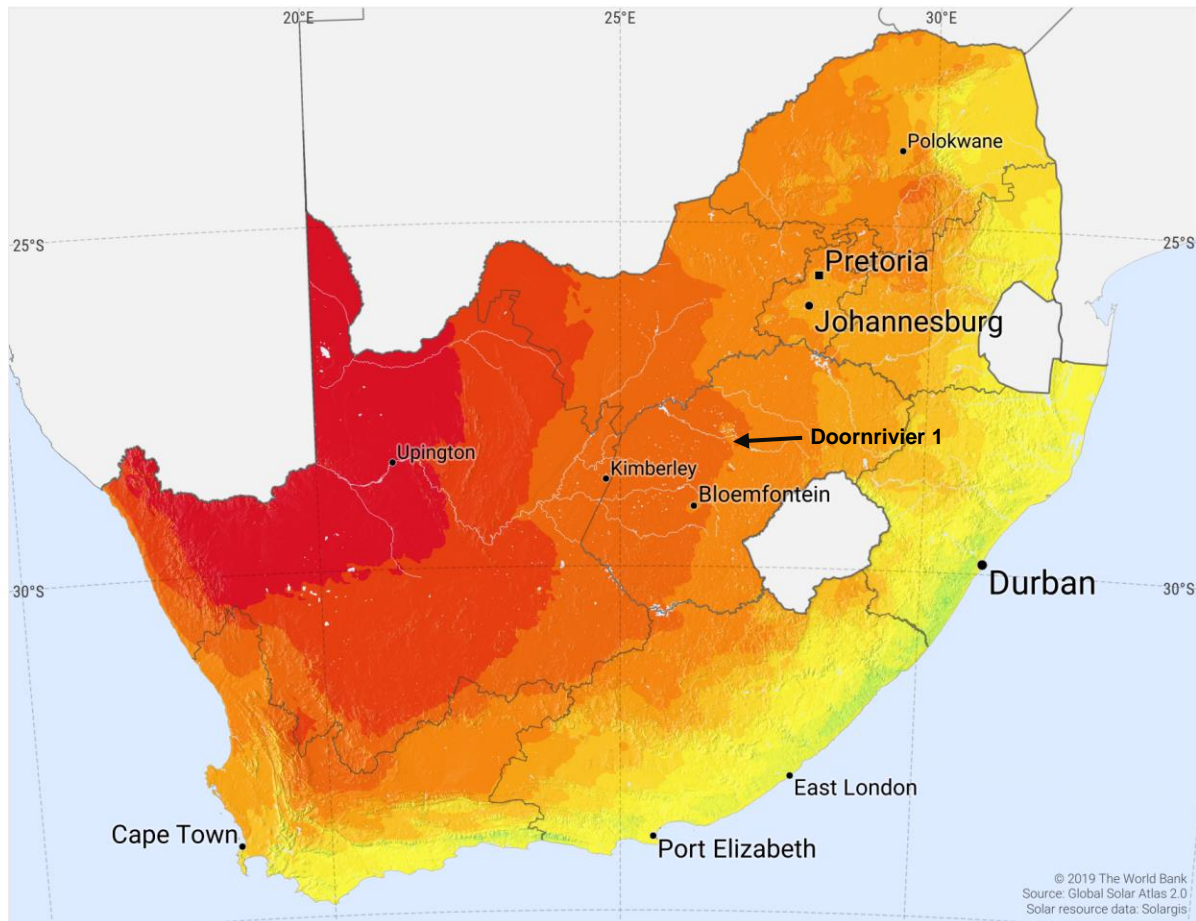
The site is in close proximity to the Theseus substation, which is located directly adjacent to the north-eastern corner of the property (see Figure 2 above). The site is therefore ideally located to provide easy connection to the Theseus substation.

The general area is also ideally suited for a solar PV facility due to the relatively high irradiation levels. The Global Horizontal Irradiation (GHI) average for the area is 2113 kWh/m<sup>2</sup> according to the Global Solar Atlas (see Figure 3 below). According to the Global Weather Corp Global horizontal irradiance (GHI) is a measurement of the total solar electromagnetic radiation above a horizontal surface at a given location and time. It is the most useful metric for predicting solar panel output. It accounts for 71.6% of PV performance variations.

<https://blog.globalweathercorp.com/global-horizontal-irradiance-solar-panel-efficiency>

SOLAR RESOURCE MAP

**GLOBAL HORIZONTAL IRRADIATION**  
**SOUTH AFRICA**



This map is published by the World Bank Group, funded by ESMAP, and prepared by Solargis. For more information and terms of use, please visit <http://globalsolaratlas.info>.

**Figure 3:** Global Solar Atlas image showing the Global Horizontal Irradiation levels for the proposed site.

**2.2.2 Compatibility with the Surrounding Area**

The proposed activity is not within the existing land use rights of the property. The property is zoned Agricultural. A rezoning application in terms of SLUMA will be required. The surrounding land-uses are also predominantly agricultural in nature. However, the property is in close proximity to the Theseus Substation.

The proposed development is also in close proximity to the approved Springbok Solar PV facility, located approximately 1km south, on the opposite side of the R730 on Farm Weltevrede No. 638.

The proposed development is not expected to significantly impact on people's health and well-being (e.g., in terms of noise, odours, etc.). However, the proposed development may have an impact on the visual character and "sense of place", since the property is within an agricultural area. This must also be considered in the context of other future proposed solar PV facilities and mining activities in the area.

No limitations in terms of the Matjhabeng Municipality Spatial Development Framework (2020/21 to 2024/25), were found.

The general objectives of Integrated Environmental Management have been taken into account through the following:

- The actual and potential impacts of the activity on the environment, socio-economic conditions and cultural heritage have been identified, predicted and will be evaluated, as well as the risks and consequences and alternatives and options for mitigation of activities, with a view to minimizing negative impact, maximizing benefits and promoting compliance with the principles of environmental management.
- The effects of the activity on the environment have been considered before actions taken in connection with them – *alternatives have been considered and will be investigated.*
- Adequate and appropriate opportunity for public participation is ensured through the public participation process.
- The environmental attributes have been considered in the management and decision-making of the activity – *an EMP will be compiled and included in the Environmental Impact Assessment Report for the proposed activity. The development must adhere to the requirements of all applicable state Authorities.*

The principles of environmental management as set out in section 2 of NEMA have been taken into account. The principles pertinent to this activity include:

- People and their needs have been placed at the forefront while serving their physical, psychological, developmental, cultural and social interests – *the proposed activity will have a beneficial impact on people. However, potential negative impacts will also be investigated.*
- Development must be socially, environmentally and economically sustainable. Where disturbance of ecosystems, loss of biodiversity, pollution and degradation, and landscapes and sites that constitute the nation's cultural heritage cannot be avoided, are minimised and remedied. - *Although the activity is expected to have little significant environmental impact, these impacts have been considered, and mitigation measures have been put in place. This will also be dealt with in the EMP*
- Where waste cannot be avoided, it is minimised and remedied through the implementation and adherence of EMP.
- The use of non-renewable natural resources is responsible and equitable .
- The negative impacts on the environment and on people's environmental rights have been anticipated and will be prevented, and where they cannot be prevented, are minimised and remedied.
- The interests, needs and values of all interested and affected parties will be taken into account in any decisions through the Public Participation Process
- The social, economic and environmental impacts of the activity have been considered, assessed and evaluated, including the disadvantages and benefits – *will be addressed in the Environmental Impact Assessment Report.*

- The effects of decisions on all aspects of the environment and all people in the environment have been taken into account, by pursuing what is considered the best practicable environmental option – *the proposed activity is expected to have minimal/negligible environmental impacts, especially after mitigation measures as described in the specialist reports and in the EMP are implemented.*

### 3. LEGAL REQUIREMENTS

The current assessment is being undertaken in terms of the National Environmental Management Act (Act 107 of 1998, NEMA), to be read with section 24 (5): NEMA EIA Regulations 2014. However, the provisions of various other Acts must also be considered within this EIA.

The legislation that is relevant to this study is briefly outlined below.

#### 3.1 THE CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA

The Constitution of the Republic of South Africa (Act 108 of 1996) states that everyone has a right to a non-threatening environment and that reasonable measure are applied to protect the environment. This includes preventing pollution and promoting conservation and environmentally sustainable development, while promoting justifiable social and economic development.

#### 3.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT 107 OF 1998)

The National Environmental Management Act (Act 107 of 1998) (NEMA), as amended, makes provision for the identification and assessment of activities that are potentially detrimental to the environment, and which require authorisation from the relevant authorities based on the findings of an environmental assessment. NEMA is a national act, which is enforced by the Department of Forestry, Fisheries and the Environment (DFFE). These powers are delegated in the Free State to the Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA). In terms of Section 24C of NEMA, the national Department of Forestry, Fisheries and the Environment (DFFE) is the Competent Authority.

