DRAFT

ENVIRONMENTAL SOCIAL IMPACT ASSESSMENT SCOPING REPORT FOR THE PROPOSED DEVELOPMENT OF RENEWSTABLE ®SIVUTSE ON THE FARM BERGVLIET 65HS AND REMAINING EXTENT OF THE FARM RIETFONTEIN 66HS, WITHIN THE DR PIXLEY KA ISAKA SEME LOCAL MUNICIPALITY IN THE MPUMALANGA PROVINCE

DFFE REF:

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DATE

13 SEPTEMBER 2024

PREPARED FOR

RENEWSTABLE
MPUMALANGA

PREPARED BY

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"From the world we live to the world we seek"

PROJECT TITLE:

DRAFT ENVIRONMENTAL SOCIAL IMPACT ASSESSMENT SCOPING REPORT FOR THE PROPOSED DEVELOPMENT OF RENEWSTABLE ®SIVUTSE ON THE FARM BERGVLIET 65HS AND REMAINING EXTENT OF THE FARM RIETFONTEIN 66HS, WITHIN THE DR PIXLEY KA ISAKA SEME LOCAL MUNICIPALITY IN THE MPUMALANGA PROVINCE

QUALITY CONTROL:

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EXECUTIVE SUMMARY

As part of the Eskom lander tender MWP1247GX, Hydrogen de France (HDF- Energy) has been awarded 1782 ha of Eskom's land to develop 8 Renewstable® hydrogen power plants in the Mpumalanga Province, South Africa. Distributed over five farm portions near the Tutuka and Majuba Coal Power Stations, HDF-Energy is part of a cluster of different project developers, also awarded with land in the area to develop infrastructure related to renewable energy. HDF-Energy, under its Special Purpose Company (SPC) "Renewstable Mpumalanga (Pty) Ltd", is undertaking the development and implementation of 4 projects referred to as Majuba Cluster that consists of the following:

- Renewstable®Qhakaza
- Renewstable®Bokamoso
- **Renewstable®Sivutse**
- Renewstable®Ntokozo

These projects are high-capacity renewable power plants based on hydrogen energy storage technology, focusing on the 74MW Renewstable®Sivutse. The power plant will harness renewable energy from a solar Photovoltaic (PV) plant and convert it into hydrogen using an electrolyser system.

This ESIA project is specifically for 74MW Renewstable Sivutse, which will be within an agricultural land parcel located on Portions 1, 6, 34 and the Remaining Extent of the Farm Bergvliet 65HS as well as the Remaining Extent of the Farm Rietfontein 66HS, approximately 3 km northeast of Majuba Power Station and approximately 7 km southwest of Amersfoort. The site is within Ward 8 in the Pixley Ka Isaka Seme Local Municipality jurisdiction in the Mpumalanga Province under the Gert Sibande District Municipality. The extent of the site is approximately 435 ha.

The local community relevant to the economic impact assessment is defined as those within a 5km radius of the site, meaning they are the project's immediate sphere of influence. In comparison, the communities that fall within the 10 km radius of the wider influence sphere will also be considered if applicable. The proposed development aims to respond to the government initiative driven by the need to diversify the country's energy sources and create a balanced, more sustainable energy mix. The proposed project will contribute significantly to South Africa's transition to clean and sustainable energy, reduce greenhouse gas emissions, create job opportunities, and enhance energy security. The project is a compelling endeavour that addresses immediate energy needs and sets the stage for a greener and more prosperous future in South Africa. The proposed project will ensure energy diversification, enhance diversification, enhance grid services, and provide economic stimulus for the region and country.

The proposed Renewstable® Sivutse triggers listed activities in terms GNR 983, GNR 984, and GNR 985 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), EIA Regulations of 2014 as amended, which requires an Environmental Impact Assessment (EIA) process to be undertaken by a registered Environmental Assessment Practitioner (EAP); a Water Use Licence Application (WULA) triggering Section 21: a, b, c, e, g, and i, in

terms of the National Water Act, 1998 (Act No. 36 of 1998) (NWA) from the Department of Water and Sanitation (DWS).

Subsequently, Nsovo Environmental Consulting (Nsovo) is the independent consultant appointed by HDF-Energy (Pty) Ltd and is responsible for the necessary authorisation and licensing processes to comply with the legislative requirements. The project Applicant is Renewstable Mpumalanga (Pty) Ltd., whereas the Competent Authority is the Department of Forestry, Fisheries and the Environment (DFFE). The project will be undertaken in line with the requirements of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) and associated EIA Regulations of 2014 as amended.

The objective of the Scoping process, as indicated in the Regulations process, is to, through a consultative process—

i. identify the relevant policies and legislation relevant to the activity;
ii. motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
iii. identify and confirm the preferred activity and technology alternative through an identification of impacts and risks and ranking process of such impacts and risks;
iv. identify and confirm the preferred site through a detailed site selection process, which includes an identification of impacts and risks inclusive of identification of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment
v. identify the key issues to be addressed in the assessment phase;
vi. agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be conducted to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration, and probability of the impacts to inform the location of the development footprint within the preferred site; and
vii. Identify suitable measures to avoid, manage, or mitigate identified impacts and determine the extent of the residual risks that need to be managed and monitored.

The Scoping phase entailed a detailed description of the baseline environment, forming the backdrop of the impact assessment phase. Further, it allowed for identifying critical issues and concerns based on input from the relevant stakeholders, I&APs, and the EAP's professional judgment based on experience and expertise in the field.

In identifying the alternatives, various aspects are considered, including the degree of sensitivity of the site, technical viability, and economic viability to a certain extent. The scoping assessment, including specialist input, highlighted the following: The proposed Renewstable® Sivutse will be undertaken on land parcels earmarked for similar projects and deemed preferable and most feasible for projects of this nature. As such, alternatives considered include technical and no-go alternative.

To assess the potential environmental impacts associated with the construction and operation of the proposed Renewstable® Sivutse and associated infrastructure, detailed specialist studies to address the above issues must be undertaken within the EIA phase of the project. The identification and assessment of impacts were based on input from specialist studies that provided baseline information and the necessary details in preparation for the report. The details of the Specialist are included in the Table below, and the Reports are attached as **Appendix C.**

Specialist Study	Company	Specialist	SSV outcome Sivutse A	SSV outcome Sivutse B
Draft Reports /SSV Reports completed and attached.				
Wetland Biodiversity Assessment	WaterMakers	Willem Lubbe		
Heritage Impact Assessment	Archaeological and Heritage Services Africa (Pty) Ltd	Edward Matenga		
Agricultural Impact Assessment	Nsovo Environmental Consulting	Tshiamo Setsipane		
Terrestrial and Assessment	Amanzi Environmental Services	Rudi Greffrath		
Animal				
Plant				
Paleontological Assessment	Bamford (Pty) Ltd	Dr. Marion Bamford		
Civil Aviation Verification	GWI Group	Jon Heeger		
Glint and Glare				
RFI				

Specialist Study	Company	Specialist	SSV outcome Sivutse A	SSV outcome Sivutse B
Visual Impact Assessment	Outline Landscape Architects	Katherine Hammel-Louw		
Defence	Nsovo Environmental			
Avifauna Impact Assessment	Cossypha Ecological	Robyn Phillips		
Herpetofauna	Mboneni Ecological Services	Avhafarei Phamphe		
Traffic Impact Assessment	Traffic Surveys	Pieter Joost		
Social Impact Assessment and Tourism	Mana (Pty) Ltd	Vhahangwele Manavhela		
Included in the Plan of Study to be completed during the EIA Phase				
Noise and Vibration Specialist	DB Acoustics	Barend		
Major Hazard Installation	ISHECON	-		
Air Quality and Climate Change Impact	EHRCON	Uno Neveling		

According to the National Web-based Environmental Screening Tool (2020),

- The project site is located within the Mpumalanga Air Quality Priority Area
- The site is not within the South African Protected Areas

- The site encroaches on Critical Biodiversity Areas, particularly the southern and western portions, while the majority is in Critical Biodiversity Areas, particularly the southern and western portions, while the majority is heavily modified.
- The site is approximately 0.8km from Majuba Nature Reserve, a protected area.
- The site encroaches on Critical Biodiversity Area 1.
- A channelled valley bottom wetland has been identified within the site. As such, the requisite buffers have been considered.

The Draft Scoping Report will be made available to the Interested and Affected Parties (I&APs) and the Stakeholders for thirty (30) days to allow them to review and comment. All comments received will be included in the Comments and Response Report, which will form part of the Final Scoping Report. The Plan of Study for the EIA is incorporated in this report, and it will be submitted to the Competent Authority (CA) (the National Department of Forestry, Fisheries, and Environment, (DFFE) in terms of section 24C of the National Environmental Management Act (NEMA). The Scoping Report has been prepared as dictated by the Regulations and thus achieved the primary objectives as detailed above.

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LIST OF ACRONYMS AND ABBREVIATIONS

BES	Battery Energy System
CARA	Conservation of Agricultural Resources Act, 1983 (43 of 1983)
CBA	Critical Biodiversity Area
CBD	Central Business District
DEFEAT	Department of Economic Development, Environmental Affairs and Tourism
DFFE	Department of Forestry, Fisheries and the Environment
DSWS	Department of Water and Sanitation
DMRE	Department of Mineral Resources and Energy
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme
ERA	Electricity Regulation Act, 2006 (4 of 2006)
GNR	Government Notice Regulations
HyPCe	Hydrogen Power Center
HSA	Hazardous Substances Act, 1973 (56 of 1973)
I&APs	Interested and Affected Parties
ICE IDP	Internal Combustion Engine Integrated Development Plan
IEA	International Energy Agency
IEP	Integrated Energy Plan
IEM	Integrated Environmental Management
IFC	International Finance Corporation
IOGP	International Association for Oil & Gas Producers
IPCC	Intergovernmental Panel on Climate Change

IPPPP	Independent Power Producers Procurement Programme
IRP	Integrated Resource Plan
LM	Local Municipality
LNG	Liquefied Natural Gas
MPT	Mpumalanga Parks and Tourism
MBSP	Mpumalanga Biodiversity Sector Plan
MPRDA	Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
MDARDLA	Mpumalanga Department of Agriculture, Rural Development and Land Administration
MW	Megawatt
NCRECA	Noise Control Regulations under the Environmental Conservation Act, 1989 (73 of 1989)
NDP	National Development Plan
NEMA	National Environmental Management Act, 1998 (Act 107 of 1998)
NEMAQA	National Environmental Management: Air Quality Act, 2004 (No. 39 of 2004)
NEMBA	National Environmental Management: Biodiversity Act, 2004 (No. 10 of 2004)
NEMPA	National Environmental Management: Protected Areas Act, 2003 (57 of 2003)
NEMWA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NHRA	National Heritage Resources Act, 1999 (No. 25 of 1999)
NO_2	Nitrogen dioxide
NPA	National Ports Act, 2005 (12 of 2005)
NPAES	National Protected Areas Expansion Strategy (2009)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
OCGT	Open Cycle Gas-Turbine
OHSA	Occupational Health and Safety Act, 1993 (Act 85 of 1993)
PPP	Public Participation Process
SACAD	South Africa Conservation Areas Database
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SAPAD	South Africa Protected Areas Database

ToR	Terms of Reference
WULA	Water Use Licence Application
OEM	Original Equipment Manufacturer
O&M	Operation and Maintenance
OHSA	Occupational Health and Safety Act 85 of 1993

1 INTRODUCTION AND BACKGROUND

As part of the Eskom lander tender MWP1247GX, Hydrogene de France (HDF- Energy) has been awarded 1782 ha of Eskom's land to develop 8 Renewstable® hydrogen power plants in the Mpumalanga Province, South Africa. Distributed over five farm portions near the Tutuka and Majuba Coal Power Stations, HDF-Energy is part of a cluster of different project developers, also awarded with land in the area to develop infrastructure related to renewable energy. HDF-Energy, under its Special Purpose Company (SPC) "Renewstable Mpumalanga (Pty) Ltd", is undertaking the development and implementation of 4 projects referred to as Majuba Cluster that consists of the following:

- Renewstable®Qhakaza
- Renewstable®Bokamoso
- **Renewstable®Sivutse**
- Renewstable®Ntokozo.

The project's main objective is to design, develop, build, manufacture, operate, and maintain a 74MW Renewstable® Sivutse power plant and related infrastructure near Amersfoort in Mpumalanga to generate clean energy/electricity, increase access to electricity and contribute to the country's sustainable development initiatives.

1.1 BACKGROUND

The proposed development triggers the NEMA EIA listed activities; as such, Renewstable Mpumalanga (Pty) Ltd", is required to undertake an Environmental and Social Impact Assessment (ESIA) process and obtain an Environmental Authorisation in line with the requirements of the EIA Regulations of 2014 as amended and promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). This is an Environmental Authorisation application for listed activities as contained in Government Notice Regulations (GN R) GN 983, GN R984 and GNR 985.

Subsequently, Nsovo Environmental Consulting (Nsovo) is the independent consultant appointed by HDF-Energy (Pty) Ltd and is responsible for the necessary authorisation and licensing processes to comply with the legislative requirements. The project proponent is Renewstable Mpumalanga (Pty) Ltd., whereas the Competent Authority is the Department of Forestry, Fisheries and the Environment (DFFE) since the Minister is the competent authority for granting environmental authorisations for establishing renewable energy projects. The project will be undertaken in line with the requirements of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) and associated EIA Regulations of 2014 as amended.

The proposed Renewstable® Sivutse triggers listed activities, as indicated above, and can thus not proceed without an Environmental Authorisation issued by the Competent Authority. The project will thus follow the full Environmental Impact Assessment (EIA), a two-phase process comprising the Scoping and the EIA phases. The social aspect will form

part of the process to align with the requirements of South African legislation and international standards. Henceforth, the process will be referred to Environmental and Social Impact Assessment (ESIA). The objectives of this ESIA are to:

- Identify the project's probable positive and negative impacts on the physical and social environment before, during, and after construction.
- ·Provide technical information and recommendations to enable the selection and design of the best alternatives for the project.
- ·Identify mitigation actions and monitoring plans and describe institutional and capacity-building arrangements for the implementation of the ESMP.

The objectives of the Scoping process, as indicated in the Regulations process, is to, through a consultative process—

I. Identify the relevant policies and legislation relevant to the activity.
II. motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location.
III. identify and confirm the preferred activity and technology alternative through an identification of impacts and risks and ranking process of such impacts and risks;
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VII. Identify suitable measures to avoid, manage, or mitigate identified impacts and determine the extent of the residual risks that need to be managed and monitored.

The ESIA has been prepared and aligns with the requirements of the legislation provided in Section 6. The document has been prepared in line with Appendix 2 of the EIA Regulations of 2014 as amended, and all required information is contained herein.

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2 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

HDF-Energy appointed Nsovo Environmental Consulting as the independent Environmental Assessment Practitioner (EAP) for the proposed project and meets the general requirements stipulated in regulations 13(3) of the NEMA 2014 EIA Regulations as amended. Nsovo therefore:

- Is independent and objective;
- Has expertise in conducting EIAs;
- Considers all relevant factors relating to the application; and
- Provides full disclosure to the applicant and the relevant environmental authority.

Table 1 presents the details of the EAP involved, including relevant experience. A detailed Curriculum Vitae and Qualifications are attached in Appendix B.

Table 1: Details of the Environmental Assessment Practitioner (EAP)

Name of Company	Nsovo Environmental Consulting
Person Responsible	Munyadziwa Rikhotso
Professional Registration	EAP EAPASA: 2019/1156
Postal Address	40 Lyncon Road, Carlswald, Midrand, 1684
Telephone Number	087 803 9294
Email	munyadzi@nsovo.co.za
Qualifications & Experience	BSc. Honours Environmental Science **20 years of experience**
Project Related Expertise	In terms of project-related expertise, the Environmental Assessment Practitioner has completed the following projects: • EIA for the proposed Exxaro Dorstfontein West Expansion project in Mpumalanga Province. • EIA for the proposed Bushveld Vametco Expansion Project in North-West Province. • EIA for the proposed Maphutha-Witkop powerline in Limpopo Province. Basic Assessment for the proposed Decommissioning and Demolition of Verwoedberg Substation and 275kV power.

	• Basic Assessment for Bloemendal Substation and loop in and out lines.

2.1 DETAILS OF THE APPLICANT

Table 2 presents details of the Applicant Renewstable ® Sivutse.

Table 2: Details of the Applicant

Name of Company	Renewstable Mpumalanga (Pty)Ltd
Project	Renewstable® Sivutse

2.2 DETAILS OF THE SPECIALISTS

To adequately identify and assess potential environmental impacts associated with the proposed project, Nsovo has appointed specialist sub-consultants listed in **Table 3**.

Table 3: List of specialist sub-contractors

Specialist Study	Company	Specialist	Reference
Draft Reports /SSV Reports completed and attached.			
Wetland and Aquatic Assessment	WaterMakers	Willem Lubbe	Appendix C1
Heritage Impact Assessment	AHSA	Edward Matenga	Appendix C2
Agricultural Impact Assessment	Nsovo Environmental Consulting	Tshiamo Setsipane	Appendix C3
Biodiversity (Terrestrial, Animal, and Plant) Assessment	Amanzi Environmental Services	Rudi Greffrath	Appendix C4

Specialist Study	Company	Specialist	Reference
Paleontological Assessment	Bamford (Pty) Ltd	Dr. Marion Bamford	Appendix C5
Civil Aviation Verification	GWI Group	Jon Heeger	Appendix C6
Glint and Glare			
RFI			
Visual Impact Assessment	Outline Landscape Architects	Katherine Hammel-Louw	Appendix C7
Herpetofauna	Mboneni	Avhafarei Phamphe	Appendix C8
Traffic Impact Assessment	Traffic Surveys	Pieter Jooste	Appendix C9
Social Impact Assessment and Tourism	Mana (Pty) Ltd	Vhahangwele Manavhela	Appendix C10
Avifauna Impact Assessment	Cossypha Ecological	Robyn Phillips	Appendix C11
Included in the Plan of Study to be completed during the EIA Phase			
Noise and Vibration Specialist	DB Acoustics	Barend Van Der Merwe	
Major Hazard Installation	ISHECON	-	
Climate Change Impact	EHRCON	Jeandre Neveling	

3 DESCRIPTION OF THE LOCALITY AND THE PROPERTY ON WHICH THE ACTIVITY IS TO BE UNDERTAKEN AND THE LOCATION OF ACTIVITY ON THE PROPERTY

The IFC PS section 8 states that where the project involves specifically identified physical elements, aspects, and facilities that are likely to generate impacts, environmental and social risks and impacts will be identified in the context of the Project's Area of Influence (PAOI). This area of influence encompasses, as appropriate, the area likely to be affected by:

(i) the project and the client's activities and facilities that are directly owned, operated, or managed (including by contractors) and are a project component.

(ii) impacts from unplanned but predictable developments caused by the project that may occur later or at a different location; or

(iii) indirect project impacts on biodiversity or ecosystem services upon which Affected Communities' livelihoods depend.

This section provides detailed information on the proposed project's location. Its main aim is to provide the environmental aspects found within the proposed development area and a baseline description of the surroundings.

3.1 LOCALITY OF THE PROPOSED PROJECT

The proposed project is located outside an urban area on Portions 1, 6, 34, and the Remaining Extent of the Farm Bergvliet 65HS and the Remaining Extent of the Farm Rietfontein 66HS, approximately 3 km northeast of Majuba Power Station and approximately 7 km southwest of Amersfoort. The site is within Ward 8 in the Dr Pixley Ka Isaka Seme Local Municipality jurisdiction in the Mpumalanga Province under the Gert Sibande District Municipality.

Figure 1 below is a locality map depicting the proposed study area at a scale of 1:50 000. For the A3 locality maps, refer to Appendix A.

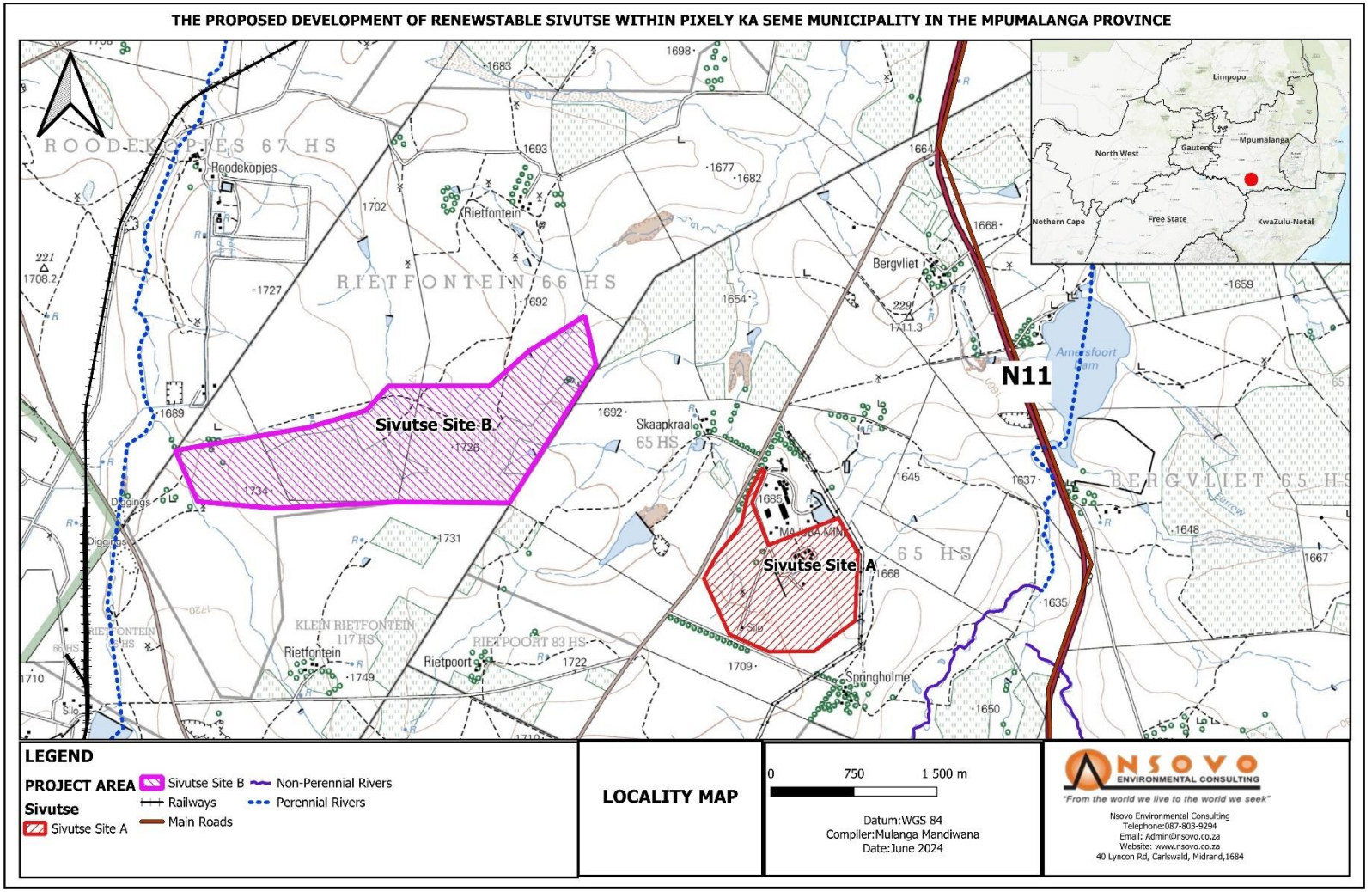


Figure 1: Locality map showing the proposed Renewstable® Sivutse A and B

3.1.1 PROVINCE AND PROVINCIAL BOUNDARIES

The proposed development is located within the Mpumalanga Province, which lies in eastern South Africa and borders Eswatini and Mozambique. It shares borders with the South African provinces of Limpopo to the north, Gauteng to the west, the Free State to the southwest, and KwaZulu-Natal to the south. The provincial capital is Mbombela.

3.2 DESCRIPTION OF THE AFFECTED PROPERTIES

The proposed development of Renewstable®Sivutse plant and associated infrastructures will be located on the Farms listed in Table 4.

Table 4: Property Details

Farm Name	Portion Number	Surveyor General 21 Digit Code
Proposed Site		
Rietfontein 66HS	Remaining Extent	T0HS00000000006600000
Bergvliet 65HS	1	T0HS00000000006500001
	6	T0HS00000000006500006
	34	T0HS00000000006500034
	Remaining Extent	T0HS00000000006500000
Mooimeisieskrans 262 HS	Remaining Extent	T0HS00000000026200000
Access Roads		
Start	4	T0HS00000000006600004
Middle	Remaining Extent	T0HS00000000006600000
End	Remaining Extent	T0HS00000000006500000

3.3 COORDINATES OF THE PROPOSED SITE COORDINATES

Coordinates of the proposed site options and associated linear infrastructure are presented in the Tables below.

3.3.1 SITE COORDINATES

Table 5: Site Coordinates

Sivutse A		
Points	Longitude	Latitude
Proposed Site		

Corner A	27° 5'4.11"S	29°47'51.61"E
Corner B	27° 4'45.39"S	29°49'0.47"E
Corner C	27° 4'45.36"S	29°49'33.53"E
Corner D	27° 4'25.00"S	29°50'5.01"E
Corner E	27° 4'39.35"S	29°50'8.99"E
Corner F	27° 5'18.57"S	29°49'40.66"E
Corner G	27° 5'18.44"S	29°47'58.39"E
Centre	27° 5'6.19"S	29°49'8.97"E
Access Roads		
Start	27° 4'52.18"S	29°51'9.27"E
Middle	27° 4'49.20"S	29°50'1.16"E
End	27° 4'45.06"S	29°49'9.08"E
Sivutse B		
Points	**Longitude**	**Latitude**
Proposed Site		
Corner A	27° 5'9.20"S	29°51'2.88"E
Corner B	27° 5'25.09"S	29°50'56.51"E
Corner C	27° 5'41.11"S	29°50'44.25"E
Corner D	27° 5'57.18"S	29°50'52.53"E
Corner E	27° 6'2.10"S	29°51'5.49"E
Corner F	27° 6'2.10"S	29°51'20.43"E
Corner G	27° 5'53.35"S	29°51'33.54"E
Corner H	27° 5'22.95"S	29°51'28.23"E
Corner I	27° 5'30.86"S	29°51'5.54"E
Corner J	27° 5'10.15"S	29°51'4.09"E
Centre	27° 5'46.55"S	29°51'6.98"E

3.4 SURROUNDING LAND USES

Being part of the "Majuba Cluster," Renewstable® Sivutse and Renewstable® Bokamoso are the closest to Majuba Power Station. The land use within and around the proposed development is predominantly agricultural activities, **Error! Reference source not found.**. These are discussed in detail in the sub-sections below:

3.4.1 RESIDENTIAL

The proposed development lies outside Amersfoort and the immediate surroundings are agricultural lands. The closest residential community is Amersfoot located approximately 7km away, as detailed in Table 6 below.

Table 6: Residential Communities adjacent to the study area

Area	Type of community	Distance from the study area
Amersfoort	Primarily, medium-income residential households characterise the town.	Approximately 8 km
Daggakraal	It is an impoverished and isolated community with plenty of unmined mineral resources. It is a low-income settlement whose primary activity is farming.	Approximately 10KM.

3.4.2 PROTECTED AREAS

The site is approximately 0.8 km from the Majuba Nature Reserve, administered by Eskom, located within the Majuba Rail project site. The map below provides the distance between the site and Majuba Nature Reserve.

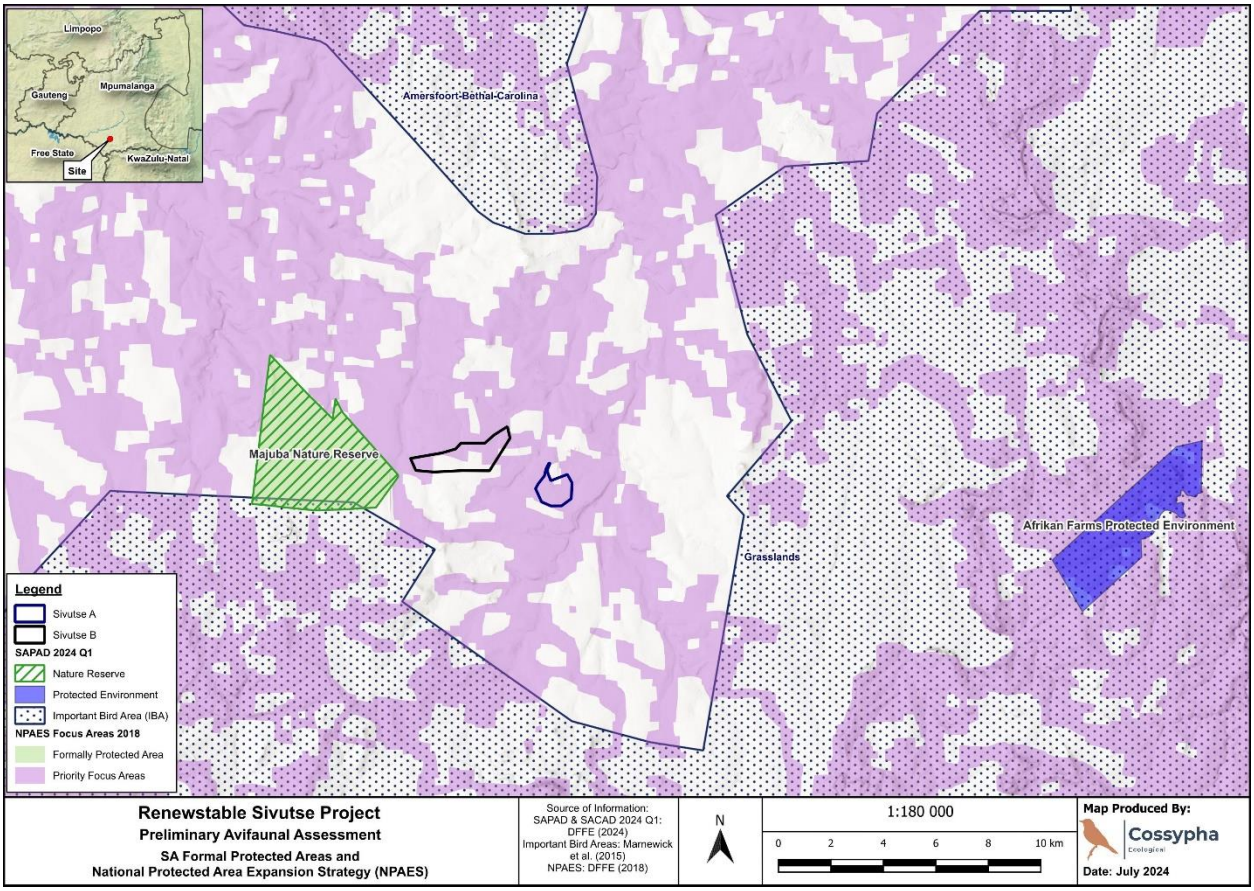


Figure 2: Nature Reserves in Proximity (Cossypha, 2024)

3.4.3 COMMERCIAL AND INDUSTRIAL

The main economic sectors within the Dr Pixley Ka Isaka Seme Local Municipality include agriculture, community services, construction, mining, electricity, finance, manufacturing, transport, and trade.

3.4.4 AGRICULTURE AND FARMING

. Amersfoort town is surrounded by vast open spaces predominantly used for sheep raring and maize farming. The proposed development is within the remaining extent of the Farm Bergvliet 65HS and the remaining extent of the Farm Rietfontein 66HS, which are used for crop farming, with maize being the cultivated crop.

3.4.5 SURFACE INFRASTRUCTURE

This section describes the surface infrastructures within the study area, including a description of the road network, buildings, and existing powerlines.

Existing Buildings

The existing buildings within the Eskom OCGT offer an opportunity to refurbish and reuse. The Eskom buildings are in an apparent good structural state. HDF-Energy proposes to repurpose these buildings as a worker's camp during construction and become the vibrant heart of the green hydrogen industry in the country during operation. This “green hydrogen centre” could be:

- A centre of training where students are hosted
- Visit of the public
- Partnership with universities to be discussed
- HDF office for Mpumalanga
- Building for electrolysers

Road Network

The primary access road to the proposed study area is N11 to Volkrust, while secondary access to sites will be Road P48/Existing, which can be accessed via a gravel road. The existing road network will need to be enhanced to allow easy access to the site during construction and other project phases.

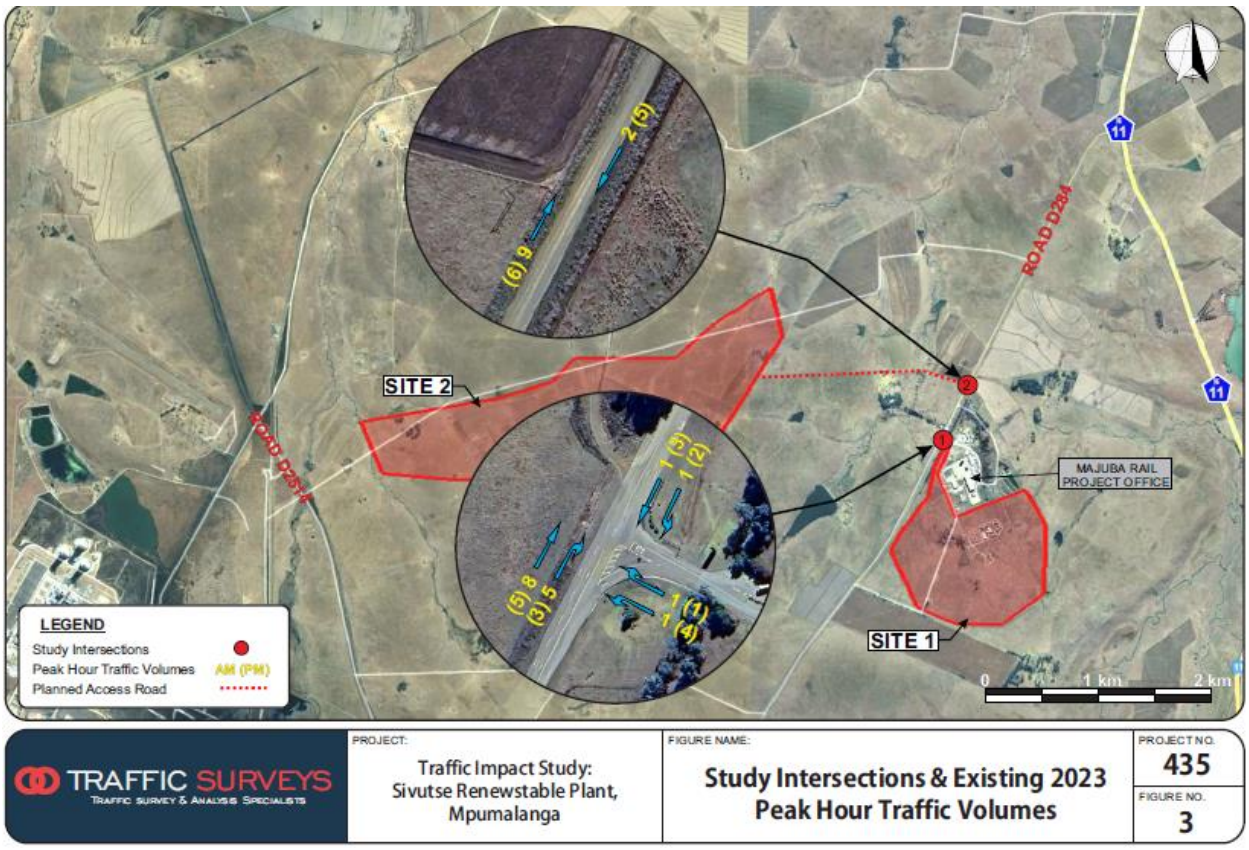


Figure 3: Road Network (Traffic Surveys,2024)

3.4.5.1 Linear Infrastructure

The site is 700 m from a railway line; Other services may be expected to exist within the development site; this will be established as the project progresses.

Existing Powerlines and Substations

There are existing powerlines and Eskom OCGT building infrastructures. The Eskom 400kV and 765kV transmission overhead powerlines were identified 3km away on the eastern and southern boundaries of the site, respectively. An additional 12.5km 132kVKv distribution line is proposed to connect the site to the grid.

3.4.5.2 Facilities

The proposed site is located ±5 km from the Amersfoort Town. The CBD hosts activities and infrastructure suitable for daily economic activities, such as shopping centres, police stations, schools, post offices, etc. No residential areas are near the site.

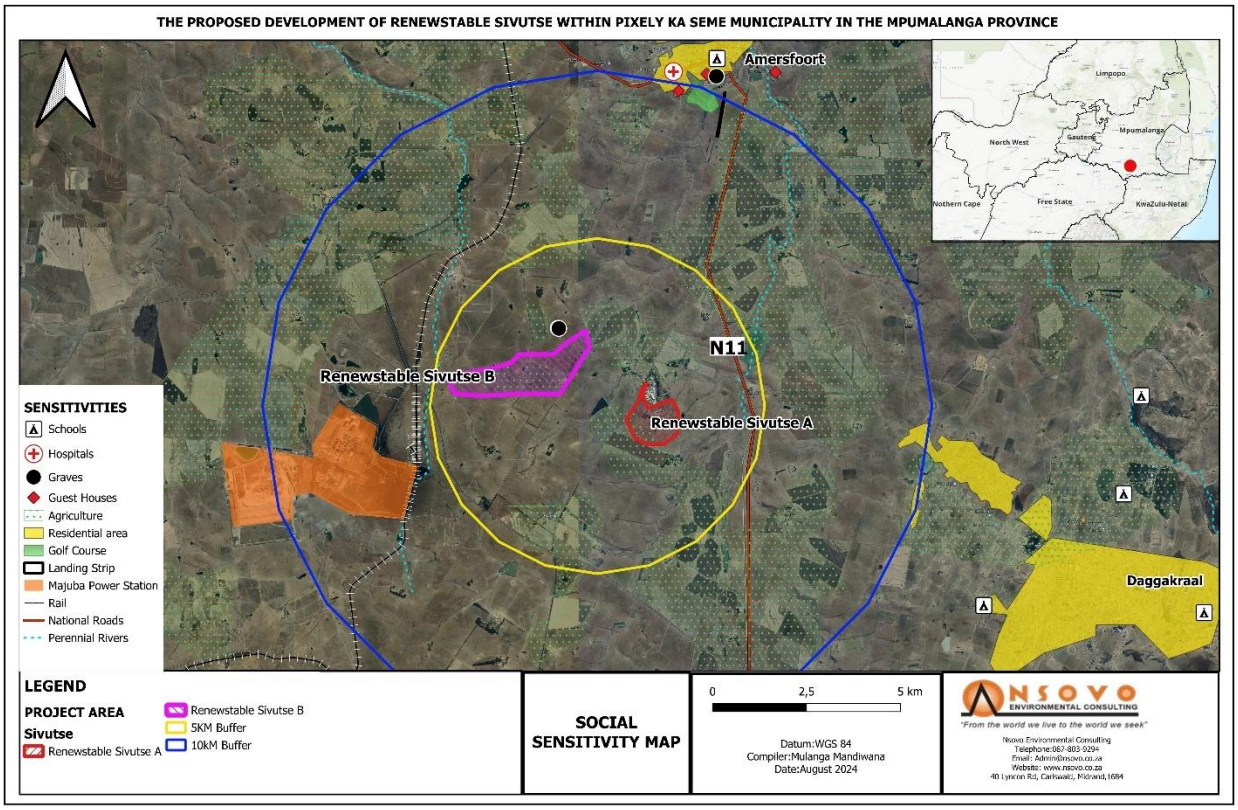


Figure 4: Land uses surrounding the development area.

4 A PLAN THAT LOCATES THE PROPOSED ACTIVITY OR ACTIVITIES APPLIED FOR, AS WELL AS ASSOCIATED STRUCTURES AT AN APPROXIMATE SCALE

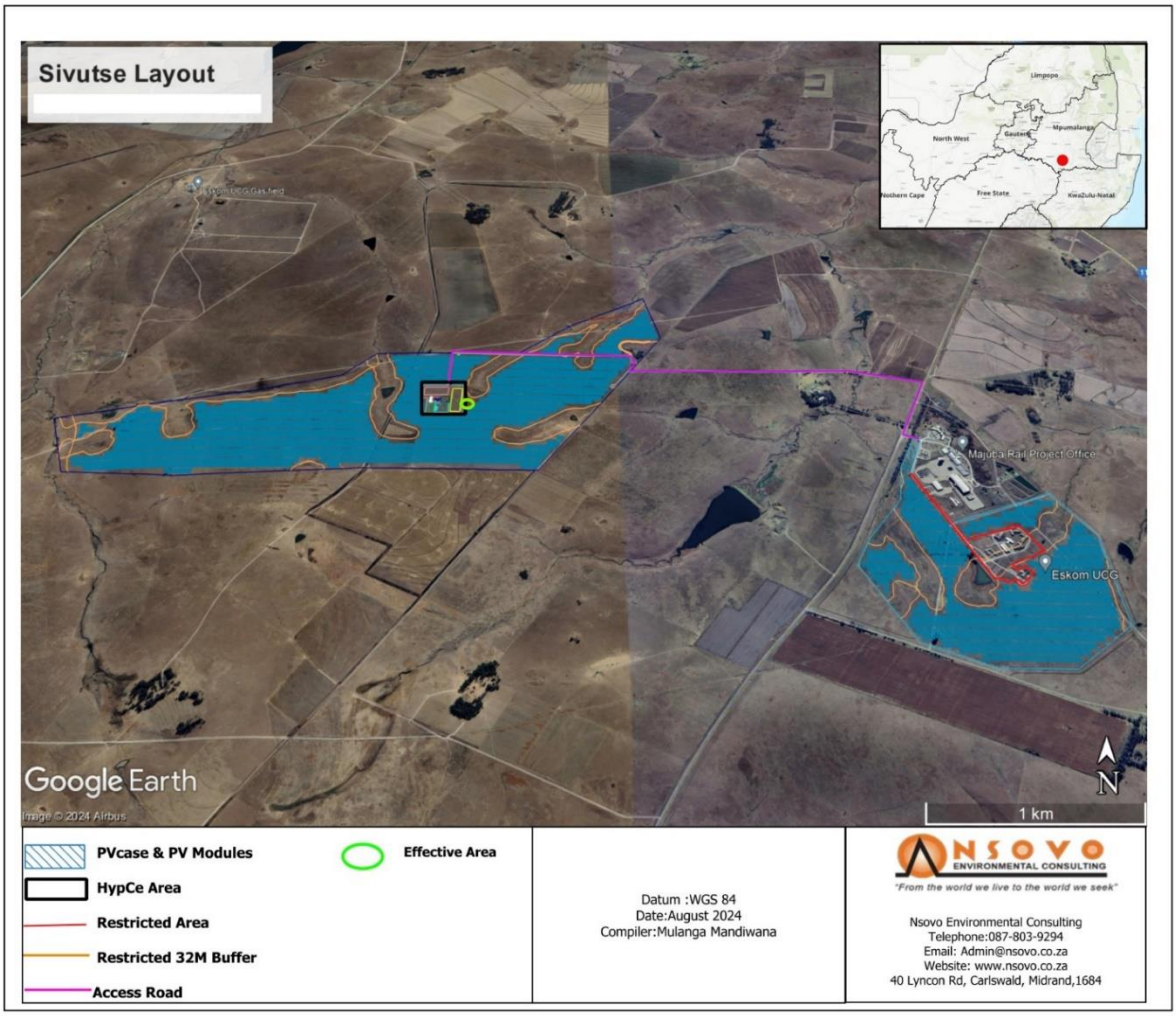


Figure 5: Preliminary Layout at a scale of 1:100 (HDF-Energy, 2023)

5 A DESCRIPTION OF THE SCOPE OF THE PROPOSED ACTIVITY, INCLUDING ALL LISTED AND SPECIFIED ACTIVITIES TRIGGERED AND A DESCRIPTION OF THE ACTIVITIES TO BE UNDERTAKEN, INCLUDING ASSOCIATED STRUCTURES AND INFRASTRUCTURE

This section describes the proposed activities, including the scope of the proposed project, mainly focusing on the listed activities that trigger the ESIA process. It also describes the associated structures and infrastructure related to the proposed development.

5.1 BACKGROUND AND THE PROPOSED SCOPE OF WORK

The project involves developing the 74MW Renewstable Sivutse Power Plant, a high-capacity renewable power plant based on hydrogen BESS storage technology that harnesses renewable energy from a Photovoltaic (PV) Park and converts it into hydrogen using an electrolyser system. This hydrogen is stored in a compressed gas form; subsequently, when the photovoltaic park generates insufficient energy, the stored hydrogen is utilised to produce electricity for the grid through a fuel cell system. This innovative approach ensures a continuous and reliable power supply even when the PV park's energy production is inadequate. The system will only emit oxygen and water vapour as by-products.

The electricity produced by the plants will be purchased by a private(s) off-taker (s) at an agreed rate under the Power Purchase Agreement (PPA) for at least 25 years from the commissioning. The power plant is scheduled to be commissioned in 2027 and will contribute to the greening of the local power grid and enhance the territory's energy independence. The proposed development entails the following primary infrastructure:

Table 7: Primary infrastructures

Primary Infrastructure	Power produced
Baseload electricity	**55MW day, and evening 12 MW night**
Solar plant	210MWp
Electrolyser	60MW
Green H2 storage	250MWh
High-capacity fuel cells	12MW
Battery power	220MW

Battery storage	55MWh
Capacity production	87%
Land required	315 hectares
Electricity production	841.09 MWh daily 307 000 MWh yearly

Associated infrastructure includes the following:

- Hydrogen Power Centre
- Control Room
- Access/Service roads
- Buildings
- Fencing and Security
- Communications DC and AC cables installed underground and overhead.
- High Voltage Collector station that will be shared with other IPPS

Figure 6depicts the flow diagram of the proposed Renewstable® Sivutse, along with further details of the proposed activities.

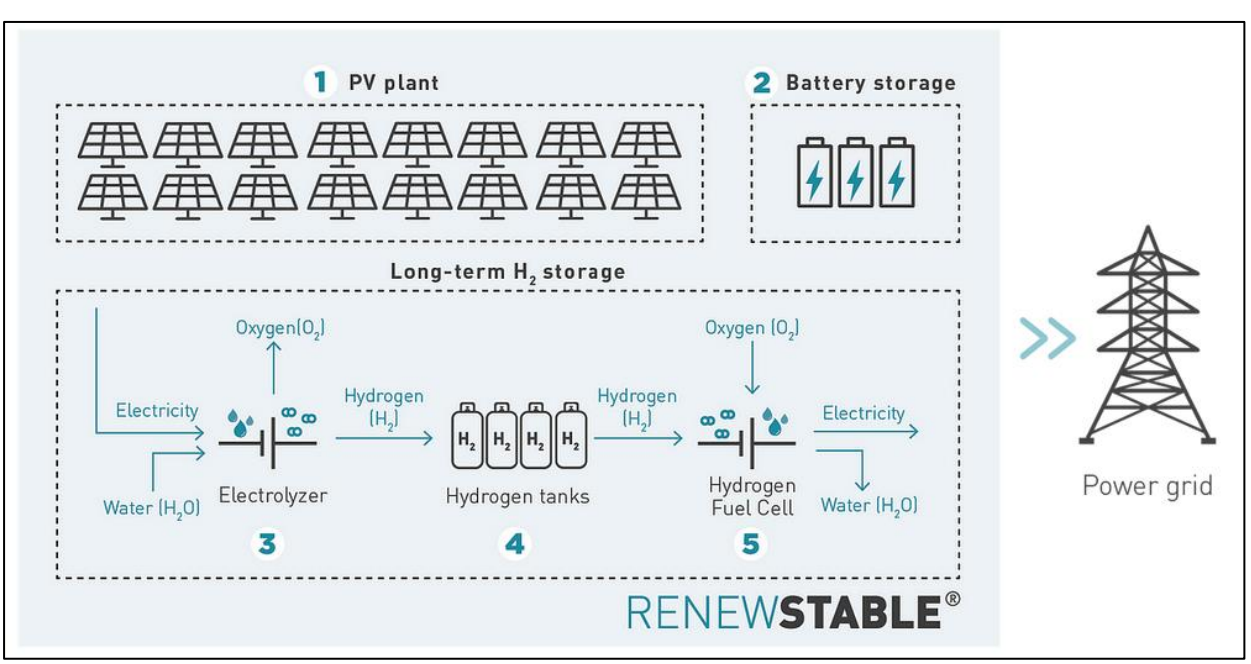


Figure 6: Process Flow Diagram

5.2 DESCRIPTION OF THE PROJECT'S MAIN COMPONENTS

The proposed development entails the following primary components.

