DRAFT

SCOPING REPORT FOR THE PROPOSED DEVELOPMENT OF THE KLIPDRIFT SOLAR PARK AND ASSOCIATED INFRASTRUCTURE WITHIN THE JURISDICTION OF THE LETSEMENG LOCAL MUNICIPALITY IN THE FREE STATE PROVINCE

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DATE

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PROJECT TITLE:		
THE DRAFT SCOPING REPORT FOR THE PROPOSED DEVELOPMENT OF THE KLIPDRIFT SOLAR PLANT AND ASSOCIATED INFRASTRUCTURE WITHIN THE JURISDICTION OF THE LETSEMENG LOCAL MUNICIPALITY IN THE FREE STATE PROVINCE		
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Report:	**Compiled By:**	**Peer Reviewed By:**
Draft Scoping Report	Rejoice Aphane	Munyadzi Rikhotso

EXECUTIVE SUMMARY

Solasun SA (Pty) Ltd (Solasun) proposes the development of the 400MW photovoltaic (PV) solar plant to be referred to as the Klipdrift Solar plant (Klipdrift) and 2 X 132kV powerline connecting at Eskom Jacobsdal substation, and 132Kv step-up substation. The proposed development will be connected to the Eskom Holdings SOC Ltd (Eskom) electricity grid. The connection to the Eskom grid will be done according to the Eskom connection solution.

The proposed Klipdrift Solar plant is not part of the Department of Energy's (DoE's) Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). However, it will add to the national electricity grid and increase the renewable energy capacity required by the DoE from Renewable Energy (RE) sources (i.e., wind, solar) by 2030.

The Klipdrft solar plant is situated on farm Portion 1, of farm Klipdrift 20 JQ, within the jurisdiction of Letsemeng Local Municipality, Xhariep District Municipality in the Free State Province. The study area is situated approximately 3 km south of the Pulida solar plant, further, it is located outside the protected area.
The proposed development triggers the NEMA EIA listed activities; as such, Solasun must undertake the Environmental Impact Assessment (EIA) process to obtain an environmental authorisation before construction of the above-mentioned activities in accordance with the EIA Regulations, 2014 (promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), as amended.

Furthermore, the proposed development will trigger Section 21 water use activities; as such, Solasun will lodge a Water Use Licence Application (WULA) in terms of Section 40 the National Water Act, 1998 (Act No. 36 of 1998) (NWA) to obtain a Water Use Licence (WUL) from the Department of Water and Sanitation (DWS) before the commencement of any listed Section 21 water use activity. Subsequently, Nsovo Environmental Consulting (hereafter referred to as Nsovo) has been appointed by Solasun to undertake the necessary authorisations and licencing process to comply with the requirement of the legislation. The project proponent is Solasun SA (Pty) Ltd, whereas the Competent Authority (CA) is the Department of Forestry, Fisheries, and Environment (DFFE).

The Environmental Impact Assessment for the proposed project is undertaken in accordance with the EIA Regulations, in terms of Section 24 (5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), as amended. The EIA phase aims to achieve the following objectives:

a) Determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context.
b) Describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the development footprint on the approved site as contemplated in the scoping report.
c) Identify the location of the development footprint within the approved site as contemplated in the Scoping Report based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment.

d) Determine the nature, significance, consequence, extent, duration, and probability of the impacts occurring to inform identified preferred alternatives; and the degree to which these impacts can be reversed; may cause irreplaceable loss of resources and can be avoided, managed, or mitigated.
e) Identify an ideal location for the activity within the development footprint of the approved site as contemplated in the scoping report based on the lowest level of environmental sensitivity identified during the assessment.
f) Identify, assess, and rank the impacts the activity will impose on the development footprint on the approved site as contemplated in the scoping report through the life of the activity.
g) Identify suitable measures to avoid, manage or mitigate identified impacts; and
h) Identify residual risks that need to be managed and monitored.

Accordingly, a Scoping Report has been prepared in accordance with the requirements of Appendix 2 of the NEMA.EIA Regulations of 2014 as amended, and it contains the following information:

(a) The details and expertise of the Environmental Assessment Practitioner (EAP) who prepared the report.
(b) The location of the proposed activities.
(c) A plan which locates the proposed activities to be undertaken.
(d) Description of the scope of the proposed project, including the listed activities and the associated structures and infrastructures.
(e) Description of policy and legislative content within which the development is located and an explanation of how the development complies with and responds to the legislation and policy context.
(f) A motivation for the need and desirability of the proposed development.
(g) A full description of the process followed to reach the proposed preferred activities, site, and proposed location of the development footprint within the site.
(h) A plan of study for undertaking the EIA process to be undertaken; and
(i) An undertaking under oath or affirmation by the EAP.

The Scoping phase entails a detailed description of the baseline environment, which will also form the background of this impact assessment phase. Furthermore, it will allow for the identification of critical issues and concerns based on input from the relevant stakeholders, Interested and Affected Parties (I&APs), and the Environmental Assessment Practitioner's (EAP) professional judgment based on experience and expertise in the field of EIA.

The identification and assessment of impacts were based on the input from previous studies that provided baseline information and the necessary detail in the preparation of the report.

This report will be made available to the Interested and Affected Parties (I&APs) and Organs of State for thirty (30) days to review and comment period. 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 also incorporated in this report and is submitted to the DMRE in terms of section 24C of National Environmental Management Act (NEMA). The DFFE will assess the draft scoping report and the plan of study for EIA and advice accordingly.

The Scoping Report has been prepared as dictated and thus achieved the primary objectives as detailed above.

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LIST OF ACRONYMS AND ABBREVIATIONS	
CARA	: Conservation of Agricultural Resources Act (43 of 1983)
CBA	: Critical Biodiversity Area
DEDEAT	: Department of Economic Development, Environmental Affairs and Tourism
DFFE	: Department of Forestry, Fisheries, and the Environment
DHSWS	: Department of Human Settlement, 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 (4 of 2006)
GHG	: Greenhouse Gas Emissions
GNR	: Government Notice Regulations
I&APs	: Interested and Affected Parties
IDP	: Integrated Development Plan
IEA	: International Energy Agency
IEP	: Integrated Energy Plan
IPPPP	: Independent Power Producers Procurement Programme
IRP	: Integrated Resource Plan
MW	: Megawatt
NDP	: National Development Plan
NEMA	: National Environmental Management Act, 1998 (Act 107 of 1998)
NEMBA	: National Environmental Management: Biodiversity Act (No. 10 of 2004)
NEMPA	: National Environmental Management: Protected Areas Act (57 of 2003)
NEMWA	: National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NHRA	: National Heritage Resources Act (No. 25 of 1999)

LIST OF ACRONYMS AND ABBREVIATIONS	
NERSA	National Energy Regulator of South Africa
NWA	: National Water Act, 1998 (Act No. 36 of 1998)
OHSA	: Occupational Health and Safety Act 85 of 1993
PPP	: Public Participation Process
RMIPPPP	: Risk Mitigation Independent Power Producer Procurement Programme
SANRAL	: South Africa National Road Agency SOC Ltd.
SAHRA	: South African Heritage Resources Agency
SANBI	: South African National Biodiversity Institute
ToR	: Terms of Reference
WULA	: Water Use Licence Application

1 INTRODUCTION

Solasun SA (Pty) Ltd (Solasun) proposes the development of the 400MW photovoltaic (PV) solar plant to be referred to as the Klipdrift Solar plant (Klipdrift) and 2 X 132kV powerline connecting at Eskom Jacobsdal substation, and 132Kv step-up substation. The proposed development will be connected to the Eskom Holdings SOC Ltd (Eskom) electricity grid. The connection to the Eskom grid will be done according to the Eskom connection solution.

The proposed Klipdrift Solar plant is not part of the Department of Energy's (DoE's) Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). However, it will add to the national electricity grid and increase the renewable energy capacity required by the DoE from Renewable Energy (RE) sources (i.e., wind, solar) by 2030. The REIPPPP aims to do this in accordance with South Africa's Integrated Resource Plan for Electricity (IRP) (2010 – 2030) while simultaneously diversifying South Africa's electricity mix and positively contributing towards socio-economic and environmentally sustainable growth.

The proposed Klipdrift Solar plant is located on Portion 0 of the Farm Klipdrift No. 20, Jacobsdal Registration Division, within the jurisdiction of Letsemeng Local Municipality, Free State Province of South Africa.

The proposed development triggers the NEMA EIA listed activities; as such, Solasun is required to undertake an Environmental Impact Assessment (EIA) process and obtain an Environmental Authorisation in line with the requirements of the EIA Regulations of 2014 as amended promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA).

This is an Environmental Authorisation application and will include the following:

- Environmental Authorisation for listed activities as contained in Government Notice Regulations (GN R) GN 983, GN R984 and GNR 985.

Furthermore, the proposed development triggers Section 21 water use activities; as such, an Integrated Water Use Licence Application (IWULA) in terms of Section 40 of the National Water Act, 1998 (Act No. 36 of 1998) (NWA) will be undertaken to obtain an Integrated Water Use Licence (IWUL) from the Department of Water and Sanitation (DWS) before the commencement of any listed water use activity.

Subsequently, Solasun appointed Nsovo Environmental Consulting (hereafter referred to as Nsovo) to undertake the necessary authorisation process to comply with the requirement of the legislation. As per Section 24C(2)(a) of NEMA, the application will be lodged at 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.

2 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER, APPLICANT, AND SPECIALIST DETAILS OF THE EAP

Nsovo has been appointed by Solasun as the independent Environmental Assessment Practitioner (EAP) for the proposed project and meets the general requirements as stipulated in regulations 13(3) of the EIA Regulations, 2014 as amended. Nsovo is 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: Details of the Environmental Assessment Practitioners (EAP) shows the details of the EAP involved, including the relevant experience. A detailed Curriculum Vitae (CV) and Qualifications are attached as **Appendix D.**

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

Name of Company	Nsovo Environmental Consulting
Person Responsible	Munyadziwa Rikhotso
Professional Registration	Cert.Sci.Nat: 300076/15 (SACNASP) EAP (EAPASA): Reg 2019/ 1156
Physical Address	40 Lyncon Road, Carlswald, Midrand, 1684
Telephone Number	087 803 9294
Fax Number	086 602 8821
Email	munyadzi@nsovo.co.za / admin@nsovo.co.za
Qualifications & Experience	B.Sc. Honours Geography **19 years of experience**
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. • EIA for the proposed Tubatse strengthening phase 1 – Senakangwedi B integration within the jurisdiction of Greater Tubatse Local Municipality in Limpopo Province. • EMPr, WULA and EA amendment for the proposed Juno Gromis 400kV power line

2.1 DETAILS OF THE APPLICANT

Table 2: Details of the Applicant below shows the details of the applicant.

Table 2: Details of the Applicant

Name of Project Applicant	Solasun SA (Pty) Ltd
Trading Name	Same as above
Physical Address	213 Rivonia Road Morningside Sandton 2146
Postal Address	Same as above
Contact Person and Project Manager	Nicolaas Van Wyk
Email	nico@solarus.co.za
Telephone Number	079 150 5025

2.2 DETAILS OF THE SPECIALIST

To adequately identify and assess potential environmental impacts associated with the proposed project, Nsovo has appointed the specialist sub-consultants listed in Table 3: List of specialist sub-contractors. The specialist reports will be included in the draft Environmental Impact Assessment Report (dEIAR).

Table 3: List of specialist sub-contractors

Specialist Study	Company	Name of Specialist
Visual Impact Assessment	Outline Landscape	Kathrin Hammel-Louw
Avifauna Impact Assessment	Amanzi Environmental Services	Rudi Greffrath
Terrestrial Biodiversity Assessment		
Heritage Impact Assessment	Vhubvo Archaeo-Heritage Consultant	Munyadziwa Magoma
Paleontology Impact Assessment	Marion Bamford Consulting	Marion Bamford

3 THE LOCATION OF THE ACTIVITY INCLUDING THE 21 SG CODE OF EACH CADASTRAL LAND PARCEL, WHERE APPLICABLE THE PHYSICAL ADDRESS AND FARM NAME

This section provides detailed information of the location of the proposed development. The main aim is to describe the environmental aspects of the proposed development area and to provide a baseline description of the surroundings.

3.1 LOCALITY OF THE PROPOSED DEVELOPMENT

The proposed development is located on farm Portion 1, of farm Klipdrift 20 JQ, within the jurisdiction of Letsemeng Local Municipality, Xhariep District Municipality in the Free State Province. The proposed development is located 3km south Pulida Solar PV Park,10km and 40km north-east of Jacobsdal and Kimberly respectively.

The Table 4 and the figure 1 below indicates the approximate coordinates for the proposed project area are **29° 4'33.26"S 24°54'2.79"E.**

Table 4: Coordinates for the proposed project area

Location	Latitude	Longitude
Corner A	29° 3'14.82"S	24°54'7.68"E
Corner B	29° 3'24.67"S	24°53'20.73"E
Center Coordinates	29° 4'33.26"S	24°54'2.79"E
Corner C	29° 5'32.59"S	24°53'35.49"E
Corner D	29° 5'33.08"S	24°54'12.43"E

The Proposed Klipdrift 400MW Solar PV Plant Located in Letsemeng Local Municipality (ward 7), Free State Province

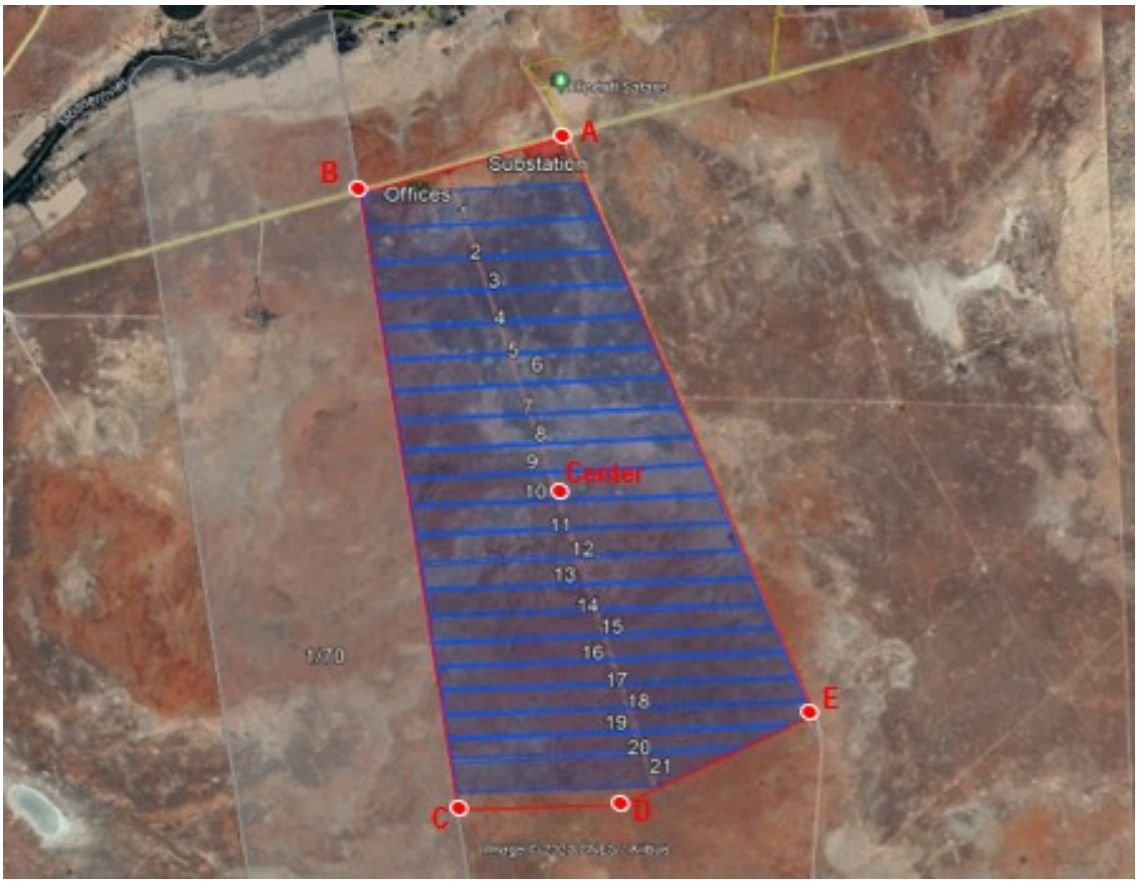

Figure 1: proposed project area

Figure 2 below depicts the locality of the proposed study area at a scale of 1:50 000. Refer to **Appendix A** for the A3 locality and sensitivity maps.