On the 04 December 2014 the Minister of Water and Environmental Affairs promulgated regulations in terms of Chapter 5 of the NEMA, namely the EIA Regulations 2014. These were amended on 07 April 2017 (GN No. 326, No. 327 (Listing Notice 1), No. 325 (Listing Notice 2), No. 324 (Listing Notice 3) in Government Gazette No. 40772 of 07 April 2017). Listing Notice 1 and 3 are for a Basic Assessment and Listing Notice 2 for a full Environmental Impact Assessment.

According to the regulations of Section 24(5) of NEMA, authorisation is required for the following listed activities for the proposed agricultural development:

Government Notice R327 (Listing Notice 1) listed activities:

- 11 The development of facilities or infrastructure for the transmission and distribution of electricity;**
- (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or**
  - (ii) inside urban areas or industrial complexes with a capacity of 275 kilovolts or more.**

The proposed grid connection to the Theseus substation will be via a 132kv powerline.

- 12 The development of;**
- (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres;**
  - (ii) infrastructure or structures with a physical footprint of 100 square metres or more;**
- where such development occurs;**

- (a) within a watercourse;
- (b) in front of a development setback; or
- (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;

Infrastructure, including solar panels and associated infrastructure, exceeding 100m<sup>2</sup> will be constructed within 32m of the watercourse present on site.

- 14 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.**

Battery storage banks will be housed in containers exceeding 80m<sup>3</sup>.

- 19 The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;**
- (a) will occur behind a development setback;
  - (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or
  - (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies.

Infilling, excavation and moving and/or removal of soil from the watercourse on site may occur during construction of the internal roads, clearance for the solar panels and or other infrastructure on site.

- 28 Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:**
- (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or
  - (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;

A solar PV farm (industrial development), exceeding 5ha, will be developed on land that was used for agriculture.

Government Notice R325 (Listing notice 2) listed activities:

- 1 The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 MW or more, excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs;**
- (a) within an urban area; or
  - (b) On existing infrastructure

The proposed development (solar PV) will generate up to approximately 88MW.

- 15 The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for;**
- (i) the undertaking of a linear activity; or

- (ii) maintenance purposes undertaken in accordance with a maintenance management plan.**

Up to 219ha of natural vegetation may be cleared.

Government Notice **R324** (Listing notice 3) listed activities:

- 4 The development of a road wider than 4 meters with a reserve less than 13,5m**  
**b. In the Free State**  
**i. Outside Urban Areas**  
**(ee) Critical Biodiversity Areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.**

Internal roads may be wider than 4 meters. The site is outside an urban area and parts of the site are within a Critical Biodiversity Area.

- 10 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.**  
**b. In the Free State**  
**i. Outside Urban Areas**  
**(ee) Critical Biodiversity Areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.**  
**(hh) Areas within a watercourse or wetland; or within 100m from the edge of a watercourse or wetland.**

Battery storage banks will be housed in containers exceeding 30m<sup>3</sup>. The storage banks may be within 100m of the watercourse identified on site and parts of the site are within a CBA.

- 12 The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.**  
**b. In the Free State**  
**i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA.**  
**ii. Within Critical Biodiversity Areas identified in bioregional plans.**  
**iv. Areas within a watercourse or wetland; or within 100m from the edge of a watercourse or wetland.**

More than 300m<sup>2</sup> will be cleared. The site is partially within endangered vegetation, partly within a CBA and within 100m of a watercourse.

- 14 The development of;**  
**(i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 10 square metres;**  
**(ii) infrastructure or structures with a physical footprint of 10 square metres or more;**  
**where such development occurs;**  
**(a) within a watercourse;**  
**(b) in front of a development setback; or**

***(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;***

***b. In the Free State***

***i. Outside Urban Areas***

***(ff) Critical Biodiversity Areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.***

Infrastructure, including the solar panels and all associated infrastructure, will exceed 10m<sup>2</sup> and will be within 32m of a watercourse. The site is outside an urban area and within a CBA.

An Application Form will be submitted to DFFE. On acknowledgment from DFFE, the Scoping Process will be undertaken to identify potential issues.

### **3.3 NATIONAL HERITAGE RESOURCES ACT**

The protection and management of South Africa's heritage resources are controlled by the National Heritage Resources Act (Act No. 25 of 1999).

Section 38(8) also makes provision for the assessment of heritage impacts as part of an EIA process and indicates that if such an assessment is found to be adequate, a separate HIA is not required.

Furthermore, in terms of Section 34(1), no person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the SAHRA, or the responsible resources authority. Nor may anyone destroy, damage, alter, exhume or remove from its original position, or otherwise disturb, any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority, without a permit issued by the SAHRA, or a provincial heritage authority, in terms of Section 36 (3). In terms of Section 35 (4), no person may destroy, damage, excavate, alter or remove from its original position, or collect, any archaeological material or object, without a permit issued by the SAHRA, or the responsible resources authority.

Section 38(1) of the NHRA of 1999 requires the responsible heritage resources authority to notify the person who intends to undertake a development that fulfils the following criteria to submit an impact assessment report if there is reason to believe that heritage resources will be affected by such event:

- the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- the construction of a bridge or similar structure exceeding 50m in length;
- any development or other activity that will change the character of a site
  - exceeding 5000m<sup>2</sup> in extent; or
  - involving three or more existing erven or subdivisions thereof; or
  - involving three or more erven or divisions thereof which have been consolidated within the past five years; or
  - the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- the rezoning of a site exceeding 10 000m<sup>2</sup> in extent; or
- any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority.



### 3.4 EIA GUIDELINE AND INFORMATION DOCUMENT SERIES

The following are the latest guidelines and information Documents that have been consulted:

- Department of Environmental Affairs and Development Planning's (DEA&DP) *Environmental Impact Assessment Guideline and Information Document Series (Dated: March 2013)*:
  - ✓ *Guideline on Transitional Arrangements*
  - ✓ *Generic Terms of Reference for EAPs and Project Schedules*
  - ✓ *Guideline on Alternatives*
  - ✓ *Guideline on Public Participation*
  - ✓ *Guideline on Exemption Applications*
  - ✓ *Guideline on Appeals*
  - ✓ *Guideline on Need and Desirability*
- Department of Environmental Affairs and Tourism (DEAT) *Integrated Environmental Management Information Series*

### 3.5 NATIONAL WATER ACT

Besides the provisions of NEMA for this EIA process, the proposed development will also require authorizations under the National Water Act (Act NO. 36 of 1998). The Department of Water and Sanitation (DWS), who administer that Act, will be a leading role-player in the EIA.

The Water Use Licence Application (WULA), in terms of Section 21 (c) and (i), will be submitted to DWS. This application will run concurrently with the NEMA Application.

### 3.6 NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT

The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) is part of a suite of legislation falling under NEMA, which includes the Protected Areas Act, the Air Quality Act, the Integrated Coastal Management Act and the Waste Act. Chapter 4 of NEMBA deals with threatened and protected ecosystems and species and related threatened processes and restricted activities. The need to protect listed ecosystems is addressed (*Section 54*).

### 3.7 THE SPATIAL PLANNING AND LAND USE MANAGEMENT ACT (ACT 16 OF 2013)

The subject area falls under the jurisdiction of the local municipality and the appropriate zoning and subdivision would need to be allocated in order to permit the development of the land for the intended purpose.

A consent use and change in land use planning application in terms of Section 35 of the SPLUMA regulations and Section 37 of the Free State Guideline Bylaw on Municipal Land Use Planning.

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### **3.8 THE CONSERVATION OF AGRICULTURAL RESOURCES ACT (ACT 43 OF 1983)**

According to the Department of Environmental Affairs (2015). EIA Guideline for Renewable Energy Projects. Department of Environmental Affairs, Pretoria, South Africa, the mandate of the Conservation and Agricultural Resources Act 1983 (Act No 43 of 1983) (CARA) is to conserve “natural agricultural resources” (the soil, the water sources and the vegetation, excluding weeds and invader plants) through production potential of land, by the combating and prevention of erosion and weakening or destruction of the water sources, and by the protection of the vegetation and the combating of weeds and invader plants.

Section 6 of the Act concerns the control measures which the following may be applicable to IPPs (subsections (2) (f), (g) and (o)):

- the regulating of the flow pattern of run-off water;
- the utilization and protection of the vegetation; and
- the construction, maintenance, alteration or removal of soil conservation works or other structures on land.

A Soil, Land-use and Agricultural Potential Assessment will be conducted.

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## 4. ALTERNATIVES

Alternatives to the proposed development are limited and have been considered below.

### 4.1 SITE ALTERNATIVES

The proposed site is the only viable site or location available at this stage and the only one that will be investigated in this application. It must also be noted that the Applicant has proposed three separate solar PV facilities in the area (the other facilities are located south-west, directly adjacent to the proposed site, on Portion 5 of Farm Doornrivier 330, and Remainder of Farm Doornrivier 330. Each proposed facility is being treated as an independent NEMA environmental authorisation application with its own impact assessment process. Each of the three Doornrivier solar PV facilities will differ in generation capacity.

### 4.2 ACTIVITY ALTERNATIVES

There are no feasible activity alternatives assessed. The primary activity is the development of a facility for the generation of renewable energy. Other renewable energy generation facilities include wind and concentrated solar power, none of which are viable on the proposed site.