Table 8: Components of the project

PV	
When the sun shines, the solar power plant generates the carbon-free primary source of electricity for the Renewstable® Power Plant. A solar PV plant alone generates intermittent power, which raises an issue for the grid operator in balancing the grid and securing power generation. Moreover, the PV plant is associated with a long-term energy storage system, enabling it to deliver clean power and avoid the intermittent related to renewable energy sources on isolated grids. The multi-MW photovoltaic plant has been designed to fit the site's specificities in terms of topography, land area, solar exposure, and density. The tracker-oriented structure is the chosen system as it maximises the power generated by the PV plant all day. The main equipment and materials included in the PV power plant are the modules, inverters, transformers, and structures. It will be purchased from tier-1 suppliers with adequate track records, performance guarantees, and products adapted to South Africa's specificities. The 210 MWp PV solar panels consist of solar cells and modules made from semi-conductor material, primarily silicon based. They will be fixed to a single-axis horizontal tracking structure, where they will tilt as the sun moves from east to west. Lightning protection poles, with a maximum height of 6m, will be installed. The panels will be mounted on steel frames and reinforced with cement into the ground. A drainage system will be designed to keep the site from flooding.	
Technical Details	PV Park, tracker technology

Project Technical Details	Capacity/Quantity
Installed (MW)	210MWp
Number of Modules	350 0000
Invertors	50
Power Station	16

Battery Energy Storage System ('BESS')

The Battery Energy Storage System ('BESS') provides end-of-the-day peak power and, in combination with hydrogen storage, ensures the stability of the electricity service. The BESS is an efficient system that provides short-term balancing with high responsiveness. Typically, the BESS will be able to balance the large drops in power generation within the power plant due to intense cloud cover, provide end-of-the-day peak power to the grid when solar power is not available, and assist in maintaining sufficient power output after sunrise and before sunset.

In the Renewstable® Power Plant, BESS complements hydrogen for short-term energy storage and power regulation. The current leading technology, and most suitable for Renewstable®, is the Li-Ion BESS. BESS architecture is like a preassembled enclosure solution for easy plug-and-play integration. BESS integrates its safety features in the assembly.

The 55MW/220MWh BESS facility will occupy approximately 2 ha of land. The BESS stores electricity, provides the end-of-the-day peak power to the grid when solar energy is unavailable and assists in maintaining sufficient power output after sunrise and before sunset.

Technical Details	Example of BESS installations – pre-assembled enclosure

Renewstable®Sivutse BESS is dedicated to Electricity Supply technical details.

Project Technical Details	Capacity/Quantity
Installed (MW)	55MW
Capacity (MWh)	220
Enclosure	20ft (6.096m) container Number of units: 110
Power Station	Max Power Station: 8MW Number of Power Stations: 14 Enclosure: Skid

Renewstable®Sivutse BESS dedicated to internal auxiliaries Supply.

Project Technical Details	Capacity/Quantity
Installed (MW)	4MW
Capacity (MWh)	17.5
Enclosure	20ft (6.096m) container Number of units: 2
Power Station	Max Power Station: 4 MW Number of Power Station: 2 Enclosure: Skid

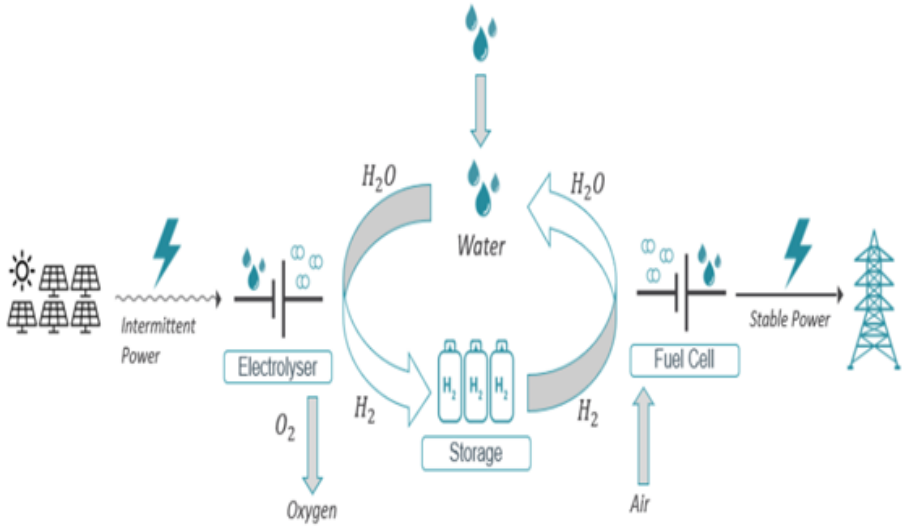
Hydrogen Chain principle: Water Cycle

The Renewstable® Sivutse Power Plant produces energy based on a renewable source and the water cycle breaking/recomposition: turning electricity and water to hydrogen, storing it, and then using it when needed to produce water and electricity again. The hydrogen system is used for long-term energy storage.

- The Electrolyser system splits the water molecule ($H2O$) into hydrogen and oxygen using the electricity generated from the PV plant; it is based on an electrochemical reaction called "water electrolysis."
- The oxygen is released into the atmosphere. Hydrogen is stored in gaseous form in pressure vessels.
- The Fuel Cell executes the reverse operation: it produces power and water by combining hydrogen and oxygen.
- The byproducts of this process are only oxygen and water; there are no harmful emissions whatsoever.

Both the electrolyzer and the BESS can absorb solar power in parallel to maximize the power plant's storage capability during the day. Combining both storage technologies allows for optimizing the use of the intermittent primary electricity source, solar.

Hydrogen chain principle



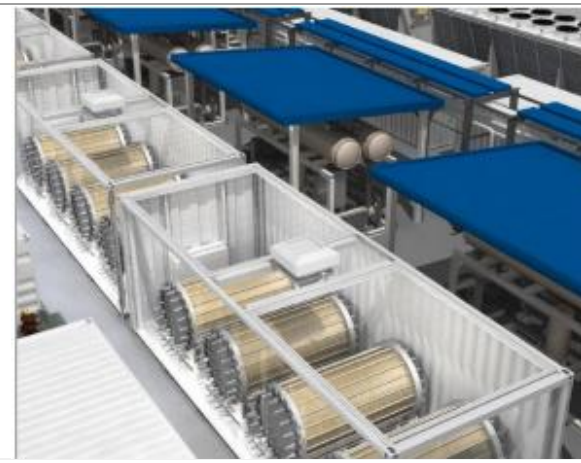
Electrolysis System

The electrolyser converts electricity from the photovoltaic park into hydrogen via electrolysis during the day. The electrolyzer is a system that produces hydrogen from the electrolysis of water. e system can use either PEM1 or alkaline-technology electrolysers with DC power to induce an electrochemical reaction (i.e., water electrolysis). The final products of the water electrolysis process will be hydrogen gas, which will be stored, and oxygen, which will be released into the atmosphere. The electrolysers will be housed in dedicated buildings according to the country's good industry practices. The buildings will be equipped with H2 detectors (set to 20% of the lower explosive limit) and ventilation switch detectors and will be actively ventilated to maintain a non-explosive atmosphere. In the case of the Renewstable® concept, the electrolyser uses renewable energy to produce the hydrogen that will store the energy. Green hydrogen is one of the most promising ways to store renewable energy; HDF Energy has put this potential into reality in a concrete and competitive application.

Technical Details

Project Technical Details	Capacity/Quantity
Installed (MW)	60 MWp
Technology	Alkalin
Chemicals present on site	KOH at 30%w: 150 m3
Enclosure	Building
Power Station	12

Example of an Alkaline electrolysis system



Hydrogen Power Centre

Hydrogen Storage is a key to enabling the advancement of hydrogen and fuel cell technologies in applications including stationary power, portable power, and transportation. Hydrogen has the highest energy per mass of any fuel. Hydrogen requires the development of advanced storage methods that have the potential for higher energy density due to its low ambient temperature density, causing low energy per unit volume. Several types of hydrogen storage exist (gas, Cold/cryo compressed, and liquid), but gas storage is the more mature and less costly. The hydrogen gas produced from the electrolysis process will be compressed and stored in cylindrical steel tanks arranged horizontally.

The Renewstable®Sivutse power plant will cover 435ha. It converts the electricity from the photovoltaic park into hydrogen through an electrolyser system, stores this hydrogen in compressed gas form, and restitutes the electricity to the grid through a fuel cell system.

Technical Details

Project Technical Details	Capacity/Quantity
Energy Stored	250MWh (23284kg)
Stored@ 300 bar	No Storage at 300 BAR
Stored @30 bar	Volume per vessel: 115 m3 Number of vessels: 475 Dimensions: D: 2,8m, L: 22m

Example of Alkaline electrolysis system

Fuel Cell

The hydrogen fuel cell has been identified as a key solution in the clean energy transition for several decades. From mobility to backup power generators, the fuel cell has multiple applications aiming to decarbonise all sectors (power generation, mobility, industry, etc.). Benefiting from years of development of fuel cell technologies, HDF-Energy has designed a multi-megawatt power fuel cell dedicated to utility-scale stationary applications. The HDF Industry Fuel Cell uses Polymer Electrolyte Membrane (PEM) technology. The PEM technology is currently the most mature stack technology as it has demonstrated its reliability in various utilisations for mobility. The PEM fuel cells operate at relatively low temperatures (around 60°C), resulting in better durability, up to 40,000h. The fuel cell combines hydrogen and oxygen to produce carbon-free electricity and rejects water as steam. The total capacity of fuel cells will be housed in prefabricated and containerised enclosures for easy integration into the HyPCe area of the power plant. The hydrogen fuel cell enclosures will also be equipped with H2 detectors (set to 20% of the lower explosive limit) and ventilation switch detectors. They will be actively ventilated to maintain a non-explosive atmosphere.

Technical Details

Example of Fuel Cell

Project Technical Details	Capacity/Quantity
Installed (MW)	12 MW
Enclosure	Per 1,5MW unit : 2x 40ft cont + 1x 20ft cont Total units : 10

Energy Management System

The Renewstable® Power Plant integrates an Energy Management System (EMS) that manages the energy storage system and the renewable producer, the PV plant, in real-time to ensure a stable power supply at the targeted power level.

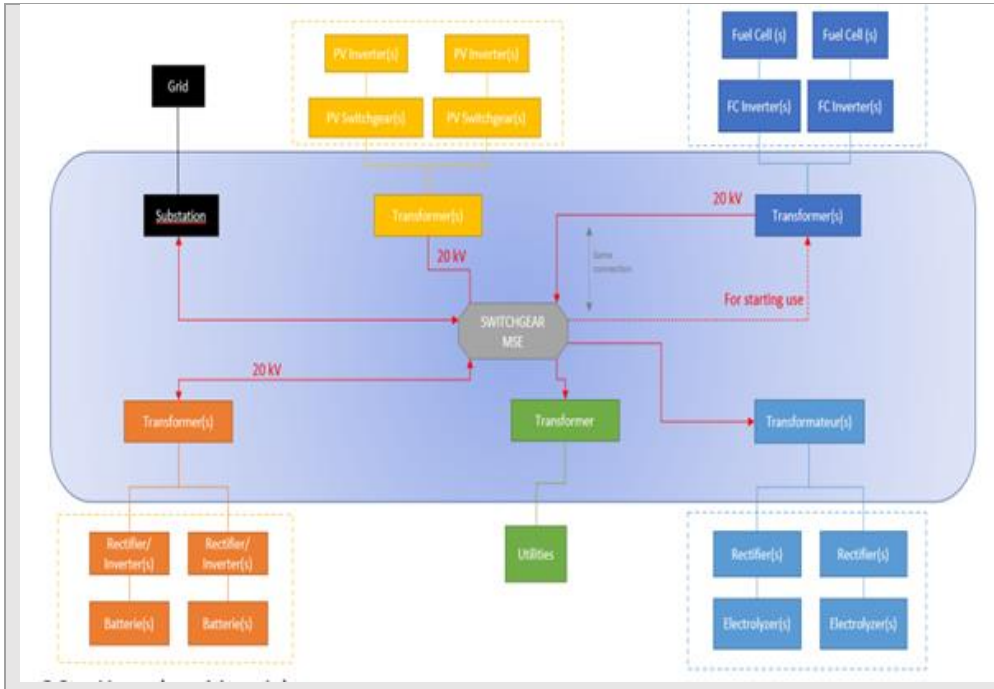
The Energy Management System is the power plant brain; it is responsible for ensuring the balancing of the different systems composing the power plant:

- The PV plant is a renewable energy source.
- When the PV is being produced, the EMS distributes the energy to deliver the due power to the grid and charge the energy storage through hydrogen production in the electrolyzer and the battery.

When the PV is not sufficient to deliver the due power, the EMS will order the battery or the fuel cell to deliver power.

Power Plant Architecture

The principle electrical architecture of the power plant is presented in the figure.



Grid Connection		
Project technical details	Capacity or quantity	
132kV powerline	Grid connection will be through an Eskom 132kV powerline.	
Connection to the Grid Collector station	Max Export Capacity	Connection to the Grid
	Voltage	132kV
HV Substation	Majuba Coal Power Substation DC and AC cables installed underground and overhead	
Associated infrastructure	Cables: Communications DC and AC cables installed underground and overhead.	

	AC cabling up to 33kV between components (underground and overhead cabling). A step-up transformer from 33kV to 132kV to connect the 132kV overhead power lines at the Point of Common Coupling with Eskom. TBC by ESKOM.
Other infrastructures	
Buildings	Several buildings are proposed for the Project Property and will be amalgamated where possible without compromising Project requirements for efficiency, power, functionality, and safety. Proposed Project buildings, which include, for example, guard buildings/security booth, office/equipment storage buildings, are anticipated to occupy a total of approximately 3 ha within the Project Property. The approximately 7 ha for the HyPCe area (or HyPCe facilities yard) will also contain buildings such as an electrical building, electrolysers building, power stations and various utilities on the skids, a pump house, and a package water treatment plant, and the existing buildings will also be used. Laydown areas will be required for the outdoor storage of vehicles, heavy equipment, machinery, prefabricated Project components, construction materials, and other supplies for construction, operation, and maintenance. They will also include platforms for equipment assembly/installation.
Access/Service Roads	Internal site roads and parking areas throughout the Project Property will facilitate the transportation of Project personnel, equipment, and materials/supplies within and between the solar PV power plant, the HyPCe area, and the entrances. These roads will range between 3 m and 10 m in width. The main roads, HyPCe area access roads, and roads to and within the administrative area, including the parking area, will be asphalted paved; the remainder of the internal site roads will be unpaved.

Fencing and Security	The Project Property will be surrounded by fencing on all sides. The HyPCe area will be enclosed by a security fence approximately 2.5 m high. Adequate 24-hour security will prevent curious onlookers or passers-by from wandering into Project-related construction or operational areas.
Site lighting	General site lighting will combine power line pole-mounted fixtures and building-mounted fixtures at the guard's buildings/security booths, staff buildings/facilities, office/equipment storage buildings, and other miscellaneous buildings. Project components and facilities are not anticipated to be permanently lit; detection sensors or manual switches will be used to engage lighting when required for operational tasks and security or safety reasons.
Hazardous Materials	The main hazardous materials that will be present on-site include: • Petroleum Hydrocarbon • Li-ion batteries • Potassium hydroxide (KOH), also known as caustic potash • Glycol • Pressure gaseous hydrogen Oil in electrical transformers
Water Usage and Ablution	The primary water sources are still being investigated. The anticipated annual consumption is 69 621 m^3/y, and water discharge is 20 886 m^3/y.
Waste Management	All waste generated on site will be handled per the Renewstable®Sivutse plant Waste Management Plan and the approved EMPr. Solid and liquid waste that is destined for off-site disposal will be temporarily stored on-site in rubbish bins, containers, or water-tight barrels. Approved third-party service providers will be engaged to remove non-hazardous and hazardous wastes for off-site disposal, recycling, and/or treatment at dedicated waste management facilities in accordance with applicable regulatory requirements. Waste

	containment receptacles containing food wastes will be secured to prevent birds or other fauna attraction. Efforts will be made to divert solid waste materials from the landfill through re-use or recycling wherever practical. Construction demolition waste, such as concrete, steel, scrap iron, and wood, will be collected and temporarily contained on-site in a designated area until it can be transported to an approved existing disposal facility or landfill site.

5.2.1 Activities Associated with the Project Construction Phase

The power plant will provide a mid-merit power profile to the national grid. It will be designed to operate for 25 years, after which, subject to prevailing circumstances, it will either be decommissioned or refurbished and extended. If decommissioned, the land where the power plant is located will undergo extensive rehabilitation, removing all power plant equipment and reinstating the land to its original land use.

The proposed project's construction phase is scheduled to start in the second quarter of 2027/2028 and would take approximately 28 months. Commercial operation would then start in the first quarter of 2029. The electricity produced by the power plant will be purchased by a private off-taker at an agreed rate under a Power Purchase Agreement (PPA) for a period of at least 25 years from plant commissioning.

The main activities associated with the project's construction phase will consist of site preparation, physical construction and equipment installation, and finalization commissioning. The Project is expected to create employment opportunities during peak construction activities, such as installing the PV modules, the proposed development is expected to create 570 employment opportunities.

Important aspects to note during the construction phase include the following:

- Given the proximity and availability of potential accommodation in the local communities surrounding the project property, no workforce accommodation camps are currently proposed in support of the Project.
- The Project components required for physical construction and equipment installation will be transported to the Project Property by truck, primarily in 12-m shipping containers, although some raw materials may be transported in bulk, and the hydrogen tanks will be transported as out-of-gauge cargo.
- Construction activities will take place only during daylight.

Table 9: Construction phase activities

Activity	Plants Facility (PV power Plant, BESS, HyPCe)	Access road
Site walk down	Site walk down to determine sensitivities and demarcate areas of sensitivity as no-go.	Site walk down the access road to determine sensitivities and mark them as a no-go.
Site Preparation	Project construction will begin with clearing vegetation and levelling soil where necessary throughout the Project Property. Only light vegetation removal will be required since the project property is currently mostly used for crop farming and is therefore not forested or heavily vegetated other than with agricultural cry laydown areas will be established for the outdoor storage of vehicles, heavy equipment, machinery, prefabricated Project components, construction materials, and other supplies. Site preparation activities will also include platform leveling for the HyPCe buildings, digging trenches, and constructing the drainage system for surface runoff management.	Site preparation activities will also include access road construction and internal road construction.
Vegetation clearance	Vegetation clearance of the ±315 hectares footprint.	Clearance of 10m width for access roads.
Excavation of foundations	Excavation of foundation and concrete works for the plant (Solar PV HyPCe area, BESS, etc.).	No foundations are required for the access road.
Civil works	Construction of solar PV power plant, including: • PV structure foundation • Structure assembly • Modules installation • Power station installation	The civil works will entail the preparation of proper drainage channels and surfacing of the roads.

Activity	Plants Facility (PV power Plant, BESS, HyPCe)	Access road
	Construction of HyPCe area facilities (i.e., BESS, HESS, and EMS), including: • Foundation construction • Electrical building • Installation of integrated systems, containers, and associated power stations for batteries, electrolysers, and fuel cells. • Erection of electrical and mechanical balance of plant components (e.g., cabling, piping, and auxiliaries). Construction/installation of remaining supporting infrastructure, facilities, and utilities, including other Project buildings (e.g., guard building/security booth and office/equipment storage building), fencing, lighting, package water treatment plant, water storage tanks, and drainage works.	
Technical/ Mechanical	Mechanical activities to prepare for operation.	Surfacing the road.
Rehabilitation	Upon completion of construction work, the site will be rehabilitated as per the specifications of the EMPr and approved Method Statements and will meet the Closure and Rehabilitation Plan requirements. The rehabilitation activities will include: • Remove excess rubble and building material. • Repairing any damage caused by construction activities. • Rehabilitating any area affected by engineering activities undertaken while constructing the proposed facility and its associated infrastructure. • Reinstating damaged roads as the result of either construction vehicles or any construction work related to the development of the Sivutse. • Replacing topsoil and planting indigenous vegetation where necessary.	

5.2.2 Operation and Maintenance

The maintenance of the Renewstable® Sivutse plant is comparable to the maintenance of any renewable power plant. In this case, the architecture of the design provides redundancy and flexibility, which means that maintenance can be done in hidden times, implying that no projected downtime due to annual maintenance is expected. The main activities associated with the operation and maintenance of the proposed development are detailed as follows:

- The solar power plant will be cleaned and undergo light preventive and corrective operations (changing fuses, modules, an inspection of inverters, cables, etc.).
- The EMS will enable aspects of the power plant and energy storage systems (i.e., the BESS and HESS) to be controlled remotely during Project operations. Since Project components in the HyPCe area will be mainly automated, the operator's primary job will be to monitor the infrastructure (including associated cooling, fire safety, security, and fault detection systems) to support their safe, secure, and efficient operation.
- Operation and maintenance of the power plant and associated energy storage and management systems in the HyPCe area will entail:
    - Regular visual inspections of the PV modules, cables, power stations, and other equipment; thermal control of electrical equipment (e.g., boxes and inverters); cleaning of the PV modules;
    - Grass cutting within the grounds of the power plant to manage the vegetation in specific areas; transformer oil sampling and testing, and potential transformer retreatment (if necessary) at a specialised third-party facility off-site; and
    - Control water quality (electrolysis input and output) through filtration, treatment, product changing when necessary, and waste management.
- Maintenance activities will also include corrective or preventative replacement of components such as electrolyte solutions, PV modules, inverters, battery cells, and fuel cell stacks.
- For these critical subsystems, an LTSA (Long-Term Service Agreement) will be executed with the suppliers so that the supplier is responsible for the specific maintenance and long-term performance of the subsystem.
- The power plant operation may require Full-Time Employees (FTEs): operators, electrical and mechanical technicians, and management.

During the various phases of the project, HDF-Energy plans to encourage the transfer of knowledge to the local community. As such, secondary activities, such as security, greenspace management, logistics, and training, would also be subcontracted.

Renewstable Sivutse will put together a team that will be responsible for operations and maintenance. The teams' primary responsibilities entail the following:

- Performance monitoring: power delivery to the grid, Grid Code, Safety, Health & Environment (HSE) rules
- Remote operation, diagnosis and failure response;
- Maintenance strategy: preventative maintenance;

- Corrective maintenance;
- Consumables management, spare parts and scheduled maintenance; and
- Others: Waste management, vegetation mowing, site and office cleaning, site security.

5.2.3 DECOMMISSIONING

The Project will be designed, built, and maintained to be in operation for at least 25 years. While decommissioning or abandonment of the new facility is not currently envisioned, the Project will at some point be decommissioned or rebuilt at the end of its useful service life in accordance with the applicable standards and regulations that are in effect at that time. Potential future decommissioning activities will likely involve the following:

- dismantling and removal of the power plant and other on-site buildings, equipment, and facilities, including:
    - possible excavation and removal of concrete pads;
    - transferring of waste materials to disposal, recycling, and/or
    - treatment facilities, as applicable (where re-use is not possible);
    - backfilling of ponds and ditches and re-establishment of natural drainage patterns; and
    - recontouring and revegetation (via natural regrowth and/or seeding with non-invasive plant species) of disturbed areas of the site as necessary to facilitate the desired end land use of the Project Property by the landowner (Eskom).

5.3 LISTED ACTIVITIES APPLICABLE TO THE PROJECT

The proposed development triggers listed activities in terms of 2014 EIA Regulations as amended, the National Water Act, 1998 (Act 36 of 1998), and the National Environmental Management: 1998 (Act 39 of 1998). The listed activities applicable are listed and briefly described in Table 10 below:

Table 10: Listed activities applicable to the project

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates. Ensure to include thresholds/area/footprint applicable.
GNR 983 Activity 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 33kV but less than 275kilovolts.*	The development will entail a collector station for connection to the grid.
GNR 983 Activity 12	*The development of infrastructure or structures with a physical footprint of 100 square metres of more where such development occurs-* *(a) Within a watercourse.*	The proposed Renewstable® Sivutse entails developing infrastructure with a footprint of more than 315 hectares that will encroach on a watercourse.
GNR 983 Activity 14	*The development and related operation of facilities or infrastructure for the storge 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 500cubic meters.*	The development will entail facilities for the storage and handling of a dangerous good, which will be stored in containers of more than 80 cubic meters.
GNR 983 Activity 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 (i) a watercourse*	The proposed development will require the removal of more than $10m^3$ soil during excavation for the Solar PV foundations within 500m of a watercourse.
GNR 983 Activity 24	*"The development of a road:* *(ii) A road with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 meters."*	The proposed development will require an approximately ± 10 m wide access road to the site and associated infrastructure.
GNR 983 Activity 28	*Residential, mixed, retail, commercial, industrial, or institutional developments where such land was used for agriculture, game farming,*	The proposed development will be outside an urban area on land zoned agriculture. The development footprint will cover approximately 315 hectares.

	equestrian purposes, or afforestation on or after 01 April 1998 and where such development: *(ii)will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial, or institutional purposes.*	
Activity 56	*The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometer –* *(i) Where the existing reserve is wider than 13.5 meters; or* *(ii) Where no reserve exists, where the existing road is wider than 8 metres;* *Excluding where widening or lengthening occur inside urban areas.*	The proposed development will require widening and lengthening the existing access roads by more than 6 m and 1 km, respectively
Activity No(s):	**Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 2 of the EIA Regulations, 2014 as amended**	**Describe the portion of the proposed project to which the applicable listed activity relates. Ensure to include thresholds/area/footprint applicable.**
GNR 984, **Activity 1**	*The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more.*	The proposed Renewstable® Sivutse entails developing a 74MW Solar PV and 470 MWH of hydrogen-based storage outside an urban area.
GNR 984, **Activity 4**	*The development 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 more than 500 cubic meters.*	The hydrogen gas produced from the electrolysis process will be compressed and stored in cylindrical steel tanks arranged horizontally, with a combined capacity of more than 500 cubic meters. The project will also entail BESS.
GNR 984, Activity 6	*"The development of facilities or infrastructure for any process or activity which requires a permit or license or an amended permit or license in terms*	The proposed project entails electricity generation and will require a Generation Licence from the National Energy Regulator

	of national or provincial legislation governing the generation or release of emissions, pollution or affluent."	of South Africa (NERSA) in terms of Section 11 of the Electricity Act (Act 4 of 2006). The proposed development will require a Water Use License (WUL) under the National Water Act (Act 39 of 2004) (NWA). Other required permits will include biodiversity, and heritage permits in terms of NEMBA and NHRA, respectively.
GNR 984, Activity 15	*"The clearance of an area of 20 hectares or more of indigenous vegetation"*	The proposed development is approximately 315 ha, and more than 20 hectares of indigenous vegetation will be removed for construction.
Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates. Ensure to include thresholds/area/footprint applicable.
GNR 985, Activity 4 f, i, cc	*The development of a road wider than 4 metres with a reserve of less than 13.5 metres.* ***f. Mpumalanga*** *i. Outside urban areas:* *(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority* *(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;*	The proposed development will require the development of a 10 m wide access road within a Critical Biodiversity Area and a sensitive area.
Activity 12 f, ii	*The clearance of an area of 300 square metres or more of indigenous vegetation.* ***f. Mpumalanga***	The proposed development will require clearance of more than 300 Square metres of indigenous vegetation for construction purposes.

	ii. Within critical biodiversity areas identified in bioregional plans;	
GNR 985, Activity 14 ii, a, f, l, dd, ff	*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;* ***f. Mpumalanga*** *i. Outside urban areas:* *(dd)Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority* *(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans*	The proposed development is located outside urban areas within the area marked as sensitive areas and a Critical Biodiversity Area.

Furthermore, the proposed development triggers Section 21 water use activities; as such, a Water Use Licence Application (WULA) in terms of Section 40 of the National Water Act, 1998 (Act No. 36 of 1998) (NWA) will be undertaken to obtain a Water Use Licence (WUL) from the Department of Water and Sanitation (DWS) before the commencement of any listed water use activity., as detailed in Table 11 below. The application has been lodged with the responsible authority, the DWS.

Table 11: Listed Activities under Section 21 of NWA, 1998

The National Water Act, 1998 (Act 36 of 1998) Activities	
Section 21 (a) Taking water from a water resource.	The proposed development will entail water abstraction from boreholes for domestic uses.
Section 21 (b) *Storage of water*	The proposed development will require a water tank for water storage.
Section 21 (c) *21(c) Impeding or diverting the flow of water in a watercourse*	Construction of roads and culverts within medium sensitivity buffer zone. The proposed development is close to a watercourse (wetland).
Section 21 (g) Disposing of waste in a manner which may detrimentally impact on a water resource.	The proposed development will entail the construction of a septic tank and brine pond.
Section 21 (i) *21(i) Altering the Bed, Banks, Course, or Characteristics of a Water Course*	The proposed development is close to a watercourse (river).

Considering the available information, no waste-related activities as per NEM: WA Section 21 are triggered. Therefore, a Waste Management Licence is not required. The storage, handling, and management of waste on-site will be dictated by the EMPr and associated norms and standards, as well as Municipal by-laws.

6 A DESCRIPTION OF THE POLICY AND LEGISLATIVE CONTEXT WITHIN WHICH THE DEVELOPMENT IS LOCATED AND AN EXPLANATION OF HOW THE PROPOSED DEVELOPMENT COMPLIES WITH AND RESPONSE TO THE LEGISLATION AND POLICY CONTEXT

6.1 APPLICABLE LEGISLATION AND GUIDELINES

IEM prescribes a code of practice for ensuring that environmental management principles are fully integrated into all stages of the development process. It advocates using several environmental and management tools appropriate for the various levels of decision-making. The most comprehensive set of legislative tools to date that provides a legislative framework that allows IEM to be rolled out is the Specific Environmental Management Acts (SEMA), which are sector-specific and linked to NEMA. These include NEM: WA (waste), NEM: AQA (air quality), NEM: BA (biodiversity), NWA (water resources), NEM: PAA (protected areas), and in some instances, NEM: ICMA (coastal management). In addition to the SEMAs, every developmental project must comply with international, national, provincial, and local legislation, regulations, strategies, and policies to manage environmental impacts.

The EIA Regulations of 2014, as amended, under Appendix 2 Section 1(e), requires a description of applicable legislation in the Scoping Report. This section lists and describes the acts and legislations applicable to the proposed development and associated infrastructure. A list of the current South African environmental legislation that is pertinent to the proposed development is described in Table 12 below. It is not an exhaustive analysis; however, it provides a guideline for the relevant aspects of each legislation.

Municipal policies, plans, by-laws, Renewstable Mpumalanga internal policies, and world best practices were considered during the ESIA process.

Table 12: Legislation Pertaining to the Proposed Project

Legislation	Administering Authority:	Summary	Applicability
The Constitution of the Republic of South Africa (Act 108 of 1996)	All Spheres of Government	The Constitution is the supreme law of the Republic of South Africa, so statutes must be in line with it. Section 24 indicates that everyone has the right to an environment that is not harmful to one's health or well-being. That Right includes an obligation imposed on the State to protect the environment for the benefit of present and future generations.	The proposed development must consider the best environmental management practices during the project's life cycle.
National Environmental Management Act (Act 107 of 1998)	National and Provincial	The Act requires that an environmental authorisation must be issued before a listed activity may commence. Section 24(4) of NEMA prescribes that the procedures for the investigation, assessment, and communication of the potential consequences or impacts of activities on the environment must, among other things, with respect to every application for environmental authorisation, ensure that the general objectives of Integrated Environmental Management (IEM) are considered. Section 24(2) indicates that the Minister can publish a list of activities that may not commence without environmental authorisation. Three listing notices, Listing Notice 1, 2, and 3, were published in 2014 and amended on the 7th of April 2017 to	The proposed development triggers "listed activities," as defined by NEMA, therefore requiring an EA from the relevant Competent Authority (CA), in this case, the DFFE, according to Section 24C. Further, the DFFE screening tool has been consulted from the project onset, and a copy of the report has been uploaded along with the application form. The DFFE screening tool was also used to guide the required specialist studies; thus, the list corresponds with the specialist studies identified in the screening tool report submitted to the DFFE **(Appendix C).**

Legislation	Administering Authority:	Summary	Applicability
		determine whether a Basic Assessment or Scoping and Environmental Impact Assessment should be undertaken. NEMA also provides for the duty of care and remediation of environmental damage. This duty is set out in section 28 and is imposed on every person "who causes, has caused or may cause significant pollution or degradation of the environment. Section 30 further indicates the procedures for reporting incidents and the need to implement remedial measures that deal with incidents.	
National Environmental Biodiversity Act (Act 10 of 2004)	National and Provincial	The National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) is to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA and the protection of species and ecosystems that warrant national protection. The following regulations, strategies, and frameworks emanate from this Act: • Alien and Invasive Species Regulations, 2014 • South Africa's	The sensitivity of the PAoI has been mapped, and sensitive areas have been flagged to allow for the creation of buffers and protection. The requisite application will be submitted to the provincial department, where protected species have been identified and mapped within the construction footprint.

Legislation	Administering Authority:	Summary	Applicability
		• National Biodiversity Strategy and Action Plan (NBSAP) • National Spatial Biodiversity Assessment (NSBA) • National Biodiversity Framework (NBF, 2009)	The DFFE Biodiversity Directorate and the Protected Areas Planning and Management Effectiveness will be consulted.
National Environmental Management: Protected Areas Act	National and Provincial	The Act provides for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity. Section 17 declares areas protected. Any development envisaged in a protected area would require approval from the responsible management authority.	The site's sensitivity has been mapped, and sensitive areas have been flagged to allow for buffers and protection of protected areas. The site is 0.8 km from the Majuba Nature Reserve, but it is not within a protected area.
National Environmental Management: Air Quality Act (Act No. 39 of 2004)	Municipalities	The purpose of the Act includes reforming the law relating to air quality and providing national norms and standards regulating air quality monitoring, management, and control in the country. It also gives effect to S24 of The Constitution. Apart from imposing an obligation on metropolitan and district municipalities to implement the licensing system, a list of activities has been published, which indicates activities that require an Air Emission Licence (AEL).	The proposed project is in the air priority area. None of the proposed activities triggers Section 21 of this Act; however, the proposed projects must consider climate change and global warming issues.

Legislation	Administering Authority:	Summary	Applicability
National Environmental Management: Waste Act (Act No. 59 of 2008)	National and Provincial	The purpose of the Act includes reforming the law regulating waste management to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation, securing ecologically sustainable development, and remediating contaminated land. A list of activities has been published indicating activities requiring a Waste Management Licence (WML).	No waste-related activities as per NEM: WA Section 21 are triggered; therefore, a Waste Management Licence is not required. The EMPr, associated norms and standards, and Municipal by-laws will dictate the on-site storage, handling, and management of waste.
National Water Act (Act No. 36 of 1998)	National and Provincial	The Act seeks to ensure that the country's water resources are protected, used, developed, conserved, managed, and controlled in a manner that considers relevant factors such as meeting the basic human needs of present and future generations. It further lists the 11 water uses specified in Section 21 that require a licence/ General Authorisation.	Some of the proposed activities will encroach on water resources, including watercourses and wetlands. This is expected for the proposed culverts and loops along the corridor. Therefore, the requisite WUL application must be lodged with the DWS for the sites that trigger Section 21 listed activities. Applications for the proposed scope will primarily trigger Section 21 a, b, c, i and g.
National Heritage Resources Act (Act No. 25 of 1999)	National and Provincial	NHRA aims to introduce an integrated and interactive system for managing national heritage resources. Any development that falls within the ambit of the developments described in the Act and/or involves an impact on heritage resources must comply with the requirements of the NHRA. Permits for this specific	The scoping phase confirmed the presence of graves close to the project site. As such, the measures proposed by the specialist must be adhered to, and the requirements of the legislation regarding the preservation of graves must be considered.

Legislation	Administering Authority:	Summary	Applicability
		project would be administered by the Provincial Heritage Agency or South African Heritage Resources Agency (SAHRA).	
Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983)	National, Provincial, and Local	The Act aims to provide control over the use of natural agricultural resources to promote the conservation of soil, water resources, and vegetation and combat weeds and invader plants. Section 6 of the Act makes provision for control measures to be applied to achieve the objectives of the Act. In addition, there is also draft legislation, namely, Sustainable Utilisation of Agricultural Resources.	The proposed project is on agricultural land. Measures relating to soil, water, and vegetation conservation and the management of alien invasive species must be considered and form part of the EMPr.
Noise Control Regulations in terms of the Environmental Conservation, 1989 (Act 73 of 1989)	Municipality	The assessment of impacts relating to noise pollution management and control, where appropriate, must form part of the EMPr.	Noise generated during the project's construction and operational phases must comply with the provincial Noise Control Regulations.
Electricity Regulation, 2006 (Act 4 of 2006)	National	This act provides the national regulatory framework for the electricity supply industry to make the National Energy Regulator the custodian and enforcer of the national electricity regulatory framework; to provide for licenses and registration as how generation, transmission, distribution, reticulation, trading, and the	The proposed project is an electricity generation project.

Legislation	Administering Authority:	Summary	Applicability
		import and export of electricity are regulated; to regulate the reticulation of electricity by municipalities, and to provide for matters connected to it.	
National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)	National	This Act aims to provide for the protection, conservation, and management of ecologically viable areas representative of South Africa's biological diversity and natural landscapes.	The site is 0.8km from the Majuba Nature Reserve. As such, the act's requirements will need to be closely considered. Furthermore, the respective Department within the DFFE AND Province will be allowed to comment.
National Road Traffic Act (Act No. 93 of 1996)	National, Provincial, and Local	An abnormal load vehicle permit will be required to transport the various solar power plant and transmission line components to the site for construction. These include: • Route clearance and permits for vehicles carrying abnormally heavy or abnormally dimensional loads will be required. • Transport vehicles exceeding the dimensional limitation (length) of 22m.	The constriction phase will entail delivering components that may sometimes be abnormal loads. The project will always need to comply with the Act's requirements and apply for permits as required.
Occupational Health and Safety Act (OHS Act	National	The Major Hazard Installation (MHI) regulations (July 2001) published under Section 43 of the Occupational Health and Safety Act (OHS Act) requires employers, self-employed persons, and users who have on their	The project must comply with the requirements of the Act throughout the project phases. Installation of gas tanks and gas pipelines will need to comply with the requirements of the Act.

Legislation	Administering Authority:	Summary	Applicability
		premises, either permanently or temporarily, a major hazard installation or a quantity of a substance which may pose a risk (our emphasis) that could affect the health and safety of workers and the public to conduct a risk assessment in accordance with the legislation. Following legislation, the risk assessment must be done by an approved inspection authority (AIA) registered with the Department of Labour and accredited by the South African Accreditation Systems (SANAS) before construction of the facility.	
Hazardous Substance Act, 1973 (56 of 1973)		The Hazardous Substances Act controls hazardous substances' production, import, use, handling, and disposal. Under the Act, hazardous substances are defined as substances that are toxic, corrosive, irritant, strongly sensitizing, flammable, and pressure-generating under certain circumstances and may injure, cause ill health, or even death in humans.	The project will generate hazardous waste which will be handled in accordance with the requirement of the Act, and the applicable Norms and Standards. Furthermore, the project comprises a hydrogen plant which is highly flammable; as such, requirements of the Act must be adhered to.
Gas Act, 2001 (48 of 2001)		The Gas Act 48 of 2001 intends: • to promote the orderly development of the piped gas industry; • to establish a national regulatory framework;	The proposed project comprises a hydrogen gas plant which is considered highly flammable. The requirements of the gas legislation and regulatory requirements must be adhered to.

Legislation	Administering Authority:	Summary	Applicability
		• to establish a National Gas Regulator as the custodian and enforcer of the national regulatory framework; and • to provide for matters connected therewith. The objects of this Act are to: (a) promote the efficient, effective, sustainable, and orderly development and operation of gas transmission, storage, distribution, liquefaction, and regasification facilities and the provision of efficient, effective, and sustainable gas transmission, storage, distribution, liquefaction, re-gasification, and trading services; (b) facilitate investment in the gas industry. (c) ensure safety and efficiency—economical and environmentally responsible transmission, distribution, storage, liquefaction, and gas re-gasification. (d) promote companies in the gas industry owned or controlled by historically disadvantaged South Africans using license conditions to enable them to become competitive. (e) ensure that gas transmission, storage, distribution, trading, liquefaction, and re-gasification services are	

Legislation	Administering Authority:	Summary	Applicability
		provided equitably and that all parties concerned consider the interests and needs of all parties concerned. (f) promote skills among employees in the gas industry; (g) promote employment equity in the gas industry. (h) promote the development of competitive markets for gas and gas services. (i) facilitate gas trade between the Republic and others. (j) promote access to gas affordably and safely.	
Mpumalanga Nature Conservation Act, 1998 (Act No. 10 of 1998)	Provincial	This Act makes provisions with respect to nature conservation in the Mpumalanga province. It provides for, among other things, wildlife protection, hunting, fisheries, endangered fauna, and flora as listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora, the control of harmful animals, freshwater pollution, and enforcement.	The site is 0.8km from the Majuba Nature Reserve. As such, the act's requirements will need to be closely considered. Furthermore, the respective Department within the Province will be allowed to comment.
Climate Change Bill (2018)		The objects of the Act are to: a) provide for the coordinated and integrated response to climate change and its impacts by all spheres of government by the principles of cooperative governance;	Climate change consideration must be incorporated in the design, and the objects of the Act must be adhered to.

Legislation	Administering Authority:	Summary	Applicability
		b) provide for the effective management of inevitable climate change impacts through enhancing adaptive capacity, strengthening resilience, and reducing vulnerability to climate change to build social, economic, and environmental resilience and an adequate national adaptation response in the global climate change response. c) 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 sustainably. The National Greenhouse Gas Emission Reporting Regulations have been promulgated in terms of NEM: AQA to introduce a single national reporting system for the transparent reporting of greenhouse gas emissions. The regulations apply to the categories of emission sources listed in Annexure 1 to the regulations and include electricity production exceeding 10 MW. Tier 1 reporting is required at a minimum, with a five-year	

Legislation	Administering Authority:	Summary	Applicability
		grace period applicable before reporting to the lower tiers.	
Spatial Planning and Land Use Management Act, 2013 (Act No.16 of 2013)	National	The Act makes provisions regarding developing a new framework to govern planning permissions and approvals, sets parameters for new developments and provides for different lawful land uses in South Africa.	A change in land use is required, as the area is currently zoned agriculture and needs to be rezoned industrial. The rezoning application will be lodged with the Local municipality.
Civil Aviation	Civil Aviation Act 13 of 2009	As outlined in Part 139.01.30 of the Civil Aviation Regulations (GN R425, GG 35398 of 1 June 2012), Buildings or other objects which will constitute an obstruction or potential hazard to aircraft moving in the navigable air space in the vicinity of an aerodrome, or navigation aid, or which will adversely affect the performance of the radio navigation or instrument landing systems, must not be erected or allowed to come into existence without the prior approval of the Director.	The screening report rated civil aviation as medium. However, a specialist and detailed mapping assessment confirmed that the proposed power plant location is within the low sensitivity of civil aviation aerodromes.
Defence	Defence Act 42 of 2002	The Defence Act 42 of 2002 is a comprehensive piece of legislation in South Africa that governs various aspects related to national defence, military organisation, and security matters.	The screening tool assessed the proposed site as having low sensitivity to Defence concerns. Therefore, according to protocols for Specialist (GN.320) of March 2020, there are no anticipated adverse impacts on defence. Moreover, GIS

Legislation	Administering Authority:	Summary	Applicability
			mapping confirmed that the proposed project is located within a low-sensitivity area.
Development Facilitation Act (Act 67 of 1995)	National	The Development Facilitation Act (Act 67 of 1995) (DFA) sets out several key planning principles that have a bearing on assessing proposed developments, considering the national planning requirements. The planning principles most applicable to the study area include: • Promoting the integration of the social, economic, institutional, and physical aspects of land development; • Promoting integrated land development in rural and urban areas in support of each other; • Promoting the availability of residential and employment opportunities near or integrated; • Optimising the use of existing resources including such resources relating to agriculture, land, minerals, bulk infrastructure, roads, transportation, and social facilities; • Contributing to the correction of the historically distorted spatial patterns of settlement in the	Applies to all developments.

Legislation	Administering Authority:	Summary	Applicability
		Republic and the optimum use of existing infrastructure more than current needs; • Promoting the establishment of viable communities; and • Promoting sustained protection of the environment.	
Mineral And Petroleum Resources Development Act of 2002.	National	Section 53 of the Act administers the use of land surface rights contrary to the objects of the Act. (1) Subject to subsection (2), any person who intends to use the surface of any land in any way which may be contrary to any object of this Act or which is likely to impede any such object must apply to the Minister for approval in the prescribed manner. The requisite application will be submitted.	The Section 53 application is in progress.
OTHER National Protected Areas Expansion Strategy (NPAES) Environmental Conservation Act (Act No. 73 of 1983) Natural Scientific Professions Act (Act No. 27 of 2003) National Forest Act (Act No. 84 of 1998) National Veld and Forest Fire Act (101 of 1998) National Protected Areas Expansion Strategy (NPAES)			

Legislation	Administering Authority:	Summary	Applicability
Civil Aviation Act (Act 13 of 2009) and Civil Aviation Regulations (CAR) of 1997 Civil Aviation Authority Act (Act 40 of 1998) The Civil Aviation Act No. 13 of 2009 Draft White Paper on Civil Aviation Policy, 2017 ICAO Annex 14, Volume 1: Aerodrome Design and Operations (see Appendix 6.4 & 6.5) SA Civil Aviation Regulations (CARS): Part 139 – Aerodromes and Heliports SA Civil Aviation Technical Standards (CATS): SACATS 139.01.30 (26th Amendment) – Obstacle Limitations and Markings Outside Aerodromes or Heliports (Appendix 6.2) **PROVINCIAL** Mpumalanga Nature Conservation Ordinance (Ordinance 8 of 1969) **MUNICIPAL** Municipal Systems Act (Act No. 32 of 2000) Municipal By-laws as applicable to the project area Laws identified in the respective specialist reports **INTERNATIONAL** International Finance Corporation Performance Standards Equator Principles International Convention on Biological Diversity (CBD, 1993) The Convention on Wetlands (RAMSAR Convention, 1971) The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES 1973) The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention, 1979) The United Nations Framework Convention on Climate Change (UNFCC,1994)			

Legislation	Administering Authority:	Summary	Applicability

6.2 OTHER POLICIES AND GUIDELINES

The following Guideline documents were considered in the preparation of this report:

- Department of Environmental Affairs (DEA) Integrated Environmental Management Guideline Series 7, Public Participation in the EIA Process as published in Government Gazette No. 33308, 18 June 2010;
- Implementation Guidelines (published for comment) in Government Notice 603 of 2010;
- Integrated Environmental Management Information Series (Booklets 0 to 23) (DEAT, 2002 – 2005);
- Energy Efficiency Strategy of the Republic of South Africa (Department of Minerals and Energy (DME) now operating as Department of Mineral Resources (DMR), March 2005);
- White Paper on Renewable Energy (2003); and
- Integrated Resource Plan for South Africa (2010).
- Climate Change Policy

6.3 PROVINCIAL AND MUNICIPAL PLANS

The ESIA considers the provincial and Municipal plans and the project's relevance and alignment with the existing plans as detailed in Section7-(Motivation).