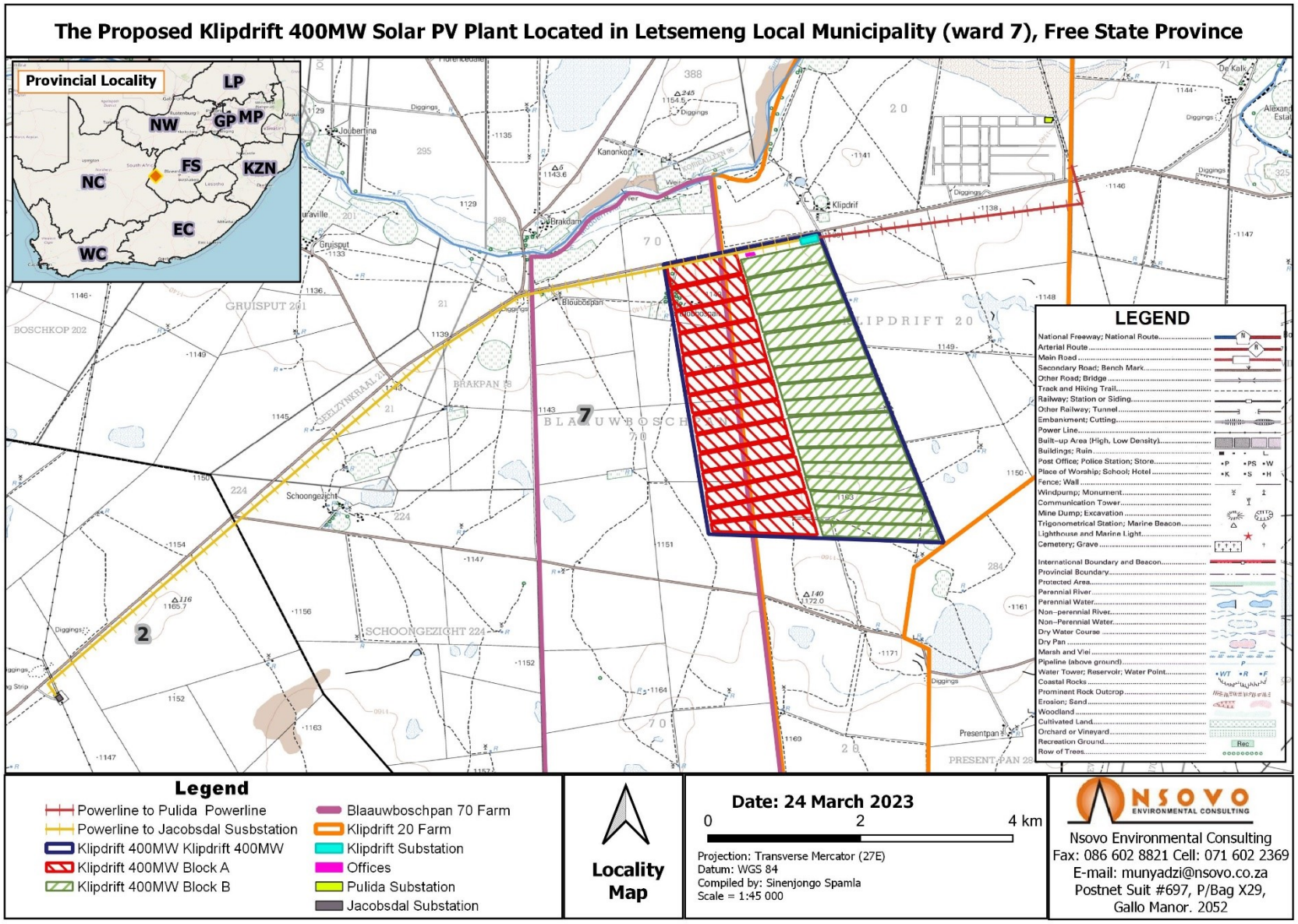

Figure 2: Locality map showing the proposed study area.

3.2 DESCRIPTION OF THE AFFECTED PROPERTY

The proposed development will take place within farm Klipdrift 20 as listed in Table 5: Details of the properties below.

Table 5: Details of the properties affected.

Farm Name	SG Codes	Portion Number
Klipdrift 20	F01800000000002000001	Portion 1

3.2.1 PROVINCE AND PROVINCIAL BOUNDARIES

The proposed development is in the Free State Province, located in the centre of South Africa. The province is bordered by North- West, Gauteng, Mpumalanga, Northern Cape, Eastern Cape, KwaZulu-Natal, and the independent state of Lesotho.

3.2.2 MUNICIPALITY AND WARDS

The proposed development is within Municipal Ward 7 of the Letsemeng Local Municipality within the jurisdiction of Xhariep District Municipality.

3.3 SURROUNDING LAND USES

The land use within and around the proposed development is predominantly agricultural and tourism-related activities. These are discussed in detail in the sub-sections below:

3.3.1 RESIDENTIAL

The proposed development is within the farming area, no residential areas are near the proposed development.

Table 6: Farms adjacent to the study area

Area	Type of community	Distance from the study area
Game Safaris	The site is near De Kalk Gasteplaas, Memory field guest house, Klipdrift Safaris.	Approximately within 15 km
Jacobsdal	Primarily medium-income residential households characterise the town.	Approximately 16 km
Farms	The farm is currently used for stock farming, primarily cattle.	Within the proposed site

3.3.2 COMMERCIAL, MINING, AND INDUSTRIAL

The main economic sector within Letsemeng Local Municipality is agriculture. The municipal area also has diamond mining which is a major natural resource IDP (2020/2021).

3.3.3 ROAD NETWORK

The secondary access road to the proposed study area is N8 to Kimberley. The site can be accessed via gravel road from De Werf to Jacobsdal town.

3.3.4 EXISTING POWERLINES AND ASSOCIATED INFRASTRUCTURE

There are an existing 11kV and 22kV distribution power lines within the proposed study area.

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

Figure 3: proposed activities below presents the proposed activities at a scale of 1:100 000. The maps are attached as **Appendix A** of this draft Scoping report.

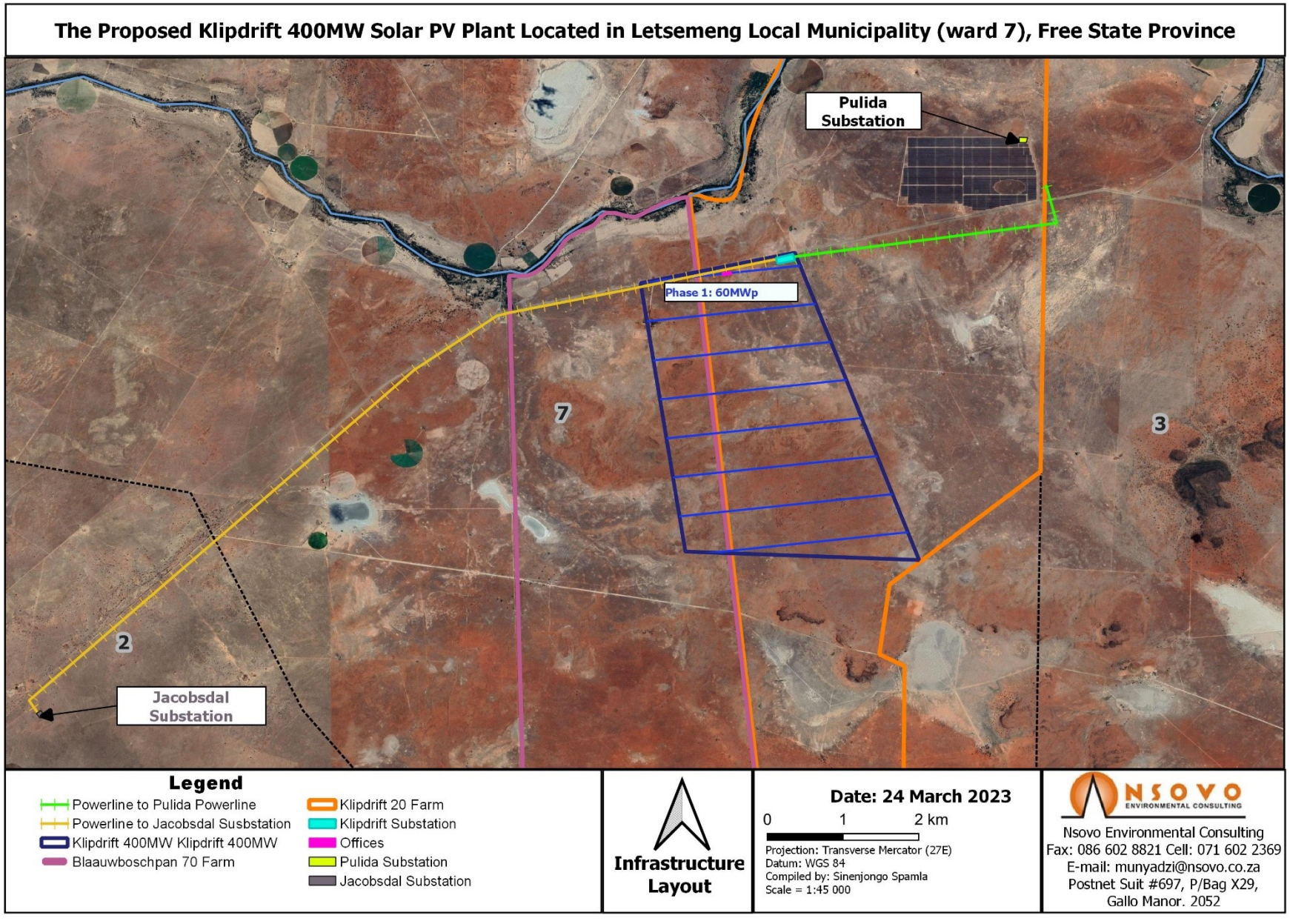

Figure 3: proposed activities

5 DESCRIPTION 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 EIA process. It also describes the associated structures and infrastructure related to the proposed development.

5.1 THE PROPOSED ACTIVITIES

The proposed development entails the following:

- The solar power generation activities will include the development of the following primary activities:
  - A maximum of 400MW PV solar plant consisting of solar modules and inverters;
  - An estimated 70MWh/280MWh Battery Energy System (BESS) facility on approximately 2 ha of the proposed development area;
  - 132kV step-up substation within the proposed solar park measuring 50 x 50 m (2500 m²); and
  - development of the access road within the solar plant.
- Connection to the Eskom Grid will include the construction of the following infrastructure:
  - Approximately 3 km 132 kV loop-in loop-out powerline from the proposed Solar Park substation to the existing Pulida powerlines
  - Approximately 13.4 km 132 kV loop-in loop-out powerline from the proposed Solar Park substation to Eskom Jacobsdal substation

Project component	Area/length/Size	Servitude	Purpose
Solar Plant	1000 ha	Unknown	The purpose of power plant is to generate electricity using Solar panels.
Battery Energy System (BESS) facility	2ha	36m	BESS is for the storage of electricity.
132kV Overhead transmission line	3 km 13.4km	35m	The purpose of this infrastructure is the transmission of electricity from the 132Kv step -up substation to the Eskom Jacobsdal substation and Pulida powerline

Access/Service road	10km	8m	To access to the site for construction and service roads during the operational phase.
Step-up substation	2 hectares	Unknown	Transform electricity from transmission to distribution

The proposed project components are listed in Table 7 below.

Table 7: Components of the proposed development

Proposed activities	Description	Image/Design/Map
Solar panels and invertors	The 400MW PV solar panels will cover an area of1000 ha. Solar panels are made up of solar cells and modules from semi-conductor material and are primarily silicon based. The PV solar panels will be fixed to a single-axis horizontal tracking structure where the panels will tilt as the sun moves from east to west. Lightning protection poles would be installed and will have a maximum height of 2 m. The decision on the wattage and other specifications of the panels as well as the inverters will be made available at a later stage. 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.	
Access Road	Part of the project will include the construction of the internal access road.	
Battery Energy Storage System	The 70MW/280MWh BESS facility will occupy approximately 2 ha of land. The batteries will be stored in shipping containers or multi story building. The storage areas (container or multi story building) will have cooling fans, smoke detectors, and battery management systems. The battery cells are solid and do not pose any risk of leakage.	

Onsite substation	The proposed 132kV step-up substation will connect the Klipdrift Solar Park to the Eskom Grid Connection to the grid will be through the proposed 2X 132 kV powerline from the proposed Klipdrift Solar Park substation to the Eskom Jacobsdal substation and the Pulida Powerline.	
Powerlines	An approximately 2x 132 kV loop-in loop-out powerline from the proposed Klipdrift Solar plant substation to the Eskom Jacobsdal substations and Pulida powerline will be constructed.	
Buildings	The following single-story buildings and associated infrastructure will be erected: • Guardhouse. • Office block/control room and warehouse; and • Parking area.	
Fencing and Security	Double fencing with electrification, CCTV cameras with 24-hour monitoring from Control room – details to be finalised.	
Water Usage and Ablution	During the construction phase, approximately 50 000 litres per month will be used for construction and ablution. During the operational phase, 11 180 of water will be used utilised for cleaning the solar panel and domestic use. A septic tank will be constructed on-site and maintained in line with the relevant guidelines. The source of water for the site will be a borehole that will be commissioned during the construction phase.	
Waste Management	All waste generated on site will be handled in accordance with the Klipdrift Solar plant Waste Management Plan as well as the approved EMPr. Solid waste	

	generated during construction will mainly be in the form of construction material, excavated substrate and domestic solid waste. Cardboard waste will be produced from panel packaging, which will be compacted on-site before removal. Other wastes included rubber caps on panel edges, wooden pallets, and plastic wrapping (all related to the panel packaging). Waste will be disposed of in either waste skips and/or scavenger-proof recycling bins (where possible) and temporarily placed in a central location for removal by an appropriate contractor. Where possible, waste will be recycled. Non-recyclable solid construction waste will be temporarily held in skips or other appropriate waste containers to be disposed of at an appropriately licensed landfill site. Any other waste and excess material will be removed once construction is complete and disposed of at a registered waste facility. During construction, the use of the following hazardous substances is anticipated: paint, grease, and petrol/diesel for trucks, cranes, bulldozers etc. Limited amounts of transformer oils and chemicals. Dangerous goods required to be stored during construction (e.g. limited quantities of fuel, oil, lubricants, etc.) will be stored in compliance with relevant legislation (i.e. stored in covered and bunded areas/bin and disposed of at a registered hazardous waste site). Hazardous waste will be appropriately stored and disposed of.	