### 4.3 DESIGN/TECHNOLOGY ALTERNATIVES

Three different solar photovoltaic (PV) technology alternatives are options for the PV:

- Poly-Crystalline photovoltaic
- Concentrated photovoltaic (CPV)
- Thin film PV

These technologies each have their own advantages and disadvantages, from cost and space efficiency to visual impacts. The various options will be considered and assessed in more detail in the Environmental Impact Report.

### 4.4 LAYOUT ALTERNATIVES

The proposed property covers an area of 372ha, of which approximately 219ha will be available to be developed for the PV array and all associated infrastructure with the identified sensitivities and no-go areas excluded from potential development. This allows some space to consider various layout alternatives.

The layouts will consider the needs to maximise the output from the facility (maximise the solar array area) and consider the environmental sensitive and “no-go” areas identified by the specialists, either through desktop analysis and/or site investigations.

These layouts will be assessed in the Environmental Impact Report.

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## 4.5 NO-GO ALTERNATIVE

This is the option of not developing the proposed solar PV facility.

Although the no-go development might result in no potential negative environmental impacts, the direct and indirect socio-economic benefits of not constructing the PV Solar facility will not be realised. The national and local need for renewable energy will not be realised.

The no-go alternative will not result in any removal of vegetation or impacts on biodiversity (flora or faunal) or loss of agricultural land since the development will not take place. However, since the area is used for grazing and other agricultural activities, this does not guarantee that the natural vegetation and ecosystem as a whole will revive or continue to function undisturbed.

The no-go alternative will also result in South Africa's unsustainable, coal-based electricity supply will not be augmented with renewable energy alternatives.

The potential job opportunities during the construction and operational phases of the development will also not be realised.

Due to the nature of the activity, and the size and location of the site, the socio-economic benefits of the activity for the wider national community are considered to greatly outweigh any environmental benefits of not implementing the activity.

The potential negative and/or positive environmental impacts will be fully assessed in the Environmental Impact Report.

## 5. SITE DESCRIPTION

### 5.1 LOCATION

The site is located on Portion 21 of Farm Doornrivier No. 330, Virginia, Free State, approximately 4.5km south-west of Virginia, adjacent to the R730, and directly adjacent to the Theseus Substation.

Site co-ordinates: Approximate central point: 28° 09' 57.10" S, 26° 48' 50.20" E.

### 5.2 VEGETATION

Parts of the property have been disturbed by current and past agricultural activities, either through cultivation (maize) or livestock grazing. Portions of the property however, especially the central parts and around the existing farmstead, are generally natural or near natural.



**Figure 4:** General view of part of the proposed site looking south. The existing cultivated areas can clearly be seen to the right of the image, and grazing areas to the left.

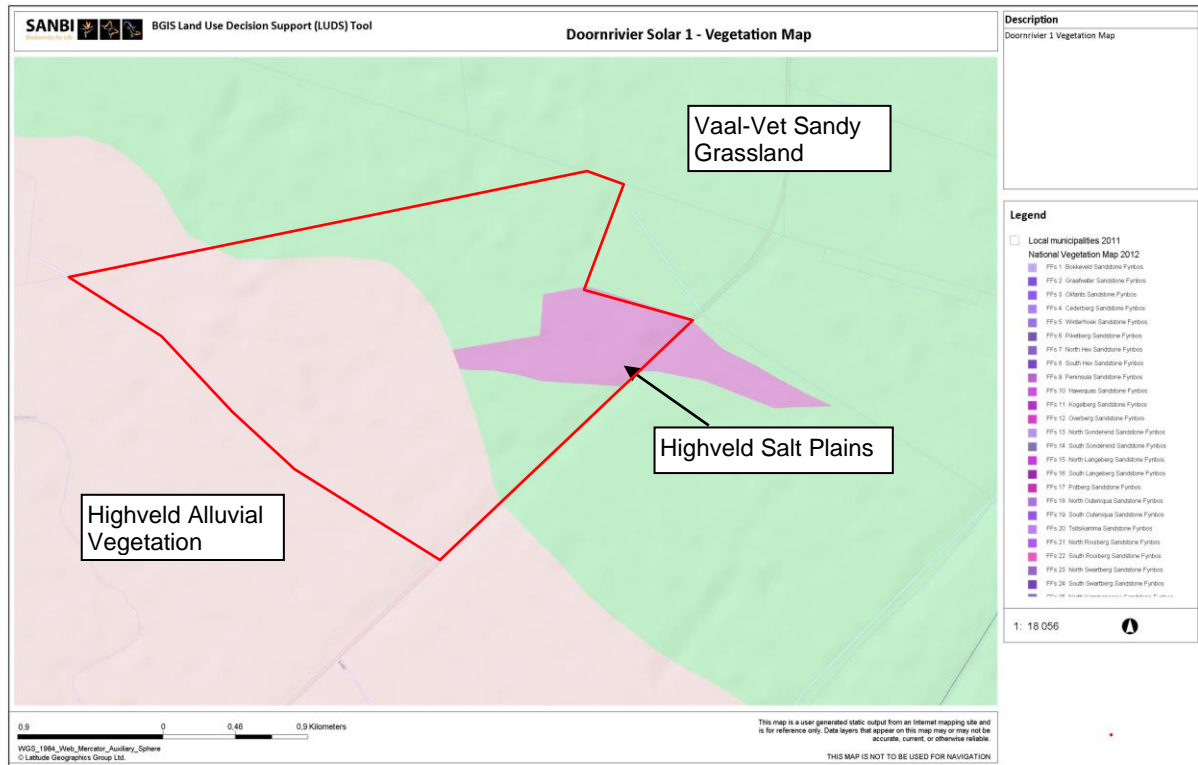


**Figure 5:** General view of part of the proposed site looking east. The existing powerlines can be seen, as well as the Theseus Substation in the distance (red arrow).



**Figure 6:** General view of the central part of the site, looking south over the undisturbed natural areas of the property.

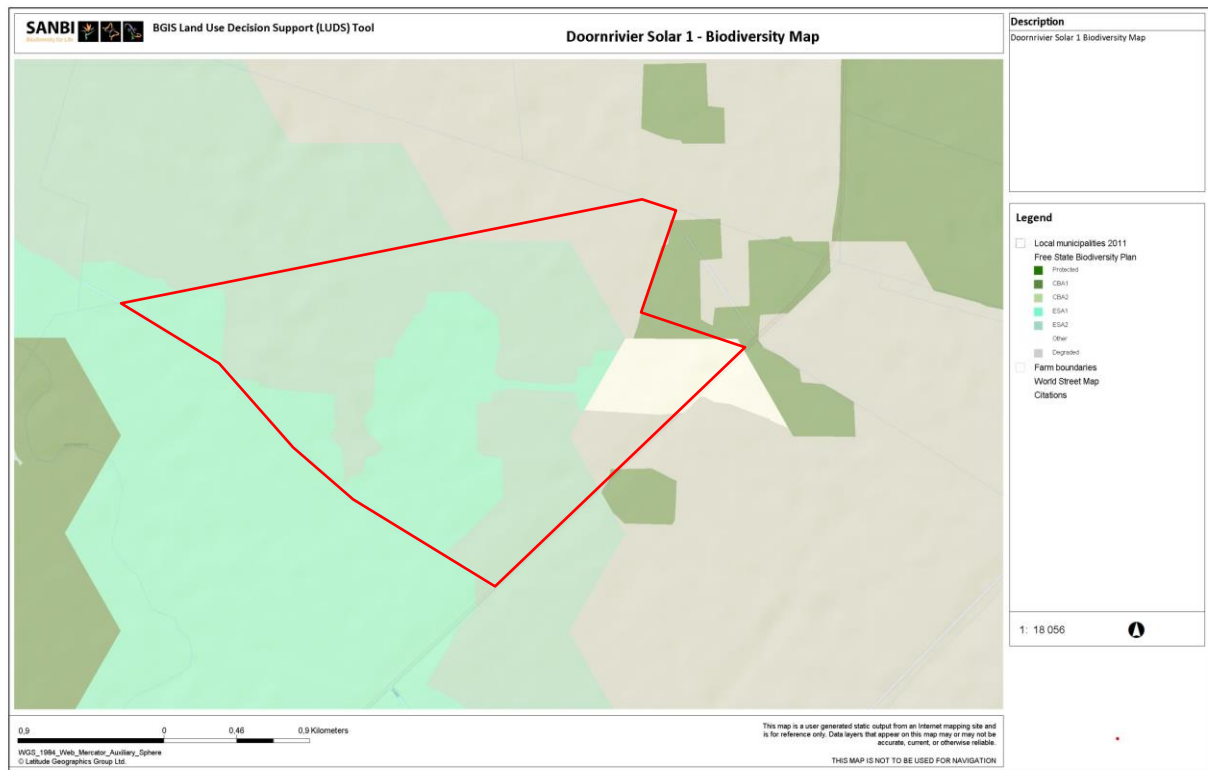
According to the Vegetation map of South Africa, Lesotho and Swaziland (Mucina & Rutherford, 2006, as updated in the 2012 beta version and 2018 Final) two broad vegetation types are expected on the proposed site, namely Highveld Alluvial Vegetation (Least Concern) and Vaal-Vet Sandy Grassland (Endangered). A small patch of Highveld Salt Plains is identified in the 2012 Map, but not on the 2018 Map. (see Figure 7 below).