Table 13: Provincial and Municipal Plans

Plan	Description
Mpumalanga Provincial Growth and Development Strategy (2003), which is part of the Mpumalanga Vision 2030 Strategic Implementation Framework	The Mpumalanga Provincial Growth and Development Strategy (PGDS) is a comprehensive framework to guide the province's socioeconomic development. It aligns with the broader national objectives and focuses on several key areas: Economic Growth and Employment: Promoting sustainable economic growth and creating job opportunities. Education and Innovation: Improving education systems and fostering innovation. Healthcare: Ensuring accessible healthcare for all residents. Social Protection: Providing social safety nets to protect vulnerable populations. Infrastructure Development: Building and maintaining economic infrastructure. Environmental Sustainability: Promoting sustainable environmental practices. Rural Development: Enhancing the rural economy and improving living conditions in rural areas. Governance: Building a capable and developmental state and fighting corruption. This strategy is part of the Mpumalanga Vision 2030, which aims to transform the province into a more inclusive and prosperous region by 2030. Vision 2030 clearly and concisely captures the broader drivers of change globally and globally. In this respect, it

Plan	Description
	correctly identifies the implications of the global and regional trends on development and the parameters within which development will unfold. Vision 2030 is driven by a belief that South Africa could create 11 million jobs by 2030 through, among others, building partnerships between the public sector, business, and labour to facilitate, direct and promote investment in labour-intensive areas. **The proposed project is anticipated to contribute to the plan as it will create up to 5175 direct and indirect jobs during the construction and operational phases. Induced employment created during the construction and operational phases will be 5400 and 810, respectively**. As part of the fundamental mechanisms, the plan highlights efforts to focus on economic infrastructure, which includes energy, electricity, water and broadband. The plan encourages a shift towards renewable energy sources, recognising the limits of electricity that rely on dwindling coal reserves. The current reliance on coal for energy means an adequate supply of electricity and liquid fuel is a concern. Waterberg will be developed as an alternative coal supply region. There is a need to balance domestic coal supply with export growth and find alternative sustainable renewable energy resources, such as gas. Another mechanism identified includes environmental sustainability and resilience, noting that climate change has a marked impact on South Africa. Furthermore, climate change is identified as one of the key drivers of change. It highlights that in responding to these changes, industries and households will have to reduce their negative impact on the environment. Corresponding policies applicable at the provincial level to reduce carbon emissions include electricity from renewables such as biofuels and improving energy efficiency via incentives.
Mpumalanga Industrial Development Plan (2016)	The Mpumalanga Industrial Development Plan is an integrative approach to industrialisation in the province within the context of a broad policy and planning framework that covers all spheres of Government. At the core of the provincial strategic and planning framework is the Mpumalanga Economic Growth and Development Path, which indicates a clear commitment by the provincial government towards industrialisation through enabling infrastructure development and resource allocation. The plan aims to achieve short- and long-term goals of Developing inter-sectoral linkages that will localise the supply chains within the province, especially with major companies in the mining and energy sectors; Planned efforts to distribute development investments over a range of industries to prioritise job creation; and expanding sustainable and value-adding employment opportunities.

Plan	Description
Gert Sibande District Municipality Local Economic Development Strategy	The vision for the GSDM LED Strategy is to promote long-term sustainable growth within the GSDM through job creation, the eradication of poverty and unemployment, meeting the socio-economic needs of the community, and diversification of the economic base. One of the sectors driving the economy in the district is Energy generation. The district has four out of 10 operational coal-fired power stations in Mpumalanga, namely, Tutuka, Camden, Majuba and Grootvlei. As such, coal-fired power generation is a major industry in Gert Sibande, and these power stations are located near the coal mines due to the high cost associated with the transportation of coal. The Majuba Rail Network was commissioned to ease the pressure placed on the existing road infrastructure between Ermelo and Amersfoort by the truck transporting coal to Majuba Power Station. Amongst the NDP targets are energy and electricity-related targets that include: • The proportion of people with access to the electricity grid should rise to at least 90% by 2030; and • The country would need an additional 29 000MW of electricity by 2030, of which at least 20 000MW of this capacity should come from renewable sources. In line with National Outcome 6, which focuses on an efficient, competitive and responsive economic infrastructure network with the following outputs, the output includes: • Output 1: Improving competition and regulation. • Output 2: Ensure reliable generation, distribution and transmission of electricity.
Dr Pixley Ka Isaka Seme Local Municipality	The mining and energy sectors are key to the municipality's economic growth. The Majuba Power Station is located within the municipal area, and several mines. The municipality has recognised that climate change is one of the most critical issues currently occupying governments throughout the globe, citing that the impact of highly unpredictable climate change has reached unparalleled levels. To address the issue of climate change in regard to infrastructure provision, the introduction of “green Infrastructure” must be implemented and adopted in frameworks and development plans. Currently, South Africa is facing a major electricity backlog as Eskom is in debt and is correctly using emergency reserves to address the issue of load shedding. Electrical demand will only be met through the national grid or self-governing renewable energy sources like solar energy that will be sustainable and address climate change. Even

Plan	Description
	though there is a reduction in terms of solar energy usage as a form of generating electricity, it is evident that this technology is projected to be even cheaper than traditional coal and natural gas-charged electricity generation.

Table 14: Mpumalanga Strategic Initiatives and alignment with the project

Strategic Initiative	Alignment with Renewstable®Sivutse
Mpumalanga Vision 2030	
Economic Diversification	The project contributes to economic diversification in Mpumalanga by introducing industrial activities in the energy sector and reducing reliance on agriculture and mining.
Infrastructure Development	Enhances the province's energy infrastructure, providing a reliable power supply crucial for sustaining industrial activities and supporting economic growth.
Job Creation and Social Development	It creates significant employment opportunities during the construction and operational phases, reducing unemployment and poverty, particularly in rural areas like Malelane.
National Development Plan (NDP) 2030	
Energy Security	Contributes up to 34MW of renewable energy to the national grid, enhancing South Africa's energy security and reducing the risk of power shortages.
Environmental Sustainability	Supports the transition to a low-carbon economy by using solar, a cleaner alternative to coal, and commits to comprehensive environmental management practices.
Economic Growth and Job Creation	Promotes inclusive economic growth and job creation, aligning with NDP's objectives to reduce poverty and inequality by stimulating local economies and industrial development.
New Growth Path	
Industrial Development	It supports industrial development by building a modern energy infrastructure that powers industrial activities, enhancing South Africa's industrial capacity and competitiveness.

Strategic Initiative	Alignment with Renewstable®Sivutse
Job Creation and Skills Development	Generates direct and indirect employment opportunities and provides training and skills development for the local workforce, supporting national job creation and upskilling goals.
Industrial Policy Action Plan (IPAP)	
Industrial Development	The project contributes to the IPAP's focus on enhancing South Africa's industrial capacity, particularly in the energy sector, which is crucial for national economic expansion.
Economic Growth and Competitiveness	The Renewstable®Sivutse project's infrastructure and industrial contributions align with IPAP's goals of boosting South Africa's global competitiveness and economic growth.

6.4 OVERVIEW OF RELEVANT INTERNATIONAL STANDARDS

6.4.1 INTERNATIONAL FINANCE CORPORATION PERFORMANCE STANDARDS

The IFC Sustainability Framework articulates the IFC's strategic commitment to sustainable development and is an integral part of the IFC's approach to risk management. The Framework incorporates the IFC's Policy, Performance Standards, and Access to Information Policy. Alongside the Performance Standards is a companion set of Guidance Notes, guiding clients in meeting them. The Framework was adopted in 2006 and updated in 2012 following an 18-month consultation with stakeholders worldwide.

The Performance Standards are directed towards clients, guiding the identification of risks and impacts. They are designed to help avoid, mitigate, and manage risks and consequences as a way of doing business sustainably. These include stakeholder engagement and disclosure obligations of the client concerning project-level activities." IFC Performance Standards 2012."

The proposed project will incorporate the International Finance Corporation (IFC) 's environmental and social policies to promote responsible environmental stewardship and socially responsible development. These policies provide a frame of reference for lending institutions to review projects' environmental and social risks, particularly those undertaken in developing countries.

Through the Equator Principles, the IFC's standards are now recognised as international best practices in project finance. The IFC screening process categorises projects into A, B, or C to indicate relative environmental and social risk degrees. The categories are:

- Category A Projects expected to have significant adverse social and/or environmental impacts that are diverse, irreversible, or unprecedented.
- Category B Projects expected to have limited adverse social and/or environmental impacts that can be readily addressed through mitigation measures; and
- Category C Projects expected to have minimal or no adverse impacts, including specific financial intermediary projects.

The proposed project is categorised as a Category B project; hence, the EIA Process to assess the project's potential negative and positive environmental impacts. The International Finance Corporation (IFC) has adopted eight (8) Performance Standards (PS) on Social and Environmental Sustainability to manage social and environmental risks and impacts and to enhance development opportunities.

Table 15: IFC Performance Standards

Performance Standard	Summary	Applicability
IFC – PS 1	**Assessment and Management of Environmental and Social Risks and Impacts** Assessment and Management of Environmental and Social Risks and Impacts Performance Standard PS 1 applies to all projects with environmental and social risks and impacts. It underscores the importance of managing environmental and social performance throughout the life of a project and establishes the importance of: i. Integrated assessment to identify the environmental and social impacts, risks, and opportunities of projects; ii. Effective community engagement through disclosure of project-related information and consultation with local communities on matters that directly affect them; and iii. The client's management of environmental and social performance throughout the life of the project.	The development and operation of the proposed project presents risks to the social and biophysical environments. As a result, undertaking an EIA is critical to complying with this PS.
IFC – PS 2 Labour and Working Conditions	Performance Standard PS 2 acknowledges that the pursuit of economic growth through employment creation and income generation should be accompanied by the protection of workers' fundamental rights. The requirements set out in PS 2 have been guided in part by several international conventions and instruments, including those of the International Labour Organization (ILO) and the United Nations (UN). To promote fair treatment, non-discrimination, and equal opportunity of workers. • To establish, maintain and improve the worker-management relationship. • To promote compliance with national employment and labour laws. • To protect workers, including vulnerable categories such as children, migrant workers, workers engaged by third parties, and workers in the client's supply chain.	Both skilled and unskilled workers will be employed, particularly during the project's construction phase, thus triggering this PS.

Performance Standard	Summary	Applicability
	• To promote safe and healthy working conditions and the health of workers. • To avoid the use of forced labour.	
IFC – PS 3 Resource Efficiency and Pollution Prevention	Performance Standard PS 3 recognizes that increased economic activity and urbanization often generate increased levels of pollution to air, water, and land, and consume finite resources in a manner that may threaten people and the environment at the local, regional, and global levels. There is also a growing global consensus that the current and projected atmospheric concentration of GHG threatens the public health and welfare of current and future generations. PS 3 outlines a project-level approach to resource efficiency and pollution prevention and control in line with internationally disseminated technologies and practices. In addition, it promotes the ability of private sector companies to adopt such technologies and practices as far as their use is feasible in the context of a project that relies on commercially available skills and resources. The objectives of PS 3 are: • To avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities. • To promote more sustainable use of resources, including energy and water. • To reduce Project-related GHG emissions. This standard has potential relevance to the project scope.	This standard has potential relevance to the project scope during the construction and operational phases.
IFC – PS 4 Community Health, Safety, and Security	Performance Standard 4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. While acknowledging the public authorities' role in promoting the health, safety, and security of the public, PS 4 addresses the client's responsibility to avoid or minimize the risks and impacts to community health,	Community health, safety and security risks are assessed as part of the ESIA. This will remain applicable throughout the project.

Performance Standard	Summary	Applicability
	safety, and security that may arise from project related activities, with particular attention to vulnerable groups. The objectives of PS 4 are: • To anticipate and avoid adverse impacts on the health and safety of the affected community during the project life from both routine and nonroutine circumstances. • To ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the affected communities.	
IFC – PS 5 Land Acquisition and Involuntary Resettlement	Performance Standard 5 recognizes that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons that use this land. Involuntary resettlement refers to physical displacement (relocation or loss of shelter) and economic displacement (loss of assets or access to assets that leads to loss of income sources or other means of livelihood) due to project-related land acquisition and/ or restrictions on land use. The objectives of PS 5 are: • To avoid, and when avoidance is not possible, minimize displacement by exploring alternative project designs. • To avoid forced eviction. • To anticipate and avoid, or where avoidance is not possible, minimize adverse social and economic impacts from land acquisition or restrictions on land use by: i. providing compensation for loss of assets at replacement cost; and ii. ensuring that resettlement activities are implemented with appropriate information disclosure, consultation, and the informed participation of those affected. • To improve or restore the livelihoods and standards of living of displaced persons	The property identified for the development of the Renewstable® Sivutse Project has been awarded through the Eskom Land lease program. The development thereof will not prejudice any residents as the site is unoccupied. No land acquisition or resettlement is required and, as a result, compliance with PS 5 is not required.

Performance Standard	Summary	Applicability
	• To improve living conditions among physically displaced persons by providing adequate housing with security of tenure at resettlement sites.	
IFC – PS 6 Biodiversity Conservation and Sustainable Management of Living Natural Resources	Performance Standard 6 recognises that protecting and conserving biodiversity, maintaining ecosystem services, and managing living natural resources are fundamental to sustainable development. The Convention on Biological Diversity has guided the requirements set out in PS 6. The objectives of PS 6 are: • To protect and conserve biodiversity. • To maintain the benefits of ecosystem services. • To promote the sustainable management of living natural resources by adopting practices that integrate conservation needs and development priorities.	The site is predominantly agricultural. Despite providing limited habitat for terrestrial and aquatic fauna and flora, a biodiversity assessment and separate avifauna assessment have been included as part of the ESIA. Furthermore, specialists have been commissioned to provide input, and the outcomes of their studies have been incorporated.
IFC – PS 7 Indigenous Peoples	Performance Standard 7 recognises that Indigenous Peoples, as social groups with identities that are distinct from mainstream groups in national societies, are often among the most marginalised and vulnerable segments of the population. In many cases, their economic, social, and legal status limits their capacity to defend their rights to, and interests in, lands and natural and cultural resources and may restrict their ability to participate in and benefit from development. The objectives of PS 7 are: • To ensure that the development process fosters full respect for the human rights, dignity, aspirations, culture, and natural resource-based livelihoods of Indigenous Peoples. • To anticipate and avoid adverse impacts of projects on communities of Indigenous Peoples, or when avoidance is not possible, to minimise and/or compensate for such impacts.	No risks to indigenous people have been identified. This PS is not applicable.

Performance Standard	Summary	Applicability
	• To promote sustainable development benefits and opportunities for Indigenous Peoples in a culturally appropriate manner. • To establish and maintain an ongoing relationship based on Informed Consultation and Participation (ICP) with the Indigenous Peoples affected by a project throughout the project's life cycle. • To ensure the Free, Prior, and Informed Consent (FPIC) of the Affected Communities of Indigenous Peoples when the circumstances described in this Performance Standard are present. • To respect and preserve the culture, knowledge, and practices of Indigenous Peoples.	
IFC – PS 8 Cultural Heritage	Performance Standard 8 recognises the importance of cultural heritage for current and future generations. Consistent with the Convention Concerning the Protection of the World Cultural and Natural Heritage, PS 8 aims to ensure that clients protect cultural heritage during project activities. In addition, the requirements of this PS on a project's use of cultural heritage are based in part on standards set by the Convention on Biological Diversity. The objectives of PS 8 are: • To protect cultural heritage from the adverse impacts of project activities and support its preservation. • To promote the equitable sharing of benefits from the use of cultural heritage.	Earthworks and construction activities could pose a risk to cultural heritage. This Performance Standard is not triggered.

6.4.2 IFC Environmental Health and Safety Guidelines

World Bank Group Environmental, Health, and Safety Guidelines (known as the "EHS Guidelines") are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). The EHS Guidelines are technical reference documents with general and industry-specific examples of GIIP. They are referred to in the World Bank's Environmental and Social Framework and IFC's Performance Standards. The World Bank Group requires borrowers/clients to apply the relevant levels or measures of the EHS Guidelines. When host country regulations differ from the levels and measures presented in the EHS Guidelines, projects will be required to achieve whichever is more stringent. The EHS Guidelines applicable to this project include the General EHS Guidelines, 2007: The EHS Guidelines contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs (some of the monitoring aspects will not apply to the construction phase of the Project).

6.4.3 The Equator Principles

The Equator Principles are risk management framework financial institutions adopt for determining, assessing, and managing environmental and social risk in projects. They primarily aim to provide a minimum standard for due diligence to support responsible risk decision-making. Equator Principles Financial Institutions (EPFIs) commit to implementing the Equator Principles in their internal environmental and social policies, procedures, and standards for financing projects and will not provide Project Finance or Project-Related Corporate Loans to projects where the client will not or is unable to, comply with the Equator Principles. Potential borrowing organisations need to consider the Equator Principles and environmental and social risk management as part of the EIA process to facilitate potential access to funding for project development. There are 10 principles, as shown below, and these require that projects conduct an EIA process in compliance with the IFC Performance Standards on Environmental and Social Sustainability; hence, there is a need for this ESIA process. Table 15 describes the applicable principles.

Table 16: The Equator Principles

Principles
1. **Review and categorisation** Establishes the need for the EPFI to categories the project based on the magnitude of its potential environmental and social risks and impacts as part of its internal environmental and social review and due diligence.
2. **Social And Environmental Assessment** Requires the client to conduct an Assessment process to address, to the EPFI's satisfaction, the relevant environmental and social risks and impacts of a proposed Project. It is required that the Assessment documentation will propose measures to minimize, mitigate, and offset adverse impacts in a manner relevant and appropriate to the nature and scale of the proposed project.

3.	**Applicable environmental and social standards** Established that the Assessment process should firstly address compliance with relevant host country laws, regulations and permits that pertain to environmental and social issues.
4.	**Environmental and Social Management System and Equator Principles Action Plan** Requires an Environmental and Social Management Plan (ESMP) to be prepared by the client to address issues raised in the assessment process and incorporate actions required to comply with the applicable standards.
5.	**. Stakeholder engagement** Requires clients to demonstrate effective Stakeholder Engagement as an ongoing process in a structured and culturally appropriate manner with affected communities and, where relevant, other stakeholders
6.	**Grievance mechanism** Requires the client to establish a grievance mechanism designed to receive and facilitate resolution of concerns and grievances about the Project's environmental and social performance as part of the ESMS.
7.	**Independent review** Requires that an Independent Environmental and Social Consultant, not directly associated with the client, will carry out an independent review of the assessment documentation, including EMPs process documentation to assist the EPFI's due diligence, and assess Equator Principles compliance.
8.	**Covenants** Requires that the client pledge its commitment to complying with all relevant host country environmental and social laws, regulations and permits in all material respects in the financing documentation.
9.	**Independent monitoring and reporting** Requires the appointment of an Independent Environmental and Social Consultant or requires that the client retain qualified and experienced external experts to verify its compliance with the Equator Principles and monitoring information which would be shared with the EPFI.
10.	**Reporting and transparency** Entails the client's reporting requirements in addition to the disclosure requirements in Principle 5. This principle states that the client will ensure that, at a minimum, a summary of the EIA is accessible and available online and the client will publicly report GHG emission levels (combined Scope 1 and Scope 2 Emissions) during the operational phase for Projects emitting over 100 000 tonnes of CO_2 equivalent annually.

6.4.4 INTERNATIONAL CONVENTIONS

South Africa is a party to most international conventions and has an important role to play in international environmental law by virtue of its position as one of the stronger African countries. This Sections outlines the environmental conventions to which South Africa is a party. Such Conventions include:

- Framework Convention on Climate Change, 1992;

- Convention on Biological Diversity, 1992;
- The Convention on International Trade in Endangered Species (CITES) of 1973;
- Convention to Combat Desertification 1994;
- National Rangeland Management Policy and Strategy of 2012;
- National Biodiversity Strategy and Action Plan 1 and 2 (draft);
- Vienna Convention for the protection of the ozone layer (1985);
- Montreal Protocol on substances that deplete the ozone layer (1987);
- United Nations Convention on Biological Diversity (UNCBD); and
- United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) 2007.

7 DESCRIPTION OF THE NEED AND DESIRABILITY OF THE PROPOSED ACTIVITY

This section justifies the need and desirability of the proposed development, focusing on its associated benefits and importance to the locals and the region.

7.1 MOTIVATION FOR THE DEVELOPMENT

The outbreak of the COVID-19 pandemic in March 2020 found a vulnerable South African economy and deepened the existing economic crises. In 2019, before the pandemic and lockdown, the national economy expanded by only 0.3%, and the provincial economy contracted by 0.4%. The pandemic and lockdown intensified the province's and country's economic challenges (www.parliament.gov.za). Subsequently, on 15 October 2020, President Ramaphosa detailed the Economic Reconstruction and Recovery Plan (ERRP) to build a new economy and reignite and unleash South Africa's true potential. The overarching goal of the plan is to create a sustainable, resilient, and inclusive economy that focuses on the following priority areas:

- Energy security.
- Industrial base to create jobs.
- Mass public employment programme.
- Infrastructure development.
- Macroeconomic interventions.
- Green economy.
- Food security.
- Reviving the tourism sector.

Following the pronouncement of the ERPP, the Mpumalanga Provincial Government adopted the ERRP and referred to it as the Mpumalanga MERRP, which was finally launched in October 2021. The strategic objective of the MERRP is not only to mitigate the negative impact of the COVID-19 pandemic on the economy and livelihoods but also to place the provincial economy on a growth trajectory that creates more job opportunities for the people of Mpumalanga. The plan proposes several interventions, including rolling out massive economic infrastructure to revive the economy and create jobs. The proposed Renewstable Mpumalanga project aligns with this strategy as it provides reliable electricity, enhancing and stimulating growth.

A primary hindrance to the growth of the South African economy in recent years has been the electricity crisis, which exposed the country to load shedding. This has negatively impacted the country's economy, industrial output, and the daily lives of its citizens. South Africa's load-shedding crisis is caused by a combination of factors, and resolving it is a complex challenge that requires multifaceted solutions.

In support of solutions and initiatives to curb the country's energy crisis, Eskom's Land Lease Programme was launched in April 2022. Through this program, Eskom makes some of its lands available to IPPs to create new electricity-generating capacity. These land parcels are near network connection points, reducing the time required to build new grid connection infrastructure. As opposed to buying electricity from the IPPs, Eskom facilitates a process for the IPPs to wheel the power over the Eskom grid, either for their consumption or to sell to other consumers. Eskom, thus, called upon the private sector to enable new capacity in line with the anticipated future deregulated electricity industry.

In April 2022, Eskom issued an RFP, as part of the first phase of the Land Leasing Project, for leasing 17 land parcels in Mpumalanga province around the Majuba and Tutuka Power Stations. In October 2022, Eskom concluded lease agreements with five IPPs to develop an estimated 1,800MW of new generation capacity. HDF Energy is part of a cluster made up of different project developers, also awarded land in the area for the development of infrastructure related to renewable energy production.

Against this backdrop, HDF Energy plans to expand its footprint into the well-suited region of Mpumalanga Province in South Africa to address the shortage of electricity generation capacity. HDF, under its Special Purpose Company (SPC) "Renewstable Mpumalanga (Pty) Ltd," is undertaking the development and implementation of 4 projects in the Majuba Area, including the proposed Renewstable® Sivutse. The electricity produced by the plants will be purchased by a private(s) off-taker (s) at an agreed rate under a Power Purchase Agreement (PPA) for at least 25 years from the commissioning of the plant. It will contribute to the greening of the local power grid and enhance the territory's energy independence.

7.2 BENEFITS OF THE PROJECT

The desirability of implementing a Photovoltaic (PV) plant coupled with hydrogen storage in South Africa's Mpumalanga Province is undeniable. This innovative energy solution aligns perfectly with the region's abundant solar resources and growing energy demands. Mpumalanga experiences ample sunlight throughout the year, making PV generation highly efficient. By incorporating hydrogen storage, excess solar energy can be stored and used during periods of low sunlight, ensuring a stable and reliable power supply. Moreover, this project will contribute significantly to South Africa's transition to clean and sustainable energy, reduce greenhouse gas emissions, create job opportunities, and enhance energy security. It's a compelling endeavor that addresses immediate energy needs and sets the stage for a greener and more prosperous future in South Africa.

Further, the project is expected to play a central role in supporting Africa's drive to achieve electricity connection for nearly 3 million people without access to electricity, as estimated by the South African National Energy Development Institute *SANEDI), to reduce widespread reliance on coal for power generation, and to fast-track the continent's slowed industrial expansion.

Consequently, this project aims to respond to the government initiative driven by the need to diversify the country's energy sources and create a balanced and more sustainable energy mix. The proposed project will ensure the following:

Energy diversification: South Africa's electricity market is dominated by coal power plants. The past decade has seen the introduction of renewable energy initiatives, such as wind and solar power and battery energy storage technologies. The proposed new hydrogen-to-power technology is expected to add value and enhance the country's energy mix by reducing reliance on coal.

Enhance Grid services: Therefore, the Renewstable®Sivutse and similar ones in the area are hallmark power projects for South Africa. The proposed hydrogen-to-power will be one of the first in the country to provide essential services to the national grid currently provided by Eskom. These services include (design to be adjusted based on the needs):

- Power flexibility (on-demand dispatchable energy);
- Load following morning and evening peak response;
- Scheduling and short-term adjustment (energy imbalance);
- Excess energy storing;
- System protection and grid support (frequency control);
- Reactive power (voltage control);
- System restoration; and
- Long-term storage and backup capability (operating reserves, loss compensation, energy imbalance.

Economic stimulus for the region and country: The project forms part of the Majuba cluster near the Eskom Majuba Power Station. The Renewstable Mpumalanga Social Development Plan will clearly outline how the socio-economic development will be rolled out, impacting skills transfer, training, employment, and local empowerment. The project will enlist unskilled, semi-skilled, and skilled individuals through a predetermined process that may lead to employment, skilling, or upskilling to be determined via the Renewstable Mpumalanga Impact Programme. This programme will be focused on gender and youth inclusivity. Small to Medium Enterprises (SMEs) will equally be prioritised through a vetting process where eligible candidates will form part of a list of potential subcontractors to which the appointed Engineering, Procurement, and Construction (EPC) company will be contractually bound. Additionally, training, exposure, and skills sharing on Namibia's technology and emerging green hydrogen economy will be rolled out nationally through partnerships with educational institutions at all levels to ensure the localisation of GH2-related skills.

Job Creation: The proposed project is expected to create a significant number of jobs, with up to 570 and 60 direct and indirect jobs during the construction and operational phases, respectively. The combined Majuba cluster will further boost employment, potentially creating up to 5170 jobs. This substantial job creation will have a positive impact on the local community and economy.

Foreign direct Investments: This is a foreign direct investment whose infrastructural development will directly increase economic growth.

Aid South Africa's Transition to a Low Carbon Economy: The proposed Renewstable® Sivutse project is not just about reducing emissions and providing relief for those already affected by environmental impacts. It's about laying the groundwork for future emission reduction and climate resilience through investments in low-carbon and climate-resilient infrastructure. This project, with its potential to contribute to South Africa's Vision 2030 commitments, is a significant step in this direction.

Developing these projects, particularly in the Mpumalanga Province, is also an opportunity to offset the job losses caused by the decommissioning of Eskom's coal fleet. This project's implementation will positively impact the local economy through job creation opportunities directly or indirectly related to the power plant construction and operations. From this project, there will be opportunities for local people to be trained to operate and maintain the power plant, along with many supporting service opportunities being created.

In essence, the project will help South Africa with its 'Just Energy Transition' (JET) objectives by allowing for a reliable transition away from coal towards a more sustainable energy future while also accommodating and supporting the country's socio-economic development needs.

7.3 SUPPORTING STRATEGIES

At the regional level, the project would improve the socioeconomic status of the adjacent communities and the region at large. At the national level, the project would contribute to implementing South Africa's new energy policy as embodied in the White Paper on Energy (Department of Minerals and Energy, 1998), which highlights that, amongst others, coal plays a central role in the socioeconomic development of our country, while simultaneously providing the necessary infrastructural economic base for the country to become an attractive host for foreign investments in the energy sector. The priorities to which this project would contribute are laying the groundwork for enhancing a cleaner energy supply. Several national policy documents, including the White Paper on the Energy Policy of South Africa, approved in 1998; the National Development Plan ("NDP"); the draft Integrated Energy Plan; and the Integrated Resources Plan 2010–2030 present the case for natural gas as a significant contributor to South Africa's energy mix.

It must be noted that this project forms part of the Eskom land lease program, which aims to make Eskom land available close to the power stations, where there is sufficient grid capacity, which is an innovative step taken by Eskom to find the quickest way possible and within their scope of influence to boost the country's generation capacity. The key objective of the initiative is to provide relief to the constrained electricity system in as short a time as possible, as there is a dire need to alleviate pressure on the system by adding as many megawatts as possible in the shortest possible time, thus increasing Eskom's ability to conduct maintenance at its existing fleet, reducing load shedding and the usage of open cycle gas turbines (OCGTs). Being the first of its kind in the country, the program will accelerate the connection of additional capacity to the nation, thus improving supply reliability. Furthermore, the land leases will attract an estimated investment of approximately R40 billion to areas traditionally associated with coal-fired electricity generation. This makes this a compelling proof point for the just energy transition to a lower carbon economy.

8 DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED ACTIVITY SITE AND LOCATION OF THE DEVELOPMENT FOOTPRINT WITHIN THE SITE

According to the EIA Regulations published in Government Notice (GN) R982 of 2014, as amended, feasible and reasonable alternatives must be identified and considered within the Scoping and Environmental Impact Assessment and will be assessed in greater detail during the EIA Phase, as per Appendix 2 and Appendix 3, respectively

South Africa has proposed a 20-year Integrated Resource Plan (IRP) outlining a new power generation program for 2030. The program will use various renewable energy technologies to generate electricity. As indicated above, in response to the President's call for "an ambitious, bold and urgent response to the energy crisis", Eskom signed lease agreements with four independent power producer investors for the commercial lease and use of land parcels at two of its power stations in Mpumalanga province for the construction of new clean energy generation capacity in October 2022. This was the first batch of lease agreements to be signed with private companies that comprised land parcels around the Majuba and Tutuka power stations. Schedule 2 of the Electricity Regulation Act of 2006, as gazetted by the Department of Mineral Resources and Energy in August 2021, permits independent power generators to wheel electricity through the transmission grid, subject to wheeling charges and connection agreements with the relevant transmission or distribution licence holders.

As part of the feasibility, Eskom undertook a comprehensive screening of the land parcels for useability, considering accessibility, areas above underground mines, future mining activities, the conservation of environmentally sensitive areas such as wetlands and heritage sites, and the sloping of the land parcels, implying that only suitable parcels formed part of the land lease tender. It must be noted that the available land is around its power stations and other sites with sufficient grid capacity to connect renewable energy producers. All the above culminated in selecting suitable land parcels that would be earmarked for similar projects. It is against this backdrop that these sites were selected.

Consequently, the ESIA process will only consider the land parcels awarded, implying that no alternative location will be considered. However, the process will, amongst other alternatives, consider various layouts that are most suitable from an environmental and social point of view. The figure below presents the proposed site for Renewstable® Sivutse

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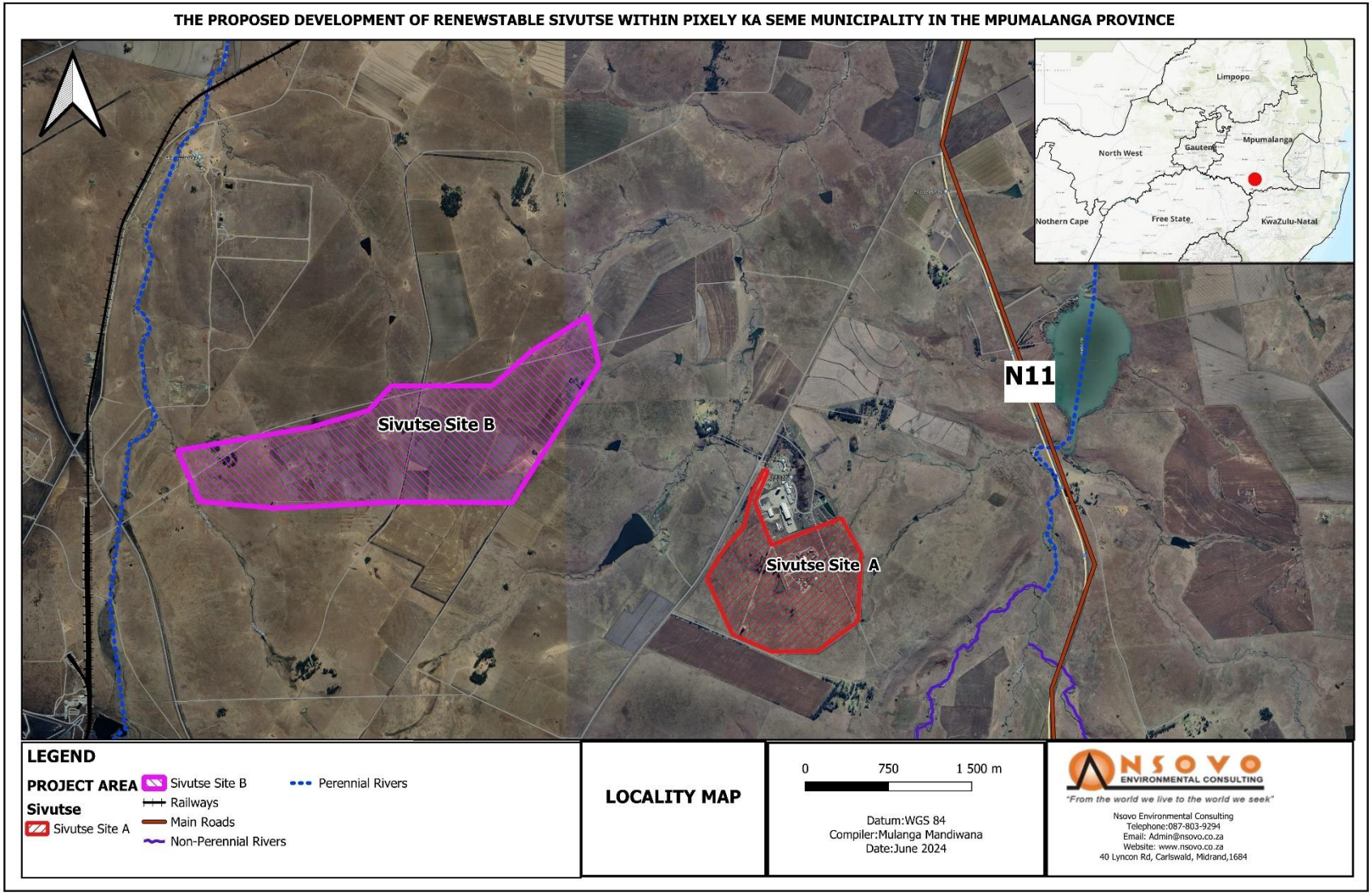


Figure 7: Locality Map of the proposed Renewstable Sivutse site

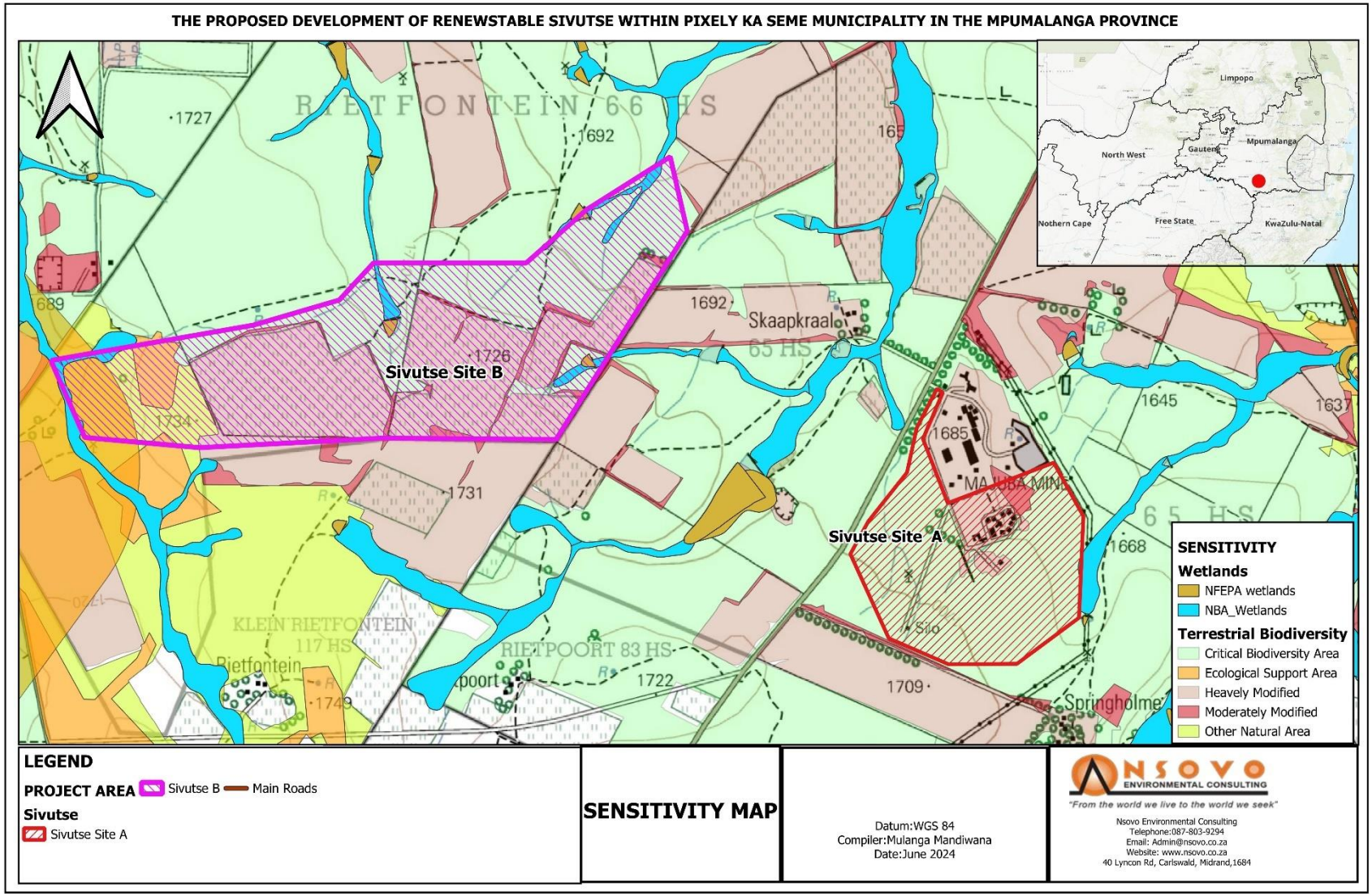


Figure 8: Sensitivity map of the study area

According to GN R 982 of the EIA Regulations (2014), an alternative is defined as *"…in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to the:*

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

The various alternatives have been assessed in terms of both environmental acceptability and economic feasibility. The selection of the preferred alternative is based on several factors:

- Public input, ascertained through the PPP;
- Specialists' recommendations;
- Environmental constraints;
- Technical feasibility;
- Economic cost-benefit analysis;
- Best practicable environmental option, i.e., the option that provides the most benefit or causes the least damage to the environment at a cost acceptable to society in both the long and short term; and
- Optimisation of existing infrastructure, such as access roads.

The purpose of alternatives, as defined in the Department of Environmental Affairs and Tourism's (now DFFE) 2004 Integrated Environmental Information Series on the Criteria for determining alternatives in EIA, is to find the most effective way of meeting the need and purpose of the proposal, either through enhancing the environmental benefits of the proposed activity or through reducing or avoiding potentially significant adverse impacts.

In terms of Section 24 of NEMA, the proponent must demonstrate that alternatives have been described and investigated in sufficient detail during the EIA process. It is important to highlight that alternatives must be practical, feasible, reasonable, and viable to cater for an unbiased approach to the project and, in turn, to ensure environmental protection. The role of alternatives is to find the most effective way of meeting the need and purpose of the proposal, either through enhancing the environmental benefits of the proposed activity or through reducing or avoiding potentially significant negative impacts.

To ensure full disclosure of alternative activities, it is important that various role players contribute to their identification and evaluation. Stakeholders have an important contribution to make during the EIA Process, and each role is detailed as follows:

The role of the environmental practitioner is to:

- encourage the proponent to consider all feasible alternatives;
- provide opportunities for stakeholder input to the identification and evaluation of alternatives;
- document the process of identification and selection of alternatives;
- provide a comprehensive consideration of the impacts of each of the alternatives and
- document the process of evaluation of alternatives.

The role of the proponent (HDF) is to:

- disclose all information relevant to the identification and evaluation of alternatives;
- assist in the identification of alternatives, particularly where these may be technical;
- be open to the consideration of all reasonable alternatives; and
- be prepared for possible modifications to the project proposal before settling on a preferred option.

The role of the public is to:

- assist in the identification of alternatives, mainly where local knowledge is required;
- be open to the consideration of all reasonable alternatives; and
- recognise that rarely one favoured alternative suits all stakeholders and that alternatives will be evaluated across a broad range of criteria, including environmental, social, and economic aspects.

The applicability of each alternative type to the proposed project is outlined in **Error! Reference source not found.**. It must be highlighted that the alternatives presented in the table are derived from both the EIA Regulations (2014) as amended and the Department of Environmental Affairs (now Department of Forestry, Fisheries, and the Environment) 2004 Integrated Environmental Information Series on the Criteria for determining alternatives in EIA. This report will further discuss where the alternative applies to the project.

Table 17: Applicability of alternative type to the proposed project

Alternative	Applicability
No-go Option	The 'no-go' alternative is sometimes referred to as the 'no-action' alternative (Glasson *et al.,* 1999) and, at other times, the 'zero-alternative.' It assumes that the activity does not go ahead, implying a continuation of the current situation or the status quo. This alternative must be discussed on all projects as it allows for assessing impacts should the activity not be undertaken. **This alternative is discussed in this report and not recommended.**
Activity alternatives	These are sometimes referred to as project alternatives, although the term activity can be used broadly to embrace policies, plans, programs, and projects. Consideration of such alternatives requires a change like the proposed activity. This would entail a

Alternative	Applicability
	process where a different project is proposed. **Only one activity alternative is discussed in this report.**
Location/ property alternatives	Location alternatives could be considered for the entire proposal or a proposal component. The latter is sometimes considered under site layout alternatives. A distinction should also be drawn between alternative locations that are geographically quite separate and alternative locations nearby. In the latter case, alternative locations in the same geographic area are often referred to as alternative sites. Alternative sites were awarded as part of the lend tender. As such, alternative sites were not assessed. However, a thorough assessment of the awarded sites and establishing sensitivity buffers was conducted to ensure that the least sensitive footprint with the identified sites is developed. **Only one site location is proposed for Renewstable® Sivutse.**
Process alternatives	Various terms are used for this category, including technological alternatives and equipment alternatives. Considering such alternatives means achieving the same goal using a different method or process. For example, an industrial process could be changed, or an alternative technology could be used. These are also known as technological and equipment alternatives and will be discussed as they apply to the type of technology. **This report details two technology options: Solar Energy Storage Technology and Hydrogen fuel cell technologies. detailed in h this report**
Demand alternatives	Demand alternatives arise when a demand for a particular product or service can be met by some alternative means. This applies to the demand for a product or service. An example of this would be where there is a need to provide more electricity. The proposed project is an energy generation project and forms part of the Renewable projects that are commissioned to respond to the energy demand. **However, demand alternatives are not discussed in this report.**
Scheduling alternatives	These are sometimes known as sequencing or phasing alternatives. In this case, an activity may comprise several components, which can be scheduled in a different order or at different times and, as such, produce different impacts. **No scheduling alternatives were considered.**
Input alternatives	By their nature, input alternatives are most applicable to industrial applications that may use different raw materials or energy sources in their processes. **The proposed project is a solar power plant, implying that the energy source is the sun. No alternative sources are discussed as part of the project.**

Alternative	Applicability
Routing alternatives	Alternative routes, such as power lines, transport, and pipeline routes, are generally considered for linear developments. **The only linear activities are roads, and no alternatives are considered.**
Site layout alternatives	Site layout alternatives permit consideration of different spatial configurations of an activity on a particular site. This may include specific components of a proposed development or the entire activity. **The feasibility phase considered various layouts within the identified site, to honour the legislated environmental buffers. Following this, the least sensitivity layout was presented as the base case. This report only focuses on one layout option within the site.**
Scale alternatives	In some cases, activities that can be broken down into smaller units can be undertaken on different scales. For example, a housing development within an overall mixed-use development could have the option of 1,000, 2,000, or 4,000 housing units. Each of these scale alternatives may have different impacts. The proposed project is a mono phase. **as such, scale alternatives are not discussed further in this report.**
Design alternatives.	This entails considering different designs for aesthetic purposes or construction materials to optimise local benefits and sustainability, which would constitute design alternatives **n design alternatives are considered.**

8.1 DETAILS OF ALL THE ALTERNATIVES CONSIDERED

This section describes the alternatives/ options considered for Renewstable® Sivutse Project as follows :

- Technology Alternative
  - Hydrogen Fuel Cell Technology
  -
  - Solar Energy Storage Technology
- No Go Alternative.

8.1.1 TECHNICAL ALTERNATIVES

8.1.1.1 HYDROGEN FUEL CELL TECHNOLOGY

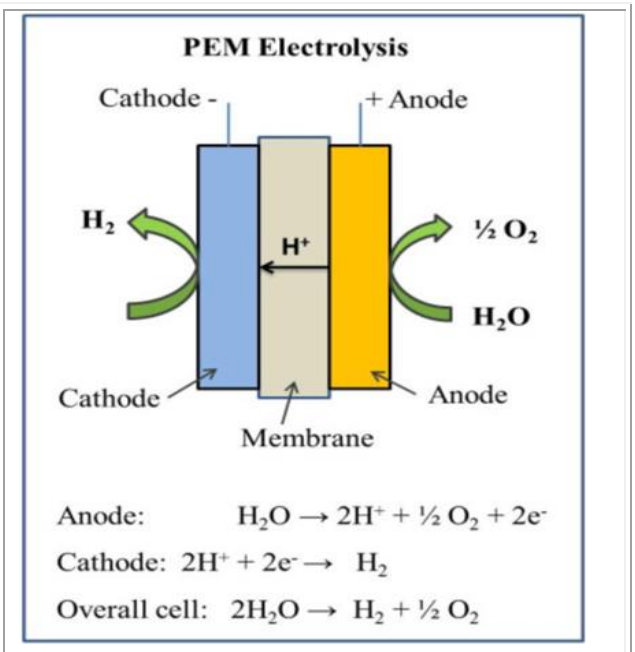
Three different hydrogen fuel cell technologies exist on the market: alkaline, PEM, and solid oxide. The main difference between the technologies is the electrolyte used. The electrolyzer is a system that produces hydrogen from the electrolysis of water. The system can use either PEM1 or employ alkaline-technology electrolysers with DC power to induce an electrochemical reaction (i.e., water electrolysis). The final products of the water electrolysis process will

be hydrogen gas, which will be stored, and oxygen, which will be released into the atmosphere. In the case of the Renewstable® concept, the electrolyser uses renewable energy to produce the hydrogen that will store the energy. Green hydrogen is one of the most promising ways to store renewable energy; HDF Energy has put this potential into reality in a concrete and competitive application.