The construction phase of the proposed project will entail the following:

Table 8: Activities for the construction phase

Activity	Sola Plant Facility	Distribution line	Access road
Site walk down	Site walk down to determine sensitivities and demarcate areas of sensitivity as no-go.	Site walk down along the powerline to determine sensitivities and mark areas of sensitivity as no-go.	Site walk down along the access road to determine sensitivities and mark them as no-go.
Vegetation clearance	Vegetation clearance of the ±15000 hectares footprint.	Clearance of the 32m servitude.	Clearance of 4m width for access roads.
Excavation of foundations	Excavation of foundation and concrete works for the plant.	Excavation of foundations for the towers.	No foundations are required for the access road.
Civil works	Construction of the plant.	Construction of the powerline structures.	The civil works will entail the preparation of proper drainage channels and surfacing of the roads.
Technical/ Mechanical	Mechanical activities to prepare for operation.	Stringing and energising the powerline.	Surfacing the road.
Rehabilitation	Rehabilitation of laydown areas and encouraging plant growth.	Rehabilitation of servitude and encouraging plant growth.	Rehabilitation, removal of excess material.

5.1.1 SITE WALK-DOWN

A site walk-down will be undertaken for the proposed solar plant as well as the powerline corridor to determine the less sensitive areas for the proposed 132 kV loop in loop out powerlines, which require a 32m servitude (or per agreement with Eskom). The primary aim of the walk-down is to ensure that sensitive areas are avoided, and buffer zones are created for conservation purposes. This exercise will ensure that the development poses the least impact on sensitive environments. Further engagements with Eskom as the servitude owner for the proposed transmission line are underway, and wayleaves will be applied for accordingly before the commencement of the construction phase.

5.1.2 ACCESS ROAD

The primary access to the proposed site is through the National roads (N8) and an existing 4 m wide, 22 km long gravel road. Further, the proposed project will require secondary access roads that will be developed as part of the project scope.

5.1.3 VEGETATION CLEARANCE

Approximately 2256 hectare has been secured for the proposed solar plant, and only the immediate footprint will be cleared for construction. All vegetation clearance will be done in accordance with the approved Environmental Management Programme (EMPr).

5.1.4 CIVIL WORKS

Civil works will be required for the construction of the solar plant, powerline foundations, and the access road. Civil works will include cement foundations for the solar panels, tower foundations for the powerline and drainage channels on the access roads.

5.1.5 WATER ALLOCATION

The water source for human consumption and cleaning of the solar panels during the operation phase will be a borehole. The water required during the operational phase will be for cleaning of the solar panels. The maximum annual water requirement for the project is 11,180 m3 per year. An application for a Water Use Licence will be lodged with the DWS.

5.1.6 REHABILITATION

Upon completion of construction work, the site will be rehabilitated as per the specifications of the EMPr, approved method statements, and it will meet the requirements of the rehabilitation plan. The rehabilitation activities will include:

- Removal of excess rubble and building material.
- Repairing any damage caused by construction activities.
- Rehabilitating any area affected by engineering activities undertaken during the construction of 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 Klipdrift Solar Plant; and
- Replacing topsoil and planting indigenous vegetation where necessary.

5.2 LISTED ACTIVITIES APPLICABLE TO THE PROJECT

The proposed development triggers listed activities in terms of EIA regulations Listing Notices 1, 2 and 3 of 2014 as amended and the National Water Act, 1998 (Act 36 of 1998) Regulations. The listed activities applicable are listed and briefly described in Table 9 below:

Table 9: Listed activities applicable to the proposed development

Listed Activity		Activity/development description
Applicable activities listed under the EIA Regulations, Listing Notice 1 (GNR 983) of 2014 as amended.		
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 33 but less than 275 kilovolts.*	The proposed development entails the construction of 2x 132kV overhead transmission line to connect the step-up substation to the Eskom Jacobsdal substation and Pulida powerline outside the urban area.
GNR 983 Activity 28	*Residential, mixed, retail, commercial, industrial, or institutional developments where such land was used for agriculture, game farming, equestrian purposes, or afforestation on or after 01 April 1998 and where such development:* *(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.*	The proposed solar plant will require clearance of 2256 ha on agricultural land.
GNR 983 **Activity 67**	"The Phased activities for all activities".	The proposed project will have phased activities that entail the clearing of an initial 1000ha and an additional 1256ha in future, for the construction of the solar plant. This will include bush clearing.
Applicable activities listed under the EIA Regulations of 2014 as amended – Listing Notice 2		

Listed Activity		Activity/development description
GNR 984, Activity 1	*"The development and related operation of facilities or infrastructure for the generation of electricity from a non-renewable resource where the electricity output is 20 megawatts or more, excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs within an urban area or on existing infrastructure."*	The proposed project will entail the development of a 400 MW PV Solar plants outside an urban area.
GNR 984, Activity 15	*"The clearance of an area of 20 hectares or more of indigenous vegetation"*	The proposed PV Solar plant will have a footprint of approximately 2256 hectares. As such, more than 20 hectares of indigenous vegetation would be removed for construction purposes.
Applicable activities listed under the EIA Regulations of 2014 as amended – Listing Notice 3		
N/A		

It must be noted that the proposed project also triggers listed activities under Section 21 of the NWA as detailed in the Table 10 below. The application has been lodged with the responsible authority, the DWS.

Table 10: 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*	Water for consumption and construction would be sourced from a borehole to be developed on the site.
Section 21 (g) *Disposing of waste in a manner which may detrimentally impact on a water resource*	The construction of septic tank.

6 APPLICABLE LEGISLATION AND GUIDELINES

Appendix 2 Section 1(e) of t EIA Regulations (GNR 982) of 2014, as amended, requires a description of applicable legislation in the Scoping Report. This section lists and describes the Acts and legislation relevant to the proposed development and associated infrastructure. Municipal policies, plans, and by-laws, Klipdrift Solar plant's internal policies and guidelines, as well as world best practices, were considered during the undertaking of the EIA process. A

list of the current South African environmental laws, which are considered pertinent to the proposed development, is described in Table 11: legislation pertaining to the proposed project below. Although the table is not an exhaustive analysis of the legislation, it provides a guideline for the relevant aspects of the applicable legislation.

Table 11: legislation pertaining to the proposed project.

Aspect	Relevant Legislation	Brief Description
Environment	• National Environmental Management: Act 1998, (Act No. 107 of 1998) as amended. Environmental Impact Assessment Regulations and associated Listing Notices of December 2014 as amended	The overarching principles of sound environmental responsibility as reflected in the National Environmental Management Act, 1998 (Act No. 107 of 1998) apply to all listed projects. Construction and operation of activities must be conducted according to the generally accepted principles of sustainable development, integrating social, economic, and environmental factors. The EIA process followed complies with the NEMA and the EIA Regulations of December 2014 as amended. The proposed development involves "listed activities," as defined by NEMA. Listed activities are activities that, if not mitigated, pose detrimental impacts on the environment, and therefore require an EA from the relevant Competent Authority, in this case, the DFFE.
Biodiversity	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	The purpose of 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. As part of its implementation strategy, the National Spatial Biodiversity Assessment was developed.
Protected Areas	National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)	The purpose of this Act is to provide for the protection, conservation, and management of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes.

Aspect	Relevant Legislation	Brief Description
Heritage Resources	National Heritage Resources Act, 1999 (Act No. 25 of 1999)	The National Heritage Resources Act, 1999 (Act No. 25 of 1999), legislates the necessity for cultural and heritage impact assessment in areas earmarked for development, which exceed 0.5 ha. The Act provides for potential destruction to existing sites, pending the archaeologist's recommendations through permitting procedures. Permits for this specific project would be administered by Free State Heritage Agency or South African Heritage Resources Agency (SAHRA).
Noise Management and Control	Noise Control Regulations in terms of the Environmental Conservation, 1989 (Act 73 of 1989)	The assessment of impacts relating to noise pollution management and control, where appropriate, must form part of the EMPr. Applicable laws regarding noise management and control refer to the National Noise Control Regulations issued in the Environment Conservation, 1989 (Act 73 of 1989). Further, noise that may be generated during the construction phase of the project must comply with the provincial Noise Control Regulations.
Water Resources Management	National Water Act, 1998 (Act 36 of 1998)	This Act provides for fundamental reform of the law relating to water resources and use. The preamble to the Act recognises that the aim of water resource management is to achieve sustainable use of water for the benefit of all users and that the protection of the quality of water resources is necessary to ensure the sustainability of the nation's water resources in the interests of all water users. The proposed activities will require a borehole water for the construction and domestic use. Therefore, the necessary WUL application has been lodged with the DWS.

Aspect	Relevant Legislation	Brief Description
Agricultural Resources	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	The Act aims to provide for control over the utilisation of natural agricultural resources to promote the conservation of the soil, water resources, and vegetation and to 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. The proposed location is used for agricultural purposes.
Human	The Constitution of South Africa, 1996 (Act No. 108 of 1996	The Constitution provides for an environmental right (section 24). The State is obliged "to respect, protect, promote and fulfil the social, economic and environmental rights of everyone…" The environmental right states that: "Everyone has the right - a) To an environment that is not harmful to their health or well-being; and b) To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that - • Prevent pollution and ecological degradation; • Promote conservation; and • Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."
Waste	National Environmental Management: Waste Act, 2008 (Act 59 of 2008) and MARPOL protocol	This Act provides fundamental reform of the law regulating waste management to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development. This Act also ensures national norms and standards for regulating the management of waste by all spheres of government. Further, it provides specific waste management

Aspect	Relevant Legislation	Brief Description
		measures, licensing and control of waste management activities, remediation of contaminated land; compliance and enforcement; and matters connected to that.
Electricity	Electricity Regulation, 2006 (Act 4 of 2006)	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 import and export of electricity are regulated; to regulate the reticulation of electricity by municipalities, and to provide for matters connected to it.
Transportation	National Road Traffic Act (Act No. 93 of 1996)	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 will be required for vehicles carrying abnormal heavy or abnormally dimensional loads. • Transport vehicles exceeding the dimensional limitation (length) of 22m.
Health and Safety	Occupational Health and Safety Act (OHS Act	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 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

Aspect	Relevant Legislation	Brief Description
		and accredited by the South African Accreditation Systems (SANAS) before construction of the facility.
Forests	National Forests Act (Act No. 84 of 1998	The National Forest Act (Act 84 of 1998) allows for the protection of certain tree species. The Minister has the power to declare a particular tree to be a protected tree. According to Section 12 (1) d (read with Sections (5) 1 and 62 (2) (c)) of the National Forest Act (Act 84 of 1998), a licence is required to remove, cut, disturb, damage, or destroy any of the listed protected trees. The most recent list of protected tree species was published in November 2014. The Department of Agriculture, Forestry and Fisheries (DAFF) is authorised to issue licences for any removal, cutting, disturbance, damage to or destruction of any protected trees. In terms of vegetation map, the site is within the ESA 1 and 2.
Astronomy Geographic Advantage	Astronomy Geographic Advantage (Act 21 of 2007)	The Astronomy Geographic Advantage (Act 21 of 2007) aims to provide for the preservation and protection of areas within the Republic that are uniquely suited for optical and radio astronomy; intergovernmental co-operation and public consultation on matters concerning nationally significant astronomy advantage areas;and matters connected therewith.
Subdivision of Agricultural Land	Subdivision of Agricultural Land Act (Act 70 of 1970)	A change of land use (re-zoning) for the development on agricultural land needs to be approved in terms of the Subdivision of Agricultural Land Act (Act 70 of 1970) (SALA). This is required for long term lease, even if no subdivision is required.
Development Facilitation	Development Facilitation Act (Act 67 of 1995)	The Development Facilitation Act (Act 67 of 1995) (DFA) sets out several key planning principles which have a bearing on assessing proposed developments in light of the national planning requirements. The planning principles most applicable to the study area include:

Aspect	Relevant Legislation	Brief Description
		• 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 with each other; • 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 Republic and to the optimum use of existing infrastructure in excess of current needs; • Promoting the establishment of viable communities; and • Promoting sustained protection of the environment.
Free State Nature Conservation Ordinance	Free State Nature Conservation Ordinance (No. 08 of 1969)	To provide for the conservation of fauna and flora and the hunting of animals of the Free State Province within the framework of the National Environmental Management Act, 1998 (Act No 107 of 1998); to provide for the protection of species and ecological- systems that warrant provincial protection; to provide for the sustainable use and growth of game and aquatic life; as well as the protection of indigenous biological resources; and to provide for matters connected therewith.
Spatial development	Free state Provincial Spatial Development Framework 2007	The Free State Provincial Spatial Development Framework promotes a developmental state following the national and provincial legislation and directives. It further aligns with the Provincial Growth and Development Strategy which has committed the Free

Aspect	Relevant Legislation	Brief Description
		State to 'building a prosperous, sustainable, and growing provincial economy which reduces poverty and improves social The Free State Provincial Growth and Development Strategy guides future land use and development and set a policy for the overall spatial distribution of development which will: • Indicates and responds the spatial implications of the core development objectives; • Indicates desired or undesired utilisation of space in an area; • Identify areas where strategic intervention is required; • Indicate priority areas where public sector intervention is required. • Provide a framework for planning for district and local municipalities to co-ordinate and facilitate their planning and provide; appropriate support (a framework for more detailed land use planning); • Lays down strategies, proposals and guidelines as it relates to sustainable development; • Address environmental considerations in development planning. • Facilitates cross-boundary co-operation between municipalities, adjoining provinces, and bordering countries; • Standardization for planning frameworks of all spheres of government in the province.

6.1 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; and
- 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);
- Promotion of Administrative Justice Act (Act 2 of 2000);
- Civil Aviation Act (Act 13 of 2009) and Civil Aviation Regulations (CAR) of 1997;
- Civil Aviation Authority Act (Act 40 of 1998);
- White Paper on Renewable Energy (2003);
- Integrated Resource Plan for South Africa (2010);
- Fencing Act (Act 31 of 1963);
- National Environmental Management: Air Quality Act (Act 39 of 2004); and
- National Road Traffic Act (Act 93 of 1996).

Further, the DFFE screening tool has been consulted from the project onset, and a copy of the report has been uploaded together with the application form. The DFFE screening tool was also used to guide the specialist studies required; thus, the list corresponds with the specialist studies identified in the screening tool report submitted to the DFFE (**Appendix B)**.

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 local community, the region, and the country at large.