**Figure 7:** SANBI Vegetation map of the area (BGIS)(2012 beta) with proposed property indicated by the red polygon.

According to biodiversity overlay maps from SANBI BGIS (**Figure 8**) the vast majority of the site does not fall within a Critical Biodiversity Area (CBA), with only a very small section south of the Theseus substation being identified as a CBA. The majority of the site falls within an Ecological Support Areas (ESA1 & ESA2).

The DFFE Screening Tool Report (**Appendix 5**) identified the site as having a Low Terrestrial Biodiversity Sensitivity.



**Figure 8:** CBA Map of the site (SANBI BGIS), indicating that only a small portion of the proposed property is located within a CBA. The majority of the site is classified as either ESA1 or ESA2, and the rest as “degraded”.

### 5.3 FRESHWATER

From the SANBI National Freshwater Ecosystem Priority Areas map (see Figure 9 below), there is only one significant freshwater resource identified on the property. The desktop analysis identified a natural wetland in the north-eastern corner of the property.

A small farm dam, identified as an “artificial wetland”, is located near the farmstead.

The Doorn River runs almost parallel to the south-western boundary of the property, and is located approximately 800m from the site at its nearest point.

The DFFE Screening Tool Report (**Appendix 5**) identified the site as having a Low Aquatic Biodiversity Sensitivity.



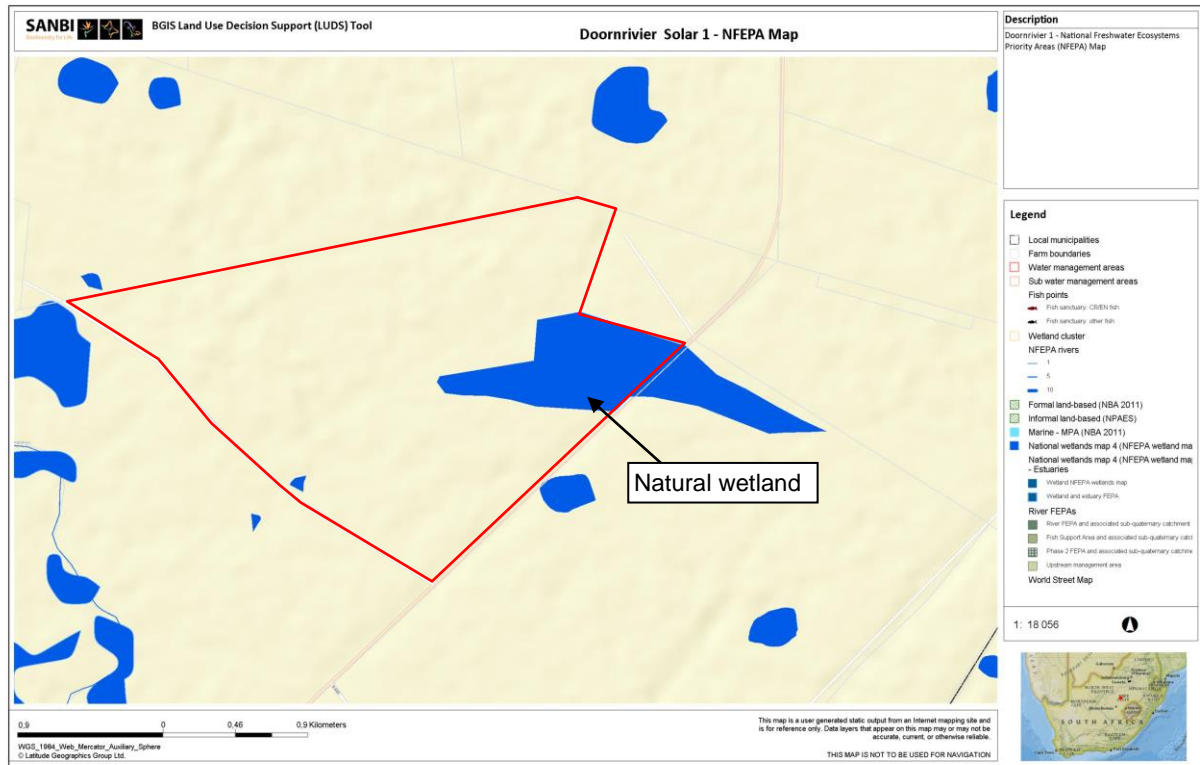


Figure 9: SANBI NFEPA Map of the water resources in the area.

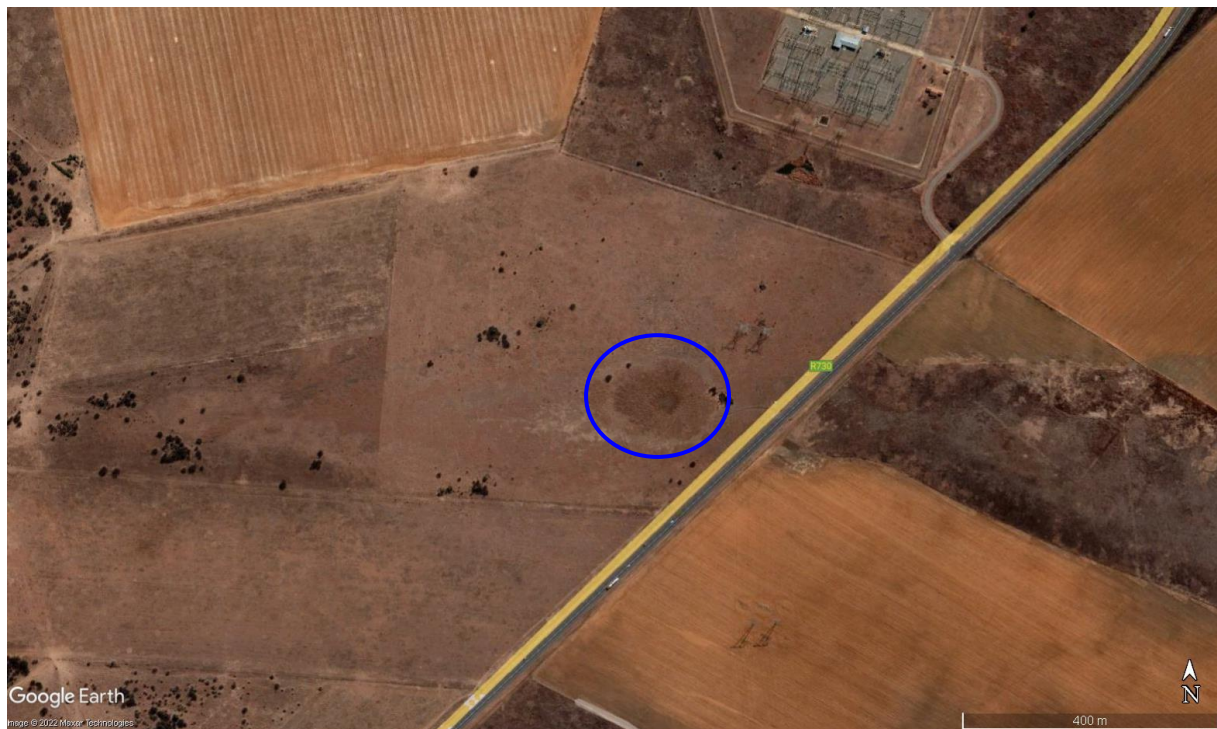
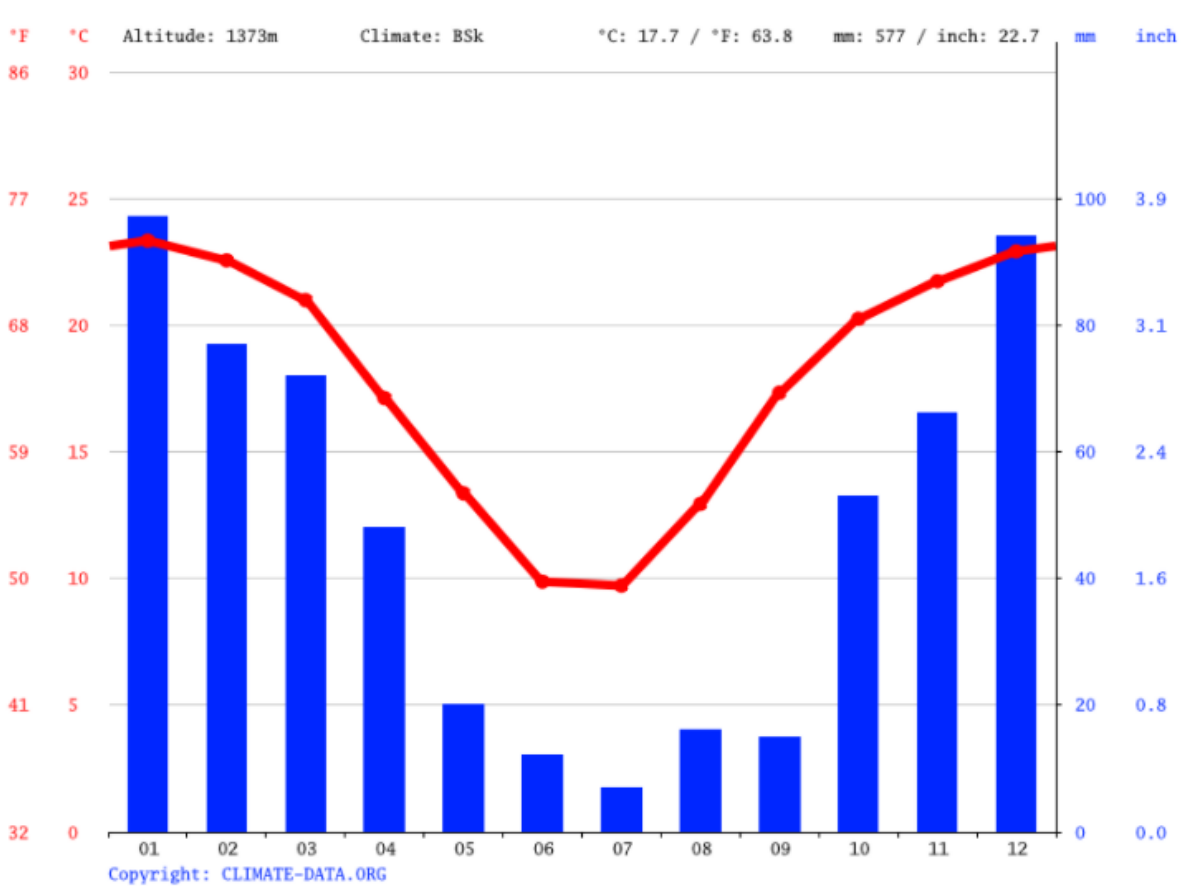