Of the three d electrolyser technologies only two are considered for the proposed project. A detailed description and comparative analysis of the alternatives is provided

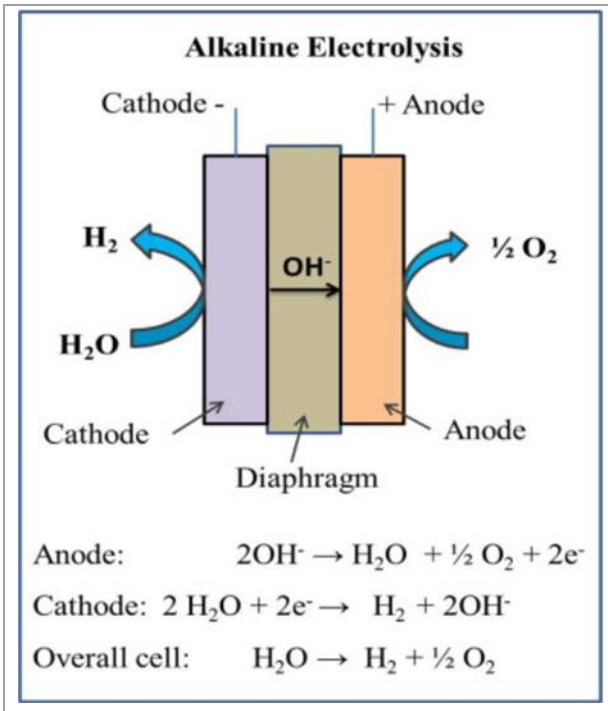
A. Proton Exchange Membrane

Proton Exchange Membrane electrolysis is the electrolysis of water in a cell equipped with a solid polymer electrolyte responsible for conducting protons, separating product gases, and electrical insulation of the electrodes. Water electrolysis is one of the most promising alternatives to storing energy from renewable energy resources. In terms of sustainability and environmental impact, PEM water electrolysis was considered one of the most promising techniques for high-purity, efficient hydrogen production from renewable energy sources. It emits only oxygen as a byproduct without any carbon emissions.

In PEM water electrolysis, water is electrochemically split into hydrogen and oxygen at their respective electrodes, such as hydrogen at the cathode and oxygen at the anode. PEM water electrolysis is accrued by pumping water to the anode, where it is split into oxygen (O_2), protons (H^+) and electrons (e^-). These protons travel via the proton-conducting membrane to the cathode side. The electrons exit from the anode through the external power circuit, providing the reaction's driving force (cell voltage). The protons and electrons recombine at the cathode side to produce the hydrogen.	

B. Alkaline Water Electrolysis

Hydrogen production by alkaline water electrolysis is a well-established technology for commercial use worldwide up to the megawatt range. The technology operates at lower temperatures, such as 30–80 °C, with an aqueous solution (KOH/NaOH) as the electrolyte, with a concentration of ~20% to 30%.

In the alkaline water electrolysis process, initially at the cathode side, two molecules of alkaline solution (KOH/NaOH) were reduced to one molecule of hydrogen (H2), and two hydroxyl ions (OH−) were produced. The produced H_2 is eliminated from the cathode surface to recombine in a gaseous form, and the hydroxyl ions (OH^-) transfer under the influence of the electrical circuit between anode and cathode through the porous diaphragm to the anode, here in discharged to ½ molecule of oxygen (O_2) and one molecule of water (H_2O). The O_2 recombined at the surface of the electrode and escapes as hydrogen.	

The main difference between the technologies is the electrolyte used. A comparative analysis of the two technologies is provided in **Table 18**,

Table 18: Comparative Analysis

Advantages and Disadvantages	Electrolysis Process	
	Alkaline Electrolysis	PEM
Advantages	• Well-established technology • Non-noble electrocatalysts • Low-cost technology • The energy efficiency is (70–80%) Commercialized	• Compact design, therefore small footprint • High current density (above 2 A cm−2), • High efficiency, fast response, • operates under lower temperatures (20–80 °C) and • produced ultrapure hydrogen and produced oxygen as a byproduct. High purity of gases (99.99%) • Higher energy efficiency (80–90%) High dynamic operation
Disadvantages	• Low current densities • Formation of carbonates on the electrode decreases the performance of the electrolyser • Low purity of gases • Low operational pressure (3–30 bar) • Low dynamic operation	• New and partially established • High cost of components • Acidic environment • Low durability

.

Of the fuel cell systems currently available on the market, only those employing PEM technology have sufficient capacity to be used for multiple-megawatt applications. The fuel cells to be used for the Projects will be supplied by HDF Energy. The Projects differ substantially from solar PV systems that provide intermittent power with minimal or no storage and will, therefore, help increase the penetration of renewable energy without causing intermittency issues. By combining hydrogen and lithium storage technologies, the Project offers a clean, carbon-free, viable, non-intermittent and renewable baseload solution that will help sustain the grid's stability at a competitive cost and with no hidden costs. It will deliver baseload power to the grid operator 24 hours per day, seven days a week, with an availability (i.e., capacity factor) higher than 85%.

8.1.2 SOLAR ENERGY STORAGE

Batteries Technology has been selected as the preferred short-term solar energy storage technology. In contrast, hydrogen fuel cells have been selected as the preferred technology for the longer-term storage of solar energy from the Project.

Other potential alternative solar energy storage technologies include:

- pumped-storage hydropower,
- thermal energy storage,
- flywheel storage, and
- compressed air storage.

However, these alternative technologies are not referred to for the following reasons:

- Implementation of pumped-storage hydrogen technologies would require specific topographical conditions, large quantities of water, and an extensive surface area.
- Pumped-storage hydropower projects are usually very large-scale (GigaWatts) and entail high capital expenditures because of the complexity of their engineering requirements.
- Thermal, flywheel and compressed air energy storage alternatives are low-maturity technologies, and no relevant commercial solution is on the market for projects of the size of the ones developed in Mpumalanga.

Batteries (especially Lithium-Ion batteries) are a well-matured technology. In contrast, hydrogen technologies (e.g., electrolysis, fuel cells, and storage) are well-known worldwide and are scaling up for use in various industries. HDF Energy identifies a combination of lithium-ion batteries and hydrogen technologies as the most technically and economically feasible solution for short—and long-term energy storage.

8.1.3 NO-GO ALTERNATIVE

Under GN R.982, consideration must be given to the option not to act, in which an alternative is usually considered when the proposed development is envisaged to have significant adverse environmental impacts that mitigation measures cannot ameliorate effectively. The no-go alternative would be not undertaking the proposed project's development. This implies that if the current electricity supply network is not strengthened, industrial development in the area will be hindered, and the integration of potential renewable energy will not be possible. Should the no-go alternative be adopted, the country will be deprived of a much-needed essential service, particularly given the existing energy supply challenge. Furthermore, the identified benefits will not materialise. The no-go would result in the project property continuing to be used as it is currently – for agricultural purposes, already dominant activity in the area. Conversely, proceeding with the Projects as proposed will increase the share of renewables in the country's energy mix while helping to reduce existing and future supply vulnerability. The no-go alternative will be used as a baseline throughout the assessment, against which potential impacts will be compared and assessed in the EIR.

9 PUBLIC PARTICIPATION PROCESS

Social risks are a product of social development, and modern civilisation can further be defined as the potential for any loss, conflict, or instability due to specific issues in projects (e.g., investments, policies, or decisions) and the reaction of related stakeholders that are confronted with negative influences due to proposed projects. Social Risks cannot be eliminated; they can be effectively managed to mitigate the negative impacts. The Public Participation Process (PPP) is any process that involves the public in problem-solving and decision-making; it forms an integral part of the Scoping and EIA process. The PPP provides I&APs with an opportunity to provide comments and raise concerns or make suggestions that may enhance the project's benefits. The main principle of Public Participation holds that those affected by a decision have the right to be involved in the decision-making process (i.e., the public's contribution will influence the decision).

The principles of public participation are to ensure that the PPP:

- Communicates the interests of and meets the process needs of all participants;
- Seek to facilitate the involvement of those potentially affected;
- Involves participants in defining how they participate;
- Is as inclusive and transparent as possible;
- it must be conducted in line with the requirements of Regulations as amended;
- Actively enhances the leadership capacity of community members, leaders, and groups within the community; and
- Utilises a community's diversity to deepen shared understanding and produce outcomes of long-term benefit to the whole community or society.

Against this backdrop, the Regulation governing public participation and engagement was developed. The Public Participation approach adopted for the project is in line with the process contemplated in Chapter 6, Regulation 39 through 44 of the 2014 EIA Regulations as amended in terms of the National Environmental Management Act, 1998 (Act 107 of 1998), The Notice requires that the EAP must ensure that:

- All reasonable measures are taken to identify potentially Interested and Affected Parties (I&APs); and
- Participation by registered I&APs is facilitated so they are provided with a reasonable opportunity to comment on the application.

The PPP approach adopted is detailed hereunder.

9.1 APPROACH AND METHODOLOGY

Chapter 6, Regulation 39 through 44 of the EIA Regulations stipulates that the person conducting a public participation process must consider any relevant guidelines applicable to public participation as contemplated in section 24J of the

Act and must give notice to all potential I&APs and stakeholders of an application or proposed application that is subject to public involvement. Furthermore, other regulations were considered, including the Protection of Personal Information Act, 2013 (Act 04 of 2013), which regulates information sharing and record keeping.

9.1.1 Identification of Interested and Affected Parties

Interested and Affected Parties (I&APs) identified include pre-identified stakeholders (government departments), landowners, and the public. Notification and request for comments were submitted to the following key stakeholders:

Table19: List of Stakeholders

- Mpumalanga Department of Agriculture and Rural Development and Land and Environmental Affairs.
- Mpumalanga Department of Water and Sanitation
- Mpumalanga Department of Transport and Public Works
- Mpumalanga Tourism and Parks Agency
- Mpumalanga Heritage Resources Agency
- DFFE Protected Areas, Planning and Management Effectiveness
- DFFE Biodiversity Directorate
- DFFE Climate Change Directorate
- South African Heritage Resource Agency
- Eskom Holdings SOC Limited (Distribution)
- Eskom Majuba Power Station
- Dr Pixley Ka Isaka Seme Local Municipality
- Gert Sibande District Municipality
- Civil Aviation Authority
- National Transmission Company of South Africa (NTCSA)
- Endangered Wildlife Trust
- BirdLife SA
- AGRI SA
- South African National Road Agency Limited.

9.1.2 Public Participation Database

Following the requirements of the EIA Regulations under Section 24 (5) of NEMA, Regulation 42 of GN R. 982, the public participation practitioner must keep a register of I&APs. To fulfil this requirement, such a register is compiled, and details of I&APs, including their comments, will be updated throughout the project cycle. The database. is in place and will be submitted with the final Scoping Report.

9.1.2.1 STAKEHOLDER MAPPING

Stakeholder mapping has been conducted to support identifying key stakeholders and database updates. The maps will also assist in identifying suitable locations for placing notices, reports, and public meeting venues. The Figure 7 below is a stakeholder Map.

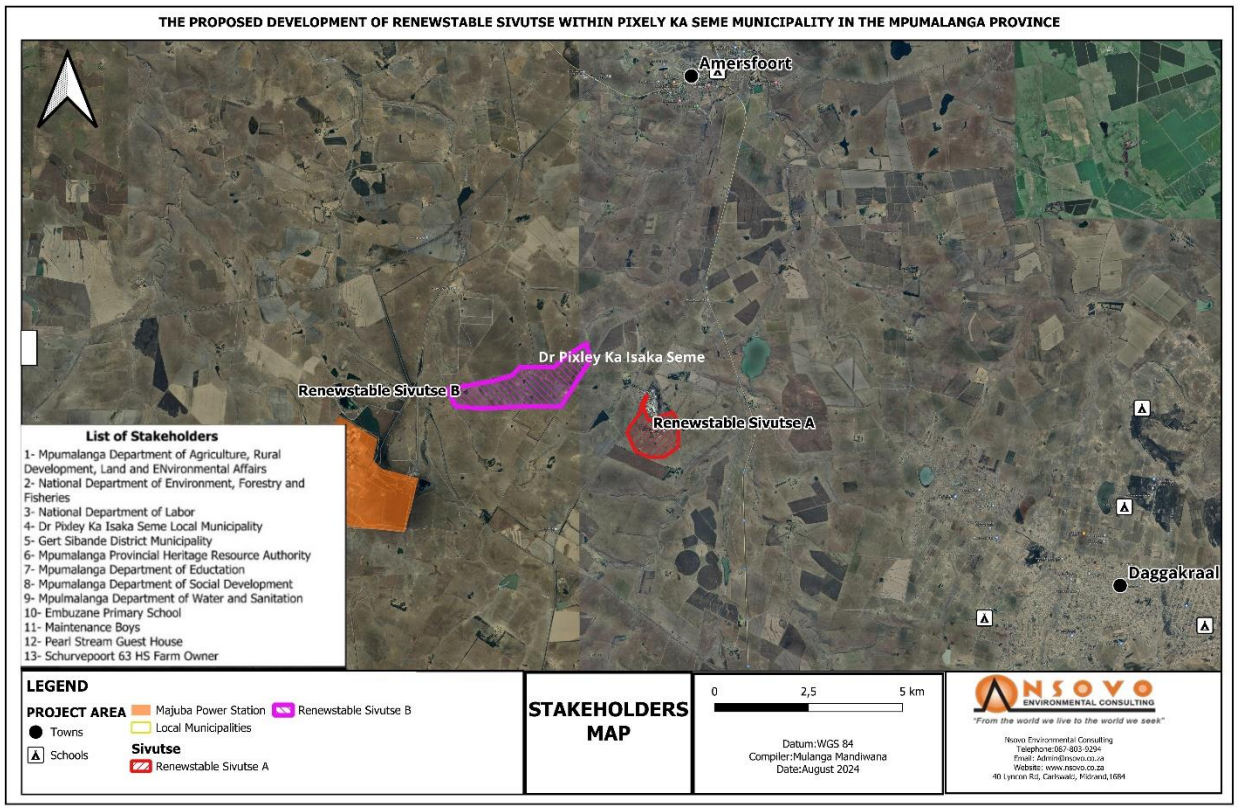


Figure 9: Maps of the stakeholders related to Renewstable@ Sivutse

Table 20: Stakeholders Risk Mapping

Identified Risk	- Potential complaints and conflicts from farmers. - Community unrest - Increased crime - Mobbing and lobbying against the project.
Mitigation Measures	- Active engagements with property owners. - Improved maintenance of vehicles, trains, and track routing to avoid potential leaks from the trains. - Develop and implement a system for affected farmers to submit their complaints.

	- Implementation of the Authority approved Public participation plan to avoid approval delays or negative decisions. - Transparent engagements with the locals about the project. - Develop a project-specific Grievance Procedure - Ensure timeous response to issues raised. - Avoid promising unachievable targets, particularly employment-related - Community Integration with a focus on addressing gender inequality.
Local Languages	- English, Afrikaans, Isizulu.
Newspaper	- Volksrust Advertiser

9.1.3 SITE NOTICES

A2 size notices indicating the availability of the draft Scoping Report and contact details for the request of the hard copy or soft copy of the report will be fixed at different conspicuous locations within and around the proposed project area. The photographic evidence of site notices will be submitted with the final Scoping Report. The site notices will be fixed in the areas indicated below.

- Along the P48-3 Road near residential areas;
- Site entrance;
- At the corner of the unnamed road to Daggakraal Town;
- N11 from Amersfoort to Volksrust;
- Amersfoort Town Cnr R35 & N11 next to Magistrate Court .
- Public facilities such as the Magistrates Court, Clinics, Police Station and commercial centres.

Additional sites close to the site will be identified, and notices will be placed.

9.1.4 PLACEMENT OF ADVERTISEMENT IN THE LOCAL NEWSPAPER

A newspaper advertisement will be placed in Volksrust Advertiser on September 13, 2024, to inform I&APs of the proposed project's availability of the Draft Scoping Report and public meetings. The proof of advertisement will be submitted with the Final Scoping Report.

9.1.5 REVIEW AND COMMENT ON THE DRAFT SCOPING REPORT

The Draft Scoping Report will be made available in hard copies to I&APs at Amersfoort and Volksrust Public Libraries as well as other areas that will be identified for hard copy placement. Soft copies will be emailed to all stakeholders mentioned in Section 9.1.1 above, landowners, and registered I&APs. The link to the dSR will also be available on request and on the Nsovo website (www.nsovo.co.za). The reports and associated annexures will be available for 30 calendar days from 13th September 2024.

9.1.6 PUBLIC MEETINGS

As part of the PPP, public meetings will be arranged accordingly, and I&APs will be informed through notices and newspaper advertisement ... The engagements will take cognisance of the local languages in the area, i.e., isiZulu, English, and Afrikaans. Furthermore, the public meetings will be twofold, including:

- Focus group meetings with directly affected parties, such as landowners and other stakeholders
- Public meeting open to all I&APs

Public meetings will be held in the morning and afternoon to accommodate various community groups. Table 21 below are details of the public meeting.

Table 21: Public Meeting Schedule

Date	Venue	Time
08th October 2024	China 2 Community Hall (Ward 7)	10H00 – 12H00
	Ezamokuhle Community Hall (Ward 8)	14H00-16H00

9.2 A SUMMARY OF COMMENTS RAISED BY INTERESTED AND AFFECTED PARTIES

The issues, comments, and concerns raised during the public participation process and the responses provided by the Environmental Assessment Practitioner (EAP) will be incorporated into the Comment and Response Report to be submitted with the Final Scoping Report.

10 DESCRIPTION OF THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE ALTERNATIVES FOCUSING ON THE GEOGRAPHICAL, PHYSICAL, BIOLOGICAL, SOCIAL, HERITAGE AND CULTURAL ASPECTS

This section outlines parts of the socio-economic and biophysical environment likely to be affected during the proposed development's construction, operational, or decommissioning phases. The potential interactions between the project and the environment are presented based on the project description and knowledge of the existing environment. Moreover, the project's potential impacts on the human environment, socio-economic conditions, and physical and cultural resources are also presented.

Similarly, the National Web-based Environmental Screening Tool is a geographically based web-enabled application that allows a proponent intending to apply for environmental authorisation under the Environmental Impact Assessment (EIA) Regulations 2014, as amended, to screen their proposed site for any ecological sensitivity. Thus, it provides site-specific baseline information and risk assessment that guides the EIA process and review information.

Baseline information from various sources and the relevance of the different aspects of the project are summarised in the Table 22. The specialist report provides more baseline information.

Table 22: Summary of Baseline Assessment and Relevance to the Feasibility Study and Project

Aspect	Relevance
Climate	• It informs the design considering flood lines, i.e., 1: 10, 50, or 100 years. This will be important for the proposed designs. • It allows the team to propose mitigation measures specific to the site conditions.
Topography	• The slope provides the necessary information to determine the depth of foundations required to construct masts, culverts, bridges, and other infrastructure. • From an environmental angle, it informs the mitigation measures to be considered.
Terrestrial Biodiversity Impact Assessment	• It allows for avoidance or the creation of buffers around areas identified as highly sensitive. • Inform the requirements for permits if sites of critical biodiversity cannot be avoided. • It allows for the proposal of relevant mitigation measures.
Aquatic Assessment	• It allows for the determination of the regulated area of a watercourse in terms of water use, as listed in Section 21 (c) and (i). • Informs and confirms the requirements for WULA. • It allows for avoidance or creation of buffers around identified watercourses during the design phase.

Aspect	Relevance
	• It allows for a proposer risk assessment and consideration of the flood lines.
Palaeontology	• To comply with the regulations of the South African Heritage Resources Agency (SAHRA) in terms of Section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA).
Heritage	Each site is assessed for the possible occurrence of six categories of heritage resources • Built Environment / Cultural Landscape • Surface archaeological finds • Subsurface archaeological finds • Industrial archaeology • Graves & Burial Grounds • Intangible heritage To comply with the regulations of the South African Heritage Resources Agency (SAHRA) in terms of Section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA). • It allows for avoiding or creating buffers around identified sites of heritage significance. • Phase 1 informs the requirements for permits if heritage sites cannot be avoided.

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10.1 SOCIO-ECONOMIC DESCRIPTION

This section presents the socio-economic aspects focusing on the Province and Municipalities within the proposed study area.

10.1.1 PROVINCIAL DESCRIPTION OF THE PROPOSED PROJECT

Mpumalanga is divided into three district municipalities namely: Gert Sibande, Ehlanzeni and Nkangala Districts. The proposed development will be conducted within one of the district municipalities (i.e., Gert Sibande). These three districts are further subdivided into 17 Local Municipalities. The province covers an area of 76 495km², with a population of approximately 4335,965 (IDP, 2017). The capital city of Mpumalanga is Mbombela (previously Nelspruit), and other major cities and towns include eMalahleni (previously Witbank), Standerton, eMkhondo (previously Piet Retief), Malalane, Ermelo, Barberton, and Sabie.

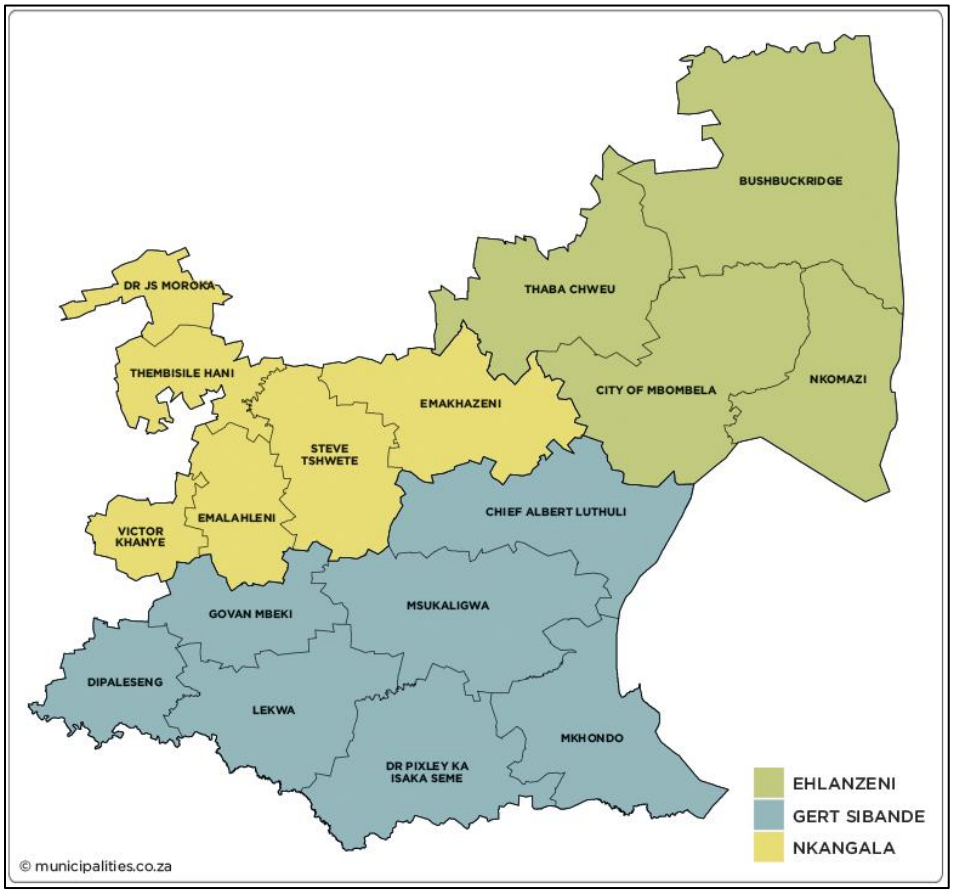


Figure 10: Municipal boundaries within the Mpumalanga Province.

According to Census 2022, Mpumalanga has a 5 143 324 million population. The population is predominantly black African, accounting for 90.7%, while Whites make up about 7.5% of the population. The province contributed about 8% towards the country's GDP in 2022. SiSwati (30,5%), IsiZulu (27,8%), Xitsonga (10,6%), Sepedi (10,3%) and IsiNdebele (9,9%) are the most spoken languages in the province. Mpumalanga's cultural heritage is celebrated through traditional music, dance, and art, representing the diverse ethnic groups, including the Swazi, Zulu, Ndebele, and Pedi communities.

Economically, Mpumalanga is driven by agriculture, mining, and tourism. The province is one of South Africa's key agricultural regions, producing crops such as maise, sugarcane, and citrus fruits, and it is also a significant centre for forestry. Mining is another cornerstone of the economy, with Mpumalanga being a substantial source of coal and other minerals like gold and platinum. Despite its economic strengths, the province faces challenges such as unemployment, poverty, and the need for infrastructure development, particularly in rural areas.

Mpumalanga struggles with inequality and joblessness, with 66.4% of the working population working. While there have been economic advancements, the province continues to require focused initiatives on education, skills development, and job creation to improve the livelihoods of its residents. Programs aimed at sustainable development and community upliftment are crucial for addressing these socio-economic challenges.

Approximately 93.7% of Mpumalanga's residents have access to electricity, and 47% report having access to piped water within their dwellings. However, like other provinces in South Africa, Mpumalanga faces significant challenges due to load shedding, which disrupts essential services such as telecommunications and water supply. Despite these obstacles, Mpumalanga remains rich in natural beauty and cultural depth, with significant growth and sustainable development potential.

10.1.2 DISTRICT MUNICIPALITY WITHIN WHICH THE STUDY AREA IS LOCATED

The Gert Sibande District Municipality is a Category C Municipality in Mpumalanga Province. It borders the Mpumalanga districts, namely Ehlanzeni and Nkangala District Municipalities, to the north, South African provinces such as KwaZulu-Natal and Free State provinces to the south, and Gauteng province to the west (www.odm.org.za). According to the IDP (2017), this is the largest district in the Mpumalanga province. It is comprised of seven local municipalities: Govan Mbeki, Chief Albert Luthuli, Msukaligwa, Dipaleseng (the proposed area of the project), Mkhondo, Lekwa, and Dr Pixley ka Isaka Seme Local Municipality, Figure 11 below

Figure 11: Municipal boundaries within the Mpumalanga Province.

According to the 2022 Census, the population is predominantly black African, accounting for about 93.6%, with a mix of other ethnic groups, including Whites,5% of the population and Indian and coloured, 0.15% of the total population. The most spoken languages are isiZulu (36.5%), followed by Siswati (25.7%) and Afrikaans (11.3%), reflecting the region's rich cultural mosaic.

Economically, Gert Sibande is one of Mpumalanga's most significant districts, driven by its agricultural solid, mining, and energy sectors. The district is a central agricultural hub, producing large quantities of maise, soybeans, and livestock. The farming activities are vital for local consumption and the broader South African market. The mining sector, particularly coal mining, is a cornerstone of the district's economy. Gert Sibande is one of South Africa's largest coal-producing regions, with coal mining providing substantial employment and contributing significantly to the national economy. The presence of several Eskom-operated power stations, including the Kendal and Kriel power stations, further underscores the district's role in powering the nation's energy grid.

Despite its economic strengths, Gert Sibande faces considerable socio-economic challenges. Unemployment remains a pressing issue, with a significant portion of the population needing help to access sustainable employment opportunities. Additionally, there are disparities in access to essential services, particularly in rural areas. According to recent data, approximately 91.8% of households in Gert Sibande have access to electricity, which is relatively high. However, only 56.5% of households have access to piped water inside their dwellings, indicating a significant gap in water service delivery that needs urgent attention to improve living conditions and support sustainable development.

Agriculture remains a critical sector in Gert Sibande, with the region's fertile lands and favourable climate supporting a diverse range of crops. Maize and soybeans are the primary crops, while livestock farming, including cattle, sheep, and poultry, plays a significant role in the local economy. The agricultural sector is vital for food security and employs the value chain, contributing to rural development and poverty alleviation. Embracing sustainable farming practices is essential for ensuring the long-term viability of this sector and the well-being of the communities that depend on it.

The combination of Gert Sibande District Municipality's economic potential, cultural diversity, and natural resources positions it as a vital area within Mpumalanga. However, addressing socio-economic challenges, particularly in service delivery and employment, is crucial for unlocking the region's full potential and ensuring equitable and sustainable development for its residents.

10.1.3 LOCAL MUNICIPALITY WITHIN WHICH THE PROPOSED STUDY AREA IS LOCATED

The Dr. Pixley Ka Seme Local Municipality is a Category B municipality within the Gert Sibande District Municipality. The Municipality is named after Dr. Pixley ka Isaka Seme, a founding member of the African National Congress (ANC). The Municipality is situated on the eastern border between Mpumalanga and KwaZulu-Natal. It is framed by the Mkhondo Municipality in the east, Msukaligwa Municipality to the north, and Lekwa Municipality to the west. It comprises an area of approximately 5227.98km², which includes Amersfoort, Ezamokuhle, Perdekop, Volksrust, Vukuzakhe, Wakkerstroom, and Daggakraal.

According to the 2022 Census, the Municipality has a total population of 115,304 individuals. The gender distribution within the municipality is slightly skewed, with females making up 52% of the population, while males account for 48%. Educational institution attendance among individuals aged 5 to 24 years stands at 70.6%, indicating significant school and tertiary education engagement in this age group. Additionally, 89.7% of municipal households reside in formal dwellings, reflecting a relatively high standard of housing infrastructure across the area.

Socioeconomic challenges within the Municipality include high unemployment rates, inadequate access to essential services such as water and sanitation and limited economic opportunities. The area’s dependence on agriculture makes it vulnerable to climate change and other environmental challenges. Efforts to stimulate economic growth often focus on improving infrastructure, enhancing agricultural productivity, and promoting small-scale industries.

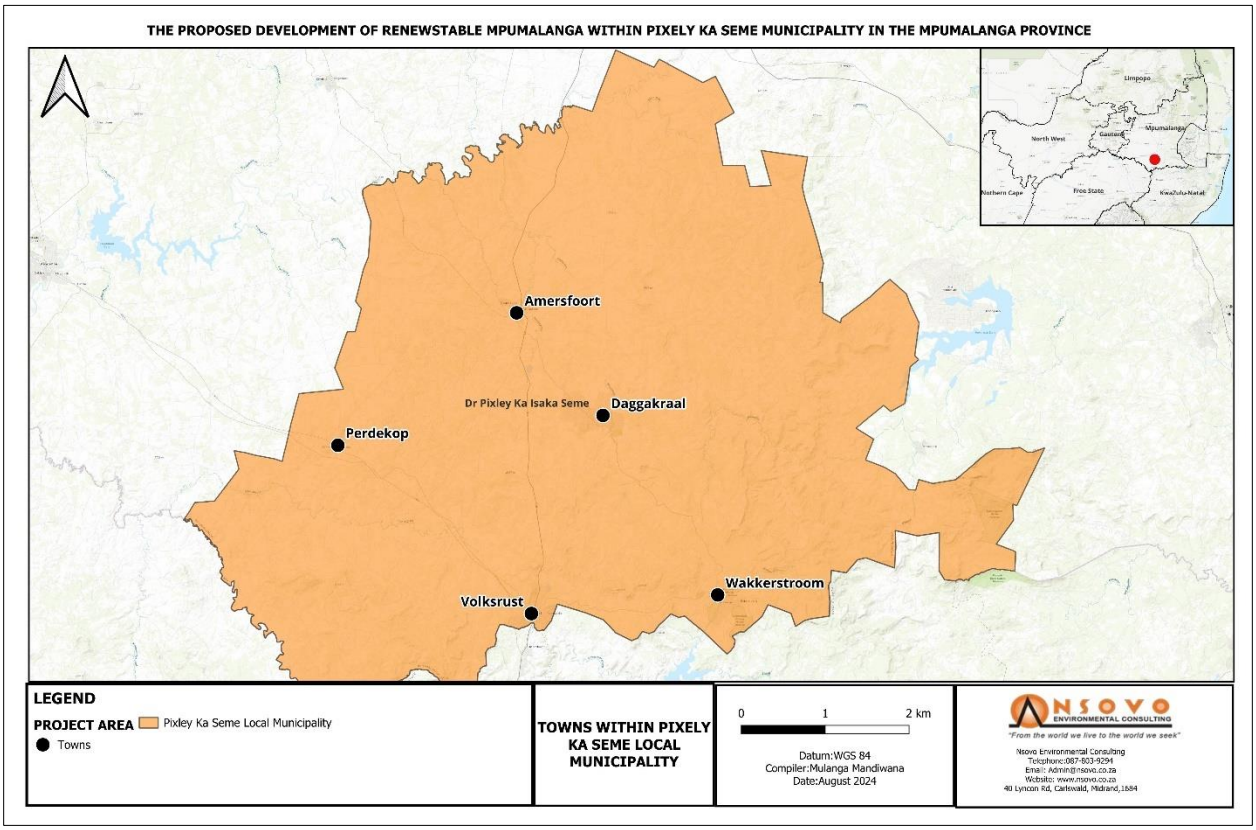


Figure 12: Towns within the Municipality

10.2 CLIMATIC CONDITION OF THE PROPOSED AREA

The study areas fall within the Cwb according to the Köppen-Geiger climate classification. This region is characterised by a warm temperate climatic zone, with dry and cold winters and warm, wet summers. Temperatures vary from a minimum of 8.41 °C in July to a maximum of 27.7 °C in December and January, respectively. Table and Figure 5 below indicate the average monthly maximum and minimum temperatures, typically ranging from 16.33 °C to 24.11 °C. The summer season is characterised by high temperatures, while the winter season is characterised by low temperatures.

Table 23: Average monthly, maximum, and minimum temperatures

Months	Minimum (°C)	Maximum (°C)	Average (°C)
January	16.37	27.7	23.77
February	16.26	27.44	23.72
March	15.28	26.9	22.97
April	13.05	24.65	20.55
May	11.03	24.01	18.95
June	8.35	21.95	16.33

July	8.41	21.46	16.38
August	10.58	23.98	19.24
September	13.51	26.13	19.24
October	14.69	26.4	21.97
November	15.67	27.14	22.63
December	16.46	27.7	24.11

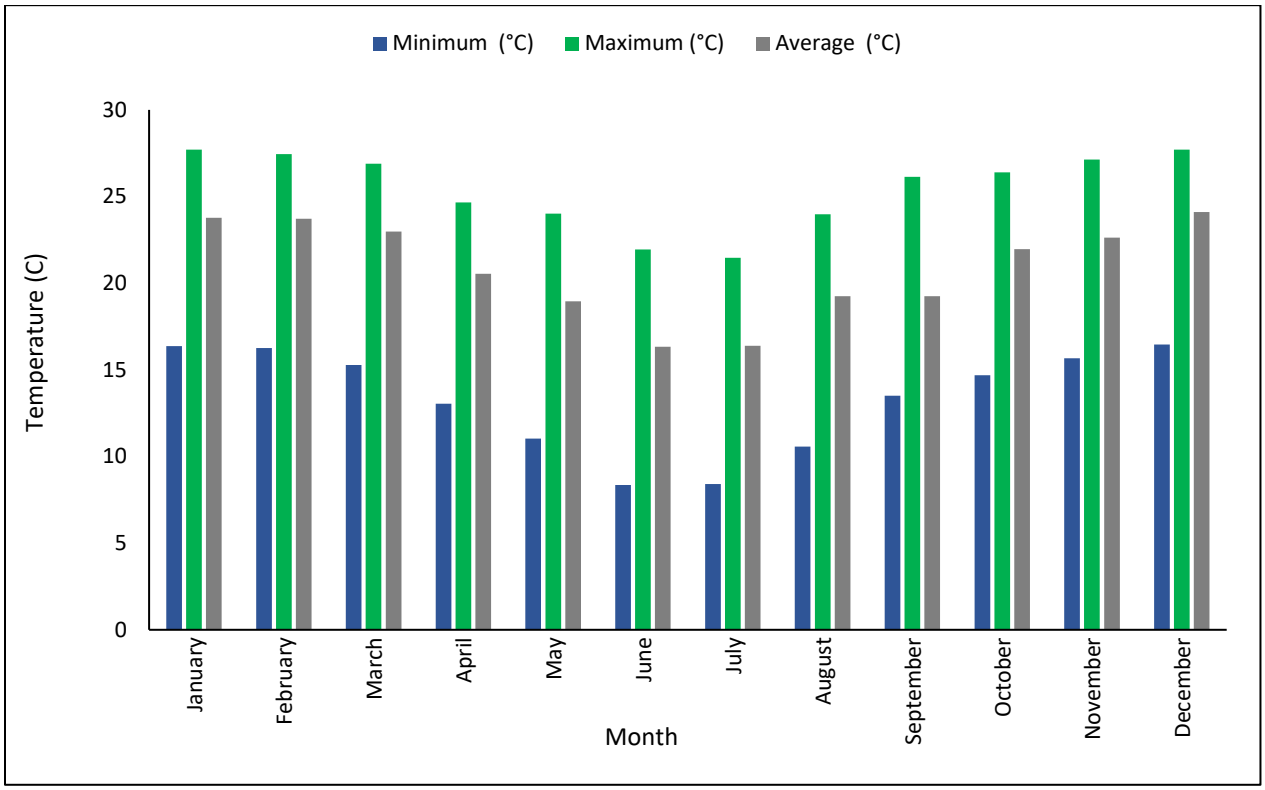


Figure 13: Average monthly, maximum, and minimum temperatures.

Köppen-Geiger has classified the region as dry winter and wet summer seasons. The region falls in the summer rainfall area, with an average annual rainfall of 792.7 mm/annum. More than 85% of rainfall occurs between October and March. The highest rainfall occurs during January and reaches about 150.3 mm, and the lowest rainfall of 5.2 mm occurs during July. Evaporation is high compared to rainfall, with annual evaporation of 1921 mm. High evaporation of 220.6 mm occurs during January, while low evaporation of 96 mm occurs during July. The Table 24 and Figure 14 below indicate the average monthly rainfall and evaporation.

Table 24: Average monthly rainfall and evaporation (mm), 1980 – 2023. (DWS station C1E007).

Months	Average monthly rainfall (mm)	Average monthly evaporation (mm)
January	150.3	214.4

Months	Average monthly rainfall (mm)	Average monthly evaporation (mm)
February	102.9	181.8
March	80.9	172
April	42.5	131.7
May	13.5	111.3
June	10	87.4
July	5.2	96
August	9.9	131.9
September	25.6	181.3
October	96.7	204.4
November	120.3	206.8
December	142.2	220.6

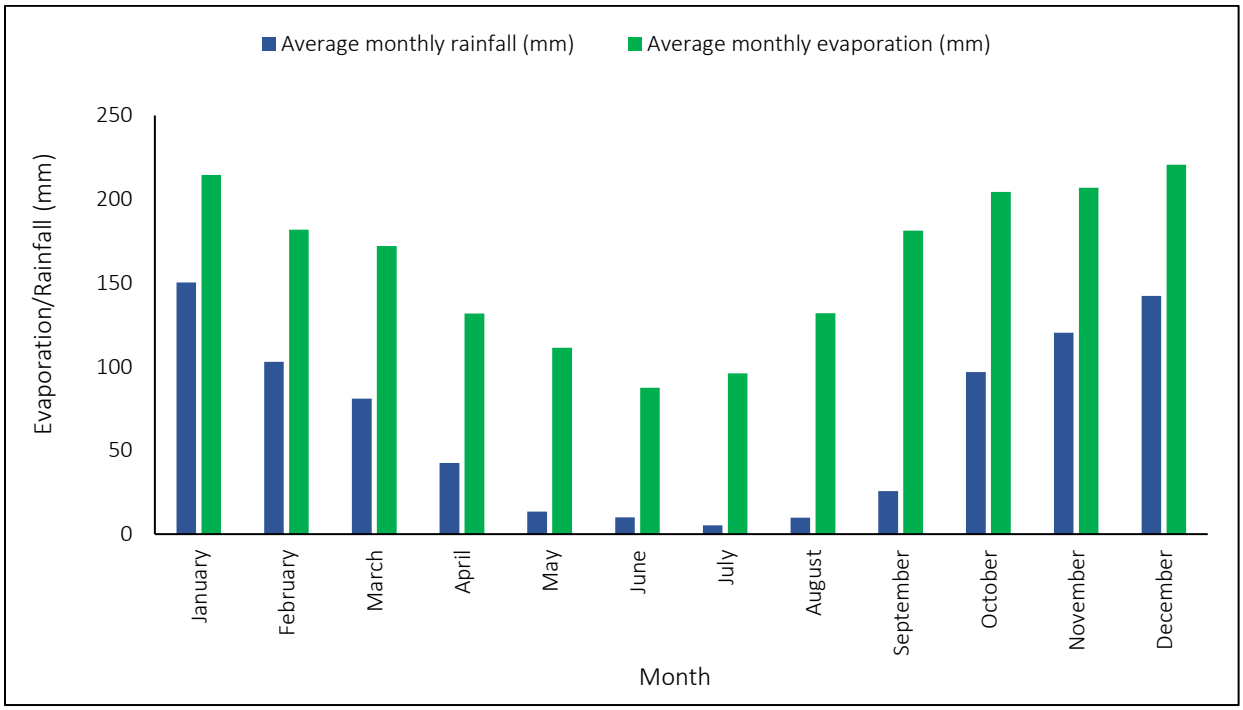


Figure 14: Average monthly rainfall and evaporation (mm), 1980 – 2023. (DWS station C1E007).

10.3 GEOLOGY WITHIN THE STUDY AREA

The geology of the Karoo Supergroup underlies the site's regional geology. This supergroup has predominantly been deposited in various localities, including the Main Karoo Basin, and significant deposits, which include Tuli, Springbok flats, Tshipise, and Ellisras Basin and Figure 15.

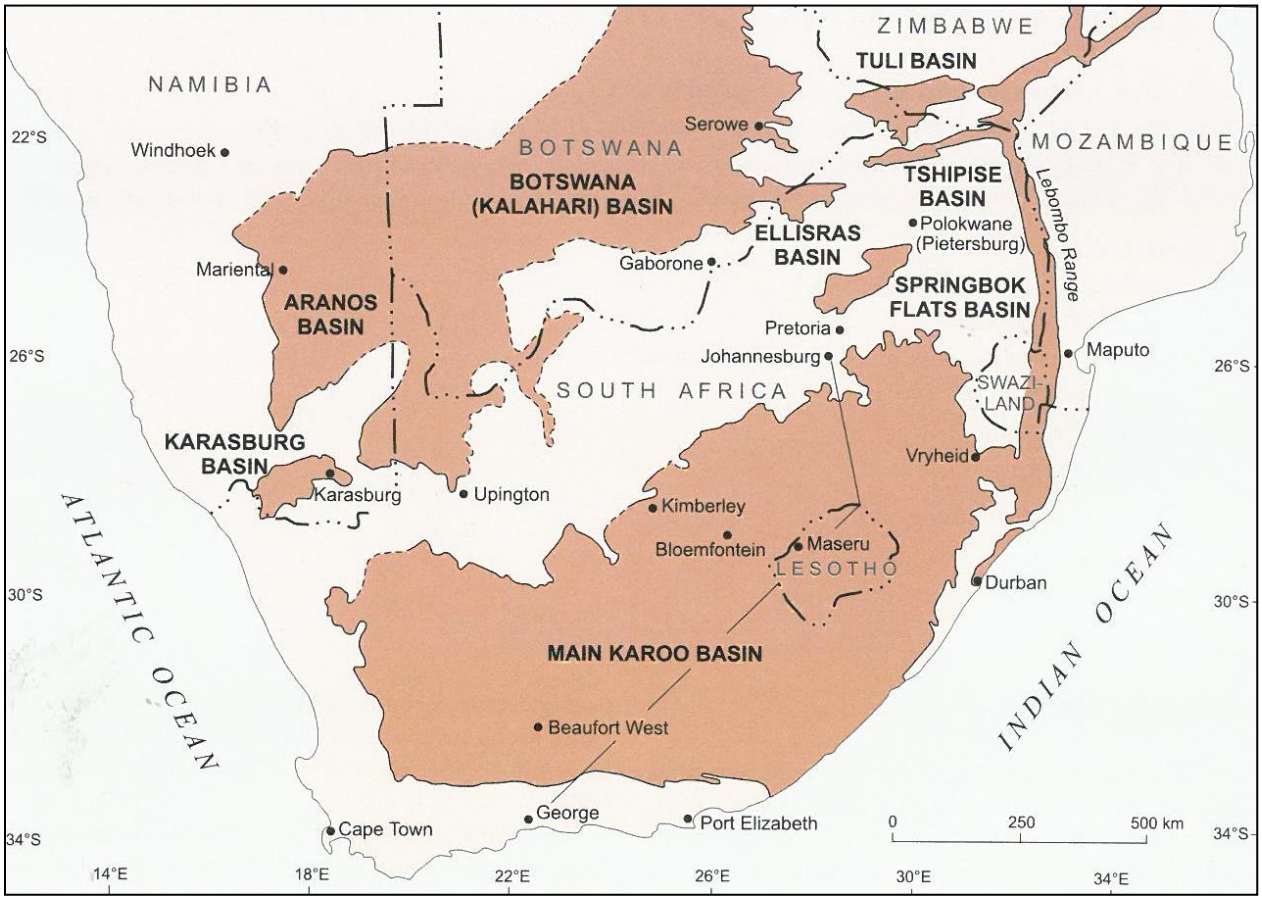


Figure 15: Location of the Karoo Basins (Johnson et al., 2006).

A large portion of the Karoo Supergroup is the Main Karoo Basin, which covers an area of approximately 700,000 km2 in South Africa. These basins range in age from late carboniferous to Middle Jurassic. The Karoo Supergroup is subdivided into different geological groups, including the Drakensberg and Lebombo Groups, the Molteno, Elliot, and Clarens Formations, the Beaufort Group, the Ecca Group, and the Dwyka Group (Johnson et al., 2006).

The Dwyka Group forms the base of the Karoo Supergroup. The supergroup rests on the Precambrian bedrock, mainly in the northern basin margin, overlies unconformably or para conformably in the rocks of the Cape Supergroup in the southern part, and unconformably overlies the Natal Group and Msikaba Formation.

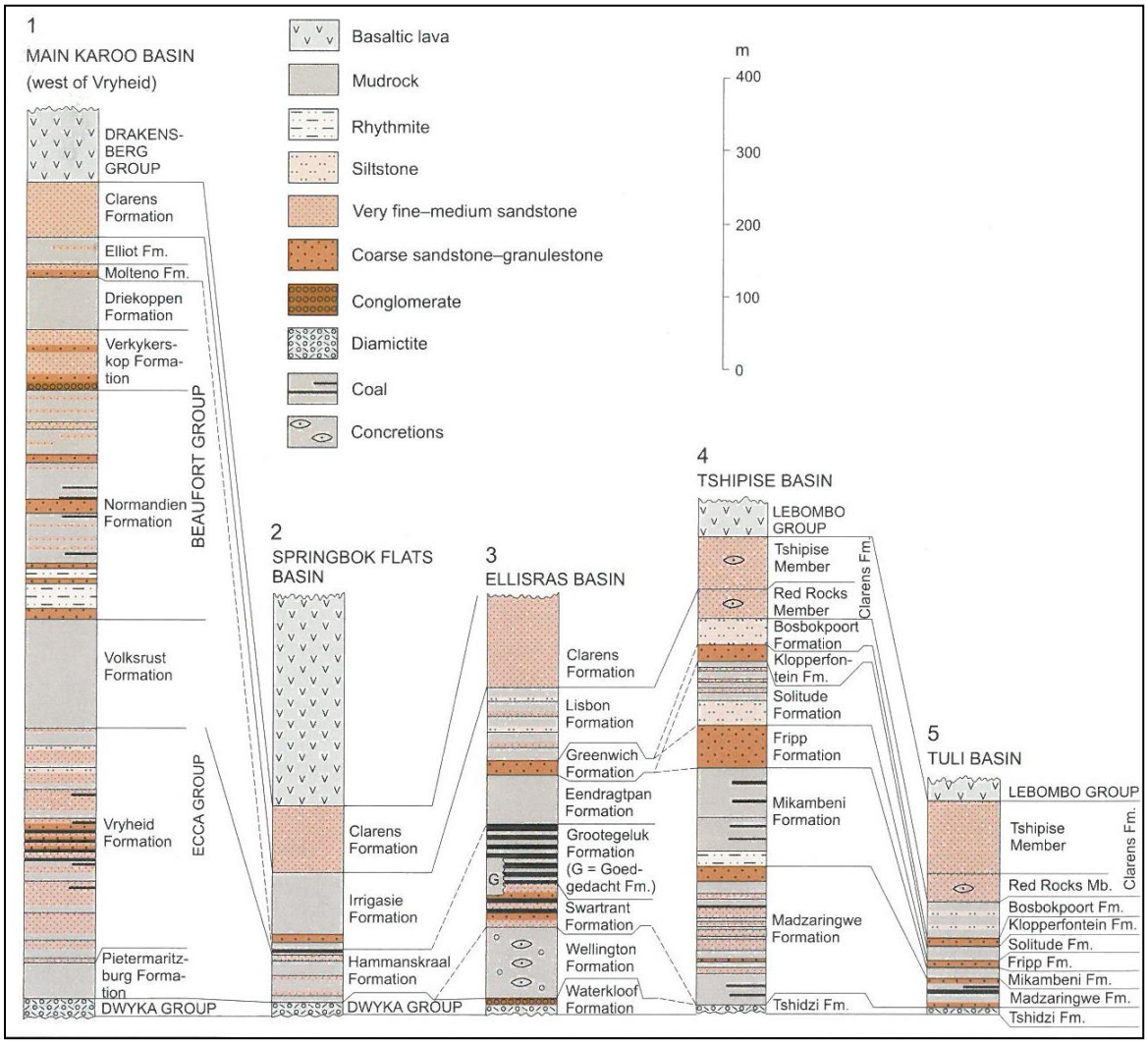


Figure 16: Stratigraphy of the Karoo Supergroup Basins (Johnson et al., 2006).