7.1 MOTIVATION FOR THE DEVELOPMENT

7.1.1 ENERGY SCENARIO IN SOUTH AFRICA

The need for energy has increased in South Africa over the last decade (Oyewo *et al.,* 2019). Much of these results from population growth, which has resulted in an imbalance between energy demand and supply. The 2017 World Bank records revealed that South Africa is the fifth most populated country in the African continent, with an estimated

population of over 56 million in 2017 and annual average growth of 1.2% (Oyewo *et al.,* 2019). As such, electricity demand is expected to increase by 277 terawatts per hour (TWh) between the year 2015 (245 TWh) and 2025 (522 TWh), with a recorded annual average growth rate of 2.3% (Wright *et al.,* 2017).

7.1.2 THE NEED FOR RENEWABLE ENERGY

Climate change and its related negative impacts have been the leading discourse within scientific research for decades. As such, scientists have invested time and effort to develop models that have since improved the understanding of the causes and consequences of climate change globally. Many researchers, including the Intergovernmental Panel on Climate Change (IPCC), concluded in 2007 that climate change is undeniably occurring and is attributed to human activities over the years (IPCC, 2007). Further, Banks and Schäffler (2006) indicated that coal is the primary source of electricity generation that presents highly significant environmental threats to the world. Coal is a resource that must be conserved for other uses in the future and an energy source that has become the epicentre of climate change-related issues. Various spheres of government, including environmental specialists have advocated for alternative energy sources that could be more sustainable and such include:

- Solar Energy.
- Wind energy.
- Hydro energy.
- Tidal energy.
- Geothermal energy; and
- Biomass energy.

The country has an energy-intensive economy, with significantly increasing energy demand and most of the population living below the poverty line. Further, the energy demand exceeds energy generation capacity as the country remains susceptible to energy crises due to over-reliance on coal-generated electricity. South Africa's energy policy at national and provincial level advocates for the transition to renewable energy to encourage a balanced energy mix and maximize access to energy.

As part of the government's response to the call for a transition to renewable energy, an Integrated Resource Plan (IRP) was released in 2011 for South Africa which proposed to develop and secure 17 800 MW of renewable energy capacity by the year 2030. The IRP was later updated to include 3 725 MW of renewable energy to be produced by Independent Power Producers (IPPs) by the year 2016. Five years after the initial release of the IRP (18th August 2015), the government added a target of 300 MW to be procured and generated from renewable energy sources including wind, solar, and other renewable sources such as gas-to-power generation. Based on the Renewable Energy

Independent Power Producer Procurement Programme (REIPPPP), the target allocated for solar PV energy is 2200 MW.

In an effort of addressing the immediate supply/demand gap and reducing load shedding, the Department of Mineral Resources and Energy gazetted the Amended Schedule 2 of the Electricity Regulation Act 4 of 2006 on the 12th of August 2021, for 100 megawatts of embedded electricity generation as approved by Minister Gwede Mantashe. Under the newly gazetted Amended Schedule 2 of the ERA, applicants for 1 – 100 MW embedded electricity generation projects will now be exempt from the obligation to apply for a licence but will be required to register with the National Energy Regulator of South Africa (NERSA).

In support of the REIPPPP and considering that South Africa is facing significant electricity shortages and water scarcity; the proposed project aims to supply additional electricity to the national grid without intensive water use and relatively less carbon dioxide (CO_2) intensive than conventional coal-fired electricity generation. The proposed project will contribute to reducing the risk of rolling electricity blackouts.

Renewable energy generation has increased significantly in the past few years, with renewable energy sources such as solar power generation overtaking coal as the primary energy source in some countries. Electricity generation from solar offers greater efficiency and lower CO_2 emissions than coal and other operational advantages such as compact generators and lower water use. Further, solar power generation has become less costly in South Africa and will likely accelerate in the future if existing solar panels are well maintained. Among other renewable energy sources in the country, solar may hold the most potential because of its geographic location, placing it at an advantage to receive large amounts of solar energy.

7.2 BENEFITS OF THE PROJECT

Further, solar power generation is expected to play a central role in supporting Africa's drive to achieve electricity connection for nearly 600 million people without access to the grid, reduce widespread reliance on coal for power generation, and combat climate change from a regional to a national scale. Several advantages of solar power generation include that a solar plant is far less complex than a coal-fired power plant and hence has shorter construction times, which is crucial in addressing the country's current short-term electricity demands.

Consequently, this project aims to contribute and respond to the government-embedded electricity generation 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:

- Reduced impact on the environment.
- Reduction of the energy bill.
- Improvement in grid security; and
- Creation of jobs.

7.2.1 IMPACT ON THE ENVIRONMENT

Solar energy has a relatively reduced impact on the environment compared to any other energy source. It does not produce greenhouse gases and does not pollute the water. It also requires very little water for its maintenance, unlike other energy generation power plants.

7.2.2 REDUCTION OF THE ENERGY BILL

The use of solar to generate electricity means using less from the utility supplier (i.e.,Eskom), which translates to savings on household energy bills. Additionally, households would also sell their unused electricity generated back to the grid.

7.2.3 IMPROVEMENT IN GRID SECURITY

The grid is less vulnerable to blackouts if many power plants or energy generation sources are spread out. A grid with high penetration of solar energy has thousands of energy production centres that are widely spread out. This improves the security of the grid in case of overload, natural or human-caused disasters.

7.2.4 CREATION OF JOBS

The establishment of solar plants creates job opportunities at different project phases, i.e., from planning to the decommissioning phases. Jobs created would be at various scales and complexity, including skilled, semi-skilled, and under-skilled labor. In most instances, an effort is made to incorporate local skills in the workforce. However, skills that cannot be sourced locally will be brought in from other parts of the country or the world.

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), highlighting that renewable energy plays a central role in the socioeconomic development of our country. While simultaneously delivering electricity to households and industry, 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 solar power generation as a significant contributor to South Africa's energy mix.

The proposed Klipdrift Solar plant would improve energy security in the region. Consequently, balancing the demand and supply for energy across the Free State Province. Moreover, the development as part of renewable energy sources will reduce pollution and greenhouse gas emissions. Finally, investment in solar power generation will drive South Africa’s energy security and provide a critical economic catalyst.

8 DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED, SITE AND LOCATION WITHIN THE SITE

The identification of alternatives is a crucial component of the EIA process. The identified alternatives are assessed in terms of environmental acceptability, technical and economic feasibility via the EIA process, wherein the preferred alternative is highlighted and presented to the Authorities.

South Africa has proposed a 20-year IRP outlining a new power generation program for 2030. The program will use various renewable energy sources to produce electricity. The site selection process focused on reviewing the IRP and associated documents that address current and future development in and around the area. The EAP used integrated environmental tools such as the Geographic Information System (GIS) and the DFFE Screening Tool Report to identify and assess sensitive and no-go areas. Further, a detailed public consultation will be undertaken to determine the viability of the selected sites to meet the need and desirability of the project. Other technical alternatives will be assessed within the larger area to ensure that the most feasible options are considered for their functionality and the environment. The engagements with the I&APs will also enhance the selection of alternatives in that they allow for the various stakeholders to comment on the proposed options and make meaningful recommendations.

8.1 DETAILS OF ALTERNATIVES CONSIDERED

Consideration of alternatives is a key requirement for any EIA process and includes technical, structural, and locality. Various alternatives were identified during the Scoping as well as the no-go alternative, which are comprehensively discussed. The preferred alternative will be selected based on a synthesis of the technical and environmental factors, specialist studies input as indicated in the Plan of Study for EIA (Section 12) of this report, and public input.

This section describes the alternatives considered which include:

- Site alternative - the property on which the proposed solar plant would be located.
- Activity alternative - alternatives to the activities to be undertaken.
- Technical alternative - the technology to be used in the activity.
- Operational aspects of the proposed development; and
- The no-go alternative.

8.1.1 SITE ALTERNATIVES CONSIDERED

One site alternative was considered due to the following:

- **Land Ownership** – There is a lease agreement in place with the proponent. This is considered an important aspect of the proposed project in terms of its viability, i.e., limiting potential appeals during the decision-making process, as the land "belongs" to the proponent. In addition, the leasing of the land was determined in terms of its proximity to the existing Eskom Jacobsdal Substation and the Pulida powerlines, and the willingness of the lessor for this specific project.
- **Proximity to the Eskom Grid**-The proposed Klipdrift Solar Plant will require a connection to transmit electricity to the Eskom Grid. It is therefore imperative that the location of the solar plant be closer to a substation as this will reduce the length of the powerline required thereby also reducing project costs. A 3km powerline will be required to connect to the Pulida Powerline and it is also recommended that the proposed line run parallel the existing 132kV powerline. This will result in minimal environmental impact.

The corner coordinates (A-B) and Centre coordinate of the proposed study site are presented in the Table 12: Solar plant coordinates below and in Figure 4: Klipdrift Solar plant

Table 12: Solar plant coordinates

Solar plant Corner Coordinates		
Point	**Latitude**	**Longitude**
A -	25° 38' 27.53" S	27° 29' 27.34" E
B	25° 38' 29.36" S	27° 29' 49.60" E
C	25° 38' 36.13" S	27° 30' 07.05" E
D -	25° 38' 43.98" S	27° 30' 08.05" E
Centre	25° 38' 34.31" S	27° 29' 48.89" E

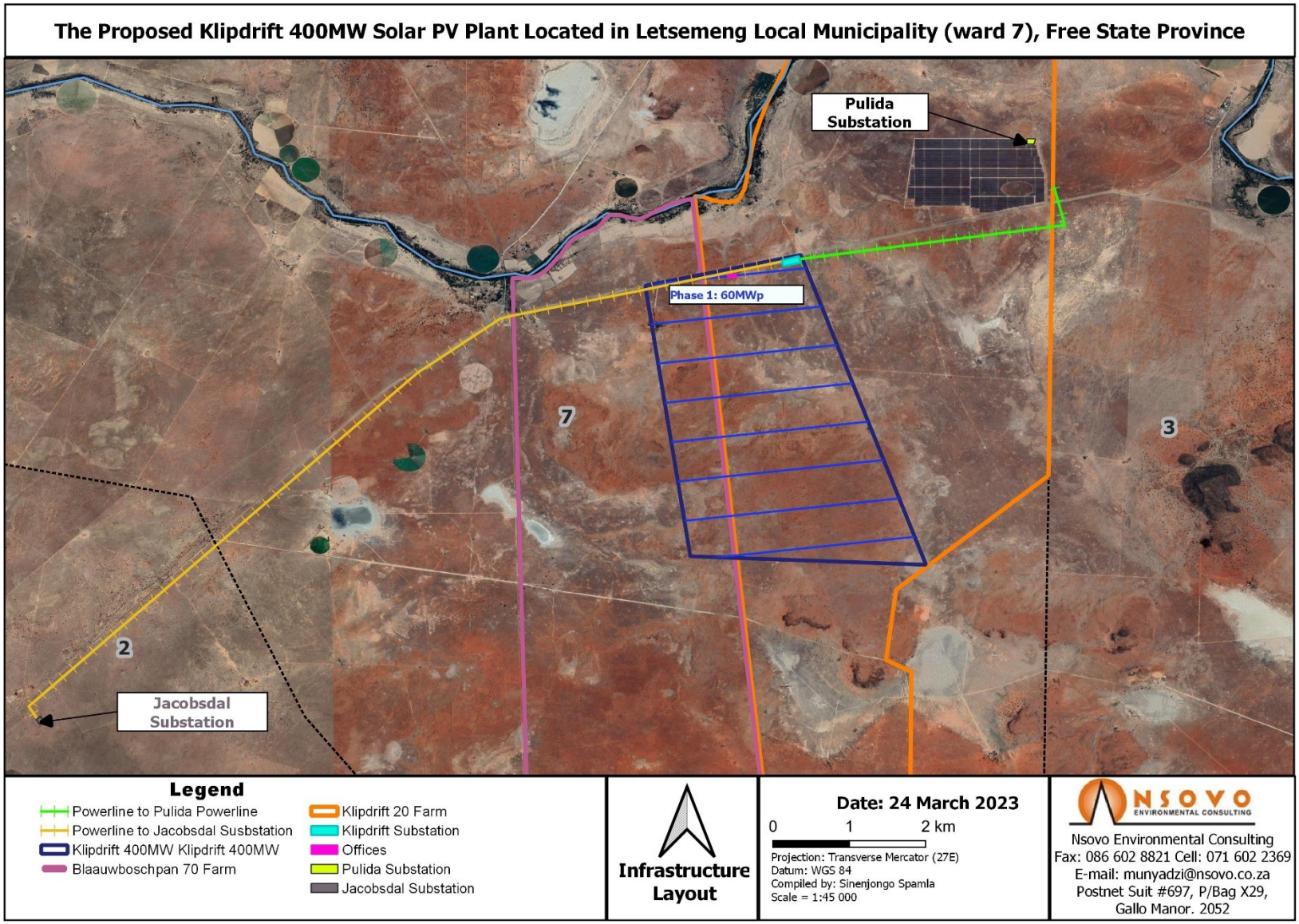

Figure 4: Klipdrift Solar plant

8.1.2 TECHNICAL ALTERNATIVES

Two technical alternatives have been identified for the proposed project, i.e., PV Solar Power versus Concentrated Solar Power (CSP). Detailed analysis and comparison of the alternatives will be undertaken as part of the EIA phase. Based on the analysis the preferred alternative will be considered and recommended for the project. The alternatives are briefly described below, as well as a comparative analysis.

8.1.2.1 Pv Solar Power

Photovoltaics (PV) is the conversion of light into electricity using semiconducting materials that exhibit the photovoltaic effect (Banks and Schäffler, 2006). A photovoltaic system employs solar modules, each comprising several solar cells, which generate electrical power. Photovoltaic technology produces enough affordable, sustainable energy to help mitigate global warming caused by carbon dioxide. The construction/ installation costs are lower compared to that of installing a CSP. The development requires considerable space, and the manufacturing process for PV Solar panels often creates less pollution than that of CSP technology. Compared to CSP, PV Solar Power does not require longer transmission distances, thus decreasing power losses.

8.1.2.2 Concentrated Solar Power

Concentrated Solar Power (also known as concentrating solar power, concentrated solar thermal) systems generate solar power using mirrors or lenses to concentrate a large area of sunlight onto a receiver. Electricity is generated when the concentrated light is converted to heat (solar thermal energy), which drives a heat engine (usually a steam turbine) connected to an electrical power generator or powers a thermochemical reaction.

PV Solar Power is preferred in many projects as alternative solar power technology. Table 13: Comparative analysis of the alternatives considered. below indicates the comparative analysis of the PV and CSP.

Table 13: Comparative analysis of the alternatives considered.

Technical alternatives	
Photovoltaic Solar Power	**Concentrated Solar Power**
• PV Solar can be installed almost anywhere. • Technical simplicity of the PV Solar makes it easy to deploy and requires much less water. • PV Solar only requires revolving around solar cells to generate. • PV system is not dispatchable as a feasible commercial energy storage does not yet exist.	• Requires a high level of irradiance (i.e., those of sunbelt countries). • Requires high access to water and a large -scale deployments (i.e. more than 20MW). • CSP requires solar cells as well as a combination of many critical mechanical and chemical components. • CSP system is dispatchable, it can store thermal energy for up to 16 hours.