Figure 10: Google Earth image showing the approximate location of the natural wetland identified on the NFEPA overlay.

## 5.4 CLIMATE

The nearest climate data that can be obtained is for Welkom, which is only 20km North of the site. The climate should therefore be relatively the same. Welkom is influenced by the local steppe climate. The climate is classified as BSk by the Köppen-Geiger system (cold semi-arid). The average annual temperature for Welkom is 17.7 °C, and the average annual rainfall is 577 mm (please refer to Figure 11 below).

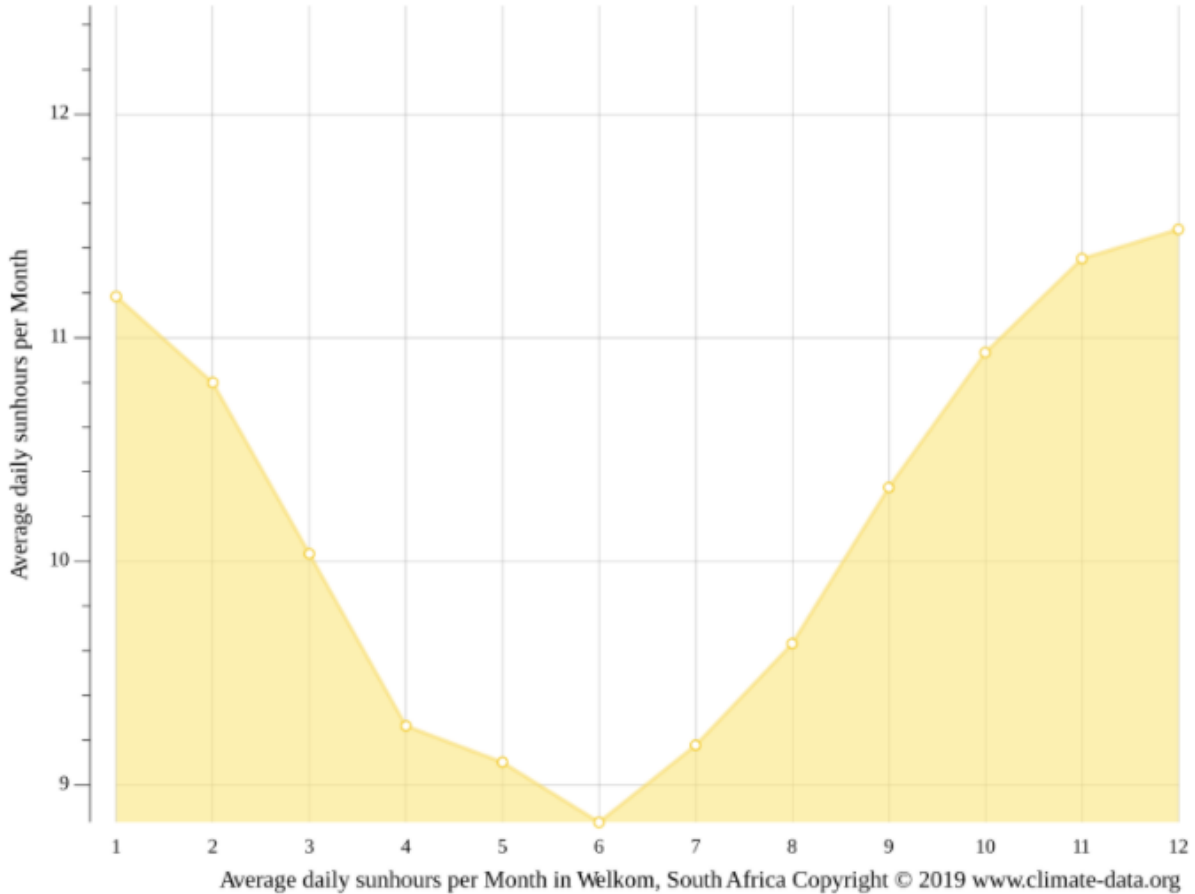


**Figure 11:** Climate data for Welkom (Source: <https://en.climate-data.org/africa/south-africa/free-state/welkom-765253/#climate-graph> ).

According to Climate-Data.org, around 3713.58 hours of sunshine are counted in Welkom throughout the year. On average there are 122.2 hours of sunshine per month.

The month with the most daily hours of sunshine is December with an average of 11.48 hours of sunshine per day. In total there are 356.02 hours of sunshine throughout December.

Please refer to Figure 12 and 13 below.



**Figure 12:** Average daily sunhours for Welkom (Source: <https://en.climate-data.org/africa/south-africa/free-state/welkom-765253/#climate-graph> )

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C (°F)	23.3 °C (74) °F	22.6 °C (72.6) °F	21 °C (69.8) °F	17.1 °C (62.8) °F	13.4 °C (56.1) °F	9.9 °C (49.8) °F	9.7 °C (49.5) °F	12.9 °C (55.3) °F	17.3 °C (63.2) °F	20.2 °C (68.4) °F	21.7 °C (71.1) °F	22.9 °C (73.2) °F
Min. Temperature °C (°F)	17.3 °C (63.1) °F	16.8 °C (62.3) °F	15.1 °C (59.2) °F	11.2 °C (52.1) °F	6.8 °C (44.2) °F	3.1 °C (37.6) °F	2.4 °C (36.4) °F	5.1 °C (41.2) °F	9.1 °C (48.4) °F	12.6 °C (54.6) °F	14.4 °C (58) °F	16.4 °C (61.5) °F
Max. Temperature °C (°F)	29.6 °C (85.3) °F	28.6 °C (83.5) °F	27.3 °C (81.2) °F	23.6 °C (74.4) °F	20.6 °C (69) °F	17.5 °C (63.5) °F	17.7 °C (63.8) °F	21.1 °C (70) °F	25.4 °C (77.8) °F	27.9 °C (82.2) °F	29 °C (84.2) °F	29.7 °C (85.4) °F
Precipitation / Rainfall mm (in)	97 (3.8)	77 (3)	72 (2.8)	48 (1.9)	20 (0.8)	12 (0.5)	7 (0.3)	16 (0.6)	15 (0.6)	53 (2.1)	66 (2.6)	94 (3.7)
Humidity(%)	52%	54%	54%	56%	53%	53%	45%	37%	31%	36%	39%	47%
Rainy days (d)	10	9	7	6	3	1	1	2	2	5	7	9
avg. Sun hours (hours)	11.2	10.8	10.0	9.3	9.1	8.8	9.2	9.6	10.3	10.9	11.4	11.5

**Figure 13:** Overall climate data for Welkom (Source: <https://en.climate-data.org/africa/south-africa/free-state/welkom-765253/#climate-graph> )

## 5.5 SOCIO-ECONOMIC CONTEXT

According to StatSA, Matjhabeng Local Municipality has a population of 406 461 (2011), with a growth rate of -0.04% (2001-2011).

According to the Matjhabeng Local Municipality Final Integrated Development Plan (2017-2022), for two consecutive periods 1996 – 2001 and 2001 - 2011, the Matjhabeng Local Municipality experience a negative growth of 2.88% and 0.04% respectively.