10.4 LOCAL GEOLOGY

The local geology of the site is characterised by two geological units which underlie the study area. These are:

- Karoo Dolerite
- Volksrust Formation

A large portion of the farm is covered by Volksrust Formation with a dolerite dyke that intruded the southeast corner of the property. A detailed description of geology is provided in the following sections.

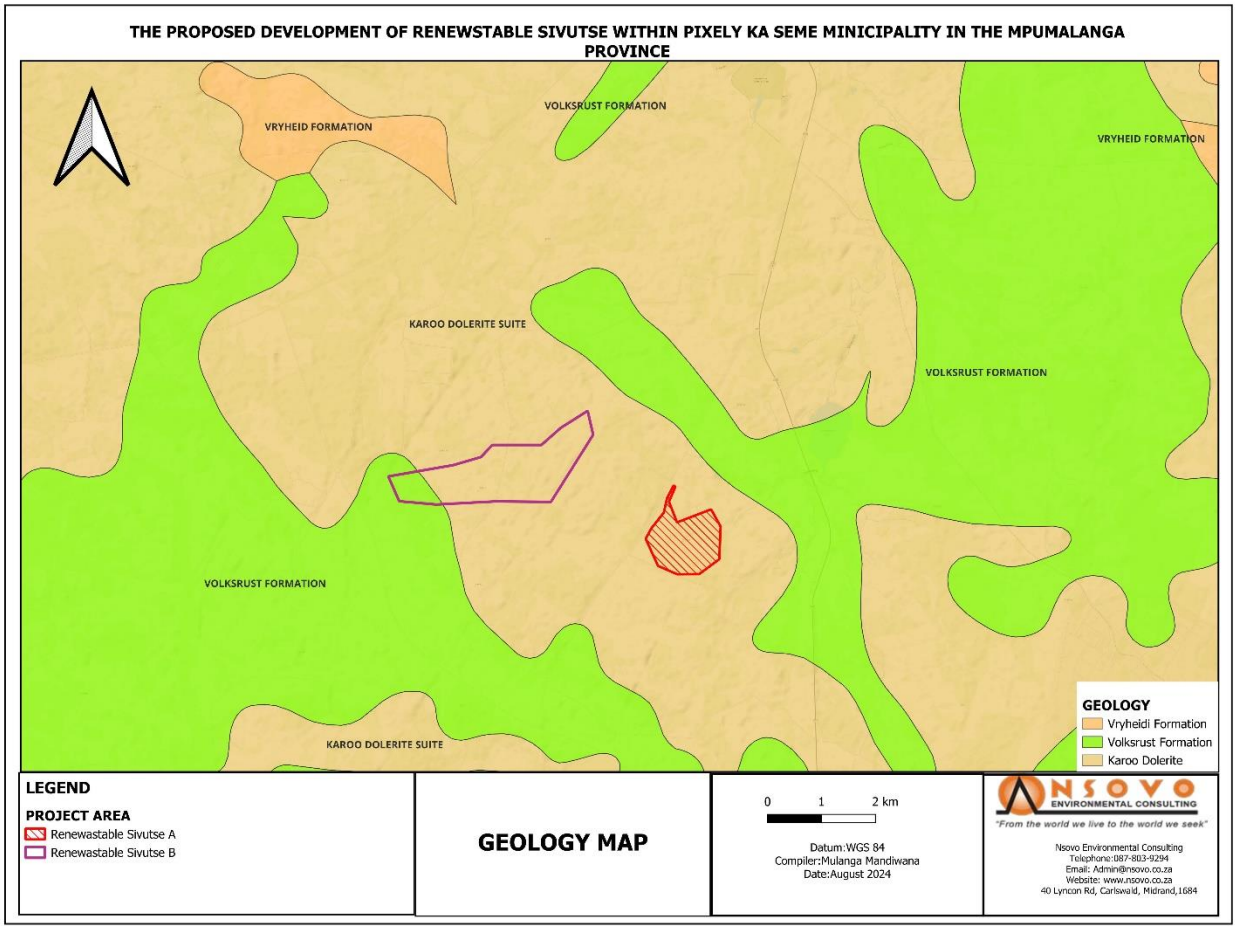


Figure 17: Geological map of the study area

10.5 GEOHYDROLOGY

Renewstable® Sivutse comprises the Karoo Dolerite intrusion and the Volksrust Formation of the Karoo Supergroup. Aquifers are classified as shallow weathered aquifers, fractured aquifers and aquifers associated with dolerite dyke. The borehole yield potential of this aquifer is generally low due to its limited thickness. Aquifer yield potential varies from 100 l/hour to 2000 l/hour. Most boreholes drilled in the fractured aquifer systems are classified as low-yielding boreholes with a yield of 0.5 l/s to 2 l/s. The regional groundwater levels in the area vary from 0.2 mg to 26.21 mg.

10.5.1 HYDROCENSUS

NRN conducted a detailed hydro census in 2024 within a radius of 1 km of the proposed facilities to obtain a representative population of the boreholes in the area. During the survey, all available borehole information was collected and recorded. The information collected during the survey is summarised below (Table 25, **Error! Reference source not found.**).

Three boreholes have been identified in the vicinity of the proposed Renewstable® Sivutse. All boreholes are outside the Renewstable® Sivutse property boundary. Groundwater resources near the site are used for domestic and livestock watering. Boreholes identified during the hydro census survey were not equipped and not in use.

Table 25: Hydrocensus survey data.

Name	Latitude	Longitude	Farm Name	Status	Purpose
HD5	-27.06869	29.82881	Rietfontein	Non-operational wind pump	Domestic and livestock watering
HD6	-27.06389	29.830475	Rietfontein 66	Non-operational wind pump	Domestic and livestock watering
HD7	-27.0638	29.830253	Rietfontein 66	Non-operational wind pump	Domestic and livestock watering

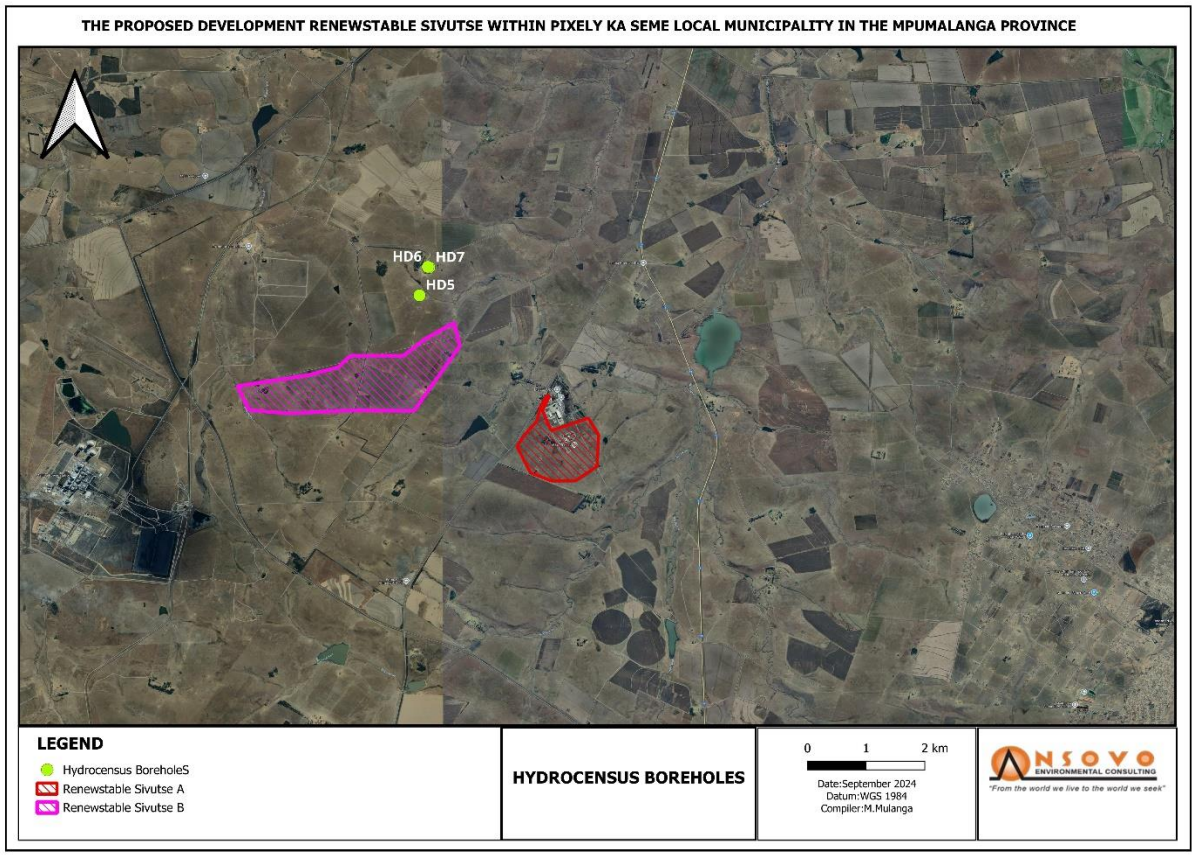


Figure 18: Distribution of boreholes

10.5.2 GROUNDWATER RECHARGE

The estimated recharge for the study area ranges from 3.8% to 5% of the annual rainfall, with an average of 4.49%. This translates to a 35.61 mm recharge per annum. The proposed plants fall under the C11E quaternary drainage

region. According to the Department of Water Affairs and Forestry (DWAF, 2005), this quaternary catchment is characterised by groundwater recharge of 35.10 mm/a, as indicated in the **Table 26** below.

Table 26: Groundwater recharge calculations (NRN, 2023)

Name of Expert	% Recharge	Recharge (mm/a)	Weight (1- 5)
Soil information	5.0	39.64	4
Geology	3.8	30.12	2
Vegter	4.0	32.00	3
Acru	4.4	35.00	3
Harvest Potential	4.7	37.50	4
Average =	**4.49**	**35.61**	

10.6 PALAEONTOLOGY

The project lies in the central part of the main Karoo Basin where the basal Karoo Supergroup rocks are exposed. Large expanses of Jurassic dolerite have intruded through the Karoo sediments. Unconformably overlying, the Karoo rocks are much younger than the Quaternary sands and alluvium.

The Karoo Supergroup rocks cover a large proportion of South Africa, extending from the northeast (east of Pretoria) to the southwest and across to almost the KwaZulu Natal south coast. It is bounded along the southern margin by the Cape Fold Belt and along the northern margin by the much older Transvaal Supergroup rocks. Representing some 120 million years (300 – 183Ma), the Karoo Supergroup rocks have preserved a diversity of fossil plants, insects, vertebrates and invertebrates.

Overlying the basal Dwyka Group glacigene rocks are rocks of the Ecca Group that are Early Permian in age. Eleven formations are recognised in this group, but not all extend throughout the Karoo Basin. In the central and eastern parts are the following formations, from the base upwards: Pietermaritzburg, Vryheid and Volksrust Formations. These sediments have varying proportions of sandstones, mudstones, shales and siltstones and represent shallow to deep water settings, deltas, rivers, streams and overbank depositional environments (Cadle et al., 1993; Johnson et al., 2006).

No fossils have been recorded from this site; a Fossil Chance Find Protocol should be added to the EMPr. Based on this information, it is recommended that no further palaeontological impact assessment is required unless the contractor finds fossils, the environmental officer, or another designated responsible person once excavations or drilling for foundations, infrastructure, and amenities have commenced.

10.6.1 SCREENING TOOL

Based on the DFFE Screening Tool, the paleontological sensitivity is High. A site sensitivity verification indicated that the paleontological sensitivity is low. Refer to the Site Sensitivity Verification attached as **Appendix C1**.

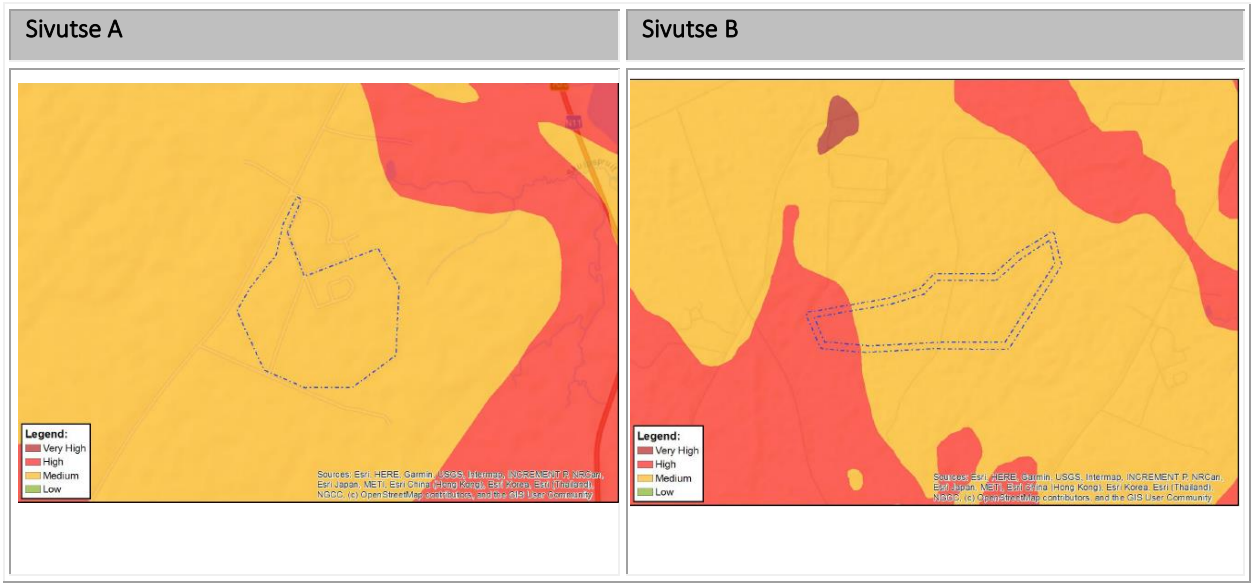


Figure 19: DFFE Screening Palaeo-sensitivity Map (2024)

Table 27: Palaeontology Sensitivity Screening Tool Vs Specialist SSV Outcomes

Site	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Renewstable Sivutse A			DFFE Screening Tool	SSV outcome
Renewstable Sivutse B		DFFE Screening Tool		SSV outcome

In conclusion, the specialist confirmed that based on the lack of previously recorded fossils from the area, it is extremely unlikely that any fossils would be preserved in the overlying soils of the Quaternary. There is an extremely small chance that fossils may occur in the shales or mudstones of the Volksrust Formation so a Fossil Chance Find Protocol should be added to the EMPr. The impact on the palaeontological heritage would be extremely low.

10.7 WETLAND DELINEATION

According to Wetland delineation conducted in March 2023, four (4) separate hydro-geomorphic units (HGM 9, HGM 10, HGM11, and HGM 12), comprising one HGM type, namely a channelled valley bottom wetland, were delineated and classified within the **Sivutse A** study area and within 500m (Figure 20). Although most of the main watercourses were described as wetlands (e.g. valley bottom wetlands), large sections of these watercourses were dominated by riparian habitat ("non-traditional riparian"; thus, riparian habitat dominated by graminoids). However, signs of wetness and hillslope driver processes were intermittently observed within these watercourses, likely due to varying geology and intrusions between the dolerites. Therefore, a conservative approach was taken, and classification was sided towards wetland classification as separating the various riparian versus wetland sections was not deemed practically or economically feasible.

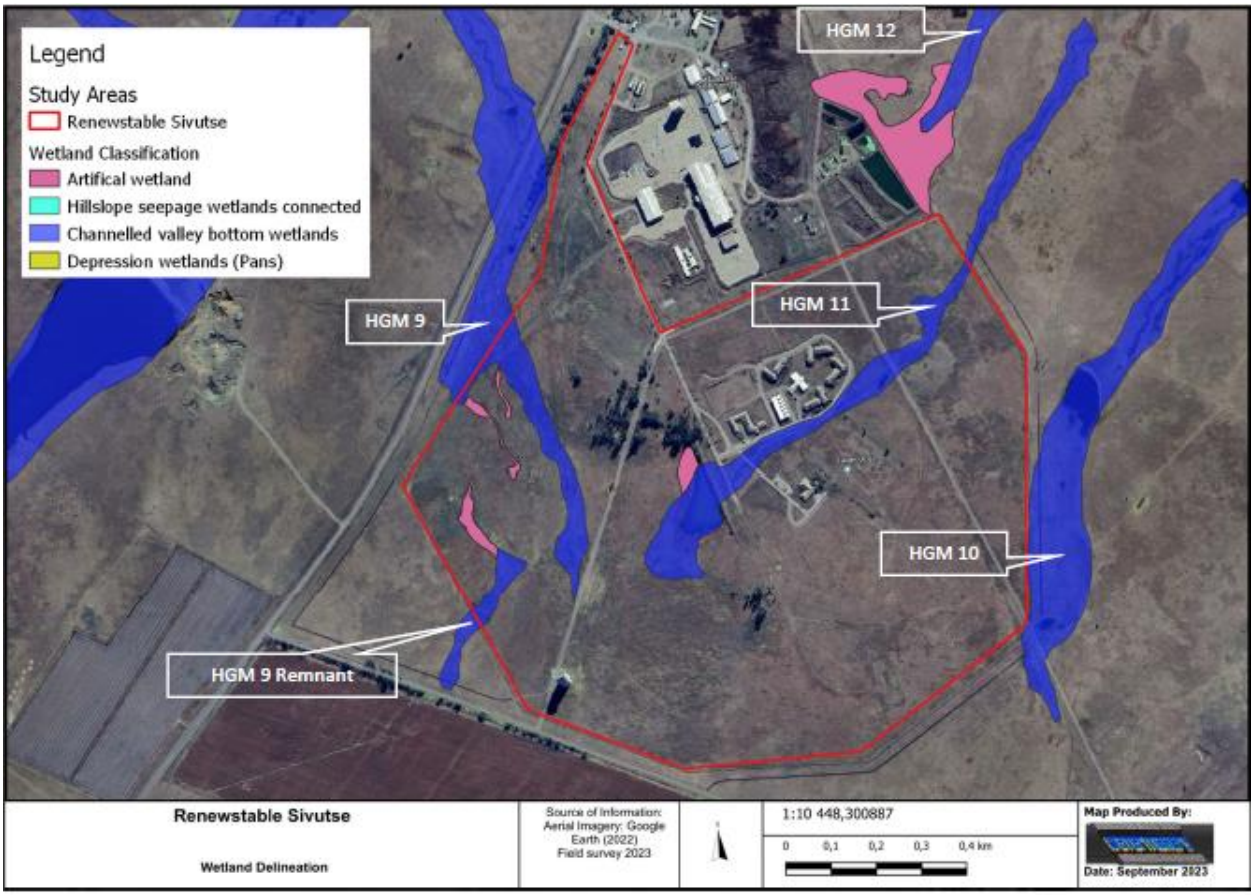


Figure 20: Delineated wetlands within the Sivutse A study area (WaterMakers, 2023).

According to the Wetland Report, twelve separate hydro-geomorphic units (HGM), comprising three HGM types, namely channelled valley bottom wetlands, hillslope seepage wetlands connected to a watercourse and depressions (pans), were delineated and classified within the **Sivutse B** study area and 500m Figure 21. HGM 1, a hillslope seepage, was subdivided into three hydrogeomorphic units (HGM 1a, HGM 1b and HGM 1c) due to the variability of terrain units and soils observed within the hillslope seepage complex. HGM 1a was supported by subsurface return flows and

contained permanent and seasonal hydrological signatures. HGM 1b consisted of a more temporary/ephemeral system, likely hydrologically mainly supported by surface run-off. HGM 1c consists of a 'saddlebag' wetland that currently receives leaking piped water and is likely naturally mostly supported by surface run-off processes.

Although most of the main watercourses were described as wetlands (e.g. valley bottom wetlands, large sections of these watercourses were dominated by riparian habitat ("non-traditional riparian"; thus, riparian habitat dominated by graminoids). However, signs of wetness and hillslope driver processes were intermittently observed within these watercourses, likely due to varying geology and intrusions between the dolerites. Therefore, a conservative approach was taken, and classification was sided towards wetland classification as separating the various riparian versus wetland sections was not deemed practically or economically feasible. Based on the current outputs of the NFEPA project, no FEPA wetlands or wetland clusters were located within the study area.

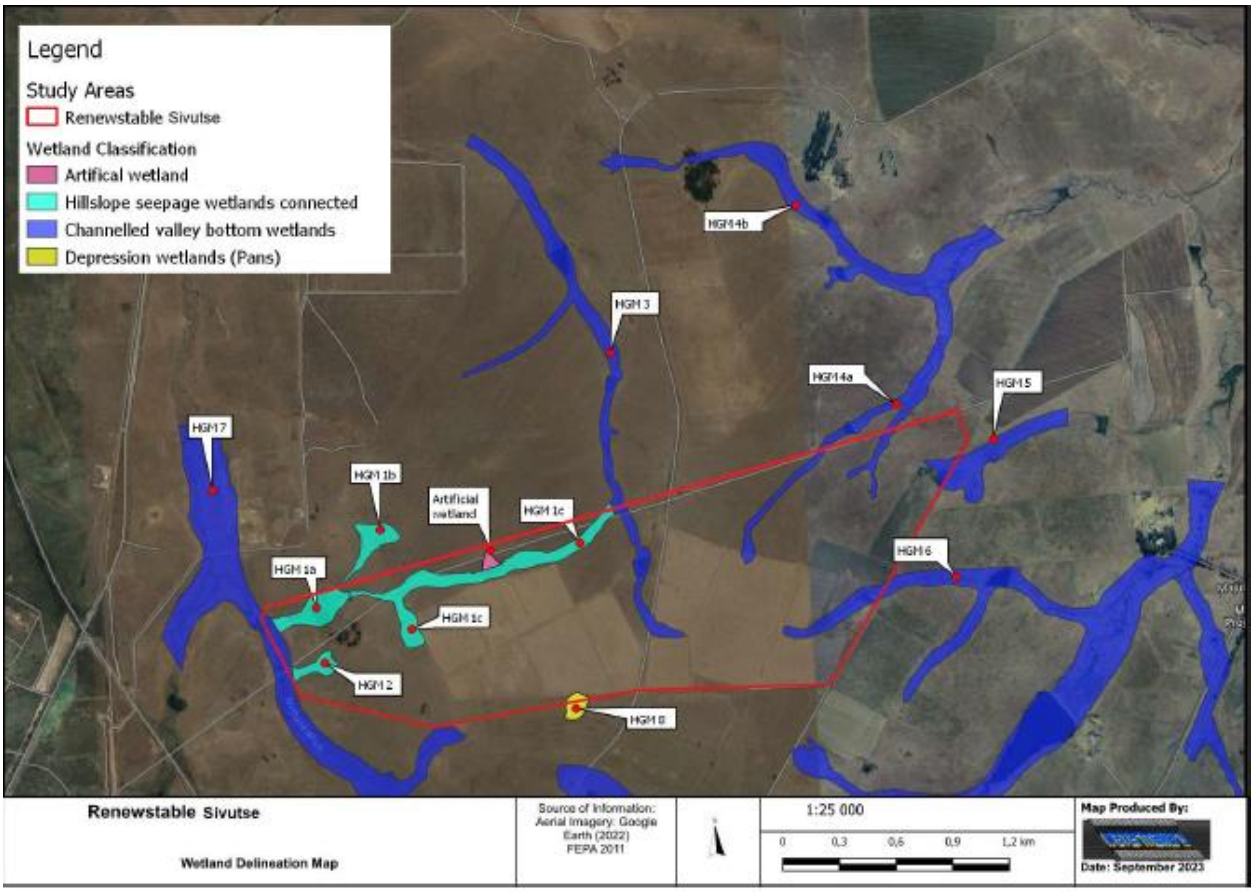


Figure 21: Delineated wetlands within the Sivutse B study area (WaterMakers, 2023).

According to the DFFE Screening Tool Report, the site has Very High sensitivity to Aquatic Biodiversity. The Site Sensitivity Verification confirmed the Aquatic biodiversity to be High Sensitivity.

Sivutse A	Sivutse B
	

Figure 22: Relative aquatic sensitivity theme (Screening Tool Report, 2024).

Table 28: Aquatic Sensitivity Screening Tool Vs Specialist SSV Outcomes

Site	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Renewstable Sivutse A	DFFE Screening Tool		SSV outcome	
Renewstable Sivutse B	DFFE Screening Tool		SSV outcome	

10.8 SITES OF ARCHAEOLOGICAL AND CULTURAL SIGNIFICANCE

There have been very few studies of the Stone Age in Mpumalanga Province; hence, there are few known Stone Age sites. One of the very few examples of Stone Age sites belonging to the Early Stone Age (ESA) era in Mpumalanga is Maleoskop on the Farm Rietkloof (Pelser 2016). Hence, information about Stone Age habitation of the area needs to be made available. Therefore, it is unlikely that Stone Age people would have occupied the area specifically as it would have been too cold, and no shelters or cave shelters existed locally that could be used as a shelter. No Stone Age sites were noted during the survey.

Mpumalanga means “a place of rising sun”, and previously, Eastern Transvaal was the name given to the area in 1993. The province includes the old Transvaal, KaNgwane, Gazankulu and Leboa. The province forms a very important part

of South Africa's natural and cultural heritage. The natural heritage consists of the Bourke's Luck pothole as well as the Sodwala caves, together with the San rock paintings, Ndebele wall paintings, and Pilgrim's Rest, which are amongst the cultural heritage.

Many farmsteads in the region were destroyed during the Anglo-Boer War. As a result, most structures date to the period after that. Architecture is very important; outbuildings would be in the same style as the main house if they were to be built in the same period. However, they vary considerably in style and materials used. The town of Amersfoort was founded in 1876 and proclaimed in 1888. From its earliest days, it was well known for its wealthy farmer community (Praagh 1906; Raper 2004). Apart from cemeteries in municipal areas, towns and villages, some are informal, without fencing, and occur sporadically all over portions of the farms.

The Phase I Archaeological and Cultural Heritage Impact Assessment for the proposed development did not yield any heritage resources within the footprint of the surveyed area. In addition, the area was generally found to be disturbed by activity related to past farming. It is thus highly unlikely that any surface archaeological site could have been identified.

10.8.1 ARCHAEOLOGICAL SITE SENSITIVITY VERIFICATION

According to the DFFE Screening Tool Report, the site is highly sensitive to Archaeological and cultural heritage. However, the Site Sensitivity Verification indicated that it is medium sensitive.

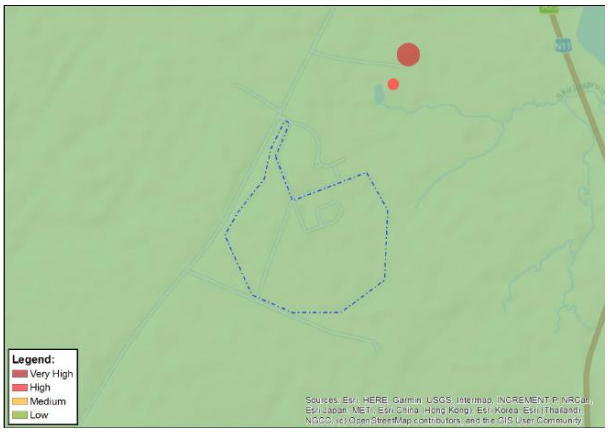
Sivutse A	Sivutse B
	

Figure 23: Heritage and Palaeontological theme (DFFE Screening Tool, 2024)

Table 29: Archaeological and Cultural Heritage Sensitivity Screening Tool Vs Specialist SSV Outcomes

Site	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Renewstable Sivutse A				DFFE Screening Tool
Renewstable Sivutse B		DFFE Screening Tool		

10.9 TERRESTRIAL BIODIVERSITY

The project area falls within the Grassland Biome, as Mucina and Rutherford (2012) described. The Grassland Biome covers roughly a third of the country, occurs across six provinces, and is the second largest of South Africa's nine biomes, covering an area of 339 237.68 km^2 (SANBI, 2012).

The study site corresponds with Amersfoort Highveld Clay Grasslands to the Grassland Biome, more generally the Mesic Highveld Grassland defined by Mucina and Rutherford (2006). This unit is found in the eastern, precipitation-rich regions of the Highveld. Grasslands of these parts are regarded as 'sour grasslands'. The study area is composed of an ecological type known as the Amersfoort Highveld Clay Grassland. This grassland comprises undulating plains with small, scattered patches of dolerite outcrops. The vegetation comprises short, closed grassland, primarily dominated by a dense *Themeda triandra* sward, often severely grazed.

10.9.1 SITE SENSITIVITY VERIFICATION

According to the National Web-based Environmental Screening Tool (2023), the study area has a Very high terrestrial biodiversity theme, a High animal species theme, and a Medium plant species theme sensitivity, as shown in Figure 24, Figure 25 and Figure 26 Below, the site sensitivity verification confirmed that the terrestrial biodiversity theme sensitivity is Very High, the animal species theme is Medium, and the Plant species theme is Medium.

Sivutse A	Sivutse B

Figure 24: Terrestrial Biodiversity theme (Screening Tool Report, 2024).

Table 30: Terrestrial Biodiversity Sensitivity Screening Tool Vs Specialist SSV Outcomes

Site	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Renewstable Sivutse A	DFFE Screening Tool SSV outcome			
Renewstable Sivutse B	DFFE Screening Tool SSV outcome			

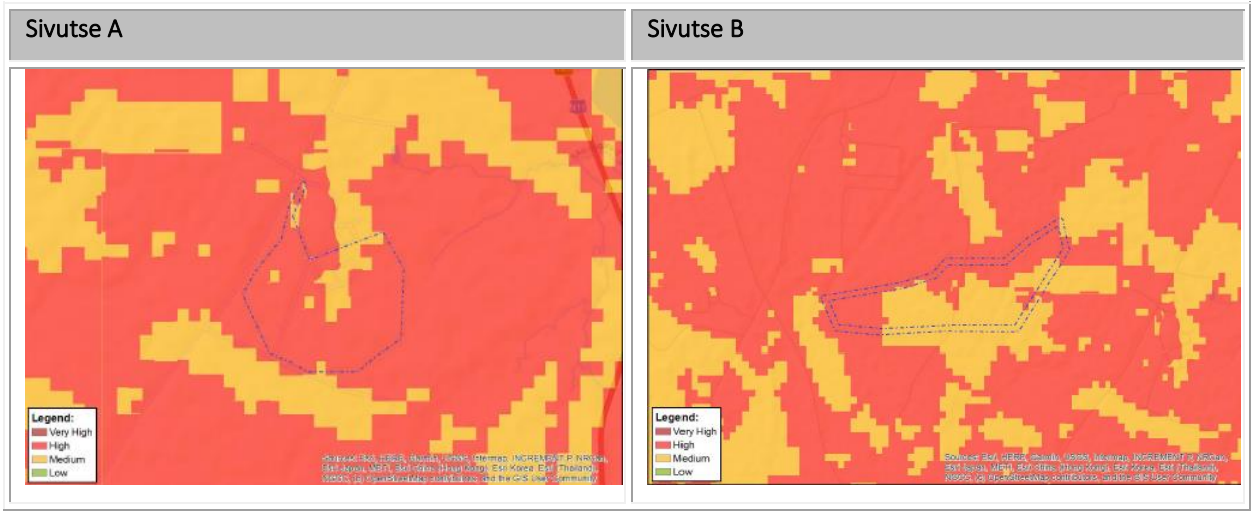


Figure 25: Animal Species Theme sensitivity (Screening Tool Report, 2024).

Table 31: Animal species Sensitivity Screening Tool Vs Specialist SSV Outcomes

Site	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Renewstable Sivutse A		DFFE Screening Tool	SSV outcome	
Renewstable Sivutse B		DFFE Screening Tool SSV outcome	SSV outcome	

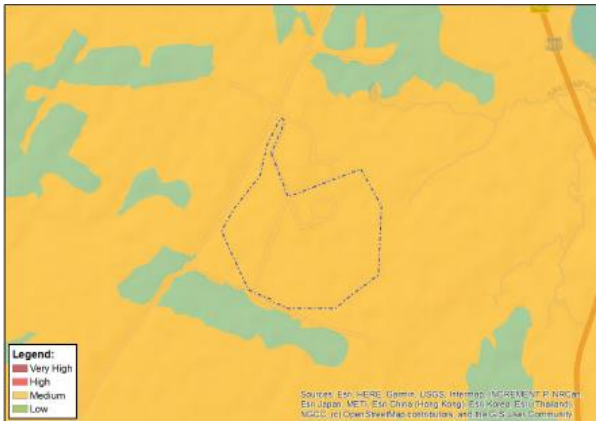
Sivutse A	Sivutse B
	

Figure 26: Plant species theme sensitivity (Screening Tool Report, 2024).

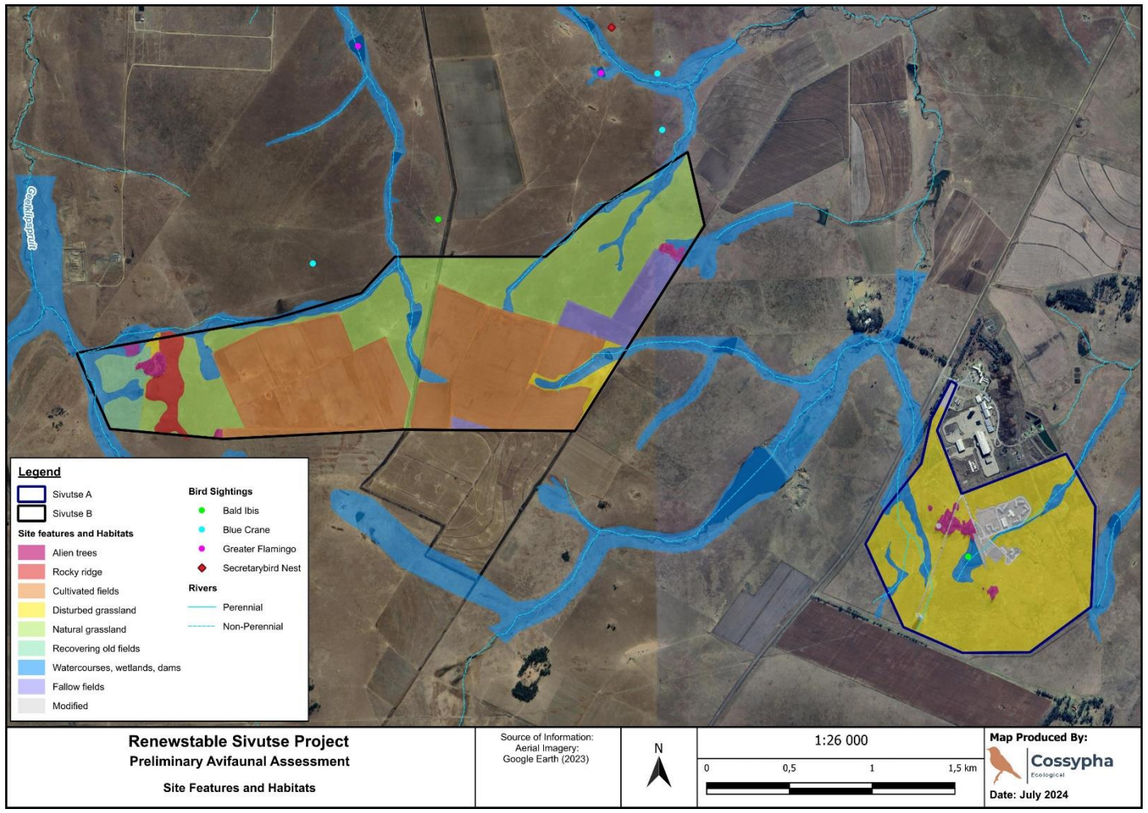
Table 32: Plant species Sensitivity Screening Tool Vs Specialist SSV Outcomes

Sites	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Renewstable Sivutse A			DFFE Screening Tool SSV outcome	
Renewstable Sivutse B			DFFE Screening Tool SSV outcome	

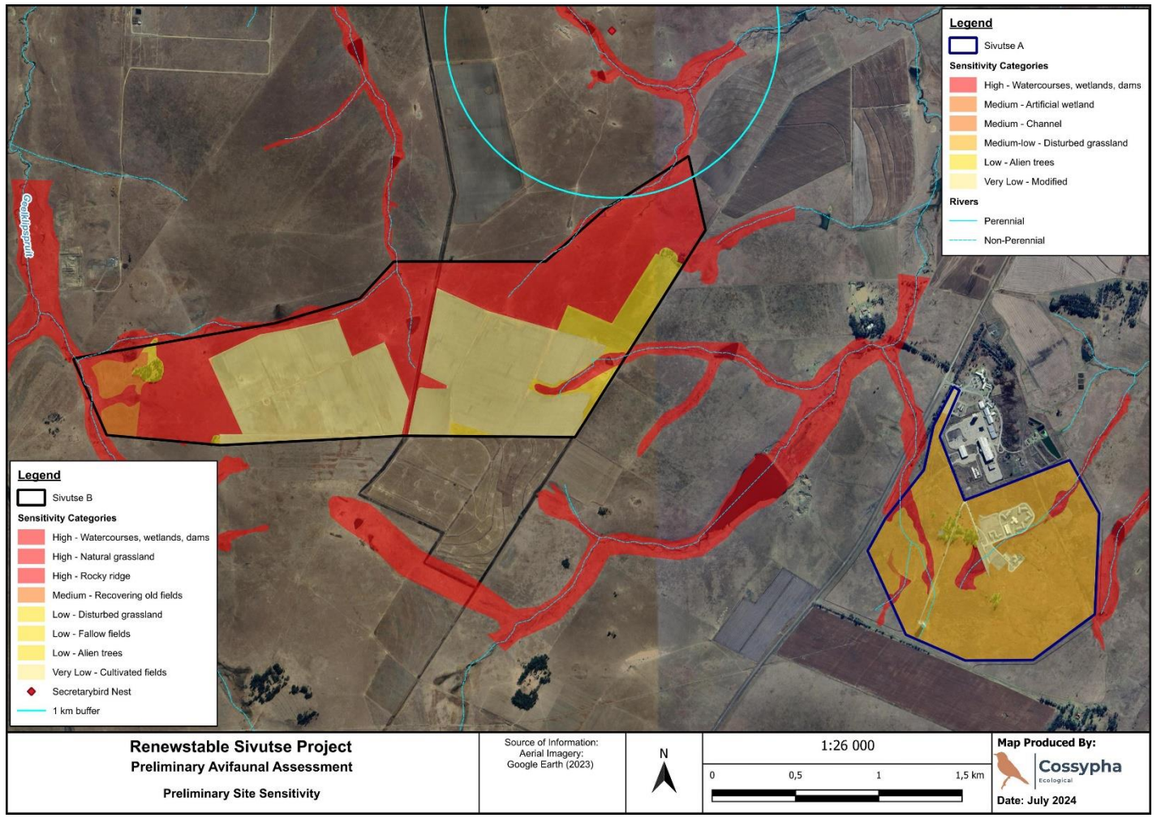
10.9.2 AVIFAUNA

The Sivutse A site is generally more disturbed by past activities (old Majuba Colliery underground mine), and is comprised primarily of disturbed grassland, with large stands of alien Eucalyptus trees in the highly disturbed areas. Parts of the site are completely modified by buildings (now derelict), roads, and other old infrastructure. A few drainage lines and wetlands occur around the site and a small dam occurs towards the centre

The Sivutse B site and the surrounding areas are comprised of natural open grassland habitat and farmland, interspersed with natural watercourses with wetlands and small farm dams, that collectively create an ecosystem that supports many avifaunal species typical of the grassland biome. The most important habitat for avifauna occurring in the Sivutse study area is the natural open grassland vegetation, and the natural drainage lines occurring in the northern and eastern sections of the Sivutse B site. This natural grassland is connected to grasslands to the north and west. The extensive tracts of open grassland vegetation on this site and in the surrounding areas supports most of the terrestrial species found in the region, including priority species such as gamebirds, raptors, cranes, ibises, and smaller gregarious species. The many watercourses, farm dams, and wetlands provide important habitat for waterfowl and other wetland associated species such as ducks, geese, herons, and flamingos, while the wet areas provide surface water for drinking for all fauna. Another key habitat in the study area is the rocky ridge occurring in the western corner, which creates habitat heterogeneity within the landscape facilitating species diversity. Rocky areas provide a greater diversity of potential niches for plants and animals because of the microclimatic conditions they offer (Burnett et al., 1998), therefore creating unique feeding opportunities in the landscape. Rocks also provide perching and display opportunities for many birds.



Habitat features of the Sivutse study area



Preliminary avifaunal habitat sensitivity of the Sivutse study area

Figure 27: Avifaunal Habitat Sensitivity (Cossypha, 2024)

Avifauna Site Sensitivity Verification

According to the National Web-based Environmental Screening Tool (2023), the relative Avian sensitivity is rated low in the Screening Tool (Refer to Figure 28 below), which was verified to be High during a site visit.

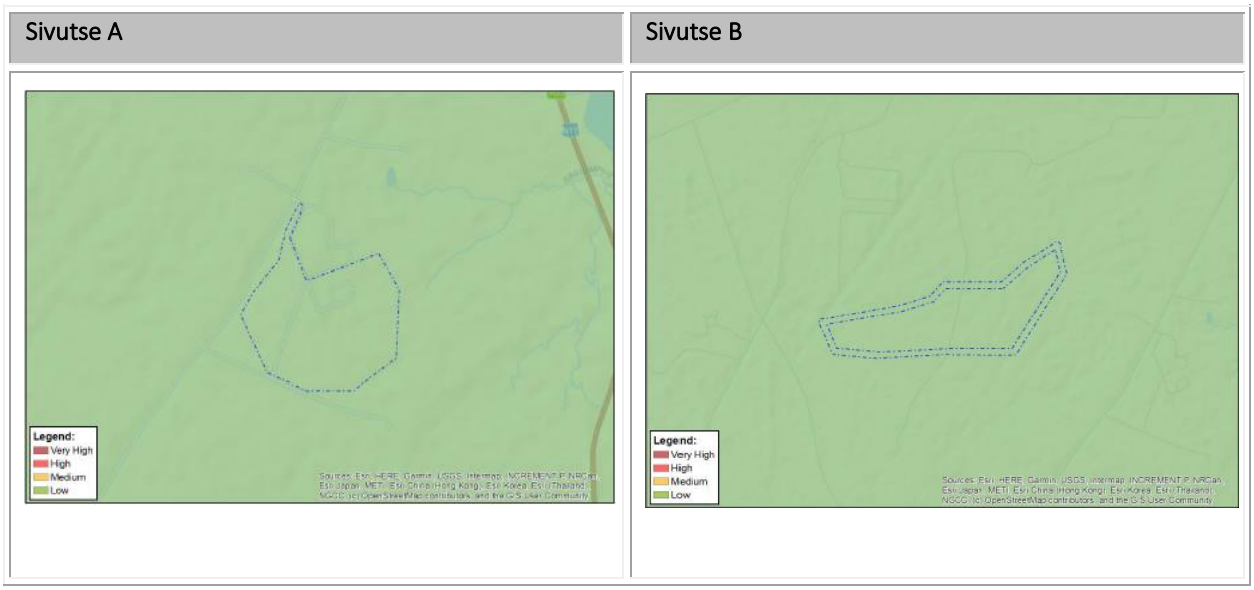


Figure 28: Relative avian theme sensitivity (Screening Report Tool, 2024).

Table 33: Relative avian Sensitivity Screening Tool Vs Specialist SSV Outcomes

Sites	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Renewstable Sivutse A		SSV Outcome		DFFE Screening Tool
Renewstable Sivutse B		SSV Outcome		DFFE Screening Tool

10.9.3 HERPETOFAUNA

Reptiles

The Herpetofauna specialist indicated that reptiles were identified, and possible reptile retreats, such as burrows, were noted during the site visit. The habitat quality and quantity of potentially present Red Listed species were evaluated. The adjoining properties (approximately 20m) were also scanned for sensitive reptile species and habitats. The list of confirmed presences was augmented with anecdotal information from the local community near the study area. Conclusions were drawn based on the impressions gathered during the site visit, as well as publications such as FitzSimons' Snakes of Southern Africa (Broadley, 1990), Field Guide to Snakes and Other Reptiles of Southern Africa (Branch, 1998), A Guide to the Reptiles of Southern Africa (Alexander and Marais, 2007), Atlas and Red List of the

Reptiles of South Africa, Lesotho and Swaziland (Bates et al., 2014). The following habitats/vegetation were thoroughly investigated for the presence of Giant Girdled Lizard (Smaug giganteus), namely:

- Areas covered by *Themeda* grasses (Red grass).
- Areas where compacted sandy loam soils occur with little to no rocks.
- Short grasses (less that 30-40 cm in length).

Amphibians

Potential habitats for red-listed frog species previously recorded in the study area were then identified. Habitat quality and quantity for red-listed species potentially present were then evaluated. This was then augmented with anecdotal evidence provided by locals. Adjoining properties (approximately 20m) were also scanned for important frog species. Samplings were conducted on moist to semi-aquatic areas, suitable habitats for which amphibian species of conservation were also investigated. Frog calls were compared with pre-recorded calls from Du Preez and Carruthers (2009)'s CD and identified from this comparison. Almost all amphibian species in South Africa have unique and identifiable vocalisations that can be used to identify individuals at a species level. Vocalisations that were heard at the project site were recorded and identified. Most South African amphibians are nocturnal and/or are more vocal at night and are usually less concealed than during the day. For this reason, a nocturnal survey of the project area was conducted for several hours on the night of the 16th of May 2024. Headlamps and torches were used to locate individual frogs and reptiles.

10.10 SOIL AND LAND CAPABILITY

The study area comprises open veld, utilised primarily for livestock grazing. Maize cultivation was observed along the southeastern portion of the study area. The Majuba Power Station is approximately 3 km west of the study area. No signs of land degradation, such as erosion gullies, were found within the study area. The land capability associated with the soils occurring within the study area is non-arable, grazing, woodland, or wildlife capability classified as Class VII (Figure 25).