• High reliability under harsh conditions, the photovoltaic arrays ensure continuous, uninterrupted operation of critical supplies. • The manufacturing process for PV panels creates less pollution. • Involves shorter transmission distances, thus decreasing power losses. • Low maintenance costs, the photovoltaic system requires regular inspections and occasional repairs, which are extremely low cost compared to conventional fuel systems.	• Consists of lower energy densities. • The manufacturing processes often create pollution. • Involves longer transmission distances, thus increasing power losses.

Considering that load shedding is a challenge in South Africa, a solar energy system that would enable higher energy densities is a preferred alternative. Further, from an environmental point of view, it is highly recommended that renewable energy developments ensure reduced pollution for sustainability purposes. As such, it has been determined that photovoltaic technology is favorable over CSP. Furthermore, photovoltaic technology is much quicker to implement and requires much less water when compared to CSP. Wind has also not been considered due to the poor wind resources in the area.

8.1.3 STRUCTURAL ALTERNATIVES (POWERLINES)

Several structural alternatives have been proposed and they include one or more of the following pylons:

- Double strain pole; and
- Steel pole angle strain structure.

The selection of the pylons to be used for the proposed powerline will take into consideration various aspects including terrain, topography, visual impact, etc. None of the options highlighted above is dismissed as options. Figure 5, and Figure 6 show the various structural alternatives that have been considered.

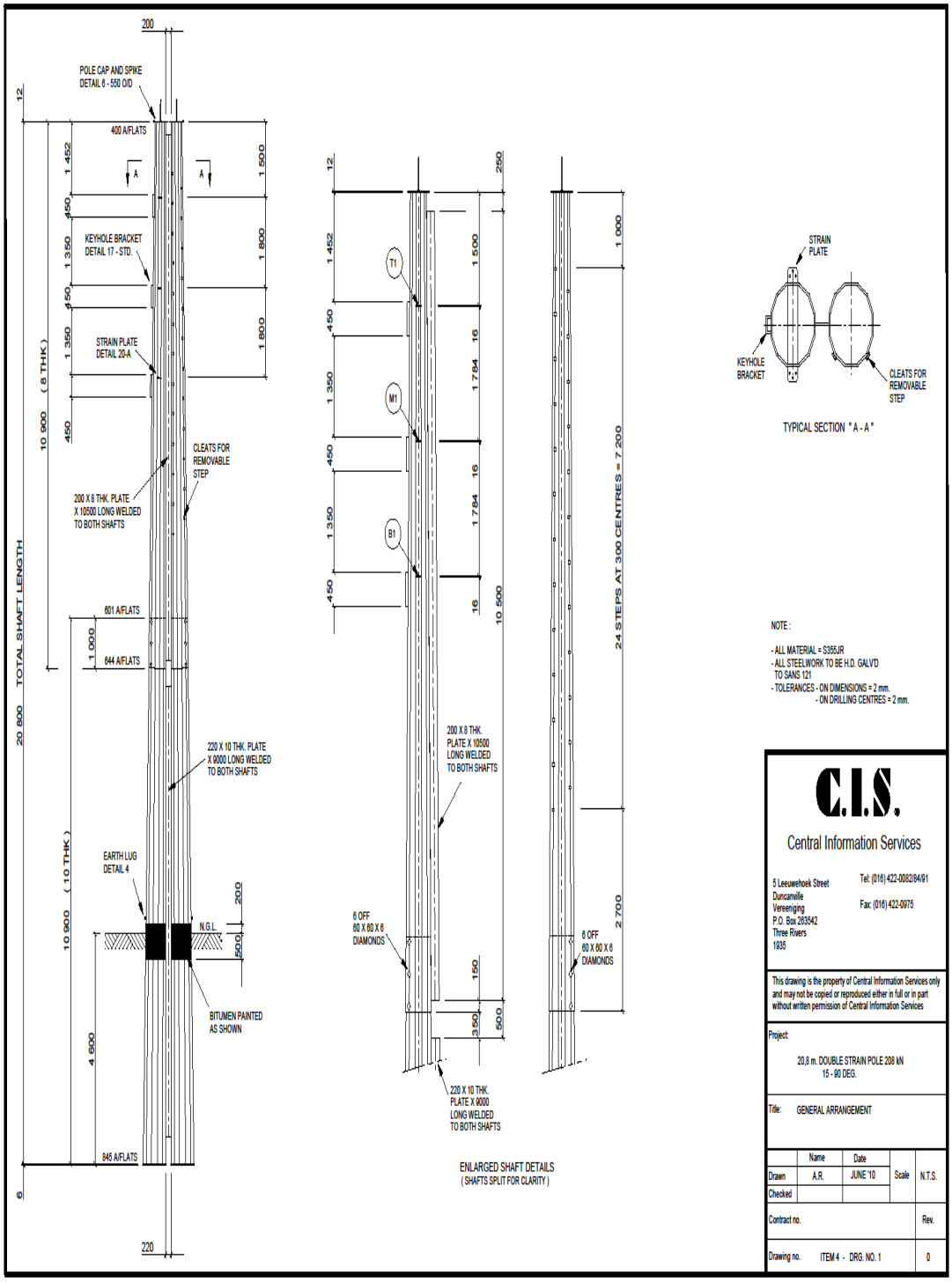

Figure 5: Double strain pole

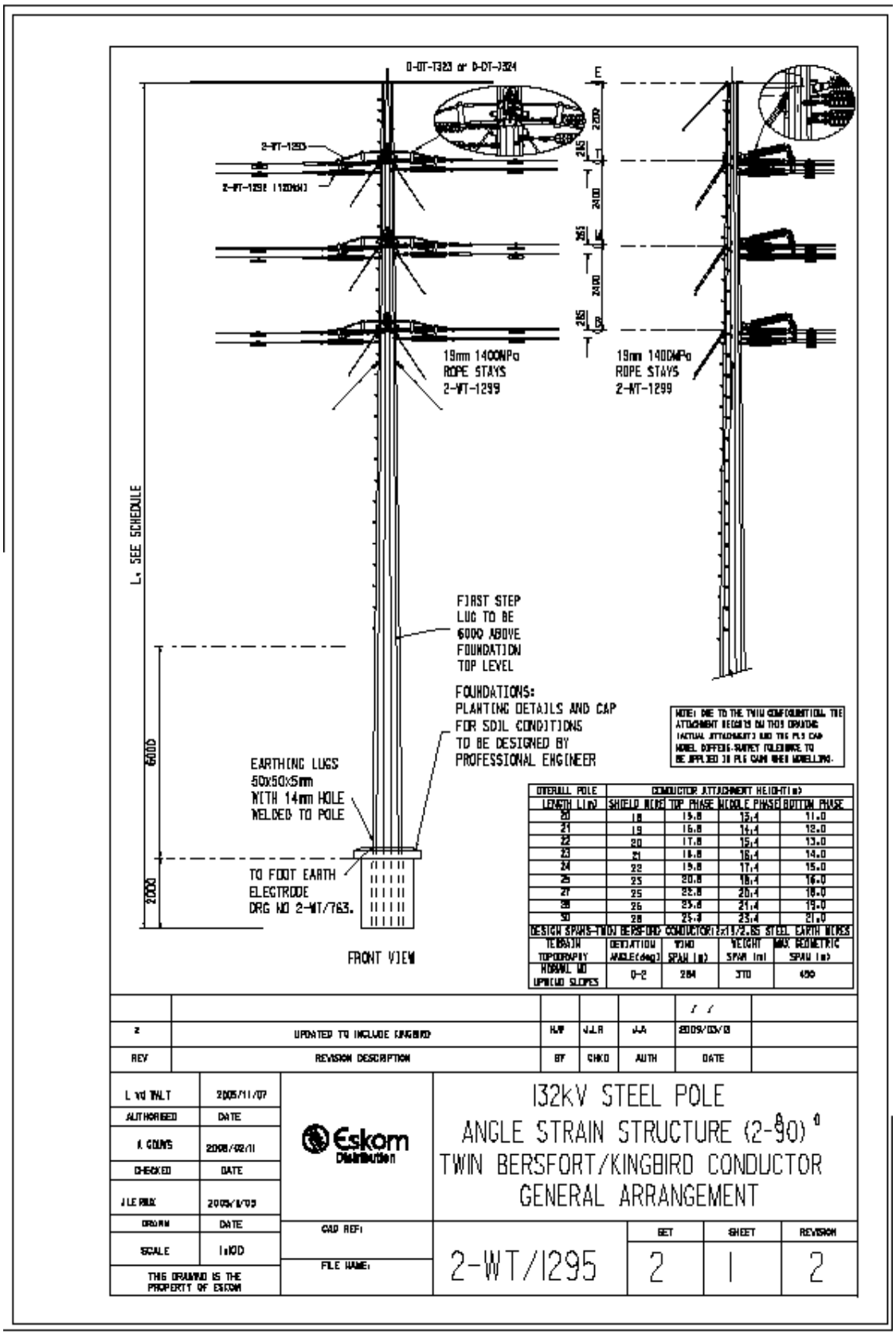

Figure 6: The steel pole structure

8.1.4 UNDERGROUND CABLING VS OVERHEAD POWERLINE

Two technical alternatives have been identified for the proposed project, i.e., the overhead powerline and underground cabling. Instead of constructing an underground powerline, overhead construction is an alternative. The advantages of the underground cable alternative would include reduced bird interaction and a distinct visual impact benefit.

Underground cables have generally been used where it is impossible to use overhead lines i.e., space constraints. Underground cables are oil cooled and have a risk of groundwater contamination. Maintenance is also difficult on underground lines compared to overhead lines. When a fault occurs in an underground cable circuit, it is almost exclusively a permanent fault due to poor visibility. Underground lines are also more expensive to construct than overhead lines and the lifespan for underground cables is reported to be much shorter, about half that of overhead power lines.

Both the underground and above-ground options will be assessed further during the EIA phase.

8.1.5 BATTERY ENERGY STORAGE FACILITY (BESS)

It is proposed that a nominal up to 500 MWh Battery Energy Storage Facility for grid storage would be housed in stacked containers, or multi-story building, with a maximum height of 8m and a maximum volume of 1,740m3 of batteries and associated operational, safety and control infrastructure. Three types of battery technologies are being considered for the proposed project:

- Lithium-ion,
- Sodium-sulphur or
- Vanadium Redox flow battery.

While there are various battery storage technologies available, the preferred alternative is the utility-scale Lithium-ion (Li-ion) battery energy storage. Li-ion batteries have emerged as the leading technology in utility-scale energy storage applications as it offers the best mix of performance specifications, such as high charge and discharge efficiency, low self-discharge, high energy density, and long cycle life (Divya KC et al., 2009).

Battery storage offers a wide range of advantages to South Africa including renewable energy time shift, renewable capacity firming, electricity supply reliability and quality improvement, voltage regulation, electricity reserve capacity improvement, transmission congestion relief, load following, and time of use energy cost management.

In essence, this technology allows renewable energy to enter the base load and peak power generation market and therefore can compete directly with other power generation and offer a truly sustainable electricity supply option.

8.1.6 ROUTE ALTERNATIVES

The proposed 132kV powerline line will loop-in and loop-out from the Klipdrift substation to Jacobsdal substation. Further, it is proposed that the other new powerline from the proposed Klipdrift substation will tie in with the existing Pulida powerline and use the existing Eskom servitude.

8.1.7 NO-GO ALTERNATIVE

According to EIA Regulations, GN R.982 of 2014, as amended, consideration must be given to the option not to act. An alternative is usually considered when the proposed development is envisaged to have significant adverse environmental impacts that mitigation measures cannot ameliorate effectively. Should the no-go option be adopted, there would be no economic benefits, i.e., employment opportunities for local communities, socio-economic development for the region. It would imply that the identified benefits, including a move to cleaner energy sources and a contribution to the advancement of the energy sector, would not be realized. Further, the integration of potential renewable energy in the area will not be possible. Should the no-go alternative be adopted, the country will be deprived of the addition of power to the grid, which is a much-needed essential service, particularly given the already existing energy supply challenge countrywide.

The no-go alternative will be used as a baseline throughout the assessment process against which potential impacts will be compared and assessed in the EIR.

9 PUBLIC PARTICIPATION PROCESS

The NEMA EIA Regulations require that during the EIA process, the Organs of State, and Interested and Affected Parties (I&APs) be informed of the application and allowed to comment on the application.

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 issues of concern or make suggestions that may enhance the project benefits.

The Public Participation approach adopted for the Klipdrift Solar plant project will be 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 such that they are provided with a reasonable opportunity to comment on the application.

Chapter 6, Regulation 39 through to 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 application or proposed application which is subjected to public participation.

The Public Participation principles hold that those affected by a decision have the right to be involved in the decision-making process. The primary objectives of conducting the PPP are 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
- Is as inclusive and transparent as possible; it must be conducted in line with the requirements of Regulations as amended.

9.1 APPROACH AND METHODOLOGY

The public participation approach adopted is in line with the process contemplated in Regulations 39 through 44 of the EIA Regulations as amended in terms of NEMA.

9.1.1 IDENTIFICATION OF INTERESTED AND AFFECTED PARTIES

The identified parties include pre-identified stakeholders (government departments) and landowners. Further, I&APs have been allowed to register. Notifications and requests for comments were submitted to the following key stakeholders via email:

Table 14: Authorities and Key Stakeholders

- Department Forestry, Fisheries, and the Environment.
- Department of Water and Sanitation.
- Free State Department of Rural, Environment and Agricultural Development.
- South African Heritage Resource Agency.
- Free State Heritage Resources Agency.
- Eskom SOC Limited – Transmission.
- South African National Roads Agency SOC Ltd.
- Letsemeng Local Municipality.
- Xhariep District Municipality.
- South African Radio Astronomy Observatory; and
- Free state Nature Conservation.

9.1.2 PUBLIC PARTICIPATION DATABASE

In accordance with the requirements of the EIA Regulations under Section 24 (5) of NEMA, Regulation 42 of GN R. 982, a register of I&APs must be kept by the public participation practitioner. In fulfilment of this requirement, such a register is in place, and the details of stakeholders and I&APs will be updated throughout the project cycle. The database is attached as **Appendix C1.**

9.1.3 SITE NOTICES

A2 size notices indicating the availability of the scoping report and contact details for the request of the hard copy or soft copy of the scoping 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 areas where the proposed activity will take place, along the gravel road of the proposed site, Jacobsdal Public Clinic, SAPS, and Spar Supermarket. Table 15: Proposed Location for placement of Notices below presents the physical addresses of the locations where notices will be placed.

Table 15: Proposed Location for placement of Notices

Location	Address
Jacobsdal Police station	Bouw Street
Jacobsdal Local Clinic	Bouw street

Location	Address
Jacobsdal Post Office	Andries Pretorius street
Jacobsdal Ratanang library	Hoop street
Usave Shoprite	Cnr Hoop and Piet Retief Street
Spar	Hoop street

9.1.4 PLACEMENT OF ADVERTISEMENT IN THE LOCAL NEWSPAPER

A newspaper advertisement will be placed in the Rapport Newspaper on Sunday,24th of June 2023 to inform I&APs of the proposed project, availability of the Scoping Report, and public meetings. Proof of newspaper advertisement will be submitted with the final Scoping report.