According to StatSA, the unemployment rate is 37%, and a youth unemployment rate of 49.7%.

According to the Matjhabeng Local Municipality Final Integrated Development Plan (2017-2022), Matjhabeng Local Municipality will develop the Energy Resource Plan to guide and address energy needs and that will be aligned with the national plan. The Municipality is trying level best to decrease its carbon footprint thus moving towards green economy.

2014	Lejweleputswa	Masilonyana	Tokologo	Tswelopele	Matjhabeng	Nala
1 Agriculture	5.6%	6.2%	24.6%	36.9%	0.8%	17.7%
2 Mining	46.5%	50.3%	21.6%	1.2%	56.0%	4.7%
<b>3 Manufacturing</b>	<b>2.5%</b>	<b>2.1%</b>	<b>2.9%</b>	<b>2.2%</b>	<b>2.1%</b>	<b>5.2%</b>
4 Electricity	1.5%	1.2%	2.9%	2.8%	1.3%	2.3%
5 Construction	1.7%	2.2%	2.5%	1.8%	1.5%	2.6%
6 Trade	11.0%	8.3%	12.3%	15.4%	10.0%	17.6%
<b>7 Transport</b>	<b>6.3%</b>	<b>5.2%</b>	<b>5.0%</b>	<b>7.8%</b>	<b>5.6%</b>	<b>11.8%</b>
8 Finance	10.8%	8.4%	7.6%	10.6%	10.8%	13.9%
9 Community services	14.2%	16.2%	20.7%	21.4%	11.9%	24.0%
Total Industries	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

**Figure 14:** Sectoral composition of Lejweleputswa's economy by local municipalities, 2014. (Source: Matjhabeng Local Municipality Final Integrated Development Plan (2017-2022)).

According to the Matjhabeng Local Municipality Final Integrated Development Plan (2017-2022), mining made up 56% of the GDP and agriculture 0.8%.

## 5.6 HERITAGE FEATURES

Due to the nature and size of the proposed development, potential heritage resources may be affected by the development. Heritage resources include any of the following, as defined by the National Heritage Resources Act (Act 25 of 1999):

- living heritage as defined in the National Heritage Council Act No 11 of 1999 (cultural tradition; oral history; performance; ritual; popular memory; skills and techniques; indigenous knowledge systems; and the holistic approach to nature, society and social relationships);

- Ecofacts (non-artefactual organic or environmental remains that may reveal aspects of past human activity; definition used in KwaZulu-Natal Heritage Act 2008);
- places, buildings, structures and equipment;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds;
- public monuments and memorials;
- sites of significance relating to the history of slavery in South Africa;
- movable objects, but excluding any object made by a living person; and
- battlefields.

The DFFE Screening Tool Report (**Appendix 5**) identified the site as having a Low Archaeological and Cultural Heritage Sensitivity, and a Very High Palaeontological Sensitivity.

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## 6. ENVIRONMENTAL ISSUES AND POTENTIAL IMPACTS

Environmental issues were raised through desktop analysis, site visits, informal discussions with the project team, specialists and authorities, and by Interested and Affected Parties through the initial public participation period. All issues raised will be assessed in the specialist reports and will form part of the Environmental Impact Report. Additional issues raised during the public participation will be listed in the Final Scoping Report.

The following potential issues have been identified:

### 6.1 BOTANICAL

A botanical impact assessment will be conducted to determine if there is any sensitive or endangered vegetation on the proposed site. Although large parts of the property is cultivated land, the development will occur on old cultivated areas with lower agricultural potential and areas of the property that are undeveloped and have natural vegetation cover.

A Botanical impact assessment will be conducted, which will describe and assess the botanical sensitivity of the area. The terms of reference for this study required a baseline analysis of the flora of the property, including the broad ecological characteristics of the site.

The botanical assessment will include the following:

- The significance of the potential impact of the proposed project, alternatives and related activities – with and without mitigation – on biodiversity pattern and process at the site, landscape and regional scales.
- Recommended actions that should be taken to prevent or, if prevention is not feasible, to mitigate impacts.

### 6.2 FRESHWATER

There is only one significant freshwater resource identified on SANBI BGIS NFEPA Overlays on the property in the desktop analysis identified a natural wetland in the eastern corner of the property (just south of the Theseus substation).

A freshwater assessment is therefore required to determine the nature and sensitivity of this wetland, and propose mitigation measures should the wetland be impacted on or removed.

The terms of reference for the Freshwater assessment are as follows:

- Literature review and assessment of existing information
- Site Assessment of the proposed activities and impact on the associated freshwater systems. This will include an assessment of the freshwater ecological condition, using river health indices such as in-stream and riparian habitat integrity, aquatic macro-invertebrates and riparian vegetation to determine set back lines and geomorphological condition of the streams, which will then determine the overall Ecstatus of the streams and provide data that will inform the Water Use Licence Application of the project.

- Define areas of increased Ecological Importance and Sensitivity (EIS), and define the Present Ecological State (PES) of the watercourses associated with the study area.
- Describe ecological characteristics of freshwater systems and compile report based on the data and information collected in the previous two tasks, describe ecological characteristics of the freshwater systems, comment on the conservation value and importance of the freshwater systems and delineate the outer boundary of the riparian zones/riverine corridors.
- Evaluate the freshwater issues on the site and propose mitigation measures to ensure the ongoing functioning of the ecosystems.
- Compilation of the documentation for submission of the water use authorisation application (WULA) to the Department of Water and Sanitation, including the Risk Assessment Matrix

### 6.3 AVIFAUNA

The potential impact of the proposed Solar PV Facility and powerlines on the birdlife in the area will also need to be assessed.

The DFFE Screening Report for a PV facility rated the avian sensitivity as low (and no rating was provided under the Powerline Category). However, due to the location and topography of the site, the presence of an NFEPA wetland on site and the relatively close proximity of the Doorn River, and the presence of fallow cropland and natural vegetation on the property, the potential impact on avifauna may be higher and should therefore be assessed.

An Avifaunal Impact Assessment will be conducted.

### 6.4 HERITAGE

The possible impact on heritage resources (archaeological and palaeontological) has been identified as a possible environmental impact as a result of the development of the solar PV facility.

In terms of Section 38(8) of the National Heritage Resources Act, a Notification of Intent to Develop (NID) will be submitted to SAHRA.

Section 38(1) of the NHRA of 1999 requires the responsible heritage resources authority to notify the person who intends to undertake a development that fulfils the following criteria to submit an impact assessment report if there is reason to believe that heritage resources will be affected by such event:

- the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- the construction of a bridge or similar structure exceeding 50m in length;
- any development or other activity that will change the character of a site
  - exceeding 5000m<sup>2</sup> in extent; or
  - involving three or more existing erven or subdivisions thereof; or
  - involving three or more erven or divisions thereof which have been consolidated within the past five years; or

- the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- the rezoning of a site exceeding 10 000m<sup>2</sup> in extent; or
- any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority.

A Heritage Impact Assessment, including an archaeological and cultural heritage impact assessment, and a palaeontological impact assessment will be conducted on the site.

## **6.5 VISUAL IMPACT**

The potential impact on the sense of place of the proposed development will also be considered. A Visual Impact Assessment will be conducted to determine the significance of any visual impact due to the construction and operation of the proposed PV facility. The assessment will determine whether the development will constitute an acceptable level of change from a visual perspective, and to provide mitigation measures to reduce any potential visual impact.

## **6.6 AGRICULTURE**

The proposed site is located on a property zoned for agricultural use. Currently, large parts of the property are used for agricultural purposes (maize crops and grazing). Due to the size and nature of the proposed development, a substantial amount of agricultural land will be lost.

The DFFE Screening Report has also rated the agricultural sensitivity as High, due to the location and topography of the site, presence of a small wetland (although artificial) and the presence of natural vegetation, the potential impact on avifauna should be assessed.

An Agricultural potential assessment and soil survey will be conducted.

## **6.7 SOCIO-ECONOMIC**

The potential socio-economic impact of a development of this nature and scale will; need to be considered and assessed, not only on a local scale, but regional and national extent too.

The proposed development has significant potential positive social and economic impacts, from job creation during the construction and operational phases, to assisting in meeting the country's electricity demand and securing supply through renewable energy sources.

However, the development could potential have negative social and economic impacts, especially on a local scale. The socio-economic cost of the development will need to be determined through a socio-economic impact assessment

## **6.8 OTHER ISSUES IDENTIFIED**

Any further issues raised during the public participation process or by the Competent Authority not mentioned in this section, will be dealt with during the EIA phase.



## 7. DETAILS OF THE PUBLIC PARTICIPATION PROCESS

Interested and Affected Parties (I&APs) have been and will be identified throughout the process. Landowners adjacent to the proposed site, relevant organs of state, organizations, ward councillors and the Local and District Municipality were added to this database. A complete list of organisations and individual groups identified to date is shown in **Appendix 4D**.

Public Participation will be conducted for the proposed development in accordance with the requirements outlined in Regulation 41 of the NEMA EIA Regulations 2014. The issues and concerns raised during the scoping phase will be dealt with in the EIA phase of this application.