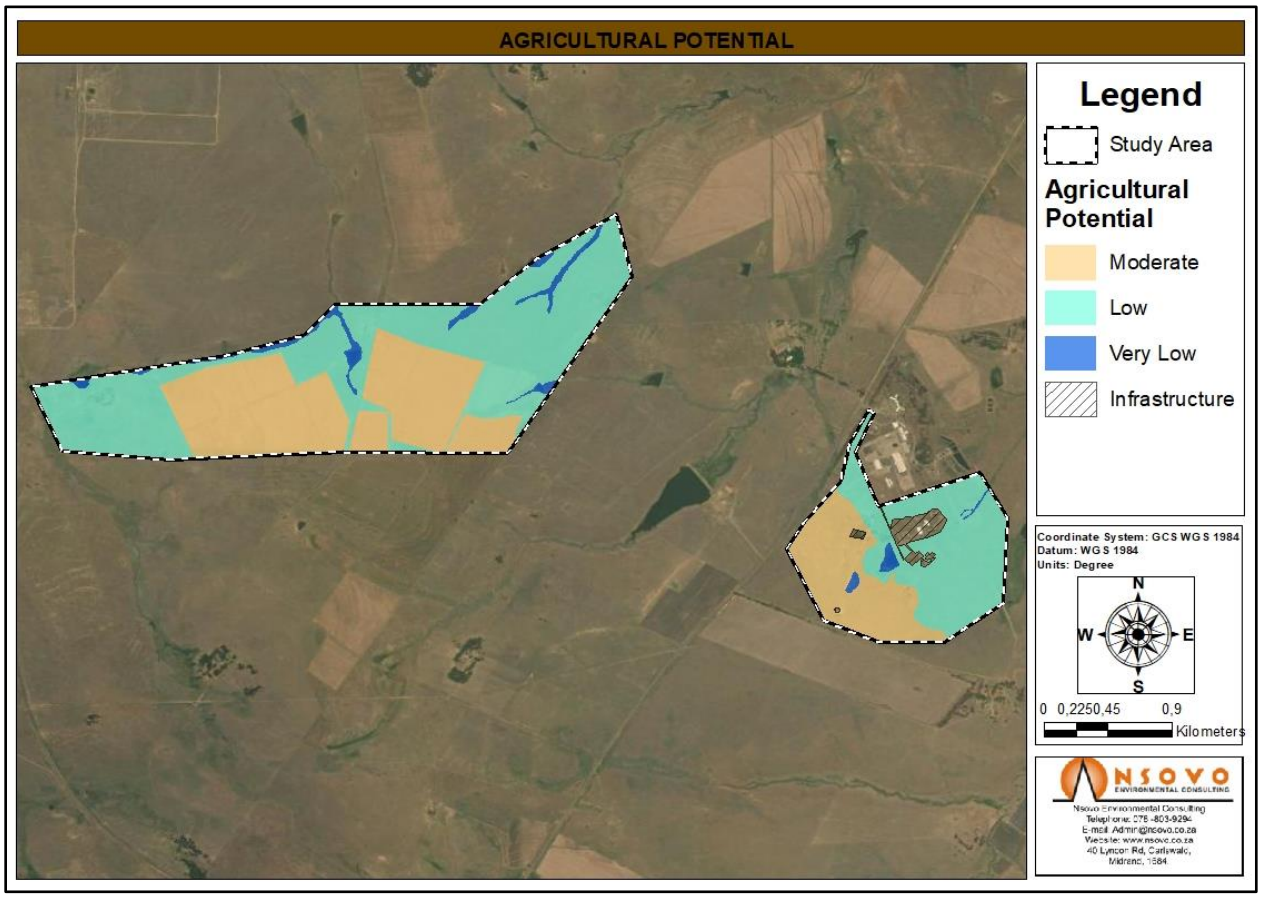


Figure 29: Agricultural potential associated with the study area.

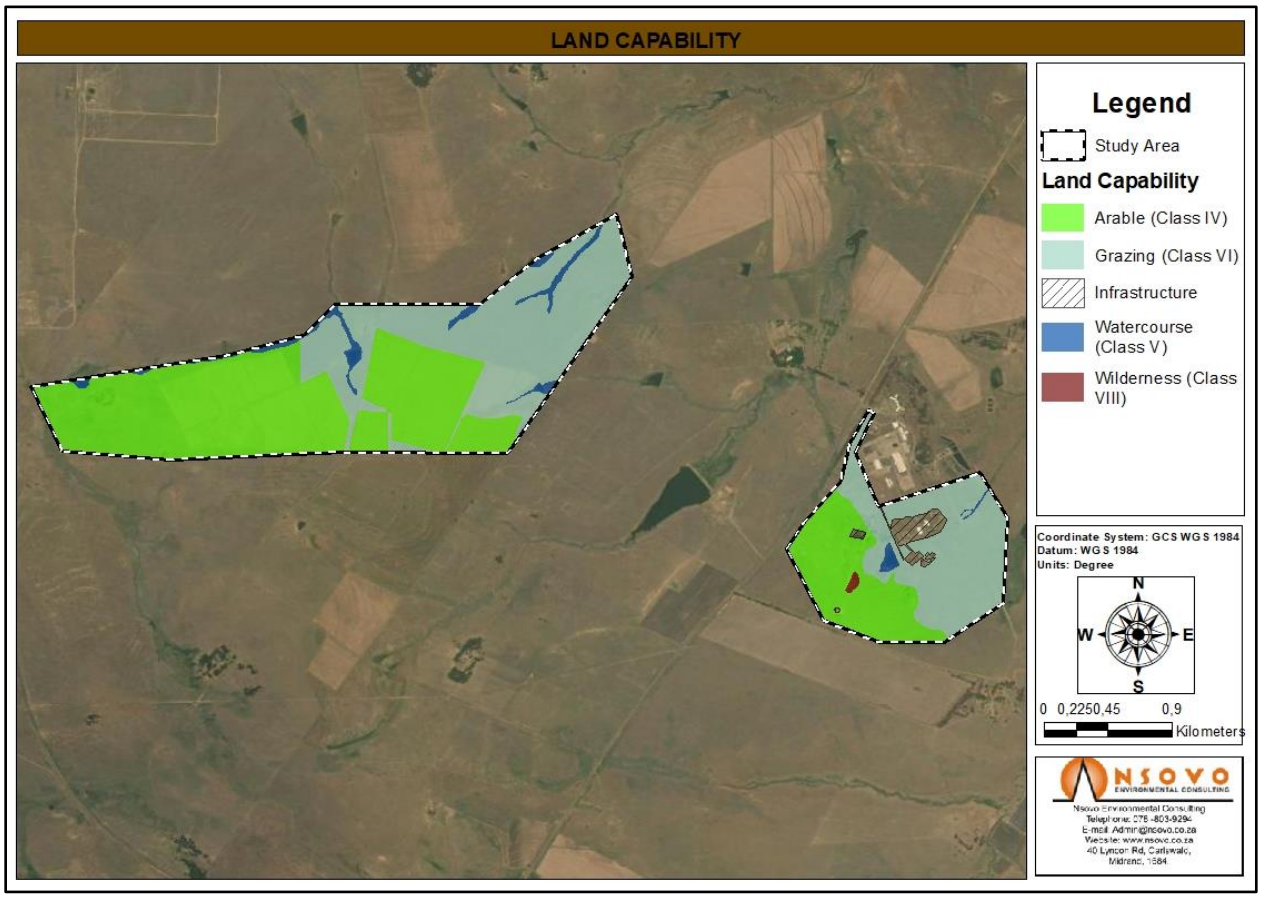


Figure 30: Map depicting land capability of soils within the Study Area.

Agricultural Site Sensitivity Verification

According to the National Web-based Environmental Screening Tool (2024), the relative agricultural theme is High sensitivity. The site sensitivity verification has confirmed that the agricultural sensitivity is High.

Figure 31: Agricultural Theme Sensitivity (Screening Tool Report, 2024).

Table 34: Relative Agricultural Sensitivity Screening Tool Vs Specialist SSV Outcomes

Site	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Renewstable Sivutse A		DFFE Screening Tool SSV Outcome		
Renewstable Sivutse B		DFFE Screening Tool SSV Outcome		

10.11 CIVIL AVIATION

SACAA Regulations and Technical Standards (CARS and CATS) often require Aeronautical Studies for developments deemed to present high safety and/or operational risk to nearby aerodromes. CATS 139.01.30, which was amended in March 2023 (SA-CATS2 of 2023 and Amendment 26 of the Civil Aviation Regulations) imposes on aerodrome licence holders the obligation to mitigate risks that obstacles or other issues may present to aerodrome or aircraft operations.

The CASSV findings are that sensitivity is low.

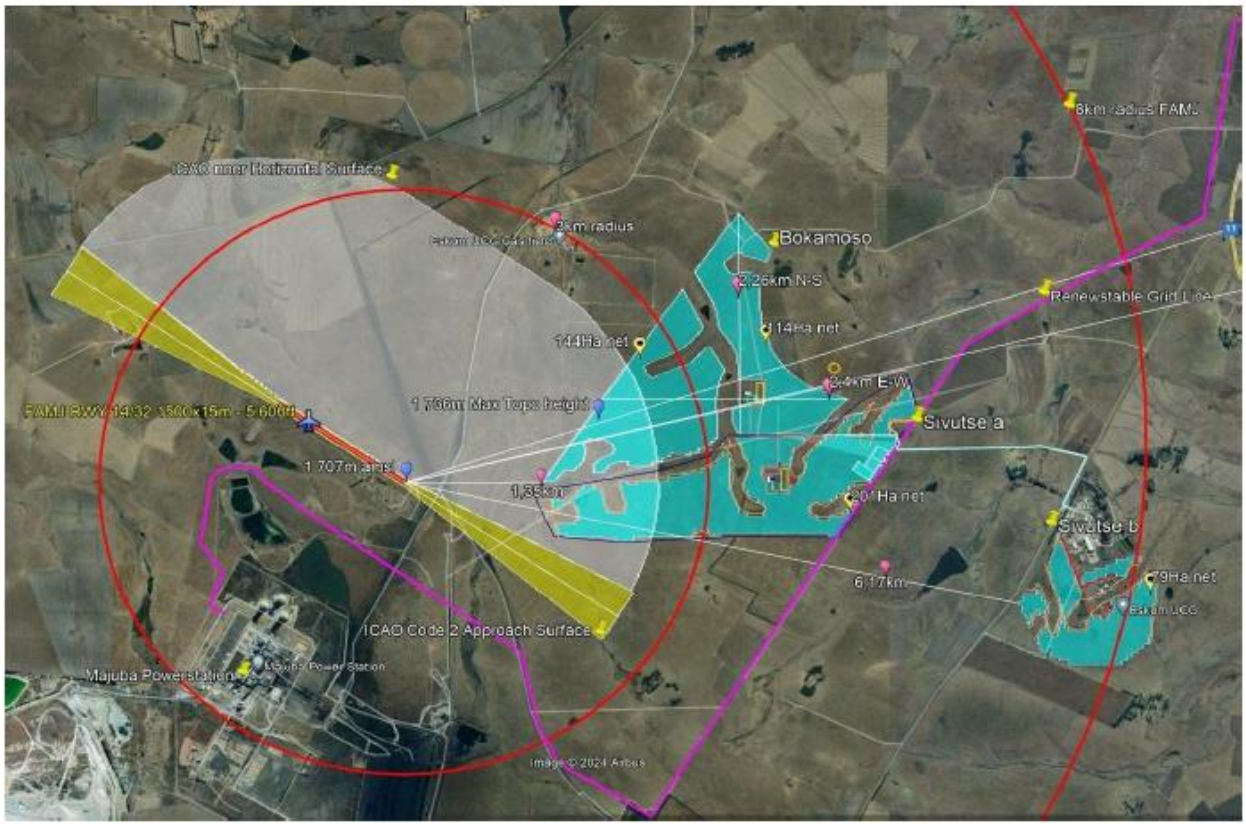


Figure 32: Proposed Site in relation to Majuba Aerodrome FAMJ (GWI Aviation Advisory, 2024)

Civil Aviation Site Sensitivity Verification

According to the National Web-based Environmental Screening Tool (2023), the relative civil aviation theme is medium sensitivity. The site sensitivity verification has confirmed that civil aviation sensitivity is low.

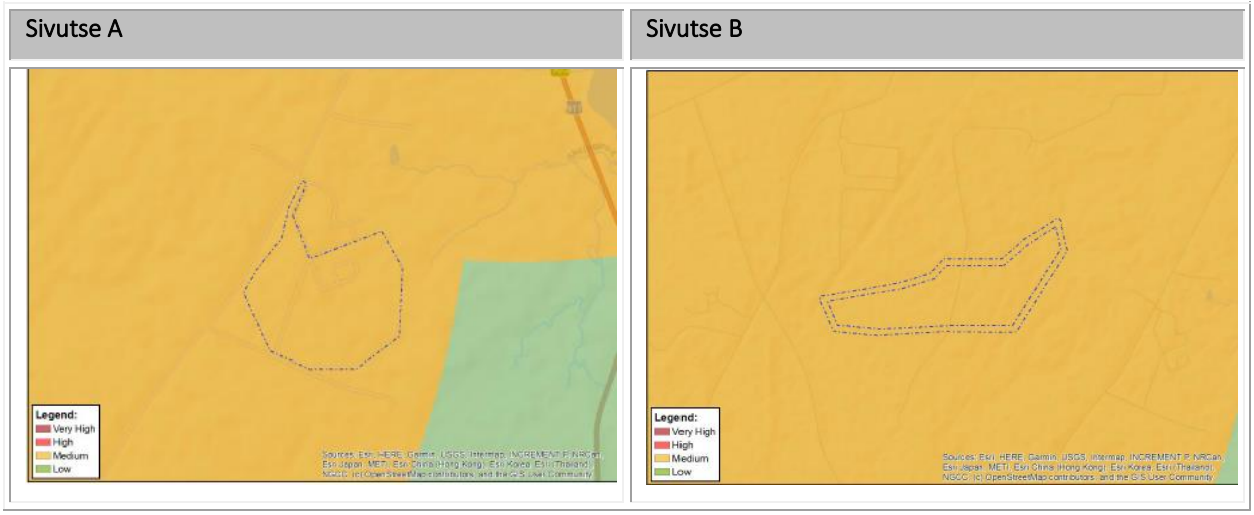


Figure 33: Relative Civil Aviation theme sensitivity (Screening Tool Report, 2024).

Table 35: Relative Civil Aviation Sensitivity Screening Tool Vs Specialist SSV Outcomes

Site	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Renewstable Sivutse A			DFFE Screening Tool	SSV outcome
Renewstable Sivutse B			DFFE Screening Tool	SSV outcome.

10.12 DEFENCE

Defence is rated low in the Screening Tool (Refer to Figure 34 below) and this was verified to be low during a site visit and GIS mapping, which determined that there are no areas of defence sensitivity near the proposed project.

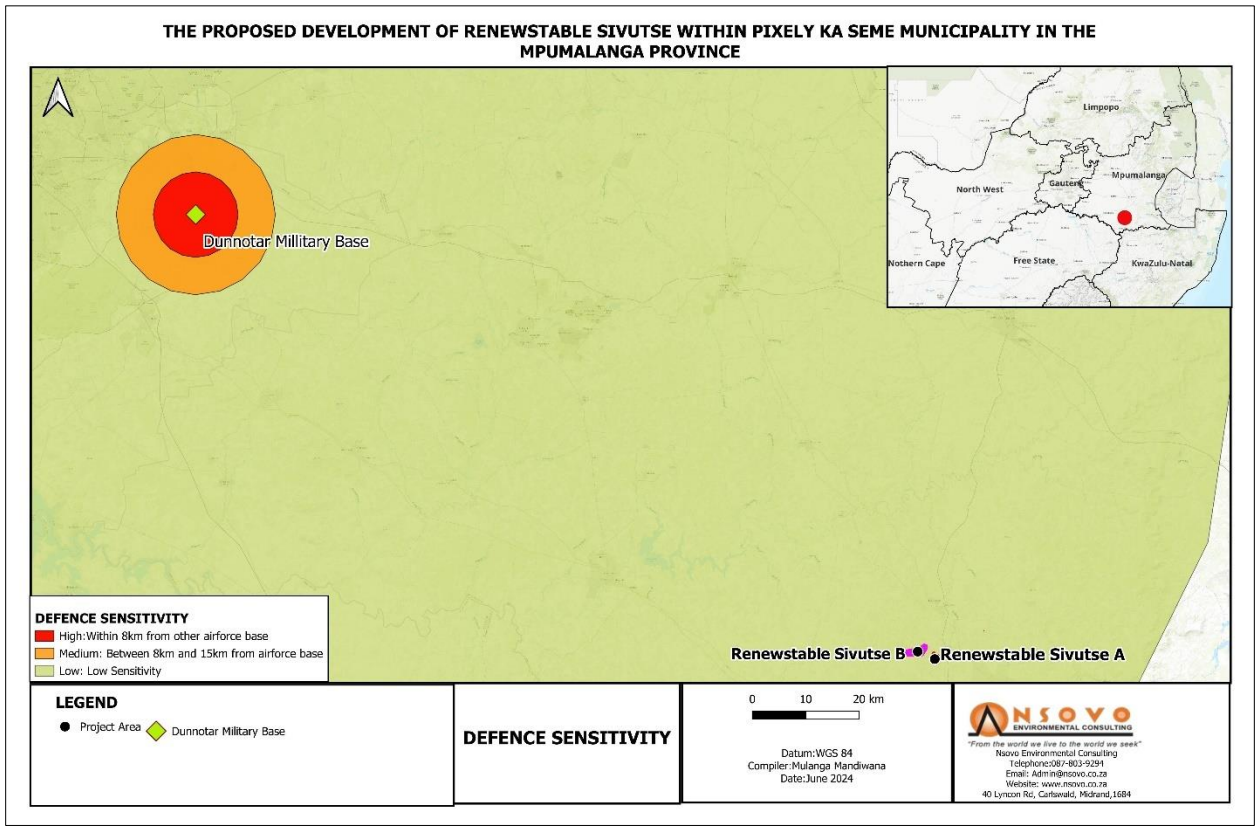


Figure 34: Defence Sensitivity map

Defence Site Sensitivity Verification

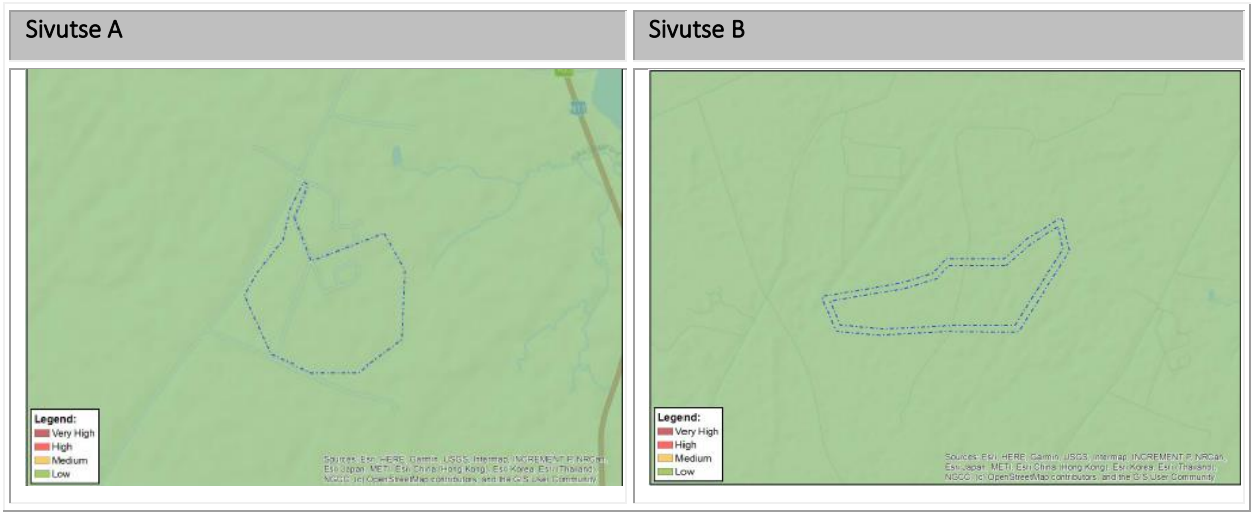


Figure 35: Relative Defence theme sensitivity (Screening Tool Report, 2024).

Table 36: Relative Defense Sensitivity Screening Tool Vs Specialist SSV Outcomes

Site	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Renewstable Sivutse A				DFFE Screening Tool SSV outcome
Renewstable Sivutse B				

10.13 RFI THEME

Furthermore, the guideline minimum distances prescribed by the FAA for the siting of facilities away from radar, navigational, and other communications devices they could potentially impact range from 250ft to 500ft, which are well below the proposed development's distance from any ground-based communications infrastructure and radio equipment, the closest of which is beyond 15 km or overflying aircraft. The risk of such interference is thus low.

RFI is rated low in the Screening Tool, and this was confirmed during the site visit. Furthermore, the proposed development is not near the weather surveillance radar or SKA radio telescope, hence the low sensitivity and risk of interfering with the telescope. The CSIR Wind and Solar Phase 2 SEA (DEFF, 2019: Part 3.13, Page 2) indicates that solar PV developments do not impact weather surveillance radar.

Table 37: Relative RFI Sensitivity Screening Tool Vs Specialist SSV Outcomes

Site	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Renewstable Sivutse A				DFFE Screening Tool SSV outcome
Renewstable Sivutse B				DFFE Screening Tool SSV outcome

10.1 HYDROLOGY

Renewstable Sivutse is situated in Quaternary catchments C11E and C11J in the Upper Vaal Water Management Area (WMA) which is situated in the northeastern part of South Africa, in the Mpumalanga Province. The study area drains into the Skulpspruit. The western side of the study area drains into the Geelklipspruit. Both Geelklipspruit and Skulpspruit eventually drain into the Vaal River approximately 30km north of the study area.

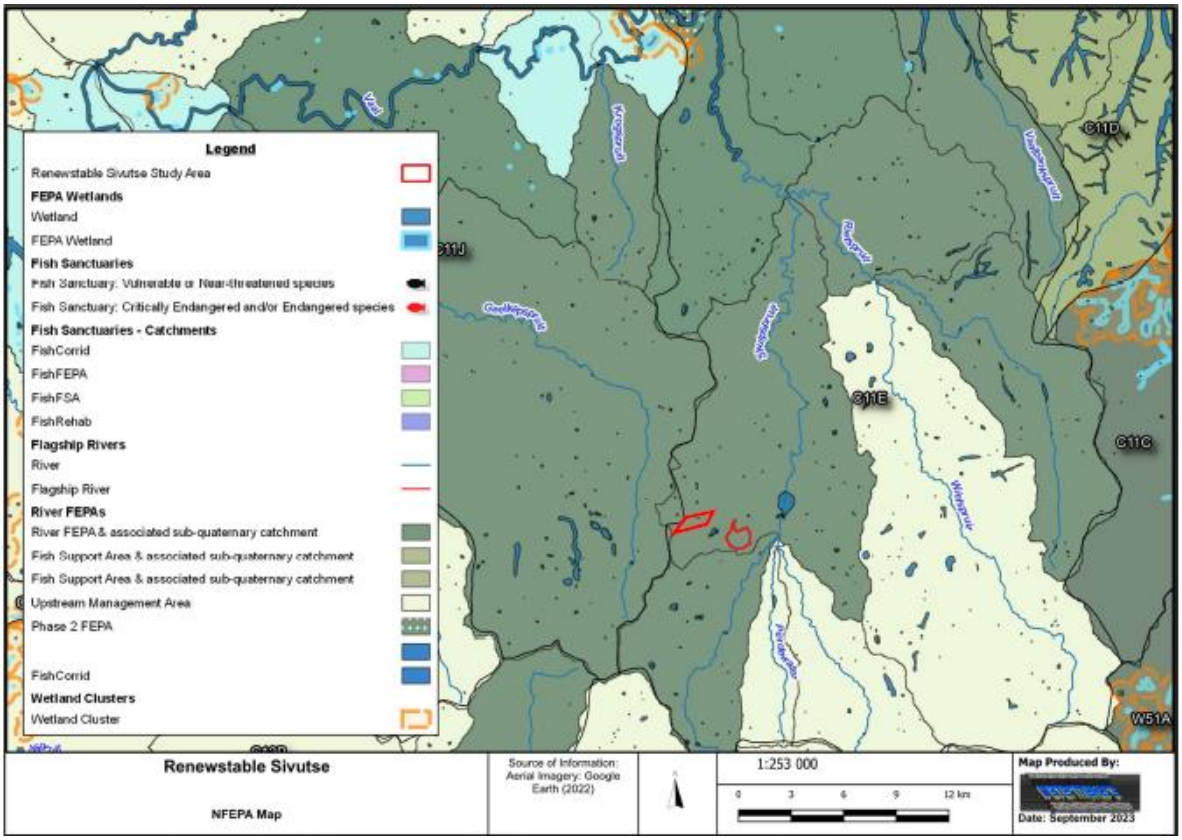


Figure 36: NFEPA map indicating closest FEPA features in relation to the study area (WaterMakers,2024)

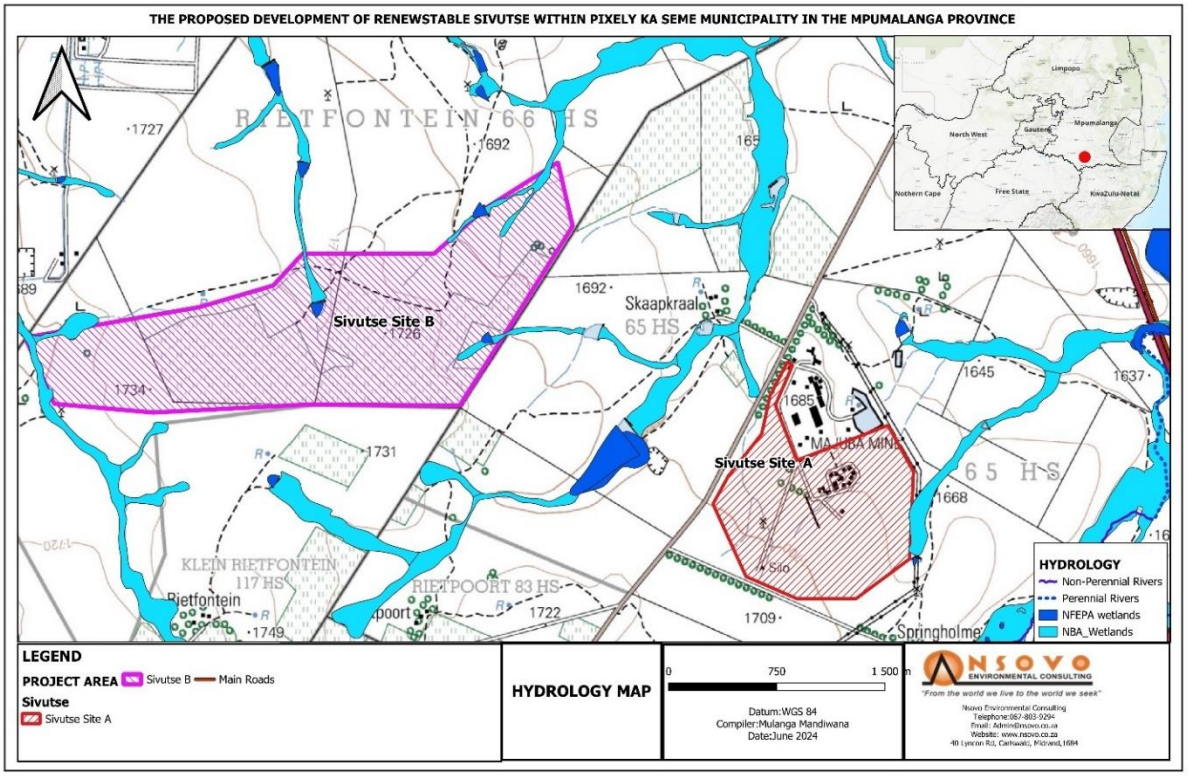


Figure 37:Hydrological map of the proposed location.

10.2 AIR QUALITY AND POLLUTION

Air quality is an issue of concern in Mpumalanga, as it is in many other parts of South Africa. Poor air quality's driving forces include human activities and natural processes. Driving forces associated with human activities include economic activity, urbanisation, industrial development, and population growth. Forces from natural processes can consist of climate change, natural disasters, and many others. These driving forces lead to pressures on the natural environment, such as increased resource demand, habitat change, and increased development. The pressures, in turn, impact the natural, social, political, and economic environments (Mpumalanga DACE, 2003).

Various natural and anthropogenic sources of air pollution exist in Mpumalanga, ranging from wildfires to industrial processes, agriculture, mining activities, power generation, paper and pulp processing, vehicle use, and domestic use of fossil fuels. Different pollutants are associated with each activity, ranging from volatile organic compounds and heavy metals to dust and odours (Mpumalanga DACE, 2003).

Air quality is defined as noise and odour, and all sources of air pollution (i.e., point, area, and mobile sources) are addressed. The Mpumalanga Air Quality Management Plan has been developed to comply with the National Environmental Management: Air Quality Act, 39 of 2004, and, more specifically, to guide Air Quality Management in the Gert Sibande District Municipality. The Plan identifies air pollution sources in the proposed locations as follows:

- The outdoor sources of air pollution resulting from human activities comprise three broad categories.
- Stationary sources can be subdivided into rural areas, such as agriculture, mining, and quarrying, and industrial point and area sources, such as chemical manufacturing, non-metallic mineral products, basic metal industries, and power generation.
- Community sources include heating homes and buildings, municipal waste and sewage sludge incinerators, fireplaces, cooking facilities, laundry services, and cleaning plants.
- Mobile sources include combustion-engine vehicles, such as light-duty petrol-powered cars, light and heavy-duty diesel-powered vehicles, motorcycles, and aircraft, and line sources, such as fugitive emissions from vehicle traffic.
- Air pollutants are traditionally classified into suspended particulate matter (dust, fumes, mists, and smoke), gaseous pollutants (gases and vapours), and odours. Few sources of air pollutants exist within and around the proposed area. Motor vehicles along the N11 may sometimes have elevated particulates and Nitrogen oxide (NO2) concentrations. Dust generation is expected from the agricultural areas around the study area.

EHRCON (2024) defines receptors as sites (or areas) that the process or activity may potentially impact. In their study, sensitive receptors were selected based on proximity to the project and comprise farmsteads, small holdings, residences, wildlife conservancies, recreation, commerce, utilities, and light/heavy industrial and mining processes up to 5 kilometers from the proposed power plant.

The DFFE Screen Tool Map confirms that the proposed site is within the Mpumalanga Air Quality Priority area.

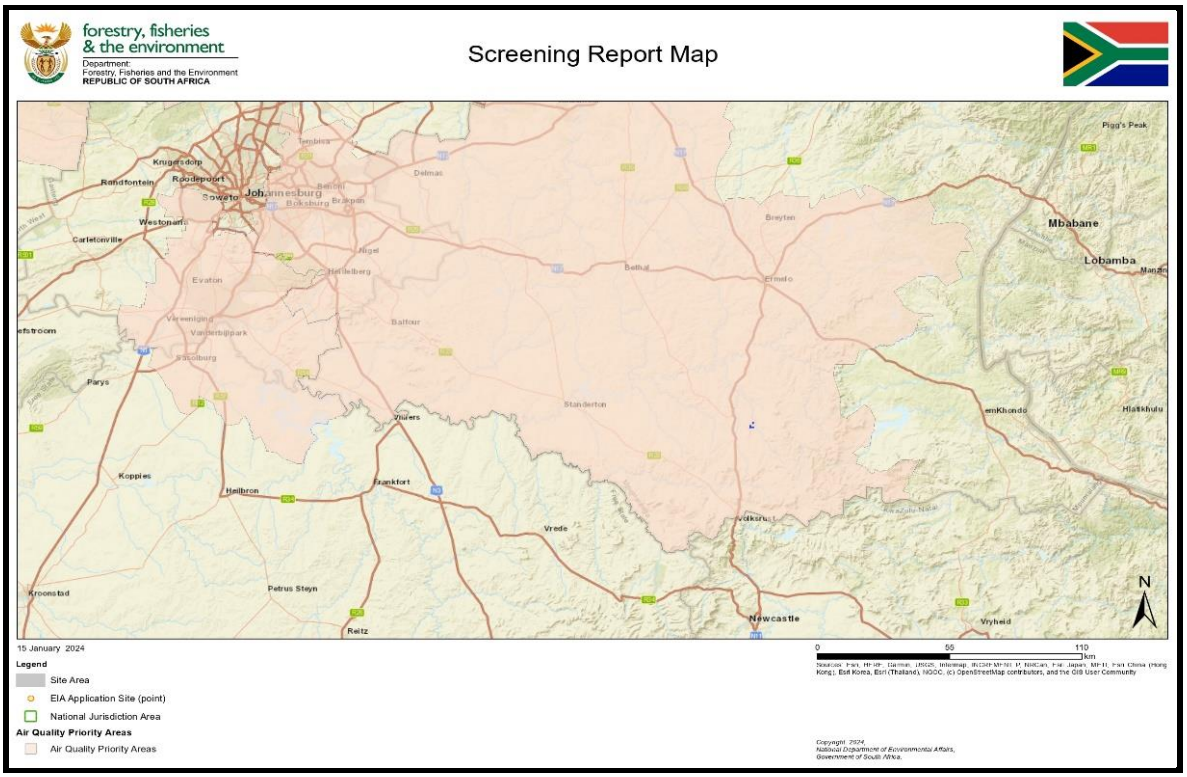


Figure 38: Confirmation of Air Quality Priority Areas Within the Study Area

10.3 SENSORY ASPECTS

10.3.1 VISUAL ASPECTS

The study area is sparsely populated, with a higher population in the small town of Amersfoort. Commercial farms and homesteads are near the site. The towns and surrounding areas are generally degraded and not very scenic. Farm residents will experience intrusion on their views due to the presence of the proposed new power plant. It can be concluded that the study area has a low density of residents, which will affect the viewers. The visual receptors included in this study are:

- Residents;
- Tourists; and
- Motorists.

The entire study area is considered to have low tourism potential, mostly because of the environmental degradation caused by mining developments and human settlements. There is also no direct major thoroughfare to prominent tourist destinations. The temporary exposure to possible unsightly views of the construction camps and the associated

activity will be minimal and localised. The severity of the power plant's visual impact on tourists will be improbable, causing a low visual impact.

The construction and operation of the proposed power plant may visually impact users within close proximity of the site. After mitigation, the visual impact for most users is expected to range between moderate and low. An advantage of the power plant is that it utilises a renewable energy source to generate electricity. It does not emit harmful by-products or pollutants that may pose health risks to users or observers. If mitigation is undertaken as recommended, it can be concluded that the significance can be managed to acceptable levels.

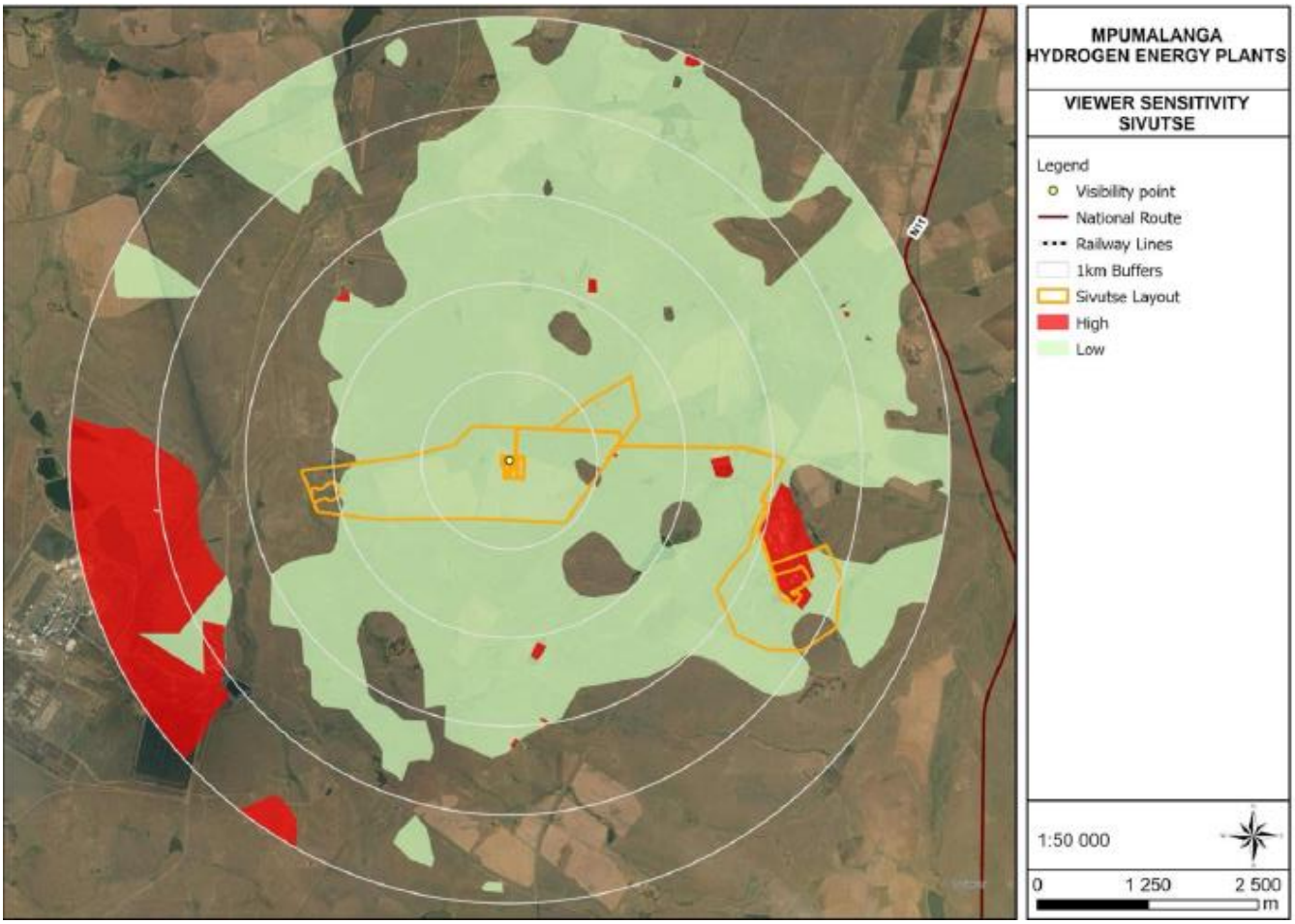


Figure 39: Viewer sensitivity to the Renewstable® Sivutse site (Outline Landscape, 2024).

Visual Impact Site Sensitivity Verification

The Landscape Solar theme sensitivity was rated very high in the Screening Tool (Refer to Figure 40 below) and this was verified to be low during a site visit.

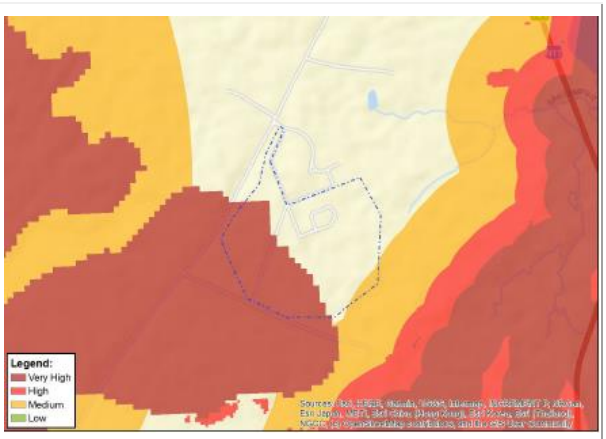
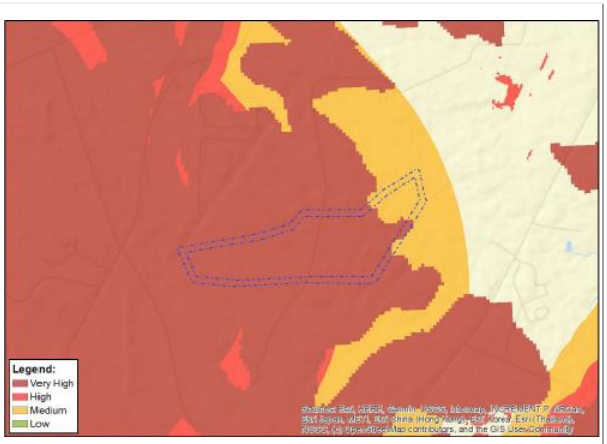
Sivutse A	Sivutse B
	

Figure 40: Relative landscape (Solar) theme sensitivity (Screening Tool Report, 2024).

Table 38: Relative landscape Sensitivity Screening Tool Vs Specialist SSV Outcomes

Site	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	DFFE FINDINGS			
Renewstable Sivutse A	DFFE Screening Tool		SSV outcome	
Renewstable Sivutse B	DFFE Screening Tool		SSV outcome	

10.3.2 GLINT AND GLARE

Receptors are sensitive elements that absorb light and transmit visual signals to the brain. The three (3) different receptors are as follows:

- Buildings and Roads: Buildings and roads are known as ground-based receptors as they are fixed onto the ground.
- Ground-based receptors identified for this project include:
    - Residential and commercial buildings adjacent to the proposed site;
    - Access Roads adjacent to the development;
    - Industrial facilities close to the site;
- Aviation: Aviation receptors are those specific towards the aviation industry and associated infrastructure.

The array will comprise 134,000 modules of 2,68m2 each, with several solar PV modules installed in each frame. The frames will be linked and operated by an electro-mechanical tracking mechanism that will allow the interlinked frames

to be rotated about the E-W axis to a maximum angle of 60o (above the horizontal). Geometrically, at solar elevations higher than 30o (i.e. throughout the year, at this location), the tracking mechanism will allow the PV modules to face the sun directly at midday, i.e. the reflected image of the sun will be directed back towards the sun itself.

The Glint and Glare (G&G) assessment arises because of potential risks to aviation operations at FAMJ posed by sunlight reflections from the solar PV arrays on the Renewstable® Qhakaza site. The types of reflections considered are specular reflections (as opposed to diffuse reflections), where the surface uniformity of the solar PV modules will result in the reflected light beams remaining relatively concentrated.

The preceding analysis has demonstrated that the relative position of the proposed solar PV array relative to the FAMJ runway, the sun position at various times of the year, and the potential of the proposed tracking mechanism to decrease the angles of incidence significantly all contribute to a lower risk of glint off the array than the pre-existing glare risk of low angle sun itself, itself already low. The marginal risk and its impact under all scenarios analysed is thus considered insignificant, and no mitigation will be required.

10.3.3 NOISE

In terms of the Noise Regulations, a noise disturbance is created when the prevailing ambient noise level is exceeded by 7.0 dBA or more. Noise is part of our daily exposure to different sources, which is part of daily living, and some of these physical attributes may sometimes be part of the ambient levels that people get used to without noticing the higher levels. Two aspects are important when considering the potential impacts of a project:

- The increase in the noise levels; and
- The overall noise levels that the proposed activities will create.

During construction, the immediate environmental noise levels will temporarily shift upward. However, the noise increase at the abutting residential properties will not exceed the prevailing ambient noise levels during the construction, operational, and decommissioning phases, as it may be below the threshold value of 7.0 dBA.

10.3.4 CLIMATE CHANGE IMPACT

Scientific opinion suggests that the continued emission due to human activities of greenhouse gases, principally carbon dioxide and methane, may bring about significant and long-term changes to the functioning of the earth's atmosphere. Of great uncertainty still are the possible impacts and damage attributable to such climate change, although indications are that their scale could be significant. According to the White Paper on Energy, South Africa is responsible for 1,6% of global greenhouse gas emissions, and the country's energy sector is the single largest source of greenhouse gas emissions in Africa, being dependent on coal for more than 75% of the country's primary energy needs during 1997. This level of emissions is also mainly because of the high level of coal used by the electricity generation and synthetic fuels industries and the high level of industrialisation that produces high energy content

products. A balanced, least-cost energy supply mix is promoted to fulfil the national energy policy of making clean, affordable and appropriate energy available to all population sectors. Although the country faces obligations to reduce its greenhouse gas emissions soon, international governance of this problem is evolving.

When considering climate change, two aspects are relevant:

- Reducing greenhouse gas emissions (climate protection relevance); and
- Adapting to climate change (climate change adaptation relevance).

10.3.5 KEY ISSUE: GREENHOUSE GAS EMISSIONS

Regarding greenhouse gas emissions, the emissions during the project's construction and operational phases are unlikely to have a major negative impact on the country's per capita GHG emissions. The construction phase is relatively short compared to the project's design life, and emissions during this time will primarily result in tailpipe emissions of construction vehicles and equipment. Power generation is limited to renewable sources (Solar and hydrogen) for the operational phase, so no GHG is emitted.

Key issue: Climate change adaptation

Adapting to climate change has been identified as a critical threat to sustainable development and the general welfare of society. The proposed project may be vulnerable to environmental changes due to climate change.

A Climate Change Study will be undertaken to consider both greenhouse gas emissions (climate protection relevance) and climate change adaptation measures that must be considered part of the project's design.

10.4 SOCIAL BASELINE

The proposed project can have positive and negative socio-economic consequences; therefore, the socio-economic baseline conditions must be understood to ensure accurate identification and assessment of the proposed Project's potential impacts. This section provides an overview of the socioeconomic baseline of the proposed project area from the district and local municipality levels.

10.4.1 SOCIO-ECONOMIC SENSITIVE AREAS IN PROXIMITY TO THE SITE

Figure 41 indicates the socio-economic sensitive areas in proximity to the proposed development. Neighbouring farms are large, and local communities within a 5 km radius may experience a range of impacts related to the proposed Project; as such, these farms and local communities represent the direct influence. No dwellings are located within the project site; however, numerous farmhouses/homesteads are sparsely populated within a 10 km radius.

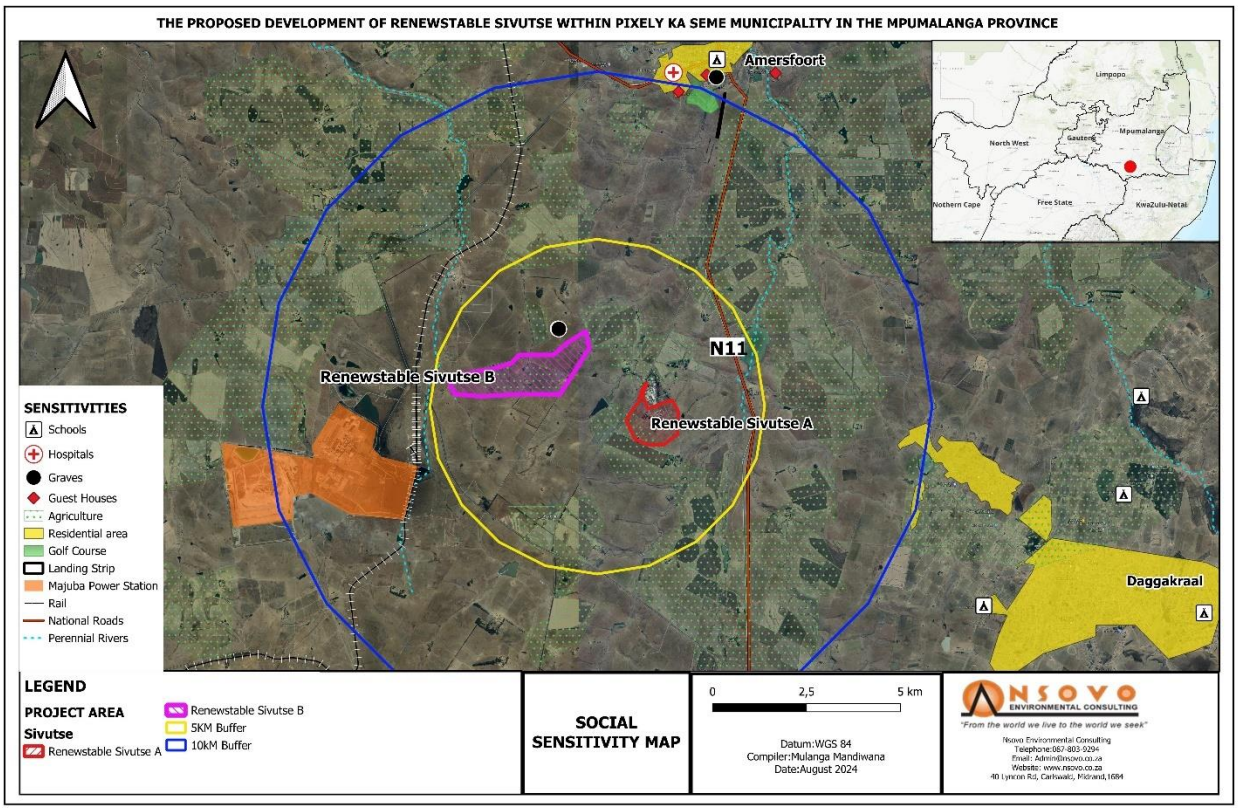


Figure 41: Socio-Economic Sensitive Areas Close to the Project

Table 39: Definition of significance rating

LEGEND		Definition
Very High Sensitivity		The identified issue is rated extremely sensitive to the negative impact on project development. As a result, the area will either have very high conservation value, very high existing/ potential socio-economic value or hold legal protection status.
High Sensitivity		The area is rated highly sensitive to the negative impact on project development. As a result, the area will either have high conservation value or existing/potential socio-economic value.
Medium Sensitivity		The area is rated as being of medium sensitivity to the negative impact on project development. As a result, the area will either have medium levels of conservation value and/or medium levels of existing/potential socio-economic value.
Low Sensitivity		The area is considered to have low sensitivity levels in the context of project Development.