9.1.5 PLACEMENT OF THE REPORTS FOR REVIEW AND COMMENTS

The draft Scoping Report will be made available in hard copies to all I&APs and in soft copies (Email) to all stakeholders mentioned in Section 8.1.2 above and registered I&AP. A link to the dSR will be made available on request, and on Nsovo website. The dSR will be placed for review and comment at the Ratanang Public library on the 23rd of June 2023 for 30 days. Proof of placement at public libraries will be submitted with the final Scoping report**.**

9.2 A SUMMARY OF ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Comments and concerns raised together with the responses provided by the Environmental Assessment Practitioner (EAP) will be presented in 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 construction, operational, or decommissioning phase of the proposed development. Based on the description of the project and the knowledge of the existing environment, the potential interactions between the project and the environment are presented. Moreover, the project's potential impacts on the human environment, socio-economic conditions, physical, and cultural resources are also presented. The sensitivity maps below provide an overview of the sensitivity of the proposed study area in relation to the proposed activities.

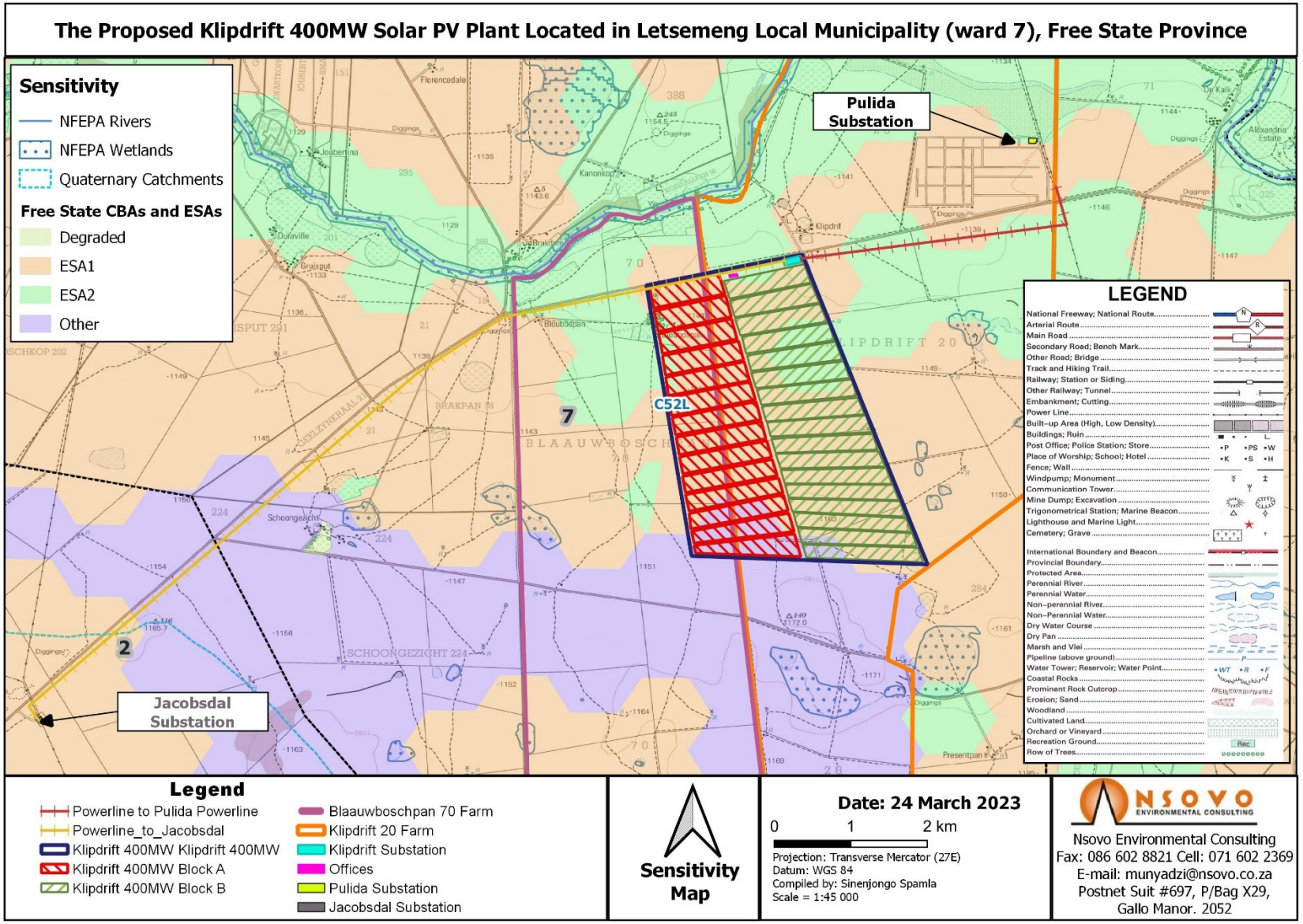

Figure 7: Sensitivity Map of the area earmarked for the proposed development.

10.1 SOCIO-ECONOMIC DESCRIPTION

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

10.1.1 PROVINCIAL DESCRIPTION OF THE PROPOSED PROJECT

The proposed project will be undertaken in the Free State Province, located in the centre of South Africa, and is bordered by North- West, Gauteng, Mpumalanga, Northern Cape, Eastern Cape, KwaZulu-Natal, and the independent state of Lesotho. The Free State Province covers 129 825km² and has a population of 2 932 000 (IDP, 2020/2021). Bloemfontein is the province's capital city and is also South Africa's judicial capital. The major towns within the province include Botshabelo, Welkom, Sasolburg, Odendaalsrus, Virginia, Bethlehem, Harrismith, Phuthaditjhaba, Kroonstad, and Parys.

At the provincial scale, agriculture remains the major contributor to the economy, while mining the goldfields reef is the largest employer. The province is the national leader in biofuel/fuel from agricultural crop production, and ethanol plants are under construction in the grain-producing western region of the province. The Free State Province also produces the majority of the country's maize, ranking South Africa in the top 10 Maize producers in the world. Field crops yield almost two-thirds of the gross agricultural income of the province. Animal products contribute a further 30%, with the balance generated by horticulture. Ninety per cent of the country's cherry crop is produced in the Ficksburg district, which is also home to the country's two largest asparagus canning factories. Soya, sorghum, sunflowers, and wheat are cultivated in the eastern Free State, where farmers specialize in seed production. About 40% of the country's potato yield comes from the province's high-lying areas.

The main vegetable crop is asparagus, both white and green varieties. Although horticulture is expanding and becoming increasingly export-orientated, most produce leaves the province unprocessed.

Gold mines in the Free State also supply a substantial portion of the total silver produced in the country, while considerable concentrations of uranium occurring in the gold-bearing conglomerates of the goldfields are extracted as a by-product.

In the north-eastern Free State, nestled in the rolling foothills of the Maluti mountains, the Golden Gate Highlands National Park is the province's prime tourist attraction. Some of South Africa's most valued San (Bushman) rock art is found in the Free State, particularly in the regions around Clarens, Bethlehem, Ficksburg, Ladybrand, and Wepener.

10.1.2 DISTRICT MUNICIPALITY WITHIN WHICH THE STUDY AREA IS LOCATED

The Xhariep District Municipality is a Category C municipality situated in the southern part of the Free State. It is bordered by the Mangaung Metro to the north, Eastern Cape to the south, Lesotho to the east, and Northern Cape to the west.

It is the largest district in the province, making up just more than a third of its geographical area. It is comprised of three local municipalities: Letsemeng, Kopanong, and Mohokare, which include 21 towns. Its administrative headquarters are in Trompsburg, which lies 125km south of Bloemfontein.

The towns in this district boast abundant natural resources such as water and agricultural land. The largest dam in South Africa is situated at the southern tip of the district. Three national roads (N1 – Gauteng to Cape Town, N6 – Eastern Cape to Bloemfontein, and N8 – Bloemfontein to Kimberley) pass through this area (www.municipalities.co.za). The main economic sectors are agriculture, construction, mining, transport, and communication.

10.1.3 LOCAL MUNICIPALITY WITHIN WHICH THE PROPOSED STUDY AREA IS LOCATED

The Letsemeng Local Municipality is a Category B municipality situated in the southwestern Free State Province within the Xhariep District. It is bordered in the north by the Lejweleputswa District, in the south by Kopanong, in the east by the Mangaung Metro, and in the west by the Northern Cape Province. It is one of three municipalities in the district, making up almost a third of its geographical area. Koffiefontein is the municipal head office.

The socio-economic growth of the municipality is centred on agriculture. The municipal area also has mining activities, with diamond minerals being the major natural resource that helps with employment creation. (IDP, 2020/2021).

10.2 CLIMATIC CONDITION OF THE PROPOSED AREA

Kimberley is the nearest city to the proposed site and usually, it receives approximately 380 mm of rain per year, with most rainfall occurring mainly during summer. It received the lowest rainfall (7 mm) in July and the highest (91 mm) in January the previous year (2022). The monthly distribution of average daily maximum temperatures shows that the

average midday temperatures for Kimberley range from 13°C in June/July to 29°C in January. The region is the coldest during July when the mercury drops to 0.3°C on average during the night. The Weinert climatic N-number for the area is 11. This indicates that the climate is semi-arid and that physical mineral grain disintegration is predominant. (www.weatherbase.com).

Table 16: Average monthly temperatures, humidity, and precipitation records (2022) (World Weather Online)

Month	Average Temperature (˚C)	Average Humidity (%)	Average Precipitation (mm)
January	29	46	91
February	27	71	51
March	26	43	50
April	21	32	52
May	18	51	14
June	13	57	16
July	13	54	7
August	16	45	10
September	21	35	10
October	24	36	26
November	26	36	38
December	29	39	62
Year	**22**	**45.42**	**427**

10.2.1 GEOLOGY AND SOILS WITHIN THE STUDY AREA

The proposed site is underlain by quaternary calcrete overlying Karoo shale of the Prince Albert Formation and, in the south, a dolerite sill represents the local topographical high. The Prince Albert Formation consists of mainly black mica-rich shale and subordinate sandstone and mudstone. In invading the Karoo strata, the dolerite sills have almost without exception selected the weaker, predominantly argillaceous horizons along which to intrude and generally represent positive erosion features. The surface calcrete (Qc) occurs as discontinuous layers and concretions and are associated

with mudstone, shale tillite, dolerite and dolomite. The calcrete is generally associated with low relief and depressions in the landscape. There are three types of calcrete represented in the area:

- Hardpan calcrete;
- Nodular Calcrete; and
- Cliff Calcrete

The calcareous pedogenic soil that develop under fluctuating water levels in the soil present on the Ecca shales is variable and can range from a calcareous soil to hardpan calcrete. The Ecca shales have an important characteristic that affects it's engineering properties. The shales tend to disintegrate and or slake when exposed to the atmosphere.

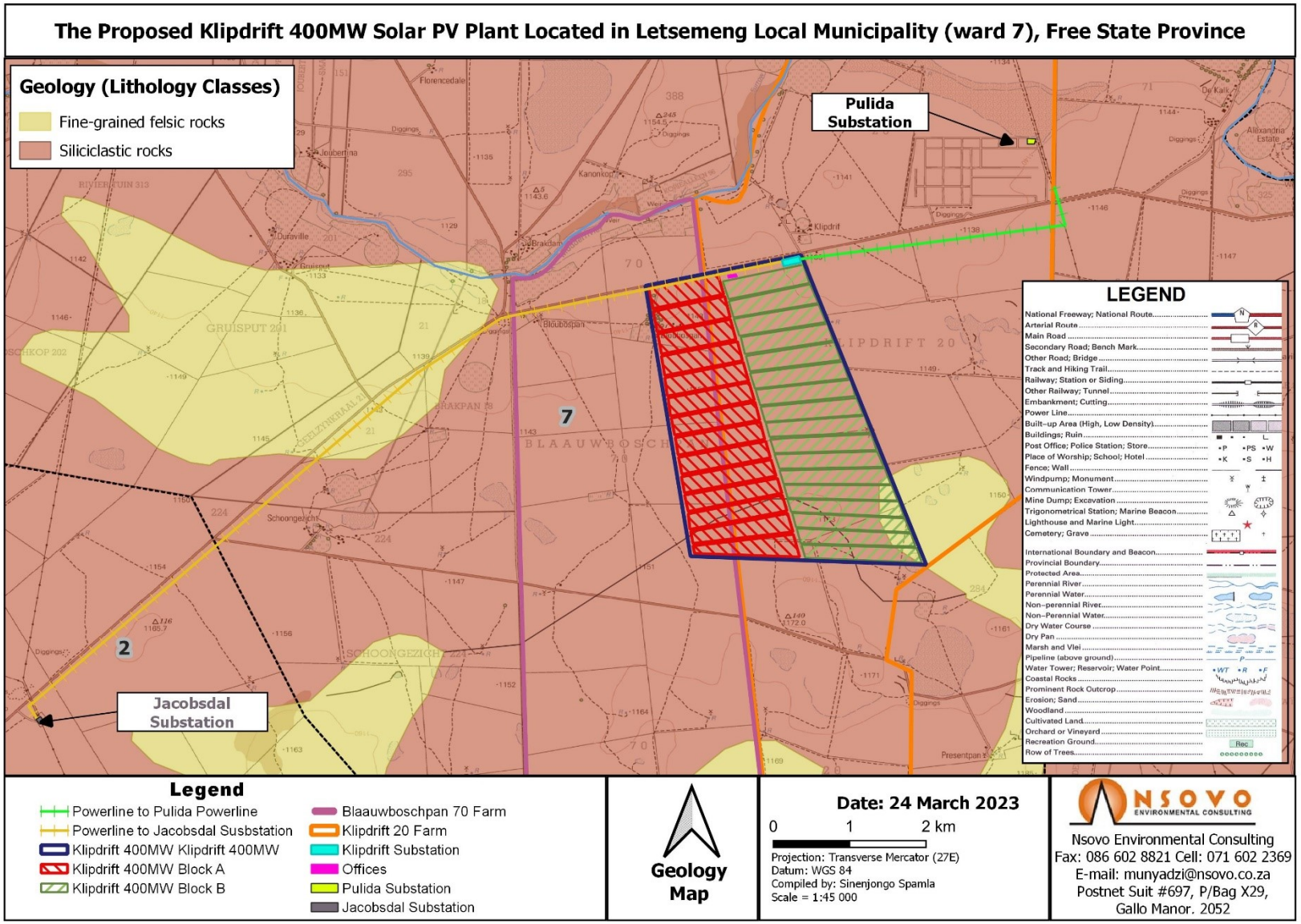

Figure 8: Geological and topographical map of the study site.

10.2.2 LAND CAPABILITY AND LAND COVER

The current land-use of the proposed development site is grazing by livestock. Neighbouring farms are being used for livestock grazing, with some isolated crop cultivation occurring in the deeper soils.

The proposed development site is largely composed of shallow, calcareous, and gravelly soils. Clay content varies between 5 and 10% with a depth of less than 400 mm. The soils are predominantly shallow with the calcrete or dolerite bedrock often exposed along the surface. The shallow nature of the soils renders the proposed area unfavourable for effective crop production. The proposed site area expects approximately less than 400mm of annual rainfall, deeming the area low and highly variable in terms of viable economic crop production. Thus, the site is considered a viable option for a solar plant, and not crop production.