As such each subsection of Regulation 41 contained in Chapter 6 of the NEMA EIA Regulations 2014 will be addressed separately to thereby demonstrate that all potential Interested and Affected Parties (I&AP's) were notified of the proposed development.

### **R54 (2) (a):**

**R41 (2) (a) (i):** A site notice (A2) was placed on the fence on the corner of the property (corner of the access road and the R730). A3 posters were placed at other locations including:

- Public Notice board at the Post Office in Virginia
- Public Notice board at the Matjhabeng Local Municipality offices in Virginia
- Public Notice board at the Checkers in Virginia
- Public Notice board at the Spar in Virginia
- Entrance road to the Theseus Substation
- On the fence on the corner of the access road and the R730. (please refer to **Appendix 4B**)

The posters contained all details as prescribed by R41(3) (a) & (b) and the size of the on-site poster was at least 60cm by 42cm as prescribed by section R41 (4) (a).

**R41 (2) (a) (ii):** N/A. There is no alternative site.

### **R41 (2) b):**

**R41 (2) (b) (i):** N/A. Notification letters were provided to the landowner

**R41 (2) (b) (ii):** Initial notification letters was circulated to neighbouring landowners. **Appendix 4C**

**R41 (2) (b) (iii):** An initial notification letter was sent to the municipal Ward councillor at the Matjhabeng Local Municipality, for the ward in which the site is situated (please refer to **Appendix 4C** for proof of notification letters sent).

**R41 (2) (b) (iv):** An initial notification letter was sent to the Matjhabeng Local Municipality.

**R54 (2) (b) (v):** Initial notification letter (please refer to **Appendix 4C** for proof of notification letters sent) will be sent to the following organs of state having jurisdiction in respect of any aspect of the activity:

- Eskom
- Department of Energy
- NERSA

- Department of Water and Sanitation
- SAHRA
- Department of Agriculture and Rural Development
- Department of Agriculture, Forestry, Fisheries
- Department of Public Works and Infrastructure
- SANRAL
- SANDF

**R41 (2) (c) (i):** An advertisement was placed in the local newspaper, Vista, on 25 November 2021 (please refer to **Appendix 4A** for proof of advertisement).

**R41 (2) (d):** N/A

**R41 (6):**

**R41 (6) (a):** All relevant facts in respect of the application were made available to potential I&AP's.

**R41 (6) (b):** I&AP's were given more than a 60-day registration and comment period on the proposed application during the first round of public participation.

**R42 (a), (b), (c) and R43(2):** A register of interested and affected parties was opened, maintained and is available to any person requesting access to the register in writing (please refer to **Appendix 4D** for the list of Interested and Affected Parties).

Please find attached in **Appendix 6**:

- Proof of Notice boards, advertisements and notices that were sent out
- List of potential interested and affected parties
- Summary of issues raised by interested and affected parties (**Appendix 4E**)

## 8. PLAN OF STUDY FOR THE EIA

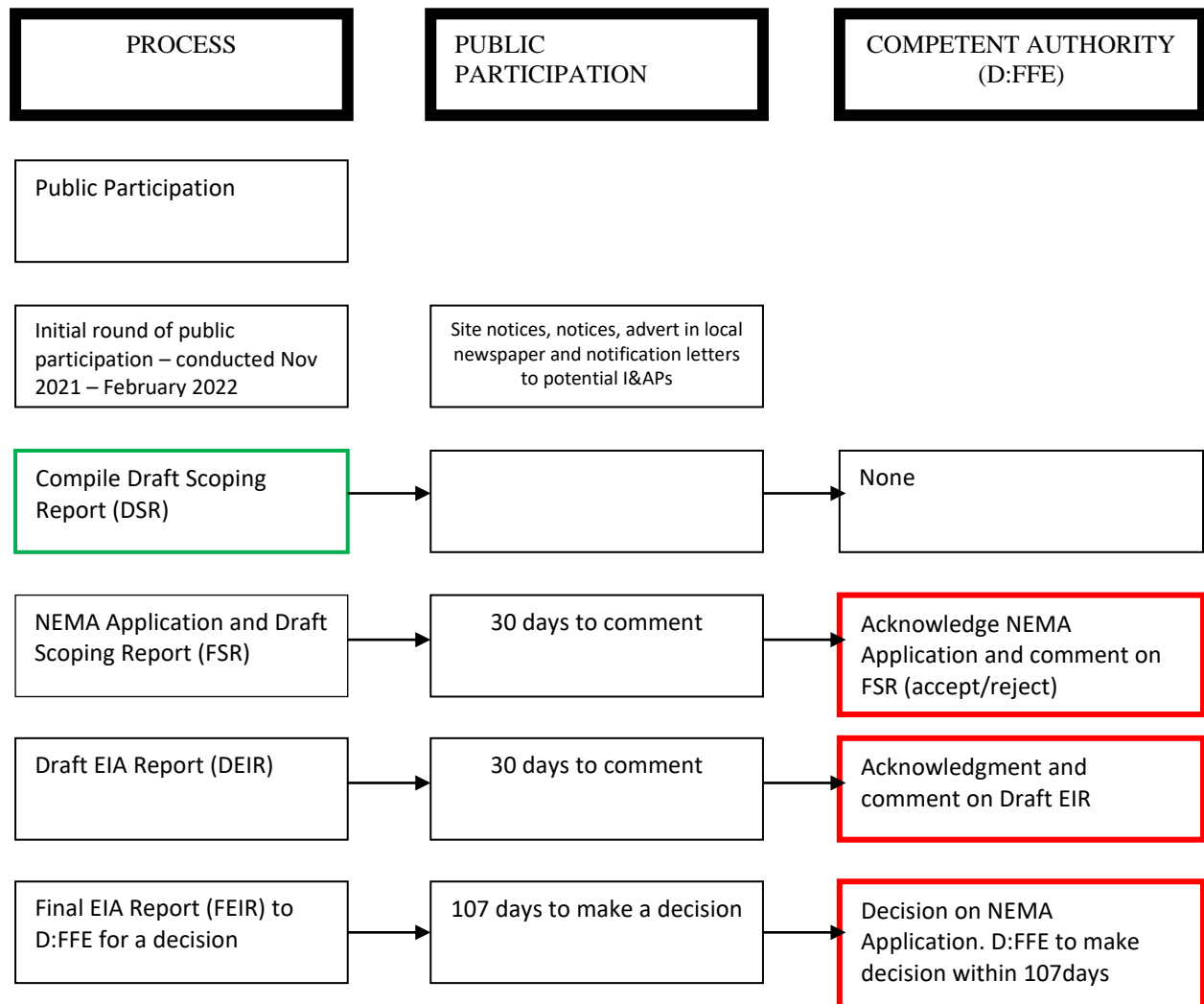
### 8.1.1 TASKS TO BE UNDERTAKEN

Due to the nature of the proposed development, there are a number of activities that will still need to be undertaken during the next phase of the project. The proposed process is as described as follows (This follows from a Scoping process to be accepted by the D:FFE):

The NEMA Application Form will be submitted to D:FFE along with the Draft Scoping Report which will also be made available for viewing and comment for a 30-day comment period. Comments received during the Public Participation Process will be incorporated into the Final Scoping Report, to be submitted to D:FFE for a decision.

The following is a list of tasks to be performed as part of the EIA Process. Should the process be modified significantly, changes will be copied to D:FFE.

EIA PROCESS	
TASK	TIMEFRAMES
Submit NEMA Application and Draft Scoping Report (FSR) and Plan of Study for EIA to D:FFE and distribute to registered I&APs for comment	September 2022
Submit Final Scoping Report and Plan of Study to D:FFE for a decision	October 2022
Receive approval for the FSR and the Plan of Study for EIA.	November 2022
Undertake specialist studies and compile the Draft Environmental Impact Report (EIR) for public comment based on specialist information.	November 2022
Submit Draft EIR for public comment.	December 2022/ January 2023
Receive responses to the Draft EIR.	January 2023
Preparation of a FINAL EIR and submission to D:FFE	February 2023



**Figure 15.** Summary of the EIA process and public participation process. The red indicates the stages where the competent authority will be consulted during the process.

## 8.2 PUBLIC PARTICIPATION AND INTERESTED AND AFFECTED PARTIES

Please refer to Figure 15 to see where the public participation process is present in the environmental impact assessment. The Interested and Affected Parties will have a chance to view and comment on all the reports that are submitted. The figures also indicated what timeframes are applicable to what stage in the process. If required, meetings with key stakeholders will be held.

At the end of the comment period, the EIR will be revised in response to feedback received from I&APs. All comments received and responses to the comments will be incorporated into the Final Environmental Impact Report (EIR). The Final EIR will then be submitted to D:FFE for consideration and decision-making.

Correspondence with I&APs will be via post, fax, telephone, email and/or newspaper advertisements.

Should it be required, this process may be adapted depending on input received during the on-going process and as a result of public input. D:FFE will be informed of any changes in the process.