Table 40: Socio-economic sensitivity area close to the project.

Constraints	5km	10km
Residential /Hospitality		
Social Services – Schools and health care facility		
Agricultural Land		
Road		
Rail		
Graves		
Social Facility -Golf Course		
Land Claim	To be assessed	

10.4.2 LAND USE

Land use within the Municipality accommodates diverse activities, including agriculture, mining, residential development, and conservation. In this context, careful planning is essential to ensure land is utilised efficiently, benefiting the community and the environment. This approach supports economic growth and encourages social integration, balancing the needs of various sectors to create a cohesive and sustainable community.

- Agriculture dominates land use in rural areas, particularly crop production and livestock farming. These activities are vital for local food security and economic stability, and much of the rural land is dedicated to agriculture and grazing.
- Mining activities, especially in areas rich in coal deposits, contribute significantly to land use and the district's economic activity. Mining operations affect land allocation, requiring dedicated extraction, processing, and associated infrastructure zones.
- Residential Areas: Land use for residential purposes varies from formal housing developments in urban towns to informal settlements in rural peripheries. These residential areas require careful planning to ensure access to essential water, electricity, and transportation services.
- Conservation: Some portions of land may be allocated to conservation efforts, especially in areas with significant biodiversity or near critical water resources. Conservation areas are essential for protecting the environment and maintaining the ecological balance in the region.
- Urban Development: Urban development is concentrated in towns and urban centres within the municipality. The land is allocated for commercial, residential, and industrial use, supporting economic activities while providing housing and services for the local population.

Figure 42: Land uses within the site

10.4.3 ECONOMIC LANDSCAPE

The municipality's economic landscape is shaped by a mix of key sectors, including agriculture, mining, manufacturing, and services, which collectively drive local economic activity. These sectors are vital for employment, income generation, and overall economic growth, but they also present challenges that must be addressed for sustainable development.

- Agriculture remains a dominant sector, particularly in rural areas. The municipality produces maize, soybeans, vegetables, and livestock. Agriculture provides food security, creates employment opportunities, and supports local agribusiness. However, the sector faces challenges such as fluctuating climate conditions, water scarcity, and the need for modern farming techniques. Agriculture contributes approximately 15% to the municipality's GDP, accounting for around 30-35% of total employment.
- Mining: The municipality is in a region rich in mineral deposits, especially coal, which plays a significant role in local and national economic activity. Mining provides substantial employment and generates considerable revenue. However, it also poses environmental challenges, particularly regarding land degradation and water pollution, which require careful management through sustainable practices. Mining contributes roughly 30% to the municipality's GDP and accounts for around 20-25% of employment, with many jobs concentrated in coal-rich areas.
- Manufacturing and Industry: Manufacturing supports economic diversification in the municipality, mainly through processing agricultural and mineral products. The development of light industry and small manufacturing enterprises provides additional employment opportunities. Manufacturing contributes about 10% to the municipality's GDP and employs approximately 10-15%.

- Public Services and Retail: The services sector, which includes retail, education, healthcare, and public administration, significantly contributes to the municipality's economy. Urban centres serve as hubs for commercial activity, providing essential goods and services to urban and rural populations. Retail is mainly growing in larger towns, driven by increased consumer demand and urbanisation. The services sector contributes approximately 25% to the municipality's GDP and accounts for around 25-30% of employment, with most jobs located in urban and peri-urban areas.
- Tourism and Conservation: In areas where conservation efforts are prioritised, tourism plays a role in the local economy. Natural reserves and biodiversity hotspots attract visitors, supporting eco-tourism and job creation in the hospitality and services sectors. Tourism contributes around 5% to the municipality's GDP and is responsible for 5-10% of total employment, with significant potential for growth through investment in infrastructure and marketing.

Despite these sectors' contributions, the municipality faces ongoing challenges such as high unemployment, income inequality, and infrastructure deficits. The overall unemployment rate is estimated at 30-35%, with youth unemployment often exceeding 50%. Addressing these issues requires economic diversification, skills development, and infrastructure investment. The municipality's economic strategy must also balance resource extraction with sustainable practices while enhancing sectors like tourism and services to create a more resilient economy.

10.4.4 POLITICAL AND ADMINISTRATIVE STRUCTURE

The province has a dual system of governance, with political institutions of governance and traditional authority, each of which is briefly detailed below:

10.15.3.1 Political Structure of Government

South Africa is a constitutional democracy with a three-tiered government and a separate judiciary. National, provincial, and local governments have legislative and executive authority in their respective sectors. The provincial government is responsible for developing the province's strategic vision and framework. They guarantee inter-municipal cooperation and coordination and ensure that each municipality accomplishes its tasks. District municipalities, comprising local municipalities, are responsible for developing IDP and the overall supply of services and infrastructure within the districts. The goal of district and local governments sharing responsibilities for local government is to provide equal access to resources and services to all communities, particularly disadvantaged ones.

10.15.3.2 Traditional Authorities

According to GSDM IDP 2019-2020, traditional authorities are primarily found in rural areas, where chiefs and their councils are in charge of organising local communities if any investment projects fall under their area of Jurisdiction

and handling community administrative duties. The project itself is not situated in the traditional area. However, the House of Traditional Leaders for the district has been established.

10.4.5 ROAD NETWORKS

The total road network of Dr Pixley Isaka Ka Seme is 278km, of which 85km is surfaced and 193km is gravel road. The Municipal roads are in poor condition due to high volumes of coal haulage trucks transporting coal to the Majuba Power Stations and other areas within and beyond its jurisdictional area, inflating the maintenance expenditures of all three spheres of government on roads across municipal boundaries. The N11, which runs through the area between Ermelo, Amersfoort, and Volksrust, is an important north-south traffic route that connects the Limpopo Province and Northern KZN. The N11 is a freight transportation route that can also be seen as a potential tourism corridor. Because it is in good shape, this route can be used to tap into the municipal jurisdiction's economic development.

Other provincial highways within the municipal boundaries include the R23 (which connects Volksrust to Standerton), R35 (which connects Amersfoort to Bethal), and the R543 (which connects Volksrust to Piet Retief). Some roads, primarily those maintained by local and provincial governments, must be adequately gravelled or tarred. Footbridges over streams and rivers are also in high demand in rural areas, where most roads are gravel and inaccessible during rainy seasons.

The proposed site is near the intersection of the regional road R35 and N11, and several access roads leading from either R35 or N11 provide access to the project site. Most of these roads require maintenance and upgrading. According to Pieter Jooste, the traffic volumes on the surrounding road network were determined in November 2023, with the common peak traffic hours occurring between 06h45-07h45 for the AM peak hour and 14h15-15h15 for the PM peak hour.

11 METHODOLOGY FOR ASSESSING THE SIGNIFICANCE OF POTENTIAL IMPACTS

The assessment of impacts is primarily based on the Department of Environmental Affairs and Tourism's (1998) Guideline Document: Environmental Impact Assessment Regulations. The evaluation will consider impacts arising from the project's proposed activities before and after implementing appropriate mitigation measures.

The impacts are assessed according to the criteria outlined in this section. Each issue is ranked according to extent, duration, magnitude (intensity), and probability. A significance rating is obtained from these criteria, and the method and formula are described below. Where possible, mitigation recommendations have been made and are presented in tabular form.

The criteria in Table 41 below will be used to evaluate. The nature of each impact will be assessed and described in relation to the extent, duration, intensity, significance, and probability of occurrence attached to it. This will be evaluated in detail for pre- and post-mitigation during the EIA phase.

Table 41: Methodology used in determining the significance of potential environmental impacts.

Status of Impact The impacts are assessed as either having a: the negative effect (i.e., at a `cost' to the environment), positive effect (i.e., a `benefit' to the environment) or Neutral effect on the environment.
Extent of the Impact (**1**) Site (site only), (**2**) Local (site boundary and immediate surrounds), (**3**) Regional (**4**) National, or (**5**) International.
Duration of the Impact The length that the impact will last is described as either: (**1**) immediate (<1 year) (**2**) short term (1-5 years), (**3**) medium-term (5-15 years), (**4**) long-term (ceases after the operational life span of the project), (**5**) Permanent.

Magnitude of the Impact

The intensity or severity of the impacts is indicated as either:

(**0**) none,

(**2**) Minor,

(**4**) Low,

(**6**) Moderate (environmental functions altered but continue),

(**8**) High (environmental functions temporarily cease), or

(**10**) Very high / Unsure (environmental functions permanently cease).

Probability of Occurrence

The likelihood of the impact occurring is indicated as either:

(**0**) None (the impact will not occur),

(**1**) improbable (probability very low due to design or experience)

(**2**) low probability (unlikely to occur),

(**3**) medium probability (distinct probability that the impact will occur),

(**4**) high probability (most likely to occur), or

(5) Definite.

Significance of the Impact

Based on the information contained in the points above, the potential impacts are assigned a significance rating (**S**). This rating is formulated by adding the sum of the numbers assigned to extent (**E**), duration (**D**), and magnitude (**M**) and multiplying this sum by the probability (**P**) of the impact.

S=(E+D+M) P

The significance ratings are given below.

(**<30**) low (i.e., where this impact would not have a direct influence on the decision to develop in the area),

(**30-60**) medium (i.e., where the impact could influence the decision to develop in the area unless it is effectively mitigated),

(**>60**) high (i.e., where the impact must influence the decision process to develop in the area).

12 DESCRIPTION OF THE ENVIRONMENTAL ISSUES AND POTENTIAL IMPACTS, INCLUDING CUMULATIVE IMPACTS IDENTIFIED

This section describes the proposed project's potential impacts on the receiving environment. The impacts associated with the relevant environmental components within the study area, as identified, have been assessed based on the EAP's opinion and consultation with specialist studies. Refer to Table 22 for the potential impacts identified.

12.1 PRELIMINARY IMPACT ASSESSMENT

The Scoping phase of the EIA Process identified the potential positive and negative environmental (biophysical and social) impacts of the proposed project. Site-specific evaluations were undertaken for the proposed project options to establish the best environmentally and technically practicable site/location to evaluate in the EIA phase. The process involved a range of physical, biological, social, and technical criteria.

12.2 SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS IDENTIFIED

Potential environmental impacts identified during the Scoping phase are described in Table 39 below. This is not an exhaustive list but insight into the potential impacts associated with the proposed project. It must be noted that the EIA phase may identify more potential impacts and will assess them in more detail.

Potential environmental impacts identified during the Scoping phase are described in Table 42**Error! Reference source not found.** below. This is not an exhaustive list but insight into the potential impacts associated with the proposed project. It must be borne in mind that the EIA phase may identify more potential impacts and will assess them in more detail.

Table 42: Potential Environmental Impacts Identified

Aspect	Impact	Impact Description	Mitigation Measures
Biodiversity -	Negative	The current project area falls within sensitive habitats and other areas of high biodiversity potential; infrastructure placement must be cognisant of the sensitivity rating assigned to each. The current project area would be considered to have a significant and high negative impact as it would directly affect sensitive landscapes and the habitat of threatened plant species and expected SCC that depend on these ecosystems. Anthropogenic activities drive habitat destruction, causing displacement of fauna and flora and possibly direct mortality. Land clearing destroys local wildlife habitat and can lead to the loss of local breeding grounds, nesting sites and wildlife movement corridors such as rivers, streams, drainage lines, or other locally important features. Removing natural vegetation may reduce the habitat available for fauna species and reduce animal populations and species compositions within the area.	• Compilation of and implementation of an alien vegetation management plan for the project area • 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. Footprint of the roads must be kept to prescribed widths. • Waste management must be a priority, and all waste must be collected and stored adequately. It is recommended that all waste be removed from the site weekly to prevent rodents and pests from entering. • All personnel and contractors are to undergo Environmental Awareness Training. A site induction must include the avoidance and protection of the wetland areas. Contractors and employees must all undergo the induction and be made aware of the “no-go” to be avoided.

Aspect	Impact	Impact Description	Mitigation Measures
		The Project Area was categorised as possessing a single habitat 'High SEI. This is owing to the disturbed nature of the immediate footprint. Impacts include: • Modified areas and CBA Areas will be lost, High SEI habitat will be lost, • The likelihood of losing SCC and Protected species that exists • Loss of vegetation within the development footprint • Degradation of surrounding habitats • Direct mortality of avifauna • Spread and/or establishment of invasive alien species • Displacement or Direct mortality of fauna • Disruption/alteration of species activities (breeding, migration, feeding) due to noise and vibration • Disruption/alteration of species activities (breeding, migration, feeding) due to dust Unplanned events that could impact on fauna include: • Spills into the surrounding environment • Fire • Erosion caused by water runoff from the surface	• A stormwater management plan must be compiled and implemented. • A pest control plan must be implemented; poisons must not be used due to the likely presence of SCCs. Areas of Indigenous vegetation outside the direct project footprint should not be fragmented or disturbed further. • The construction area must be fenced off, and no ingress into other areas is allowed. • Watercourses, drainage lines, streams and wetlands must be avoided, and a no-go buffer of 20m must be applied around them. Refer to the aquatic report. • Areas of Indigenous vegetation, even secondary communities outside of the direct project footprint, should not be fragmented or disturbed further.. No further loss of high-sensitivity areas should be permitted. It is recommended that areas to be developed be precisely demarcated so that only the demarcated areas will be impacted during the construction phase. • Existing access routes, especially roads, must be made use of.

Aspect	Impact	Impact Description	Mitigation Measures
			• . All livestock must always be kept out of the project area, especially areas that have been recently re-planted. • A hydrocarbon spill management plan must be put in place . • • A fire management plan needs to be complied with and implemented to restrict the impact on the surrounding areas. • . All protected and red-data plants should be relocated, and as many other species as possible. • For the threatened species that may not be destroyed, it is recommended that professional service providers that deal with plant search and rescue be used to remove such plants and use them for later rehabilitation work or other conservation projects.
Animal	Negative		• The areas to be developed must be precisely demarcated to prevent the movement of staff or any individual into the surrounding environments, signs must be put up to enforce this

Aspect	Impact	Impact Description	Mitigation Measures
			• Noise must be kept to an absolute minimum at night to minimise all possible disturbances to amphibian species and nocturnal mammals • No trapping, killing, or poisoning of any wildlife is allowed, signs must be put up to enforce this; • Outside lighting should be designed and limited to minimize impacts on fauna. All outside lighting should be directed away from highly sensitive areas. Fluorescent and mercury vapour lighting should be avoided, and sodium vapour (green/red) lights should be used wherever possible. • Schedule activities and operations during the least sensitive periods to avoid migration, nesting and breeding seasons. • All areas to be developed must be walked through prior to any activity to ensure no nests or fauna species are found in the area. Should any Species of Conservation Concern not move out of the area or their nest be found there, a suitably qualified specialist must be consulted to advise on the correct actions to be taken. • Ensure that cables and connections are insulated successfully to reduce electrocution risk.

Aspect	Impact	Impact Description	Mitigation Measures
			•
Wetland	Negative	The impact assessment identified the destruction of wetland habitat, and surface water pollution, including • sedimentation and increased erosion, • altered hydrological regimes, spread of invasive species, and • decreased downstream water quality as impacts during the construction and operational phases. • The spread of invasive species and decreased downstream water quality are major impacts during the construction and operational phase.	Several general and specific mitigation measures were proposed to reduce negative impacts and incorporate potential positive impacts from the proposed development. • • A thorough wetland monitoring program must be designed and implemented before the start of the construction phase to ensure any negative impacts are detected and mitigated appropriately and timeously • An effective freshwater ecosystem buffer zone must be established before any construction activities including wetland and/or riparian habitats. The determined freshwater ecosystem buffer of 35m must be implemented on all watercourses. • Watercourse crossings should be minimised and designed perpendicular to the watercourse flow. Low-water bridges with permeable bases should be designed where appropriate and implemented to avoid concentrating flows. Flows exiting the bridge on the downstream side of the bridge should be diffused and span more than 80% of the width of the

Aspect	Impact	Impact Description	Mitigation Measures
			watercourse. They should be strictly enforced and appropriately managed. • The construction of surface stormwater drainage systems during the construction phase must be done to protect the quality and quantity of the downstream system. Active rehabilitation throughout the study area, particularly in buffer zones and wetlands themselves, should be initiated before the start of construction. Active rehabilitation to the graminoid layer within areas with low basal cover includes reseeding, grazing exclusion, species diversification to be more resilient, and increased monitoring for these sections. It is highly recommended that dense matts of *Pennisetum thunbergii* be planted within the buffer zones and any preferred drainage line or flow path, especially areas with low basal over and or areas. • exhibiting erosional processes, albeit even just slightly.
Avifauna	Negative	Possible impacts on avifauna during the construction and operational phases and their sources associated with the proposed development. The installation of the proposed Renewstable®Sivutse project and ancillary infrastructure will require clearance of grazed but natural grassland vegetation	The following recommendations are intended to guide the positioning of the proposed infrastructure and layout: • All natural drainage lines and wetlands must be avoided, including the buffer recommended by the aquatic and/or wetland specialist/s.

Aspect	Impact	Impact Description	Mitigation Measures
		during the construction phase. Most of the site will comprise solar PV arrays during the operational phase. Therefore, the main impact relating to avifauna will be the loss of natural habitat and the displacement of species, including gregarious species. Other possible direct impacts include possible collisions of priority species moving through the area with panels and power lines during the operational phase. Possible indirect impacts include the spread of invasive alien vegetation due to disturbance to the soil and potential contamination of the soil and downstream watercourses should chemicals be used to clean the panels. **Potential impacts to avifauna during the pre-/and construction phases** include the following: • Destruction of Indigenous flora and habitats (watercourses) during site establishment; • Potential loss of riparian vegetation/watercourses; • Loss/displacement of avifauna species potentially present on site; • Disturbance of local avifauna populations due to construction activities; • Loss of avifauna habitat due to vegetation clearance;	• If possible, the natural grassland habitat in western section should be avoided. This would contribute to minimisation of impacts for natural grassland on the site. If not possible, then strict mitigation and restoration actions would apply. • More information will need to be obtained through pre-construction monitoring. Assessment **Regime 1** should be followed with one peak season of monitoring included. • Due to the nature of the landscape and the potential impacts on priority species, it will be important to conduct pre-construction monitoring according to the Best Practice Guidelines for Birds and Solar Energy (Jenkins et al., 2017) for assessing and monitoring the impact of solar power generating facilities on birds in southern Africa. **Other measures include:** • Construction activity should be restricted to the immediate footprint of the infrastructure. • Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of avifaunal species.

Aspect	Impact	Impact Description	Mitigation Measures
		• Contamination of the environment by hazardous materials; • Spread of invasive alien plant species; and • Disturbance and displacement of resident bird species. **Operational Phase** Potential impacts associated with the operational phase include the following: • Collision of avifauna with reflective surfaces of solar panels leading to injury or death • Collision and/or electrocution of avifauna with associated power lines • Disturbance of local faunal communities; and • Loss of habitat due to operational activities.	• Furthermore, environmental good practices should be applied, such as ensuring strict control of staff, vehicles, and machinery on site and limiting the creation of new roads as far as possible. • Regarding habitat destruction, the recommendations of the ecological and botanical specialist studies must be strictly implemented, especially as far as limiting the construction footprint and rehabilitation of disturbed areas are concerned. • Should any nests or breeding sites be found during construction, suitable recommendations should be provided, and the EMPr must be amended. Mitigation measures must be implemented to reduce any potential direct and acute impact on avifaunal species.
Soil and Land Capability	Agriculture and Soils	The loss of topsoil in South Africa is a national concern, and thus, erosion control should be taken seriously. Soil erosion may occur during the construction phase due to: • Excavations, particularly on steep slopes • Ineffective stormwater management • Excessive use of gravel roads • Use of heavy machinery or vehicles Construction activities may lead to the compaction of disturbed soils; further, the exposure of the soil to	• If adequate soil erosion measures are implemented during the construction phase of the proposed activity, this impact can be deemed low significance. Where soils are highly erodible, adequate measures must be implemented to prevent undue soil erosion.

Aspect	Impact	Impact Description	Mitigation Measures
		environmental factors increases the likelihood of erosion. Removing surface vegetation will cause exposed soil conditions where rainfall and high winds can cause mechanical erosion. Rainfall and inadequate drainage systems would lead to sediments washing down into wetlands and rivers, causing sedimentation. In addition, hardened surfaces and bare areas will likely increase surface runoff velocities and peak flows received by riparian habitats and wetlands.	
Agriculture	Negative	The development footprint presents areas of active pasture utilised for grazing purposes, and some grass is harvested and used for stall feeding. These areas are critical for livestock farming within the study area and are regarded as important from an agricultural point of view. The loss of agricultural soils and the long-term change in land use will be localised within the study area. • The disturbance of original soil profiles and horizon sequences of these profiles during earthworks is a measurable deterioration in terms of erosion. This impact is localised within the development footprint. • Soil chemical pollution caused by potential oil and fuel spillages from vehicles is a moderate deterioration of the soil resource.	• Engage with local communities and stakeholders throughout the project's development to gather input, address concerns, and ensure the project aligns with community needs and priorities. • Implement policies prioritising hiring residents for construction and operational roles. • Establish training programs to equip local workers with the skills needed for the project. • Develop procurement policies that prioritise sourcing goods and services from local suppliers. • Work with local suppliers to build their capacity to meet the project's needs. • Create programs that offer alternative livelihoods for individuals affected by the displacement of agricultural

Aspect	Impact	Impact Description	Mitigation Measures
		• Soil compaction will be a measurable deterioration are caused by heavy vehicles commuting on the existing roads and any newly constructed access road to increase access to the solar PV plant and the hydrogen plant. • The latter impacts will be localised within the site boundary with medium consequence and significance. The project will significantly impact local agriculture. The project site is currently used for farming, and its development will bring about changes that can affect the local agricultural economy and the livelihoods of those involved in farming activities. **Displacement of Agricultural Activities**- The project site's current use of active pasture is utilised for grazing purposes, and some grass is harvested and used for stall feeding, implying that its development into a power plant will displace existing agricultural activities. This displacement will directly affect the cultivation of crops and the associated economic activities that support the local farming community. This will contribute to, amongst others. Identified impacts include	activities, such as training in new skills and support for starting new businesses. • The project operations be kept within the demarcated footprint areas as far as practically possible to minimise edge effects. • Avoid permanently impacting topsoil and subsoil but salvage the maximum depth of these when clearing areas for infrastructure. • Make use of geotextiles and contours to control soil erosion and revegetation of exposed soil surfaces where possible. • Construction vehicle movement should be limited to within the project perimeter fence to avoid unnecessary compaction of adjacent soils. • Always strip a suitable time before the placement or construction of the solar PV and hydrogen plant facilities, to avoid soil loss and contamination. • Access roads should be aligned with the existing roads such as practically possible to avoid further agricultural impact and unnecessary soil disturbance.

Aspect	Impact	Impact Description	Mitigation Measures
		• **Job Loss:** The cessation of farming activities will result in the loss of agricultural jobs, impacting farmworkers who rely on these positions for their livelihoods. • **Loss of Agricultural Land:** The conversion of agricultural land for industrial use will reduce the available farmland, which could impact local food production and the region's agricultural output. • **Economic Diversification and Support for Agri-Business**- The project provides an opportunity to diversify the local economy by introducing industrial activities alongside traditional agriculture. This can reduce the region's economic dependence on agriculture and create new economic opportunities. • **Socio-Economic Impact on Farming Communities**—The project may have a socio-economic impact on farming communities, including shifts in employment patterns and changes in land use.	
Civil Aviation	Neutral	The proposed sub-project will not materially impact civil aviation radar, navigational, or communications infrastructure in the environs, nor present additional material risks to operations at the affected aerodrome or within adjacent airspace.	• The proposed development and associated ground-based infrastructure is compliant with all relevant ICAO Annex 14 and SACAA (CARS and CATS) standards with respect to obstacle limitation surfaces and can, therefore, be supported for purposes of environmental approval.

Aspect	Impact	Impact Description	Mitigation Measures
			• The proposed development will not materially impact civilian radar, navigation, or communications infrastructure in the environs or present additional material risks to operations at Majuba Aerodrome.
Glint and glare	Neutral	The impact of glint and glare is considered low, and no mitigation is deemed necessary	No mitigation is deemed necessary
Palaeontology	Negligible	Based on the nature of the project, surface activities may impact the fossil heritage if preserved in the development footprint. The geological structures suggest that the rocks are the wrong type (volcanic) or only rarely contain fossil plants. Furthermore, the excavated material which does not preserve fossils. Since there is a small chance that fossils from the nearby Volksrust Formation may be disturbed, a Fossil Chance Find Protocol has been added to this report. Taking account of the defined criteria, the potential impact on fossil heritage resources is very low	The fossil Chance Find Protocol has been added to this report
Development	Positive	The Project has the potential to contribute to community infrastructure, including enhancements to roads, schools, and healthcare facilities through socio-economic development contributions. This contribution is envisioned to result in improved living conditions and increased access to essential services for the local population. This will include	Develop strategies to enhance the identified positive impacts.

Aspect	Impact	Impact Description	Mitigation Measures
		Energy Infrastructure: The project plant will enhance the reliability and stability of the local electricity supply, supporting residential, commercial, and industrial energy needs. **Energy Access and Affordability** The Project is poised to significantly improve energy access and affordability in Mpumalanga, the Local Municipality, and the broader Mpumalanga Province. The project addresses critical energy challenges by developing a reliable and cost-effective natural gas-fired power plant, ensuring that more residents and businesses benefit from stable and affordable electricity. **Regional Integration and Development** The proposed project will contribute to regional integration and development by enhancing energy security in the Local Municipality and establishing it as a key energy hub. It will also boost regional trade and investment by improving infrastructure along strategic routes like the Maputo Development Corridor, promoting economic growth and cooperation. Its impact extends beyond local benefits, fostering interconnected economies and supporting broader socio-economic development goals across Mpumalanga Province and beyond.	

Aspect	Impact	Impact Description	Mitigation Measures
Traffic	Negative	During the construction phase, increased heavy vehicle traffic will be expected. Without management, such increased traffic loads may negatively impact existing traffic flow. Further, unmanaged construction vehicles may decrease road safety for other road users, and uncontrolled movement of construction vehicles may result in unnecessary environmental impacts through vegetation and habitat destruction. The proposed site is adjacent to the N11, a major road leading to Volksrust. A new access road to the site will be constructed from the N11. Without mitigation, this impact may be high; however, implementing mitigation measures may result in medium/low significance.	• The delivery of construction material and equipment should be limited to hours outside peak traffic times (including weekends) prevailing on the surrounding roads where possible; • Existing access roads must be used; • Delivery vehicles must comply with all traffic laws and bylaws; • Inform communities of planned construction activities affecting vehicle/ pedestrian traffic.
Heritage	Neutral	The field survey identified no cultural heritage or archaeological resources within the area earmarked for the proposed development.	• The proposed development should be approved to proceed as planned under the observation that the proposed dimensions of the gas plant do not extend beyond the study area. • The footprint impact of the proposed development and associated infrastructure should be minimal to limit the possibility of encountering chance finds. • No burial sites (graves) were identified during the field investigation. However, should unidentified graves and burial sites be discovered during the cause of construction activities, all construction activities

Aspect	Impact	Impact Description	Mitigation Measures
			should cease. The site must be barricaded, and SAHRA/MPHRA or the professional archaeologist must be informed. • Should any unmarked burials be exposed during construction, affected families must be trekked and consulted, and relevant rescue/relocation permits must be obtained from SAHRA and the Mpumalanga Department of Health before any grave relocation can take place. Furthermore, a professional archaeologist must be retained to oversee the relocation process by following the National Heritage Resources Act 25 of 1999. • Should chance archaeological materials or human burial remains be exposed subsurface, construction work on any section of the development laydown sites, work should cease on the affected area, and the discovery must be reported to the heritage authorities immediately so that an investigation and evaluation of the finds can be made. The overriding objective, where remedial action is warranted, is to minimise disruption in construction scheduling while recovering archaeological and any affected cultural heritage data as stipulated by the PHRA and NHRA reg.

Aspect	Impact	Impact Description	Mitigation Measures
			• If archaeological or other heritage relics deemed of high significance are found when physical works commence, heritage authorities will be advised immediately, and a heritage specialist will be called to attend.
Visual Impact	Negative	The visibility analyses will consider worst-case scenarios, using line-of-sight based on topography. Within the receiving environment, specific viewers (visual receptors) experience different views of the visual resource, such as the proposed plant, and value it differently. Viewers will be affected by the alterations of the views due to the proposed development. The construction and operation of the proposed power plant may visually impact users within the site's proximity. After mitigation, the visual effect for most users is expected to range between moderate and low. An advantage of the power plant is that it uses a renewable energy source to generate electricity. It does not emit harmful by-products or pollutants that may pose health risks to users or observers. The potential visual impact that motorists may experience during the construction phase is minimal. The construction	• Keep the construction sites and camps neat, clean, and organised to portray a tidy appearance. • Screen the construction camp and lay-down areas; rehabilitate disturbed areas around pylons as soon as possible after construction to restrict extended periods of exposed soil. • Plant fast-growing endemic trees along the facility's boundary, especially along the N11. The trees will, with time, create a screen and increase the area's biodiversity. • Locate access routes to limit modification to the topography and to avoid the removal of established vegetation. • Utilise existing screening features, such as dense vegetation stands or topographical features, to place the construction camps and lay-down yards out of the view of sensitive visual receptors.

Aspect	Impact	Impact Description	Mitigation Measures
		camp will be behind the mine, with no roads, so the severity of visual impact will be low. Glint and glare of the solar panels could be a potential visual distraction and air travel hazard. The proposed solar farm is not located near any airport or airfield. The significance of potential visual impact is expected to be Low.	
Air quality	Negligible	Decreased ambient air quality. The scale of the impact is related to whether the predicted ambient concentrations of the pollutants exceed the limit values of the NAAQS in sensitive areas, i.e., residential or non-industrial areas. A detailed analysis of the impact of air quality will be undertaken during the EIA phase to determine the actual effects of the emissions on humans and the environment.	• Current industry-standard techniques should be supplemented with administrative control measures to maintain the residual impact at the nearest sensitive receivers at current background levels.
Wetland	Negative	The impact assessment identified the destruction of wetland habitat, surface water pollution, sedimentation, increased erosion, altered hydrological regimes, and spread of invasive species, it decreased downstream water quality as the major impacts during the construction and operational phase.	• Several generals and specific mitigation measures were proposed to reduce negative impacts and • incorporate some potentially positive impacts from the proposed development. Considering the erosive nature of the smectic clays on the terrain, erosion and sedimentation represent a very high risk in the study area; however, these aspects are mitigatable through maintaining appropriate basal cover

Aspect	Impact	Impact Description	Mitigation Measures
Groundwater	Negative	• A high concentration of total coliform bacteria above the SANS limit was found in groundwater. Although the concentration is not disease-forming, it is therefore recommended that groundwater be chlorinated before consumption. Groundwater levels within the project area mimic surface topography, which suggests that groundwater flow will follow topographic elevations from high to low topographic regions. The main contamination pathways identified within the study area are Runoff and infiltration through soil or vadose zone, Groundwater or aquifer and Surface water or streams.	
Surface Water	Negative	Due to the dolerite deposit, shallow groundwater discharging into low-lying areas and streams may affect surface water quality. The anticipated impacts on surface water include contamination due to discharge of unsuitable quality, system failure, stormwater, overflow, spillage, and runoff. Establish and implement stormwater management options. Prevent hydrocarbon spillage. Store hydrocarbons in a designated area. Prevent erosion from occurring. Prevent dam overflows. Separate dirty and clean stormwater and runoff. Collect all dirty runoff and stormwater. Prevent hydrocarbon	• No activities should occur in the watercourses and associated buffer zone; where unavoidable, it must be subjected to necessary approvals from DWS (Water Use License) and related recommendations. • A temporary fence or demarcation must be erected around No-Go Areas before any construction place as part of the contractor planning phase when compiling work method statements to prevent access to the adjacent portions of the watercourse. • Effective stormwater management should be a priority during both the construction and operational phases and monitored as part of the EMPr.

Aspect	Impact	Impact Description	Mitigation Measures
		spillage. Rehabilitate impacted area/soil, excavate, and remove hydrocarbon spillage. • Although groundwater's potential to meet the required total demand is low, groundwater may still provide a certain percentage of the requirement. Where the borehole is drilled correctly, yield may improve and provide sufficient volume.	• No activities should occur within 100m or a 1:100-year flood line, whichever is greater, without approval from DWS. • Care must be taken during construction to prevent leaks and spillage of materials that may detrimentally affect water quality (especially fuels and chemicals).
Climate change impact	Negative	• Construction operations will probably include mobile and stationary diesel combustion emissions. • Renewstable®Sivutse GHG emissions include Scope 1, Scope 2, and Scope 3 emissions. Scope 1 emissions include emissions from stationary combustion of natural gas and diesel. Scope 2 emissions consist of emissions from purchased electricity. Scope 3 includes emissions from mobile diesel combustion contracted to third-party suppliers. • The magnitude of the impact of GHG emissions from the construction operations was estimated to be negligible. The project's GHG emissions will likely contribute to anthropogenic climate change, which will likely be accelerated and extended as GHG emissions accumulate in the atmosphere.	• Allocating responsibility to key individuals for managing and reporting on the GHG performance of the plant. • Communicate the plan, including its key objective and any actions being taken, to staff working at the plant to ensure buy-in. • Encourage employee participation in the GHG management plan, including contributing ideas about improvement opportunities. • Reporting progress over time with respect to annual gas consumption and GHG emissions, GHG reductions/heat rate improvements achieved, and progress against targets set.

Aspect	Impact	Impact Description	Mitigation Measures
		Based on the climate threat outline, potential climate risks include increased temperature, reduced rainfall, extreme events, and wind impacts. Increased temperature and heat waves can pose a health risk to employees, influence productivity, and reduce plant efficiencies and available generation capacity.	

12.3 PROJECT SOCIO-ECONOMIC RISKS AND MANAGEMENT STRATEGY

The sections above focus on stakeholder management during authorisation process. They provide a guideline for ensuring that the principles of stakeholder management are regulated, transparent, and inclusive. This section addresses the potential social impact and variables associated with the project. It identifies the risks and proposes a strategy to ensure they are well managed.

The potential social impact variables identified in association with the proposed project are in accordance with Vanclay's list of social impact variables clustered under the following main categories as adapted by Wong (Vanclay, 2002; Wong, 2013) and include:

1. Health and social well-being
2. Quality of the living environment (Liveability)
3. Economic
4. Cultural.

These categories are not exclusive and sometimes tend to overlap, as specific processes may impact more than one category. The construction phase may impact the surrounding landowner if not properly managed. Other social-related issues may include the following:

- As a result of perceptions around job creation, increased expectations around employment opportunities may be created.
- Influx as a result of expectations around job and supply chain opportunities, resulting in pressure on land, social services, relationships, and other social infrastructure.
- Access to private, more accessible business sites will be easier, resulting in potential criminal intrusion, including theft, in private areas.

The socio-economic aspects have both positive and negative impacts. The significance of positive socio-economic benefits associated with the proposed development exceeds the significance of negative socio-economic impacts. The proposed project will result in the creation of employment opportunities and procurement of goods and services. The negative socioeconomic consequences of the project include the loss of crop fields and grazing land, disruption of farm activities and social networks, and health and safety. These social risks are of medium significance; however, they can be reduced to low with proper mitigation.

The table below identifies risks and refers to management strategies that must be developed. This includes the EMPr that will be developed as part of the EIA phase and the developers' policies and procedures for managing the identified risks. The following documents must be consulted to address the identified risks:

- EMPr ; and
- HDF-Energy policies and procedures

Table 43: Socioeconomic Impacts

Risk category	Risks Identified	Status	Description	Proposed Mitigation and Management Strategy
Socio-Economic	Employment	Positive Impact -Not mitigative require. Measure to enhance are proposed.	The Renewstable® Sivutse offers numerous economic benefits and opportunities that are poised to drive substantial growth and development in the local and regional economies of Pixely Ka Seme Local Municipality and the broader Mpumalanga Province. By creating jobs, bolstering local enterprises, enhancing infrastructure, and encouraging economic diversification, the project is set to foster a more prosperous and resilient community. The project aligns with broader regional and national development goals by stimulating economic growth, improving infrastructure, and promoting environmental sustainability. Its comprehensive approach to economic and social development ensures that the benefits are widely shared, paving the way for a more prosperous, resilient, and inclusive future for the local community and the broader region. Providing employment opportunities during the construction and operational phases. **Direct Employment:** Further permanent jobs will be created during the plant's operations phase. Project	• The proposed Renewstable® Sivutse is on farmland used for stock and crop farming. The project's development will necessitate repurposing this agricultural land, leading to the loss of these jobs. A strategy should be developed to mitigate the impact, including re-employment opportunities within the project, training programs for new roles, and compensation packages. • Engaging with the affected workers is essential to address their concerns and explore alternative employment opportunities, ensuring their continued economic stability and contribution to the local community. • The project also manages local communities' expectations regarding job opportunities, ensuring transparency and inclusivity throughout employment. Recognising the importance of community engagement and the high demand for local jobs, the project actively communicates the nature, scope, and timeline of employment opportunities to the residents. This involves

Risk category	Risks Identified	Status	Description	Proposed Mitigation and Management Strategy
			construction will be managed by a local or international engineering, procurement, and construction contractor (EPC) that will subcontract most of the local workforce. The construction phase is estimated to provide temporary employment to up to 300 people, while the operational phase will employ up to 35. The combined opportunities for the Majuba Cluster will have approximately 1800 and 270 opportunities during construction and operation, respectively. **Indirect Employment**: The project will also generate indirect employment opportunities through the demand for goods and services related to the construction and maintenance of the power plant, benefiting local businesses and service providers. The combined opportunities for the Majuba Cluster will have approximately 405 and 2700 opportunities during construction and operation, respectively. **Strengthen local economic development:** The Project will likely increase the region's expendable income through wages/ salaries and the potential for growth of local suppliers/ contractors. Lastly, the increase in expendable income may increase the potential for	setting realistic expectations about the types of jobs available, the skills required, and the duration of employment, whether during the construction or operational phases. • Renewstable Mpumalanga must promote the creation of employment opportunities for women and youth. Positions reserved for youth and women may only be filled by persons outside these categories if it can be demonstrated that no suitable persons can be employed.

Risk category	Risks Identified	Status	Description	Proposed Mitigation and Management Strategy
			secondary business opportunities in the local market. The project will create approximately 5175 direct and indirect opportunities.	
Health and social well-being	Air quality	Negative	Dust impacts from the proposed project activities are likely to be concentrated within the site of these facilities. The impact will be negligible; however,	• Implement measures proposed in the EMPr.

Risk category	Risks Identified	Status	Description	Proposed Mitigation and Management Strategy
			dust management measures must be included in the EMPr.	• Appoint a community liaison officer to deal with complaints and grievances from the public. • Dust-reducing mitigation measures, including dust suppressants, must be implemented and strictly adhered to. • No non-environmentally friendly suppressants may be used as this could result in water pollution.
	Noise	Negative	Noise-generating activities on site include the following: • Earthworks; • Delivery of building material; • Civil construction activities; • Earth drilling; • TLB activities; • Foundations and pouring of concrete. During construction, an increase in noise is expected as these activities will generate noise of medium significance without mitigation. If the mitigations are adhered to, the noise impact will be manageable and of low significance.	• Maintain all vehicles and construction machinery to ensure the noise levels do not cause unnecessary and avoidable nuisance to the workforce and local communities. • Appoint a community liaison officer to deal with complaints and grievances from the public. • Manage speed limits of vehicles and ensure all vehicles are maintained to reduce noise. • Ensure that all construction equipment is well serviced per the manufacturer's manual throughout the construction phase.

Risk category	Risks Identified	Status	Description	Proposed Mitigation and Management Strategy
			Noise can impact the health and social well-being of local communities. The proposed expansion will not significantly affect ambient noise levels, as it occurs with the existing and operational rail corridor. However, the noise impact on surrounding communities must be monitored, and measures must be included in the EMPr for both the construction and operational phases.	• The Noise Control Regulations (2013) requirements must be adhered to.
	Hazard Exposure	Negative	The use of heavy equipment and vehicles and an increase in vehicle traffic within the vicinity of the construction site will increase the risk to the personal safety of people and animals. Construction workers lighting fires for cooking and warmth during cold periods also pose a risk of fires. Successful implementation of the recommended mitigation measures will result in these risks remaining acceptable such measures will be included in the EMPr.	• During construction, the sites should be fenced off to prevent access. • Fencing should be inspected regularly and properly maintained by the contractor. • Ensure that the appropriate warning signs are erected on all boundary fences, cautioning against entering the construction area. • Ensure all construction equipment and vehicles are correctly always maintained. • Ensure operators and drivers are properly trained and make them aware, through regular toolbox talks, of any risk they may pose to the community. Place specific

Risk category	Risks Identified	Status	Description	Proposed Mitigation and Management Strategy
				emphasis on the vulnerable population sector, such as children and the elderly. • Ensure that fires lit by construction staff are only ignited in designated areas and that the appropriate safety precautions, such as not lighting fires in strong winds and completely extinguishing fires before leaving them unattended, are strictly adhered to. • Make staff aware of the dangers of runaway fire during regular toolbox talks.
	Waste		The inhibition of the site and related construction activities will result in waste generation.	• Compilation of and implementation of an alien vegetation management plan for the project area • The footprint area of the construction should be kept to a minimum and demarcated to avoid unnecessary disturbances to adjacent areas. • The footprint of the roads must be kept to the prescribed widths. • Waste management must be a priority, and all waste must be collected and stored adequately. It is recommended that all waste

Risk category	Risks Identified	Status	Description	Proposed Mitigation and Management Strategy
				be removed from the site weekly to prevent rodents and pests from entering the site • A pest control plan must be put in place and implemented; it is imperative that poisons not be used due to the likely presence of SCCs
	Increase in crime	Negative	After the public engagement perception and heightened expectations for job opportunities will become apparent. Subsequently, an influx of job seekers could result in an increase in crime in the area. This risk is more likely to be higher during construction and associated with opportunistic criminal activities. The operational may continue experiencing a certain level of crime relating to movables, cables, etc.	All workers should carry identification cards and wear identifiable clothing. • Fence off the construction site and control access to the site. • Appoint an independent security company to monitor the site. • Encourage local people to report any suspicious activity associated with the construction site to the security company. • If applicable, liaise with the Community Policing Forums near the project.
	Influx of job seekers	Negative	The construction activities will likely result in an influx of job seekers, particularly given the country's current unemployment rate. This impact can be	• Communicate, through Community Leaders and Ward Councillors, the situation regarding job opportunities created by the project.

Risk category	Risks Identified	Status	Description	Proposed Mitigation and Management Strategy
			significant and requires a proper recruitment management strategy.	• Develop and implement a local procurement policy which prioritises "locals first" to prevent the movement of people into the area in search of work. • Develop a project recruitment policy with Community Leaders and Ward Councillors and ensure compliance. Cooperate with local authorities to ensure all legislation preventing illegal settlement is consistently enforced.
	Increased risk of Transmittable Disease Infections	Negative	The risk of infections would be highest during the project's construction phase, as the construction workforce increases and exposure increases.	Awareness Raising
Quality of the living environment (Liveability)	Annoyance factor, access, and disruption of daily living patterns, particularly in remote farmlands.	Negative	The disruption of daily living patterns is most likely associated with construction activities related to irregular on-site deliveries and the use of construction vehicles and equipment. These disruptions will likely subside somewhat over the project's operational phase as operational schedules and traffic patterns become more predictable.	Appoint a community liaison officer to deal with complaints and grievances from the public. Monitor the effect of construction activities on public infrastructure regularly and immediately report any damage to the appropriate authority.

Risk category	Risks Identified	Status	Description	Proposed Mitigation and Management Strategy
	Increased traffic due to construction activities	Negative		Implement the mitigation measures in the EMPr and SES.
Economic	Job creation and skills development	Positive	The project will likely result in the following economic benefits: • Job creation and skills development • Local economic development.	Appoint a community liaison officer to deal with complaints and grievances from the public. Wherever feasible, residents should be recruited to fill semi and unskilled jobs. Women should be given equal employment opportunities and encouraged to apply for positions. A skills transfer plan should be put in place early, and workers should be allowed to develop skills that they can use to secure jobs elsewhere post-construction.
Cultural	At a social level, any cultural impacts would likely be associated with sensitive archaeological and/or heritage sites that may be found.	Negative	At a social level, any cultural impacts would likely be associated with sensitive archaeological and/or heritage sites that may be found. In this regard, a desktop heritage study was undertaken, and recommendations were made, which are included in Section 6 above.	• Chance Find Protocol • EMPr

12.4 CUMULATIVE IMPACTS

In reference to the scope for an impact assessment, IFC's Performance Standards specify that: *"Risks and impacts will be analyzed in the context of the project's area of influence. This area of influence encompasses…areas potentially impacted by cumulative impacts from further planned development of the project, any existing project or condition, and other project-related developments that are realistically defined at the time the Social and Environmental Assessment is undertaken; and (iv) areas potentially affected by impacts from unplanned but predictable developments caused by the project that may occur later or at a different location. "(IFC 2006).* As indicated above, the overarching legislation governing the EIA process within a South African context (i.e., NEMA) also requires considering cumulative impacts within the EIA process.

Cumulative impacts in relation to an activity are defined in the EIA Regulations (Government Notice R543) as the past, present, and reasonably foreseeable future impacts of an activity, considered together with the impacts of activities associated with that activity that may not be significant but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities (DEA, 2014 EIA Regulations).

In line with the government initiatives detained in the project's motivation, projects similar to the proposed have become common in the broader region and the province. They are earmarking the ROMPCO gas pipeline along the N4. A similar project identified is the Komatipoort SEZ Gas project, which is 40km away. The summary of local and regional challenges the local and district municipality faces is limited to key considerations related to this Project. It is not limited to what is identified below.