The current vegetation at the proposed site of development consists mainly of shrubland with a well-developed grass layer. The grazing capacity for the area is low, according to databases (ARC), rendering a solar plant a more suitable land use than grazing land. The agricultural map below indicates the low agricultural potential, classifying the site as non-arable.

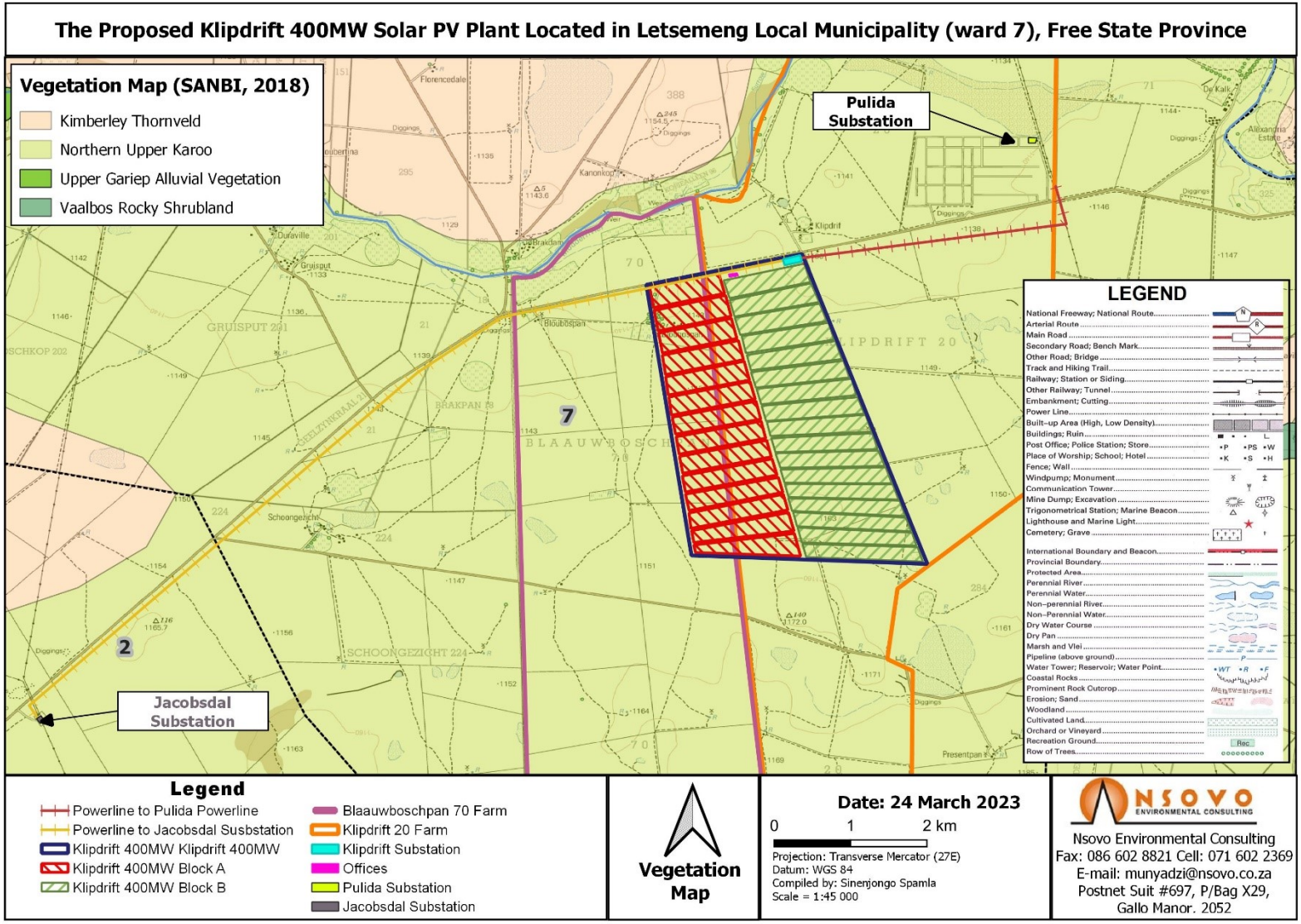

Figure 9: Vegetation cover types

10.2.3 SURFACE HYDROLOGY

The proposed site is located within the C52L Quaternary of the Lower Vaal Water Management Area. No abstraction under General Authorization is allowed for in this quaternary. The Recorded Mean annual precipitation is 435 mm per annum, with an annual run-off of 3 mm. The groundwater recharge is 9.45 mm per year and the groundwater level of the area is 30 m below surface. The following depicts the status of the proposed area:

- Eco status is category is F.
- Total groundwater use in the quaternary is 4.36 mm3 per year.
- Estimated annual groundwater recharge is 9.45mm/m^2 per annum.
- Estimated available water – 20 790 m^3 annually.
- Maximum annual water requirement for the project is 2,795 m^3 annually; and
- The scale of abstraction relative to recharge is 13.4% (Category A).

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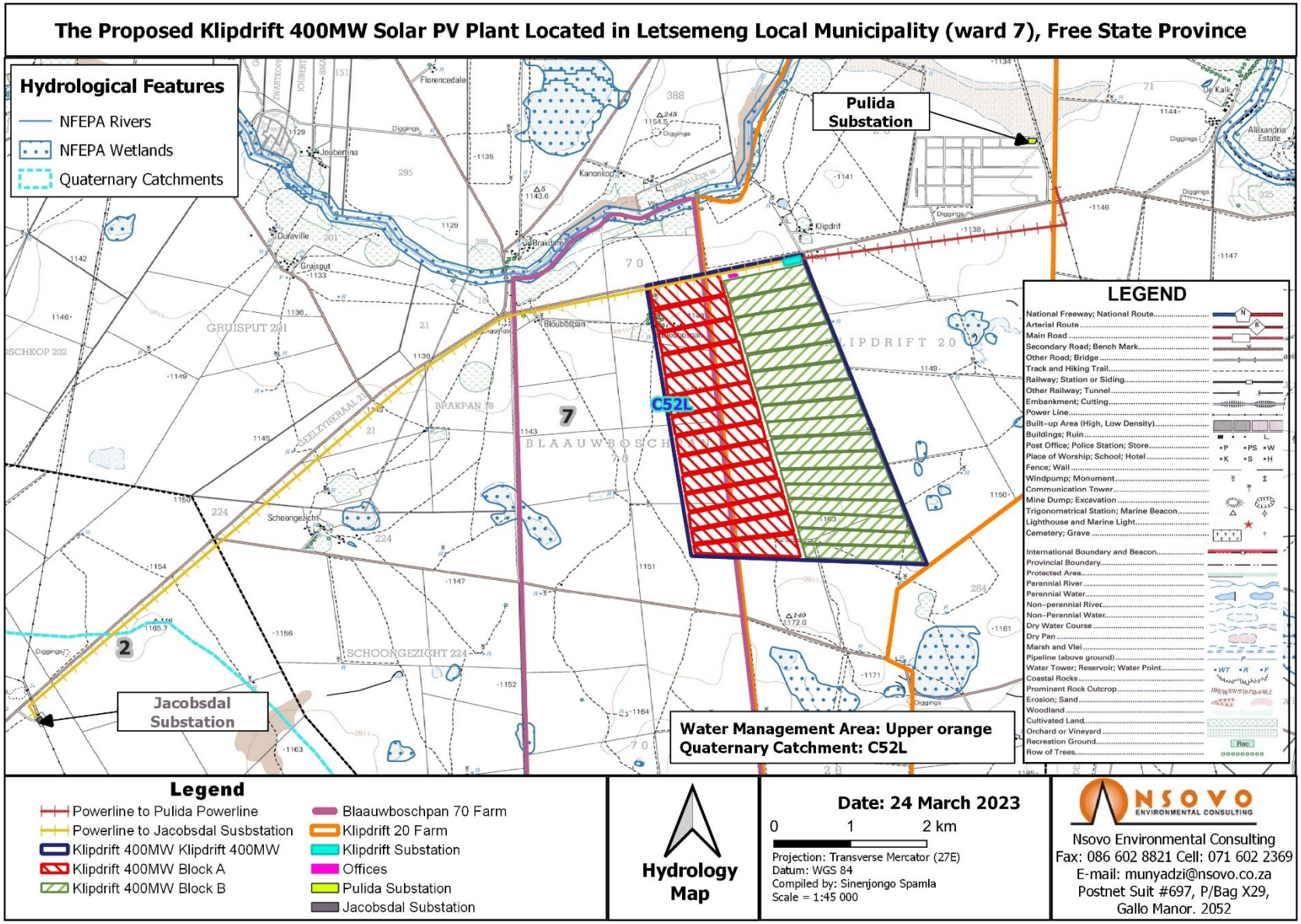

Figure 10: Hydrological map of the proposed location

10.3 SITES OF ARCHEOLOGICAL AND CULTURAL SIGNIFICANCE

10.3.1 CULTURAL HERITAGE

Cultural heritage constitutes monuments, architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science, groups of buildings, groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of outstanding universal value from the point of view of history, art or science, sites, works of man or the combined works of nature and man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view. (Source: Convention Concerning the Protection of the World Cultural and Natural Heritage)

The Heritage sites in Letsemeng include:

- Historical buildings & Monuments of 2nd World War Kanonkop (Koffiefontein)
- Voortrekker Memorial Anglican Church used in the Boer War (Petrusburg);
- The cairn of commander Ds Lubbe (Jacobsdal);
- Tone Church and Ossewa Tracks (Luckhoff);
- Battle of Driefontein Graves of English soldiers (rural areas)

Other places of interest relating to culture and heritage in Letsemeng include:

- British Block House (Fort)- The blockhouse with its unique architecture was builded in 1900 on the road to Paardeberg. It was declared a national monument in 1983.
- Burger Monument- The Burger Monument is in front of the Dutch Reformed Church. It was erected in memory of the deceased at the Battle of Roodelaagte 25.11.1899 under command of D.S. Lubbe.
- Dutch Reformed Church- Consecrated in 1879 and enlarged in 1930, was used as a hospital during the Anglo Boer War – now a national monument. A Bullet hole in the front door is evidence of the many skirmishes which took place between Boer and Brit in the area.
- Jacobsdal Cemetery (at the end of De Villiers St)- The oldest grave in Jacobsdal Cemetery dates from 1859. British War graves and monuments can be found dating from the Anglo Boer War (1899 – 1902). Some “Boers” that fought the Magersfontein battle were reburied at Magersfontein which included Commandant D.S. Lubbe’s grave (1923). Paardeberg (18 – 27 February 1900)- By means of a wide flanking movement to avoid the Boers at Magersfontein, Lord Roberts succeeded in relieving Kimberley on 15 February 1900. Due to his precarious position, Cronje was forced to fall back to Bloemfontein along the Modder River. He was denied crossing Vendusiedrif due to the British onslaught with the result that the Boers entrenched themselves on both sides of the river. 40000 British troops supported by 100 guns besieged the small Boer force of 4000 men, women and children. After 10 days of continuous bombardment, the Boer force surrendered on 27 February 1900.

10.3.2 HISTORICAL AND BUILT ENVIRONMENT

Although the affected general landscape is associated with historical events such as white settler migration, colonial wars, and the recent African people of the region, there are no listed specific historical sites on the proposed development site. No places of religious worship, ritual performances, and ancestral worship were noted or identified, although no oral records. It should be noted that there are currently no places within or in the vicinity (20m buffer) of the proposed site that are listed on the National Heritage List.

Overall, no heritage resources were identifiable in this investigation. The impacts on heritage features, sites, or materials are low or negligible, with mitigation measures provided by a watch-and-brief approach.

10.4 REGIONAL VEGETATION

The study area falls within the Nama Karoo biome which occurs on the central plateau and west of South Africa, at altitudes between 500 and 2000 m, with most of the biome. The dominant vegetation is a grassy, dwarf shrubland. Grasses tend to be more common in depressions and on sandy soils, and less abundant on clayey soils.

The geology underlying the biome is varied, as the distribution of the biome is determined primarily by rainfall. This also determines the predominant soil type with over 80% of the area covered by lime-rich weakly developed soil over rock (Low & Rebelo, 1996). The most recent classification of the area by Mucina & Rutherford (2006) shows that the site is classified as Northern Upper Karoo.

The vegetation features of this vegetation type are shrubland dominated by dwarf Karoo shrubs, grasses, and Acacia mellifera subsp. Detinens and some other low trees. Landscape features include flat to gently sloping, with isolated hills of Vaalbos Rocky Shrubland and many interspersed pans. The conservation status of the Northern Upper Karoo is Least Threatened with none conserved in statutory reserves and 4% transformed for cultivation (Mucina & Rutherford, 2006).

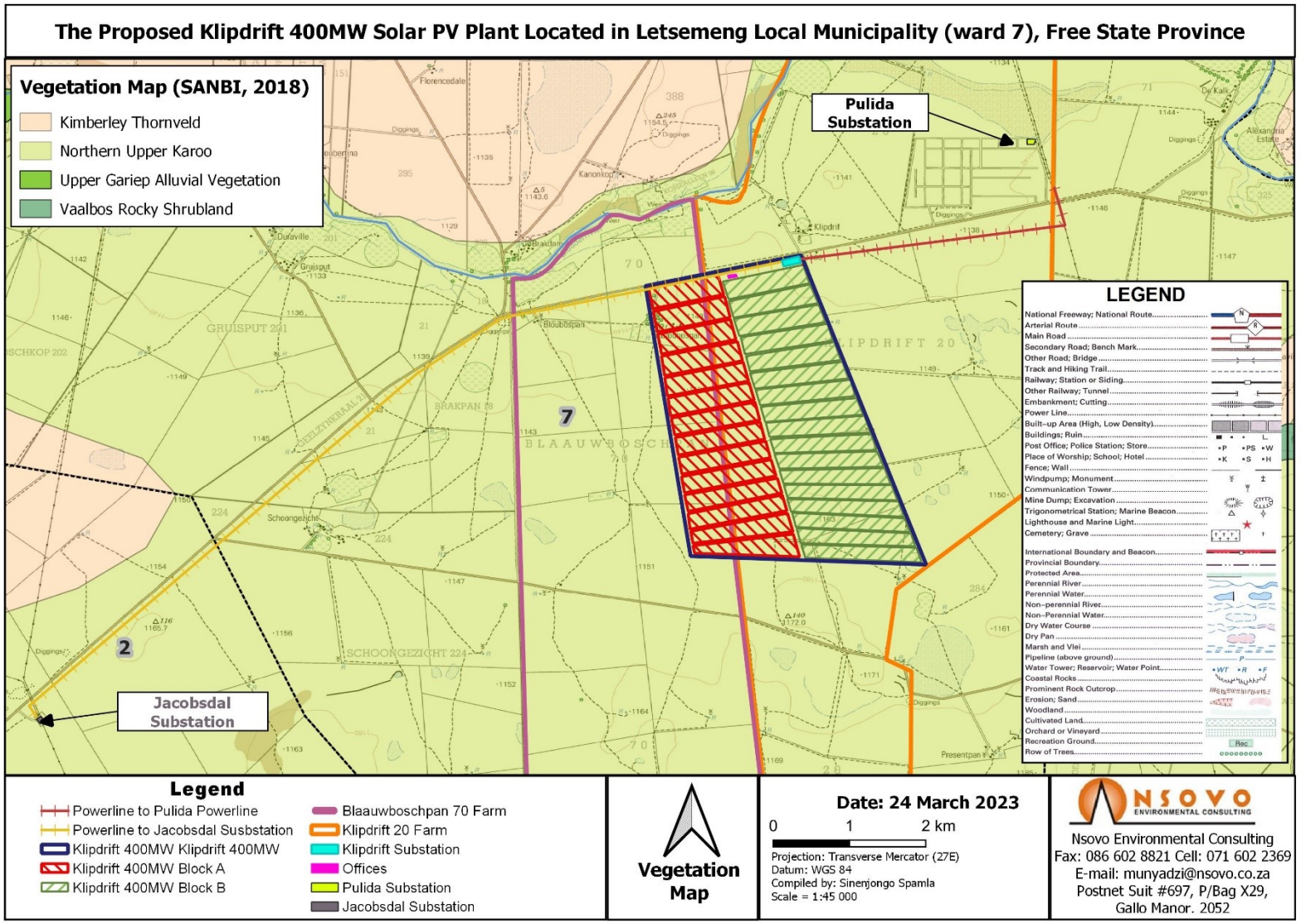

Figure 11: vegetation Map of the proposed location

10.5 SENSORY ASPECTS

10.5.1 NOISE

In terms of the Noise Regulations, a noise disturbance is created when the prevailing ambient noise level is exceeded by 7.0dBA 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 at times, 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 which will be created by the operational activities.