### 8.3 CRITERIA FOR SPECIALIST ASSESSMENT OF IMPACTS

As a result of the environmental issues and potential impacts identified in *Section 6*, the need for the following specialist studies has been identified:

- Biodiversity Assessment
- Freshwater Assessment
- Heritage Impact Assessment
- Socio-economic Impact Assessment
- Visual Impact Assessment
- Agricultural Potential Assessment
- AviFauna Impact Assessment

The impacts of the proposed activity on the various components of the receiving environment will be evaluated in terms of duration (time scale), extent (spatial scale), magnitude and significance as outlined in Table 1. These impacts could either be positive or negative. This includes an assessment of the alternatives, including the option of not proceeding with the proposed development (see Section 4).

The magnitude of an impact is a judgment value that rests with the individual assessor while the determination of significance rests on a combination of the criteria for duration, extent and magnitude. Significance thus is also a judgment value made by the individual assessor.

Table 1: Criteria used for evaluating impacts.

Criteria	Category
<b>Nature of impact</b>	This is an evaluation of the effect that the construction, operation and maintenance of a proposed dam would have on the affected environment. This description should include what is to be affected and how.
<b>Duration</b> (Predict whether the lifetime of the Impact will be temporary (less than 1 year) short term (0 to 5 years); medium term (5 to 15 years); long term (more than 15 years, with the Impact ceasing after full implementation of all development components with mitigations); or permanent.	<b>Temporary:</b> < 1 year (not including construction) <b>Short-term:</b> 1 – 5 years <b>Medium term:</b> 5 – 15 years <b>Long-term:</b> >15 years (Impact will stop after the operational or running life of the activity, either due to natural course or by human interference) <b>Permanent:</b> Impact will be where mitigation or moderation by natural course or by human interference will not occur in a particular means or in a particular time period that the impact can be considered temporary
<b>Extent</b> (Describe whether the impact occurs on a scale limited to the site area; limited to broader area; or on a wider scale)	<b>Site Specific:</b> Expanding only as far as the activity itself ( <i>onsite</i> ) <b>Small:</b> restricted to the site's immediate environment within 1 km of the site ( <i>limited</i> ) <b>Medium:</b> Within 5 km of the site ( <i>local</i> ) <b>Large:</b> Beyond 5 km of the site ( <i>regional</i> )

<p><b>Intensity</b> (Describe whether the magnitude (scale/size) of the Impact is high; medium; low; or negligible. The specialist study must attempt to quantify the magnitude of impacts, with the rationale used explained)</p>	<p><b>Very low:</b> Affects the environment in such a way that natural and/or social functions/processes are not affected  <b>Low:</b> Natural and/or social functions/processes are slightly altered  <b>Medium:</b> Natural and/or social functions/processes are notably altered in a modified way  <b>High:</b> Natural and/or social functions/processes are severely altered and may temporarily or permanently cease</p>
<p><b>Probability of occurrence</b> Describe the probability of the Impact <u>actually</u> occurring as definite (Impact will occur regardless of mitigations)</p>	<p><b>Improbable:</b> Not at all likely  <b>Probable:</b> Distinctive possibility  <b>Highly probable:</b> Most likely to happen  <b>Definite:</b> Impact will occur regardless of any prevention measures</p>
<p><b>Status of the Impact</b> Describe whether the Impact is positive, negative (or neutral).</p>	<p><b>Positive:</b> The activity will have a social/ economical/ environmental benefit  <b>Neutral:</b> The activity will have no affect  <b>Negative:</b> The activity will be socially/ economically/ environmentally harmful</p>
<p><b>Degree of Confidence in predictions</b> State the degree of confidence in predictions based on availability of information and specialist knowledge</p>	<p><b>Unsure/Low:</b> Little confidence regarding information available (&lt;40%)  <b>Probable/Med:</b> Moderate confidence regarding information available (40-80%)  <b>Definite/High:</b> Great confidence regarding information available (&gt;80%)</p>
<p><b>Significance</b> (The impact on each component is determined by a combination of the above criteria and defined as follows) The significance of impacts shall be assessed <u>with and without mitigations</u>. The significance of identified impacts on components of the affected biophysical or socio-economic environment (and, where relevant, with respect to potential legal requirement/s) shall be described as follows:</p>	<p><b>No change:</b> A potential concern which was found to have no impact when evaluated  <b>Very low:</b> Impacts will be site specific and temporary with no mitigation necessary.  <b>Low:</b> The impacts will have a minor influence on the proposed development and/or environment. These impacts require some thought to adjustment of the project design where achievable, or alternative mitigation measures  <b>Moderate:</b> Impacts will be experienced in the local and surrounding areas for the life span of the development and may result in long term changes. The impact can be lessened or improved by an amendment in the project design or implementation of effective mitigation measures.  <b>High:</b> Impacts have a high magnitude and will be experienced regionally for at least the life span of the development, or will be irreversible. The impacts could have the no-go proposition on portions of the development in spite of any mitigation measures that could be implemented.</p>

In addition to determining the individual impacts against the various criteria, the element of mitigation, where relevant, will also be brought into the assessment. In such instances the impact will be assessed with a statement on the mitigation measure that could/should be applied. An indication of the certainty of a mitigation measure considered, achieving the end result to the extent indicated, is given on a scale of 1-5 (1 being totally uncertain and 5 being absolutely certain), taking into consideration uncertainties, assumptions and gaps in knowledge.

Cognisance of the minimum report content requirements of the various specialist assessment as per the Assessment Protocols (Government Notice 320, Government Gazette No. 43110 of 20 March 2020)

Table 2: The stated assessment and information will be determined for each individual issue or related groups of issues and presented in descriptive format in the following table example or a close replica thereof.

<b>Impact Statement:</b>		
<b>Mitigation:</b>		
<b>Ratings</b>	Duration	
	Extent	
	Intensity	
	Probability of impact	
	Status of Impact (Positive/negative)	
	Degree of confidence	
<b>Significances</b>	Significance <b>without</b> Mitigation	
	Significance <b><i>WITH</i></b> Mitigation	
Indication of the certainty of a mitigation measure considered, achieving the end result to the extent indicated, is given on a scale of 1-5 (1 being totally uncertain and 5 being absolutely certain), taking into consideration uncertainties, assumptions and gaps in knowledge		
<b>Legal Requirements</b> (Identify and list the specific legislation and permit requirements which are relevant to this development):		

## 9. CONCLUSION AND RECOMMENDATIONS

A scoping exercise is being undertaken to present the proposed activities to the I&APs and to identify environmental issues discussed in this report and concerns raised as a result of the proposed development alternatives to date. The issues and concerns were raised by I&APs, authorities, the project team as well as specialist input, based on baseline studies undertaken.

This Draft Scoping Report, being undertaken in terms of NEMA, summarises the process undertaken, the alternatives presented, and the issues and concerns raised.

As a result of the above, the need for the following specialist studies, have been identified:

- Biodiversity Assessment
- Freshwater Assessment
- Heritage Impact Assessment
- Socio-economic Impact Assessment
- Visual Impact Assessment
- Agricultural Potential Assessment
- AviFauna Impact Assessment

Any further issues raised as a result of the Public Participation Process will be dealt with during the EIA phase.

The significance of the impacts associated with the alternatives proposed will be assessed in these specialist studies, as part of the EIA. Once the specialist studies have been completed, they will be summarised in an Environmental Impact Report (EIR), which integrates the findings of the assessment phase of the EIA.

Based on the significance of the issues raised during the ongoing Public Participation Process and Scoping Phase, it is evident that an Environmental Impact Assessment (EIA) is required. ***It is therefore recommended that authorisation for the commencement of an EIA for the proposed development is granted.*** Should the EIA process be authorised, the significant issues raised in the process to date will be addressed and the specialist studies noted in this report, will be undertaken.



## 10. DETAILS AND EXPERTISE OF THE EAP

This Draft Scoping Report was compiled by Clinton Geyser who has a MSc. Degree in Environmental Management. He has been working as an Environmental Assessment Practitioner since 2009 and is currently employed at EnviroAfrica CC. Clinton Geyser is a Registered Environmental Assessment Practitioner with the Environmental Assessment Practitioners Association of South Africa (EAPASA Reg no. 2021/3287).

### Qualifications:

- BSc. Earth Sciences, Majors in Geology and Geography and Environmental Management (1998 – 2000) and;
- BSc. (hons): Geography and Environmental Management (2001) and;
- MSc. Geography and Environmental Management (2002), all from the University of Johannesburg.

### Expertise:

Clinton Geyser has over eleven years' experience in the environmental management field as an Environmental Assessment Practitioner and as an Environmental Control Officer, having worked on a variety of projects in the Western, Eastern and Northern Cape. Previous completed applications include, but not limited to:

- Civil engineering infrastructure including pipelines, Waste Water Treatment Works, and roads in the Western and Northern Cape.
- Agricultural developments, including reservoirs and dams, in the Western, Eastern and Northern Cape.
- Telecommunications masts in the Western and Eastern Cape
- Housing Developments in the Western and Northern Cape.
- Resort developments in the Western and Northern Cape.
- Cemeteries in the Western Cape
- Waste Management Licences in the Western Cape

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