The local and regional challenges currently being experienced by the local and district governments have been divided based on key planning documents. A summary of some of the key challenges experienced has been identified based on a review of the following documentation:

- Mpumalanga Provincial Growth and Development Strategy, which is part of the Mpumalanga Vision 2030 Strategic Implementation Framework
- Mpumalanga Industrial Development Plan (2016)
- Gert Sibande District Municipality Local Economic Development Strategy
- Dr Pixley ka Isaka Seme Integrated Development Plan

Sustainable development is imperative for decision-makers to consider projects within the spatial context of other known and planned developments. The DFFE guideline for renewable energy projects sets the spatial extent for the EIA cumulative assessment, stating that other similar large-scale projects must be considered within a 30km radius of the application. Large-scale infrastructure identified within a 30km radius of the project includes:

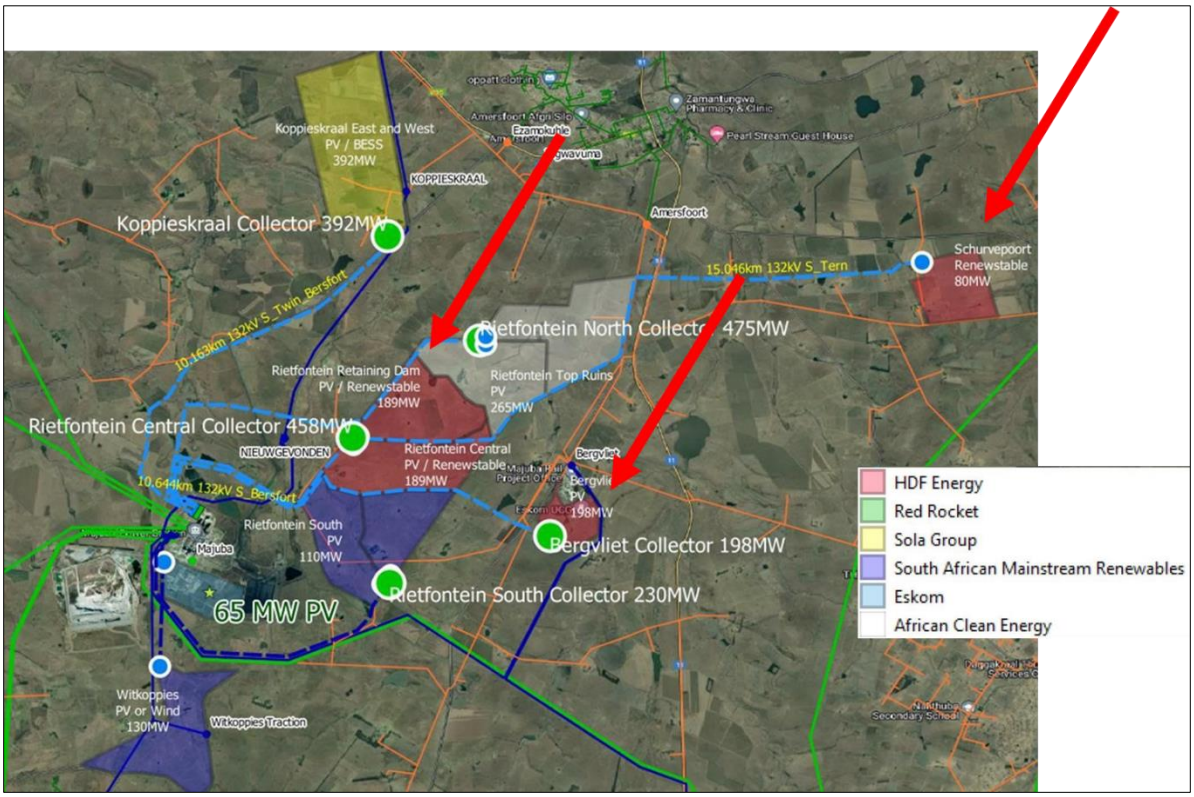


Figure 43: Other Renewable Energy Projects in the Area

Considering the above-referenced documents and the current economic climate and global recession, significant strides have been made to address the key development challenges in the Municipality. As indicated by the IDP, there is some distance to go towards addressing the challenges. The Table below only focuses on project-related challenges.

Table 44: Cumulative Impacts

Challenges	Description	Applicability to the project
High rates of unemployment and low economic growth	Similar to other Municipalities in the Country, the municipality faces a challenge regarding a marketable and skilled workforce, thereby creating a productivity gap, which in turn has a negative impact on the economic growth path. Limited efforts to encourage the development of the green economy and the development of infrastructure to support economic development will, in	Providing employment opportunities during the construction and operational phases. **Direct Employment:** Proposed wording in SIA: During the plant's operations phase, further permanent jobs will be created. Project construction will be managed by a local or international engineering, procurement, and construction contractor (EPC) that will subcontract most of the local

Challenges	Description	Applicability to the project
	the future, stifle opportunities to reduce the high levels of unemployment.	workforce. The construction phase is estimated to provide temporary employment to up to 300 people, while the operational phase will employ up to 35. The combined opportunities for the Majuba Cluster will have approximately 1800 and 270 opportunities during construction and operation, respectively. **Indirect Employment**: The project will also generate indirect employment opportunities through the demand for goods and services related to the construction and maintenance of the power plant, benefiting local businesses and service providers. The combined opportunities for the Majuba Cluster will have approximately 405 and 2700 opportunities during construction and operation, respectively. **Strengthen local economic development:** The Project will likely increase the region's expendable income through wages/ salaries and the potential for growth of local suppliers/ contractors. Lastly, the increase in expendable income may increase the potential for secondary business opportunities in the local market. The project will create approximately 5175 direct and indirect opportunities.
Low levels of skills development and literacy	There is an urgent need to improve and transfer scarce skills to the citizens of Nkomazi. The Municipality is responsible for improving the community's literacy	**Skills Development:** Training and capacity-building programs associated with the project will enhance the local workforce's skills, improve employability, and support

Challenges	Description	Applicability to the project
	levels and ensuring an adequate skills base to foster enterprise growth and job creation. This will assist the citizens in entering the competitive economic and manufacturing market.	long-term economic resilience. This focus on skills development aligns with broader regional goals of enhancing human capital and reducing poverty.
Increased incidents of HIV/AIDS and communicable diseases	HIV/AIDS is an epidemic which is increasing at an alarming rate and affects communities negatively. The provision of basic health services and adequate healthcare infrastructure, increased financial and human resources in healthcare, awareness and education and poverty alleviation programmes will reduce the increased incidents of HIV/AIDS and communicable diseases.	The expected influx of people could impact the spread of communicable diseases.
Loss of Natural Capital	Ecosystems and natural resources deliver essential environmental services (e.g. water supply, flood attenuation, climate control) that provide the foundation for human life and development. These resources are finite, so their protection and efficient use is essential if irreversible degradation and loss of the Municipality's biodiversity are to be avoided and if the sustainability objectives of the IDP are to be achieved. Habitat destruction (or land transformation) and invasive alien species are widely regarded as the greatest threats to biodiversity. Other threats include over-exploitation (e.g. medicinal plants) and climate change.	The ESIA seeks to address the loss of natural Capital by ensuring that developments are sustainable and in accordance with regulatory requirements.
Unsustainable developmental	The Municipality faces the challenge of reacting to urban sprawl, which, in turn,	The listed impacts have been identified, and specialist input has been sought to

Challenges	Description	Applicability to the project
practices	results in an increased informal settlement, overcrowded schools, ill health, marked spatial disparities, higher cost of providing infrastructure and services, disturbed ecosystems, biodiversity and environmental resources, changes in air quality, change in aesthetics and urban form, as well as loss of land for economic and agricultural services.	address them. The ESIA phase will present a detailed impact assessment with proposed mitigation measures.
High levels of crime and risk	Strategies for addressing crime, including reactive strategies to respond to crime and proactive strategies to stop crime before it happens, are required. The response requires an integrated, multifaceted approach that includes working closely with communities, the National and Provincial Governments, other stakeholders, and service providers in all areas of crime prevention.	As noted in the influx map presented on Vision 2030, some municipalities in Mpumalanga are already experiencing an influx of people searching for opportunities. This will likely be the case for the GSDM and its local Municipalities, particularly with the numerous renewable energy projects in the district.
Ensuring adequate energy and water supply	The unsustainable use of resources such as energy and water has major environmental impacts. It will ultimately compromise the Municipality's energy security and ability to deliver water of adequate quality and quantity to its citizens. Unsustainable resource use is a direct consequence of overproduction and consumption. Demand-side management is critical to ensuring a more sustainable use of resources. In the case of water, whole catchment management (including areas outside of the municipal area) and efficient nature conservation programmes will help	Service delivery is a key challenge for the local and district municipalities. Providing basic services such as water, sewerage, power, and housing has been an ongoing problem in the region. Several of the region's planning documents have identified basic service delivery as a key issue. The expected increase in employees (and associated family members) resulting from the Project and a possible influx of work seekers will strain Volksrust, Amersfoort, and the surrounding towns' existing health and education facilities.

Challenges	Description	Applicability to the project
	ensure an adequate supply of clean water in the Municipality. The most sustainable solution to the energy crisis is to reduce the energy demand and, at the same time, investigate alternative renewable energy sources.	The proposed project, however, is a solution to what the IDP highlighted as an energy challenge, as it offers alternative energy despite needing to be more renewable.
Infrastructure degradation	Degradation has become a critical social problem, with effects such as flooding in the municipal area due to unexpected heavy rain. Therefore, it is critical that the Municipality manages its assets, mitigates climate change, and ensures infrastructure life cycle management, thus providing value for money.	The project recognises climate change and associated weather challenges, which will be considered in the design and maintenance plan. Furthermore, the sustainability of the gas supply has also been investigated to ensure the project's long-term sustainability.

12.4.1 Waste Generation

During the construction phase of the proposed Renewstable® Sivutse, various waste streams will be produced within the project site. Most of this waste will end up at landfill sites within the municipality.

12.4.2 Visual Impact

The primary route in the study area is the N11, but it does not directly pass the proposed power plant. The more minor regional roads, the R35 and R23 connect the towns, mines, and farms. The secondary road network in the study area carries a much lower volume of motorists. Motorists' visual exposure to the proposed power plant will be brief, and the severity of the visual impact will be low.

12.4.3 Traffic Impact

The study area (receiving environment) was defined based on the extent and type of the project activities and the traffic characteristics expected to be generated. Based on this, the boundaries of the study area are limited to the location of the following key intersection:

- Road D284/Future access to the site.

The proposed development is expected to generate some demand for non-motorised and public transport, but no new facilities are recommended due to the site's remote location. However, it is recommended that transport for some staff be considered to and from the site during the project's construction and operational phases.

12.4.4 Soil and Land Capability

The loss of agricultural soils and the permanent change in land use will be localised within the study area; the cumulative loss of agricultural resources locally and regionally is moderate without mitigation and low with mitigation measures. It is the opinion of the specialist that the unmitigated scenario poses a threat to the sustainability of high-potential agricultural soils. Therefore, integrated mitigation measures must be implemented accordingly, to minimize the potential loss of these valuable soils, considering the need for sustainable development.

13 PLAN OF STUDY FOR EIA

The scoping phase is fundamental as it identifies potential environmental impacts and facilitates the process of compiling the ESIA and Environmental Management Programme (EMPr). This report incorporates information from the client, specialist studies, site visits, literature reviews, and previous environmental studies conducted in the area; therefore, it provides a comprehensive baseline of the study area's environment.

This scoping process followed the appropriate standards and procedures for the EIA application, as set out in the NEMA and the 2014 EIA Regulations. The study includes a description of the various alternatives and indicates those alternatives which should be pursued as part of the detailed assessment of the ESIA process. The impact significance of the proposed activity on the environment will be assessed in the EIA phase (described below) with the assistance of various specialist studies.

This section outlines how the ESIA for the proposed development will proceed during the EIA phase. The detailed assessment phase of the EIA process entails integrating specialist studies to ensure that those potential impacts are significant. Relevant mitigation measures will be included in the EMPr. This section provides specific terms of reference and impact assessment methodology for utilisation by the specialist team and EAP. The Plan of Study for EIA is intended to summarise the key findings of the Scoping Phase and describe the activities undertaken during the impact assessment. The Plan of Study provides the following:

- A description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;
- A description of the aspects to be assessed as part of the environmental impact assessment process;
- Aspects to be assessed by specialists;
- A description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;
- A description of the proposed method of assessing duration and significance;
- An indication of the stages at which the competent authority will be consulted;
- Particulars of the public participation process that will be conducted during the EIA process;
- A description of the tasks that will be undertaken as part of the environmental impact assessment process; and
- Identify suitable measures to avoid, reverse, mitigate or manage identified impacts and determine the extent of the residual risks that need to be managed and monitored.

13.1 A DESCRIPTION OF THE ASPECTS TO BE ASSESSED AS PART OF THE ENVIRONMENTAL IMPACT ASSESSMENT

The following aspects have been identified and described as part of the Scoping Report.

- Wetland and Aquatic Assessment

- Heritage Impact Assessment
- Agricultural Impact Assessment
- Terrestrial and Aquatic Biodiversity Assessment
- Paleontological Assessment
- Civil Aviation Verification and Glint and Glare
-
- Avifauna Impact Assessment
- Social Impact Assessment and Tourism
- Visual Impact Assessment
- Herpetofauna
- Traffic Impact Assessment

Table 45: Screening Tool Outcomes

Sivutse A				
Theme	**Very High sensitivity**	**High sensitivity**	**Medium sensitivity**	**Low sensitivity**
Agriculture		X		
Animal Species		X		
Aquatic Biodiversity	X			
Archaeological and Cultural Heritage				X
Avian				X
Civil Aviation			X	
Defence				X
Landscape	X			
Palaeontology			X	
Plant Species			X	
RFI				
Terrestrial Biodiversity	X			
Sivutse B				
Theme	**Very High sensitivity**	**High sensitivity**	**Medium sensitivity**	**Low sensitivity**

Agriculture		X		
Animal Species		X		
Aquatic Biodiversity	X			
Archaeological and Cultural Heritage				X
Avian				X
Civil Aviation			X	
Defence				X
Landscape	X			
Palaeontology		X		
Plant Species			X	
RFI				X
Terrestrial Biodiversity	X			

The assessment was compiled in accordance with the requirements of the *Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes when Applying for EA* (GN R320 of 2020) and comply with the following gazetted protocol, which replaces the requirements of Appendix 6 of the EIA Regulations, 2014 (as amended) in terms of NEMA: *Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Animal Species* (GN 1150 of 30 October 2020) as amended 28 July 2023.

The outcomes are presented in **Error! Reference source not found.**, including specialist studies to be completed during the EIA phase. of the twelve SSV themes completed, six will require a detailed Report in the EIA Phae, i.e.,

- Terrestrial Biodiversity (Plant and animal species)
- Avifauna
- Agriculture
- Archaeology
- Landscape

13.2 ASPECTS TO BE ASSESSED BY THE SPECIALISTS

The following specialist studies will be undertaken during the EIA Phase.

Table 46: List of EIA specialist studies and SSV outcome

Specialist Study	Company	Specialist	SSV outcome Sivutse A	Sivutse B
Draft Reports /SSV Reports completed and attached.				
Wetland Biodiversity Assessment	WaterMakers	Willem Lubbe		
Heritage Impact Assessment	Archaeological and Heritage Services Africa (Pty) Ltd	Edward Matenga		
Agricultural Impact Assessment	Nsovo Environmental Consulting	Tshiamo Setsipane		
Terrestrial and Assessment	Amanzi Environmental Services	Rudi Greffrath		
Paleontological Assessment	Bamford (Pty) Ltd	Dr. Marion Bamford		
Civil Aviation Verification	GWI Group	Jon Heeger		
Glint and Glare				
RFI				
Visual Impact Assessment	Outline Landscape Architects	Katherine Hammel-Louw		
Defence	Nsovo Environmental			
Avifauna Impact Assessment	Cossypha Ecological	Robyn Phillips		
Herpetofauna	Mboneni Ecological Services	Avhafarei Phamphe		

Specialist Study	Company	Specialist	SSV outcome Sivutse A	Sivutse B
Included in the Plan of Study to be completed during the EIA Phase				
Noise and Vibration Specialist	DB Acoustics	Barend		
Major Hazard Installation	ISHECON	-		
Air Quality and Climate Change Impact	EHRCON	Uno Neveling		
Traffic Impact Assessment	Traffic Surveys	Pieter Joost		
Social Impact Assessment and Tourism	Mana (Pty) Ltd	Vhahangwele Manavhela		

All specialist studies will be prepared per Appendix 6 of the EIA Regulations of 2014 as amended and undertaken by qualified, experienced, and registered specialists. The specialist studies will take into consideration the Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes in terms of Section 24(5) (a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation ("the Protocols") promulgated in Government Notice ("GN") No. 320 on 20 March 2020, which came into effect on 09 May 2020.

Table 47: Specialist Terms of Reference

Aspect	Company Responsible	Scope of Work / Terms of Reference
Air Quality Assessment	EHRCON	The impact assessment phase of the study will include the following:

Aspect	Company Responsible	Scope of Work / Terms of Reference
		• The compilation of an emissions inventory comprising the identification and quantification of potential sources of • emissions due to the project; Dispersion simulations of all potential pollutants from the project for applicable averaging periods • Evaluation of the potential for human health impacts; and, • Determination of environmental risk • Propose Mitigation Measures
Noise Assessment	Db Acoustics	The following will be included in the environmental noise impact assessment study: • Compilation of project source term; • Attenuation modelling of all potential noise sources due to project operations; • Evaluation of potential noise impacts on human receptors due to project activities; and, • Determining environmental noise risk according to the EIMS stipulated Impact Assessment methodology.
Climate Change Assessment	EHRCON	The impact assessment will include the following information: • An estimation of the CO_2-equivalent emissions from the project, associated fuel use, vegetation clearing activities (if applicable), and electricity use; • Estimate the impact of the project on national greenhouse gas emissions; • Evaluation of the potential impact of global climate change on the project by identifying potential physical risks to the project, employees, and communities; • Provide the potential risk of climate change on the project and the risk of the project on climate change;

Aspect	Company Responsible	Scope of Work / Terms of Reference
		• Determination of environmental risk according to stipulated Impact Assessment methodology and, • Recommendation of mitigation and management measures, where applicable. The climate change impact assessment report will consider Scope 1 emissions, which are directly attributable to the proposed project; Scope 2 emissions, which are the emissions associated with bought-in electricity over the project's lifetime; and Scope 3 emissions (as far as is reasonable and practically possible), which consider the "embedded" carbon in bought-in materials and downstream emissions.
Major Hazardous Installation Study	ISHECON	The scope of the risk assessment will include: • Review of revised Renewstable Bokamoso technical designs; • Development of accidental spill and fire scenarios for the facility; • Using generic failure rate data (for tanks, pumps, valves, flanges, pipework, gantry, couplings and so forth), determination of the probability of each accident scenario; • For each incident developed, determination of consequences (such as thermal radiation, domino effects, toxic-cloud formation and so forth); • For scenarios with off-site consequences (greater than 1% fatality off-site), calculate the maximum individual risk (MIR), considering all generic failure rates, initiating events (such as ignition), meteorological conditions, and lethality; • Assessing the risk assessment to the criteria of SANS 1641 and commenting on the suitability of the project; • Suggest mitigation, if possible, for successful implementation. This information will then identify shortcomings and rank the risks for possible risk reduction programmes. The assessment results will be tabled in a document addressing some or all of the topics listed in the MHI

Aspect	Company Responsible	Scope of Work / Terms of Reference
		regulations, which would not be adequate for submission as an MHI risk assessment.
Heritage	Archaeological and Heritage Services Africa (Pty) Ltd	The Heritage SSV has been completed in accordance with the protocol's outcomes. The assessments entailed site investigations and other field activities, and the requisite assessment will thus entail detailed reports. A Heritage Impact Assessment will be written, including sub-specialist studies. • Assessment of the significance of the proposed development during the Pre-construction, Construction, Operation, and Decommissioning Phases • Comparative assessment of alternatives (Technology alternatives will be provided); • Recommend mitigation measures to minimise the impact of the proposed development; • Implications of specialist findings for the proposed development (e.g. permits, licenses, etc • Input into the EMPr • Chance Find Protocol
Socio-economic Assessment	Hangwi Manavhela	The following methodology is proposed: • The study will commence with a baseline description of the area, including a review of available literature. This will consist of relevant legislation, existing provincial and municipal documents and studies, and any additional literature that is deemed to apply to the study. This study will focus on the local and regional levels. • Necessary demographic data will be obtained from Stats SA and other available official documents. • A stakeholder identification and analysis will be conducted to inform the impact assessment and assist with planning the fieldwork. Fieldwork will be used to obtain additional information and communicate with key stakeholders.

Aspect	Company Responsible	Scope of Work / Terms of Reference
		• Stakeholders typically include social structures such as ward councillors, municipal representatives, landowners, community representatives, farmer's associations, forums, and political leaders. Vulnerable stakeholders will be identified and consulted appropriately. • Information will be obtained via focus groups, formal and informal interviews, observation, immersions, in-the-moment discussion groups, the Internet, and literature reviews. Notes will be kept of all interviews and focus groups. • An interview schedule might be used instead of formal questionnaires. An interview schedule consists of a list of topics to be covered, but it is not as structured as an interview. It provides respondents with more freedom to elaborate on their views. • The final report will focus on current conditions, providing baseline data. Each category will discuss the current situation and investigate possible future impacts. • Recommendations for mitigation will be made at the end of the report. • The study will be participatory, which implies that it will strongly focus on including the local community and key stakeholders. Participatory methods will be used to identify local economic development projects. • Impacts will be rated according to the prescribed impact tables, and risks will be calculated using social risk assessment methods. Information obtained through the stakeholder engagement process will inform the writing of the report and associated documents.
Aquatic and Wetland	WaterMarkers	• The wetland delineation has been conducted following the guidelines in the DWAF Guideline document entitled "A Practical Field Procedure for Identification and delineation of wetlands and riparian areas" (DWAF, 2008). The study also conducted a

Aspect	Company Responsible	Scope of Work / Terms of Reference
		field and desktop data survey and classify confirmed wetlands into hydrogeomorphic units; and • The Present Ecological Status (PES) of identified wetlands and Ecological Importance and Sensitivity (EIS) has been determined.
Avifauna	Cossypha	The Terms of Reference for this report were to: • Undertake a preliminary field survey of the study area to identify and map areas of opportunity and constraint within the property, which will inform the layout. • Compile a photographic record of the characteristics of the study area, including major habitats and sensitive areas. • Verify the site sensitivities identified by the DFFE screening tool (SSV Report). • Compile a Preliminary Avifaunal Assessment Report that provides an overview of the ecological context, likely impacts, and potential red flags to development from an avifaunal perspective, covering Stage 1 of the methodology prescribed by the Guidelines (Jenkins et al., 2017); and • Provide maps and shapefiles based on the preliminary findings.

13.3 A DESCRIPTION OF THE ALTERNATIVES TO BE CONSIDERED AND ASSESSED WITHIN THE PREFERRED SITE, INCLUDING THE OPTION OF NOT PROCEEDING WITH THE ACTIVITY

The scoping phase will assess technical and structural alternatives for the Khanyazwe Flexpower facility identified in Section 7, including the "No-Go" alternative. These alternatives will be evaluated further during the EIA phase. The preferred alternatives will have the least environmental impact and provide the most socioeconomic benefits.

Alternatives to be assessed further include:

- Technical and
- No Go Alternative

13.3.1 A DESCRIPTION OF THE PROPOSED METHOD OF ASSESSING THE ENVIRONMENTAL IMPACTS

The description of the proposed method of assessing the duration and significance is included in Section 11 above.

13.4 AN INDICATION OF THE STAGES AT WHICH THE COMPETENT AUTHORITY WILL BE CONSULTED

The different stages at which the Competent Authority will be consulted are presented below.

The diagram below different stages at which the Competent Authority will be consulted.

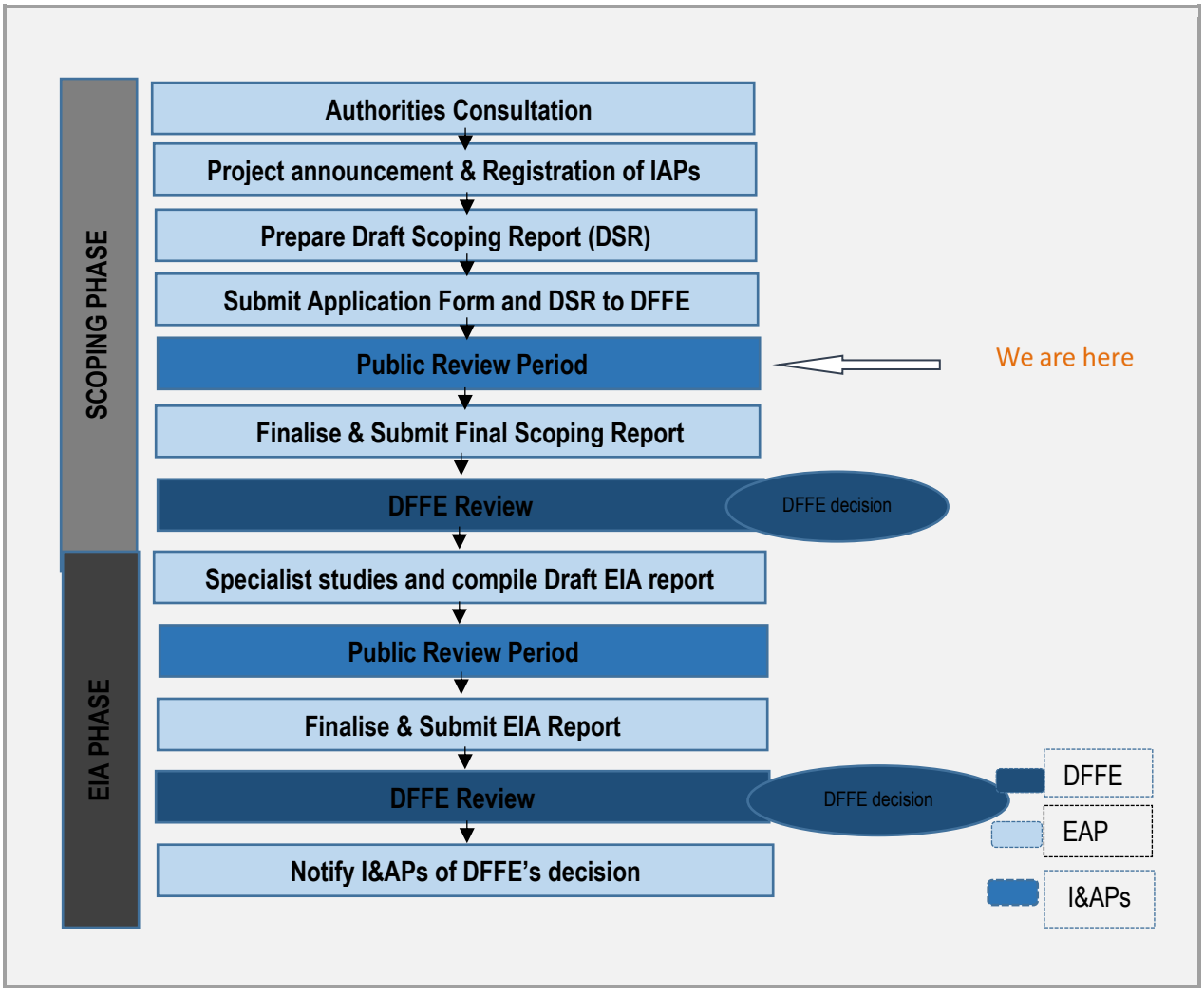


Figure 44: The different stages at which authorities will be contacted

13.4.1 SCOPING PHASE

The draft Scoping Report will be submitted to the DFFE for review and comment. It will also be sent to all stakeholders for 30 days for review and comment, during which time comments or issues raised will be addressed appropriately. The final Scoping Report will also be submitted to the DFFE for consideration.

13.4.2 ENVIRONMENTAL IMPACT ASSESSMENT PHASE

The draft Environmental and Social Impact Report (ESIR) will be prepared and distributed for public review and comments. Copies of the draft ESIR will be submitted to the DFFE and stakeholders for comment. The final ESIR, including all comments received, specialist reports, and recommendations, will be submitted to the DFFE for decision-making.

13.5 PARTICULARS OF THE PUBLIC PARTICIPATION PROCESS THAT WILL BE CONDUCTED DURING THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The Public Participation approach adopted in this plan is in line with the process contemplated in Regulations 39 through 44 of the EIA Regulations of 2014 as amended in terms of the National Environmental Management Act, 1998 (Act 107 of 1998), and Annexures 2 and 3 of Government Notice No 43412 of 5th of June 2020. The Notice requires that the EAP must ensure that:

- All reasonable measures are taken to identify potentially Interested and Affected Parties (I&APs); and
- Participation by registered I&APs facilitated such that they have a reasonable opportunity to comment on the application.

Chapter 6, Regulation 39 through 44 of the EIA Regulations stipulates that the person conducting a public participation process must consider any relevant guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential I&APs of an application or proposed application that is subject to public involvement.

Public Participation principles hold that those affected by a decision have the right to be involved in the decision-making process. The primary objective of conducting the PPP is to provide I&APs with an opportunity to express their concerns and views on issues relating to the proposed project. The principles of public participation are to ensure that the PPP:

- Communicates the interests of and meets the process needs of all participants;
- Seek to facilitate the involvement of those potentially affected;
- Involves participants in defining how they participate; and
- It is as inclusive and transparent as possible; it must be conducted in line with the requirements of the Regulations as amended.

The database of stakeholders developed during the scoping process will be used to ensure that those stakeholders involved in the Scoping Phase also participate in the EIA phase. The database will also be expanded to include I&Aps who wish to be involved in the process. Registered I&Aps will be informed of the draft ESIR's availability for review and will be given 30 days to provide their comments. The comments received will be incorporated into an updated Comments & Response Report (CRR).

Additional public consultation will occur in public and focus group meetings as appropriate. The purpose of the public meetings would be to present the findings of the draft EIR as well as the alternatives considered to the relevant stakeholders, registered I&APs, and the affected landowners. The EAP will use this forum to provide more information about the proposed development, including specialist input, and to allow the stakeholders to comment further on the proposed development. If the comments and issues highlight information that changes or influences the impact evaluation provided in the draft EIR, the necessary amendments will be made to the report. The Final EIR will be submitted to the DFFE after the second public consultation phase.

13.5.1 Public Notification

The commencement of the EIA process, i.e., the Scoping Phase, will be advertised in two local newspapers. The proposed project will further be announced publicly through the following platforms of information sharing:
Newspaper adverts of the proposed development and location, as well as contact details of where more information can be obtained and announcing the availability of the draft EIA Report for review and comment;

- A2 site notices in English and IsiZulu will be placed at conspicuous locations along the study area. Notices will also be placed at the Local Municipality office within the proposed study area; and
- Emails will be sent to key stakeholders.

Further advertising will take place during the EIA phase. It will relate to the reports' availability for public review and the announcement of public meetings at strategically located sites, allowing maximum attendance.

13.5.2 Interaction with DFFE and Provincial Departments

Interaction with DFFE and other provincial authorities with jurisdiction over the proposed development undertaken during the Scoping Phase will continue into the EIA Phase of the project. Further interaction will occur in the following manner:

- Submission of the Final Scoping Report to DFFE;
- A consultation meeting with various stakeholders and I&APs, as appropriate, to discuss the findings of the draft EIR;
- Submission of the draft EIR following public review; and

- Notification of registered I&APs of the EA once it is issued.

13.5.3 Developing a Strategy and Resolving Key Issues

A strategy for addressing and resolving key issues is to be developed and will include:

- Details on all assessments and investigations carried out;
- Use of the public participation meetings to present the findings of the reports and test the acceptability of priority issues and mitigations;
- Openly and honestly relating both positive and negative impacts of the proposed development during the public meetings; and
- Allowing the public to understand the consequences of the proposed development on the area and their livelihoods.

13.6A DESCRIPTION OF THE TASKS THAT WILL BE UNDERTAKEN AS PART OF THE ENVIRONMENTAL IMPACT ASSESSMENT

The section below indicates the tasks undertaken as part of the EIA process. The tasks to be completed during the EIA phase include:

- Detailed specialist studies as detailed in Section 13.1
- Public and Stakeholder Consultation:
    - Notification of the availability of the EIA Report for review and comment to all registered I&APs through notices and newspaper adverts;
    - Distribution of the Draft Report to Stakeholders electronically and hardcopies;
    - Public and focus group meetings;
    - Compilation of the Comments Response Report,
- Authority consultation:
    - Consultation with the competent authorities; and
    - Other relevant/ commenting authorities' consultation is needed to provide authorities with project-related information and obtain their feedback.
- Document compilation:
    - The EIA Report and associated EMPr will be compiled in line with the requirements of Appendix 3 and 4 of the NEMA EIA Regulations (2014, as amended) detailed below.

The EIA Report and EMPr will be finalised and submitted to the DFFE.

13.6.1 PREPARATION OF THE DRAFT EIR AND EMPR

The draft ESIR and EMPr will be prepared per Appendices 3 and 4 of the 2014 EIA Regulations, respectively, and will include input from the specialist studies indicated in Section 9.3.2 above. Contents of the draft EIR (Appendix 3) will consist of the following:

- Details and expertise of the EAP;
- Location of the activity;
- A plan that locates the proposed activity or activities applied for, as well as associated structures and infrastructure at an appropriate scale;
- A description of the scope of the proposed activity;
- A description of the policy and legislative context within which the proposed development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;
- A motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred location;
- A motivation for the preferred development footprint within the approved site;
- A complete description of the process followed to reach the proposed development footprint within the approved site;
- A complete description of the process undertaken to identify, assess, and rank the impacts the activity and associated structures and infrastructure will impose on the preferred location through the life of the activity;
- An assessment of each identified potentially significant impact and risk, including (i) and (vii) as per the Regulations;
- A summary of the findings and recommendations of specialist reports;
- Environmental Impact Statement inclusive of (i) to (iii) as per the Regulations;
- The final proposed alternatives that respond to the impact management measures, avoidance, and mitigation measures identified through the assessment;
- Aspects that were conditional to the findings of the assessment either by the EAP or specialist, which are to be included as conditions of authorisation;
- Recommendations from the specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation;
- The final proposed alternatives that respond to the impact management measures, avoidance, and mitigation measures identified through the assessment;
- Aspects that were conditional to the findings of the assessment either by the EAP or specialist, which are to be included as conditions of authorisation;

- A description of any assumption, uncertainties, and gaps in knowledge that relate to the assessment and mitigation measures proposed;
- A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;
- The period for which the environmental authorisation is required and, the date on which the activity will be concluded, and the post-construction monitoring requirements finalised;
- The undertaking under oath by the EAP in relation to (i) and (iv) as per the regulations and
- An indication of any deviation from the approved Scoping Report, including the Plan of Study (i) and (ii) as per the Regulations.

Contents of the EMPr (Appendix 4) will include the following:

- An EMPr must comply with Section 24N of the Act and include - details of the EAP who prepared the EMPr and the expertise of that EAP to prepare an EMPr, including a curriculum vitae;
- A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;
- A map at an appropriate scale that superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;
- A description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed, and mitigated as identified through the environmental impact assessment process for all phases of the development, including (i) to (v) of the 2014 EIA Regulations as amended;
- A description of proposed impact management actions, identifying how the impact management outcomes contemplated above will be achieved, and must, where applicable, include actions as indicated in (i) to (iv) of the EIA 2014 Regulations as amended.
- The method of monitoring the implementation of the impact management actions contemplated above;
- The frequency of monitoring the implementation of the impact management actions contemplated above;
- An indication of the persons who will be responsible for the implementation of the impact management actions;
- The periods within which the impact management actions contemplated above must be implemented;
- The mechanism for monitoring compliance with the impact management actions contemplated above;
- A program for reporting on compliance, considering the requirements as prescribed by the Regulations;
- An environmental awareness plan describing how-
  - (i) The applicant intends to inform their employees of any environmental risk that may result from their work;
  - (ii) Risks must be dealt with to avoid pollution or the degradation of the environment; and

(iii) Any specific information the competent authority may require.

13.6.2 Public Participation Process

As indicated in Sections 9 and 13.5 above, the public participation process will be undertaken.

13.6.3 Preparation of the Final EIA Report and EMPr

The final EIR and EMPr will be prepared according to Appendices 3 and 4 of the 2014 EIA Regulations as amended; further, it will be forwarded to DFFE in accordance with the report submission protocol.

13.6.4 Identify Suitable Measures To Avoid, Reverse, Mitigate, Or Manage Identified Impacts And To Determine The Extent Of The Residual Risks That Need To Be Managed And Monitored

The aspects that will be assessed have been identified, and their potential impacts and mitigation measures are indicated in Section 12 and will be elaborated further in the EMPr. The proposed method of assessing environmental aspects is included in Table 41 above

14 UNDERTAKING UNDER OATH OR AFFIRMATION BY THE EAP

In undertaking the Scoping phase of the project, the EAP has considered the requirements stipulated in the EIA 2014 Regulation as amended and other relevant Acts and Regulations. The EAP hereby confirms that with the information available at the time of preparing the Scoping Report, the following has been considered in preparing this report:

- The correctness of the information provided in the report.
- The inclusion of comments and inputs from stakeholders and interested and affected parties; and
- Any information provided by the EAP to the interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.

Refer to Appendix E for the Declaration of the EAP.

14.1 AN UNDERTAKING UNDER OATH OR AFFIRMATION BY THE EAP ABOUT THE LEVEL OF AGREEMENT BETWEEN THE EAP AND INTERESTED AND AFFECTED PARTIES ON THE PLAN OF STUDY FOR UNDERTAKING THE ENVIRONMENTAL IMPACT ASSESSMENT

The Plan of Study for the EIA forms part of this Report, which will be made available to I&APs and Organs of State for a 30-day review and comment period. Comments/issues raised will be addressed and included in the CRR.

No agreement between the EAP and I&APs is in place.

14.2 WHERE APPLICABLE, ANY SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

It will be updated during the Final submission.

14.3 ANY OTHER MATTER REQUIRED IN TERMS OF SECTION 24(4) (A) AND (B) OF THE ACT

Information that the NEMA requires has been included in this report and will be included in the EIA phase.

15 DESCRIPTION OF ANY ASSUMPTIONS, UNCERTAINTIES AND KNOWLEDGE GAPS

15.1 ASSUMPTIONS AND LIMITATIONS

The technical data supplied by the client when the Draft Scoping Report was compiled is assumed to be correct and valid. Furthermore, the alternatives presented by the client are assumed to be feasible.

15.1.1 PUBLIC PARTICIPATION PROCESS

Public and focus group meetings will be held, and the meeting minutes will be submitted with the final Scoping report. However, various means will be afforded for the public to participate in the EIA process and comment on the draft reports (Scoping and EIA). Much as the process detailed in the Regulation will be followed, some interested and affected parties may need to be noticed. This must not be considered a deliberate omission.

15.1.2 LITERATURE REVIEW

This report was based on various literature reviews and the previous specialist input, which were considered correct at the time. However, it is acknowledged that there might be some gaps in knowledge regarding the literature reviewed, although concerted efforts were made to attain as much information as possible. Further specialist studies will be undertaken to enhance the literature review.

15.1.3 SPECIALIST GAPS AND LIMITATIONS

All specialist reports to be completed will include gaps and limitations associated with the specific themes.

Heritage Study

Most of the area proposed for development is covered with grass; however, it must be noted that the area is disturbed, and no archaeological resources are expected here. Nevertheless, as with any survey, archaeological materials may be under the surface and unidentifiable to the surveyor until they are exposed once construction starts. As a result, should any archaeological/ or gravesite be observed during the construction stage, a heritage specialist monitoring the development must immediately be notified. In the meantime, further disturbance may only be made once the heritage specialist can assess the find in question. The contractor is responsible for protecting the site from publicity (i.e., media) until all assessments are made.

15.1.3.1 AVIFAUNA ASSESSMENT

The following assumptions and limitations were considered:

- Habitat boundaries usually consist of subtle transitional zones or ecotones, which cannot be captured as distinct lines. Boundaries of habitat types are, therefore, approximately defined.
- Habitat types are defined and mapped in the context of use by birds and not in terms of botanical species associations. Similarly, the riparian habitat associated with rivers, wetlands, and dams is defined in terms of broad habitat use by birds and does not denote the boundaries of wetlands and watercourses.
- The preliminary assessment was conducted over the entire 435-ha study area to get an overview of habitats, landscape features, and sensitivities. While it's unlikely, any of the habitat delineations are subject to change if new sensitivities come to light following the more detailed seasonal assessments

15.1.3.2 TERRESTRIAL BIODIVERSITY

- Whilst every effort is made to cover as much of the site as possible, representative sampling was completed as per the nature of this type of investigation. Therefore, it is likely that some plant and animal species on site were not recorded during the field investigations. An in-depth Avifauna investigation is not included in this report.
- Every effort is made to identify all plant species on-site during field investigations. However, this being the wet season, any winter flowering species would have been omitted from the field data.
- This report lists the findings of an on-site baseline evaluation within the area selected by Eskom Majuba for the construction and operation activities of the PV facility and related activities. Where necessary, recommendations for the most appropriate mitigation measures have been included.
- To obtain a comprehensive understanding of the dynamics of the biota on a site, including SCC, studies should include investigations through the different seasons of the year over several years and extensive sampling of the area. Due to the EIA process time constraints, such long-term research was not feasible, and the information contained within this report is based on a late wet season field survey.
- In terms of limitations relevant to this study, it must be noted that field investigations did not include a nocturnal survey for safety reasons; therefore, nocturnal species were not recorded by this means. Furthermore, the prevailing temperature was low during the site investigation, with persistent rainfall and hail. This could have influenced the behaviour of reptile species and meant they might not have been as active.

15.1.3.3 VISUAL IMPACT ASSESSMENT

This assessment was undertaken during the project's conceptual stage and is based on available information.

- This level of assessment excludes surveys to establish viewer preference and, thereby, their sensitivity. Viewer sensitivity is determined using a commonly used rating system.

- The site visit was conducted on the 30th of October, 2023, and the photographs used in this report illustrate the landscape's character in the summer on a rainy day.

15.1.3.4 SOCIAL-IMPACT ASSESSMENT

The SIA must be based on current and accurate project information. Similarly, the geographic extent of the SIA is influenced by project design and overall planning processes. The report is based on current information received while compiling the feasibility study and considers project information relating to planning and design, implementation, and infrastructure placement.

- This study was done with the information available to the specialist when executing it within the available timeframe and budget. The sources consulted need to be completed; additional information might exist, which might strengthen arguments or contradict the information in this report.
- It was assumed that the motivation for and the ensuing planning and feasibility studies of the project were done with integrity and that the information provided to date by the other stakeholders was deemed accurate.
- As is the nature of social research, the results of this study cannot be generalised and applied to the entire population across the whole area and are restricted to the specific study area.
- Also, people's actions can never be predicted with 100% accuracy, even when circumstances stay the same, and predictions are based on rigorous research results. Therefore, the potential impacts must be assessed holistically and not in isolation.

15.1.3.5 WETLAND ASSESSMENT

During the present study, the following limitations were experienced:

- To obtain definitive data regarding the biodiversity, hydrology, and functioning of wetlands, studies should ideally be conducted over several seasons and years. The current study relied on information gained during a single field survey conducted during a single season, desktop information for the area, as well as professional judgment and experience;
- Wetland and riparian areas within transformed landscapes, such as urban and/or agricultural settings or mining areas with existing infrastructure, are often affected by disturbances that restrict the use of available wetland indicators, such as hydrophytic vegetation or soil indicators (e.g. because of dense stands of alien vegetation, dumping, sedimentation, infrastructure encroachment, and infilling). As such, wetland and riparian delineations as provided are based on indicators where available and the author’s interpretation of the current extent and nature of the wetlands and riparian areas associated with the proposed activity;
- Some precision agricultural techniques, such as topographical manipulation and soil redistribution ploughing, were evident within the study area, which in some instances could obscure pedological signs of wetness and hydric soil forms;

- Wetland and riparian assessments are based on available techniques developed through the Department of Water and Sanitation (DWS). These methods are, however, largely qualitative with associated limitations due to the range of interdisciplinary aspects that must be considered. Current and historic anthropogenic disturbance within and surrounding the study area has resulted in soil profile disturbances as well as successional changes in species composition about its original /expected benchmark condition;
- Delineations of wetland areas were largely dependent on the extrapolation of field indicator data obtained during field surveys, 5m contour data for the study area, and from the interpretation of georeferenced orthophotos and satellite imagery as well as historic aerial imagery data sets received from the National Department of Rural Development and Land Reform. As such, inherent orthorectification errors associated with data capture and transfer to electronic format are likely to decrease the accuracy of wetland boundaries in many instances and
- Wetlands outside of the study area boundary were extrapolated using aerial imagery. However, some sampling was done outside of the study boundaries to confirm findings and better interpret the Hydropedological characterisation of the study area.
- No other specialist studies were available when writing this report to support findings for determining the Ecological Importance and Sensitivity of watercourses. However, all watercourses within the study and 500m of the study area were considered sensitive (except artificial wetland habitat).
- Regarding Ecological Importance and Sensitivity for pans, very little research has been conducted on the invertebrate biodiversity of endorheic and endorheic depressions within South Africa. Therefore, the EIS within this report is based on any detailed aquatic assessment of invertebrate biodiversity.
- Although most of the main watercourses were described as wetlands (e.g. valley bottom wetlands large sections of these watercourses were dominated by riparian habitat ("nontraditional riparian", thus riparian habitat dominated by graminoids). However, signs of wetness and hillslope driver processes were intermittently observed within these watercourses, likely due to varying geology and intrusions between the dolerites. Therefore, a conservative approach was taken, and classification was sided towards wetland classification as separating the various riparian versus wetland sections was not deemed practically or economically feasible.
- No Hydropedological studies were available to confirm wetlands drivers and Hydropedological responses associated with the terrain.
- Once the final layout, construction methodologies, and operational management regimes for landscape maintenance are established, a final impact assessment should be produced.

15.1.3.6 PALEONTOLOGY ASSESSMENT

Based on the geology of the area and the palaeontological record as we know it, it can be assumed that the formation and layout of the dolomites, sandstones, shales, and sands are typical for the country and only some might contain

fossil plant, insect, invertebrate and vertebrate material. The sands and soils of the Quaternary period would not preserve fossils.

15.1.3.7 AGRICULTURAL ASSESSMENT

The following assumptions, uncertainties, limitations, and gaps were applicable for the soil, land use, and land capability assessment:

- It is assumed that the infrastructure components will remain as indicated on the layout and that the activities for the construction and operation of the infrastructure are limited to that typical for a project of this nature;
- The soil survey was confined to the study area outline with consideration of various land uses outside the study area;
- During the site assessment and compilation of the report, employment figures about the study area could not be sourced;
- Soil profiles were observed using a 1.5m hand-held soil auger; thus, a description of the soil characteristics deeper than 1.5m cannot be given; and

Classifying soils as one specific form can be challenging due to the infinite variations in the soil continuum. Therefore, the classifications presented in this report are based on the "best fit" to South Africa's soil classification system.

16 IMPACT STATEMENT

No significant impacts were identified during the scoping phase that would necessitate substantial redesign or termination of the project.

The main impacts identified are outlined below, and recommended mitigation measures and a summary of site suitability and residual impacts will be assessed in detail during the EIA phase. Such potential impacts include the following:

Impacts evaluated as part of the SSV and found to be of **Low** significance include:

- Glint and Glare
- RFI
- Impact on the Defence Theme
- Heritage Impact Assessment
- Civil Aviation Impact
- Paleontological Impact
- Defence
- RFI

Impacts evaluated as part of the SSV and found to be of **Medium** significance include:

- Plant species
- Wetland Impact
- Landscape Impact Assessment

Impacts were evaluated as part of the SSV and found to be highly significant.

- Terrestrial and
- Aquatic Biodiversity Assessment
- Agricultural Impact Assessment

The specialist studies will consider the GN 1150 prescribed protocols and Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes in terms of Section 24(5) (a) and (h) and 44 of the National Environmental Management Act, 1998.

The subsequent EIA phase will provide a detailed assessment of the identified aspect, rate the significance accordingly, and propose mitigation measures as applicable. Based on all the findings and the EAP's assessment of impacts, the site is feasible for the proposed development and will be assessed further in the EIA phase. The No-Go option will also be comprehensively evaluated, considering specialist studies recommended as part of the PPP.

17 CONCLUSION

The Scoping Report was undertaken according to the requirements of the NEMA, the amended EIA Regulations, and associated legislation. The Scoping phase entailed a detailed description of the baseline environment, which formed the backdrop of the impact assessment phase.

The alternatives have been proposed, and the primary purpose was to determine the feasibility of each alternative for the desired outcome and the overall impact of project development on the environment. The selection of sites was supported by specialist sensitivity verification reports and, in some instances, desktops, which provided high-level input on the environmental attributes of the sites under consideration. All technical options considered during the draft will be carried over. The SSVs also informed the level of detail required in the EIA phase as such specialists will be commissioned to inform the process and address some of the main issues raised during the consultation process; such specialist input will be sought in the EIA Phase in line with the Protocols. The subsequent EIA phase will provide a detailed assessment of the identified issues, rate the significance accordingly, and propose mitigation measures as applicable.

The Draft Scoping Report is subjected to a 30-day comment and review period, allowing input from stakeholders and I&APs. The comments on the draft will be considered and comprehensively addressed through email correspondence, calls, meetings, and inclusion in the report.

18 REFERENCE

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