There will be an upward shift in the immediate environmental noise levels during the construction phase temporarily and a more permanent basis during the operational phase in the vicinity of the proposed activities. The noise increase at the abutting properties will, however, not exceed the prevailing ambient noise levels during the construction, operational, and decommissioning phases as it will be below the threshold value of 7.0dBA.

10.5.2 VISUAL ASPECTS

Visual appreciation or dislike is subjective, and thus, what is aesthetically pleasing to some can be displeasing to others. The visual analysis of a landscape, the impact of new developments and structures tend to be complicated. It is evident from previous experience that when dealing with the reaction to landscape changes, a large diversity of opinion exists. In this regard, the applicant must be sensitive from a visual impact perspective to the requirements of the local people, notably rural communities, and farmers. Many topographical features influence this environment, and these features will need to be utilized when selecting an alignment to minimize visual impacts and intrusions.

The study area consists of large areas of agricultural land used for commercial purposes. Within the receiving environment, specific viewers (visual receptors) experience different views of the visual resource and value it differently. They will be affected because of alterations to their views due to the proposed project.

Much of the study area is utilised for purposes of animal farming. The undulating agricultural landscapes of much of the study area are not necessarily sensitive but are important to preserve for their aesthetics. It is, thus, necessary to maintain a near-natural visual landscape, with limited effect on aesthetics, to enable the continuation of nature-based economic activities such as agriculture.

In this regard, the applicant must be sensitive from a visual impact perspective to the requirements of the local people, notably farmers, and other land users. Many topographical features influence this environment, and these features will need to be utilised when selecting substation location and loop alignment to minimise visual impacts and intrusions.

10.6 CLIMATE CHANGE IMPACT

The 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 due to the high level of coal use by the electricity generation and synthetic fuels industries and the high level of industrialisation producing high energy content products. To fulfil the national energy policy of making clean, affordable, and appropriate energy available to all sectors of the population, a balanced least-cost mix of energy supply is promoted. Although the country is faced with obligations to reduce its greenhouse gas emissions, international governance of this problem is an evolving area.

11 METHODOLOGY FOR ASSESSING THE SIGNIFICANCE OF POTENTIAL IMPACTS

The assessment of impacts is largely based on the Department of Environmental Affairs and Tourism's (1998) Guideline Document: Environmental Impact Assessment Regulations. The assessment will consider impacts arising from the proposed activities of the project both before and after the implementation of 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. From these criteria, a significance rating is obtained, the method and formula is described below. Where possible, mitigation recommendations have been made and are presented in tabular form.

The criteria given in Table 17: Methodology used in determining the significance of potential environmental impacts below will be used to conduct the evaluation. 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 assessed in detail during the EIA phase.

Table 17: Methodology used in determining the significance of potential environmental impacts

Status of Impact The impacts are assessed as either having a: negative effect (i.e., 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 (within the Free State Province),

(**4**) National, or

(**5**) International.

Duration of the Impact

The length that the impact will last for 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 have an influence on 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 potential impacts that the proposed project may pose on the receiving environment. Impacts associated with the relevant environmental components within the study area, as identified, have been assessed based on the EAP's opinion as well as consultation with specialist studies done in the area. Figure 12 shows the proposed grid infrastructure in relation to other similar projects within a 30km radius of the proposed development site.

Further, Table 18: Potential Environmental Impact identified presents the assessment of the anticipated impacts of the proposed project as well as mitigation measures. Identified and they include the following impacts:

Pre-construction Phase

- Employment opportunities

Construction Phase:

- Terrestrial biodiversity
- Archaeology and cultural heritage
- Hydrological
- Noise
- Generation of waste
- Traffic
- Socioeconomic

Operational Phase

The proposed development will result in a greener energy solution and contribute significantly to the regional and country's energy mix, thus reducing heavy reliance on coal as the only source of energy. This is a positive impact with a positive outlook although it may have its negative aspects, the longer term is relatively more sustainable. Other identified impacts will include the following:

- Vegetation clearance
- Surface water redirection
- Waste
- Avifauna
- Socioeconomic
- Water consumption

No-Go Alternative

The impacts identified for the no-go option includes the following:

- A negative impact of high significance was identified; it relates to the ecological effects of continued reliance on coal as a primary source of energy.
- The identified benefits of the required energy mix and all associated benefits will not be realised.

The EIA phase of the process will include detailed input from specialists as well as a detailed quantification of the extent of the impacts as well as mitigation measures. Refer to Table 18 below, for the potential impacts identified.

12.1 SUMMARY POTENTIAL ENVIRONMENTAL IMPACTS IDENTIFIED

Potential environmental impacts identified during the Scoping phase are described in Table 18 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 18: Potential Environmental Impact identified.

Aspect	Nature	Impact Description	Proposed Mitigations
PRE-CONSTRUCTION AND CONSTRUCTION PHASES			
Employment	Positive	The development of a solar plant promote the area for further investment, stimulate and contribute towards the economy as well as creating several jobs within the area, including: • The opportunities for the skilled and semi-skilled personnel in the local community during the construction as well as operational phases. • The initiatives to contribute towards educating and developing necessary skills for the locals to take advantage of opportunities associated with the proposed project. • Local businesses could be incubated and developed to be able to take opportunities which are highly technical.	• There could be initiatives developed to contribute towards educating and developing necessary skills for the locals to take advantage of opportunities associated with the proposed construction of the proposed project. • When appointing subcontractors, Solasun should give preference to appropriate subcontractors/SMMEs located in the surrounding communities, then in the municipal area, and then only to contractors located elsewhere or outside the province. • Employment of skilled, semi-skilled and unskilled labours during the construction of proposed project. • Solasun must promote the creation of employment opportunities for women and youth. The positions reserved for the youth and women may only be filled

Aspect	Nature	Impact Description	Proposed Mitigations
			with persons outside of these categories if it can be demonstrated that no suitable persons can be employed from these categories. • It is recommended that Solasun consults with local business forums.
Visual Impact	Negative	The visual impact of an object in the landscape decreases as the distance between the observer and the object increases. The visual impact at 1 km is approximately a quarter of the impact viewed from 500 m, and the visual impact at 2km is one-eighth of the impact viewed from 500 m. Therefore, objects appear insignificant in any landscape beyond 5km. The visibility of the proposed structure and infrastructure would be a function of several factors: landform, vegetation, views and visibility, genius loci (or sense of place), visual quality, existing and future land use, landscape character, and scale. The proposed activity will change the visual character of the site, particularly considering that the proposed site is in an	• Trees must be planted around the site to soften the appearance of the facility. • The facility should, as far as possible, be designed to have its tallest elements towards the north of the site. • It is recommended that trees be planted in areas where the proposed power station is most visible, to reduce the visual impact of viewers. • Keep the construction sites and camps neat, clean, and organised to portray a tidy appearance. • Screen the construction camp and lay-down yards.

Aspect	Nature	Impact Description	Proposed Mitigations
		agricultural area; the elevated points of the site can be viewed from the nearby roads. However, it must be noted that the proposed project area is characterized by Agricultural land with contemporary infrastructures in place, which will absorb the proposed developments in situ once the project becomes operational. Therefore, the visual impacts of the proposed development will be low across the receiving contemporary cultural landscape.	
Flora and Fauna	Negative	Potential ecological impacts resulting from the development would stem from a variety of different activities and risk factors associated with the preconstruction, construction, and operational phases of the project. **Construction Phase** Vegetation clearing for solar panels, offices, and transmission line, and the substation and the solar plant site itself may impact vegetation. • Destruction, fragmentation and degradation of habitats and ecosystems. • Spread and/or establishment of alien and/or invasive species.	• No un-authorized construction activities, staff, vehicles or activities, dumping or clearing is permitted in medium sensitivity area, thus declared a "No-Go" area, until pre-construction walk through completed. **Construction Phase** • Access to these areas must be limited and delegated. • Clearing of vegetation should be restricted to areas were construction is to take place. • A management plan must maintain the ecological integrity of the remaining property as required, and implementation is the responsibility of the developer.

Aspect	Nature	Impact Description	Proposed Mitigations
		• Displacement of faunal community due to habitat loss, direct mortalities, and disturbance (road collisions, noise, light, dust, vibration). • Chemical pollution associated with dust suppressants. • Fencing of PV site. **Operational Phase** • Continued fragmentation and degradation of habitats, ecosystems areas; • Erosion; • Spread of alien and/or invasive species; • Displacement and direct mortalities of faunal community (including possible SCC) due to disturbance (road collisions, collisions with solar panels and substation, noise, light, dust, vibration); • Reduced dispersal/migration of fauna; • Chemical pollution associated with measures to keep PV clean; and • Fencing of PV site. **Closure and Rehabilitation**	• The footprint of the disturbance area must be kept as small as possible, and only existing access roads should be used to reach the site for clearing, and vehicles must not be allowed to traverse natural areas or leave the demarcated road. • Clearing of vegetation must be minimised and avoided where possible. • All lay down, chemical toilets etc. should be restricted to low sensitivity areas. Any materials may not be stored for extended periods and must be removed from the project area once the construction/closure phase has been concluded. • No storage of vehicles or equipment will be allowed outside of the designated project areas. • Areas that are cleared during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood and wind events. This will also reduce the likelihood of encroachment by alien invasive plant species. • Any woody material removed can be shredded and used in conjunction with the topsoil to augment soil moisture and prevent further erosion.

Aspect	Nature	Impact Description	Proposed Mitigations
		• Continued fragmentation and degradation of habitats and ecosystems; • Erosion; and • Spread of alien and/or invasive species **Cumulative Impacts** Localised cumulative impacts include dust deposition, noise and vibration, disruption of wildlife corridors or habitat. The PV panels and associated infrastructure are expected to have a moderate cumulative impact as they form part of a powerline network and are constructed on a majority already disturbed area. Cumulatively these developments will be responsible for the destruction of a large portion of vegetation in various states.	• An Alien Invasive Plants (AIP) management plan must be implemented, whereby existing AIP's within the project area are eradicated as well as the disturbed site is monitored quarterly for at least two years to ensure that alien invasion does not take place. • 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. • Small holes (30cm by 30cm) must be placed in the fence along the fence to allow animals to move between the areas; the holes must not be placed in the fence to a major road as this will increase road killings in the area.
Alien Invasive Plants	Negative	**Construction and Operational Phase** The introduction of seed on-site through building materials and construction vehicles can impact hydrology by reducing the quantity of water entering a watercourse and outcompete natural vegetation, decreasing the natural biodiversity.	• Implement an Alien Plant Control Plan which specifies actions and measurable targets • Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area and returning it where possible afterwards.

Aspect	Nature	Impact Description	Proposed Mitigations
		Cumulative impacts Since alien vegetation is already present in the catchment, the proposed development may expose the area to increased alien vegetation.	• Long-term monitoring for the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish, as specified in the Alien Vegetation Management Pan. • Rehabilitate or revegetate disturbed areas. Regular monitoring must be implemented during the construction and rehabilitation phases to minimise potential for increased alien vegetation.
			•
Watercourse habitat	Negative	**Construction and Operational Phase** Loss and disturbance of watercourse habitat and fringe vegetation due to direct development on the watercourse as well as changes in management, fire regime and habitat fragmentation.	• The development footprint must remain outside the delineated wetland, riparian areas, and buffer zones. • Demarcate the watercourse areas and buffer zones to limit disturbance, clearly mark these areas as no-go areas • Implement an Alien Plant Control Plan

Aspect	Nature	Impact Description	Proposed Mitigations
		Cumulative impacts Degradation may result in a high degree of irreplaceable loss of resources. However, the impacts are low.	• Monitor rehabilitation and the occurrence of erosion twice during the rainy season for at least two years and take immediate corrective action where needed. • Monitor the establishment of alien invasive species within the areas affected by the construction and take immediate corrective action where invasive species are observed to establish.
Water quality	Negative	**Construction and Operational Phase** Construction and operational activities may result in the discharge of solvents and other industrial chemicals, leakage of fuel/oil from vehicles and the disposal of sewage resulting in the loss of sensitive biota in the wetlands/rivers and a reduction in watercourse function. **Cumulative impacts** Decreased water quality from spills will contribute to regional water quality decrease.	• The use of water for the cleaning of the solar panels must be contained and no chemicals added to decrease environmental risk. • Implement appropriate stormwater management around the excavation to prevent the ingress of runoff into the excavation and prevent contaminated runoff into the watercourse. • Provision of adequate sanitation facilities located outside of the watercourse area or its associated buffer zone • The development footprint must be fenced off from the watercourses, and no related impacts may be allowed into the watercourse e.g., water runoff from cleaning of equipment, vehicle access etc.

Aspect	Nature	Impact Description	Proposed Mitigations
			• After construction, the land must be cleared of rubbish, surplus materials, and equipment, and all parts of the land shall be left in a condition as close as possible to that before use. • Maintenance of construction vehicles / equipment must not take place within the watercourse. • Measures must be put in place to prevent spills or water contaminated by waste material for example, constructing sumps or drains which can contain any spills for contaminated water to be isolated from the watercourse and removed from the site for appropriate disposal • The use of only water for the cleaning of the solar panels. • Standard Operating procedures, training drills, and audits must be put in place and revised annually. • Independent water quality analyses must be undertaken annually to demonstrate and audit effective pollution control measures.
Hydrology	Negative	**Construction and Operational Phase**	• Effective stormwater management must be a priority during both the construction and operational phases.

Aspect	Nature	Impact Description	Proposed Mitigations
		Compaction of soil, the removal of vegetation, surface water redirection, changes to watercourse morphology or input of high energy surface water which could occur during the upgrading of the access road. **Cumulative impacts** Cumulative impacts include edge effects to remaining natural vegetation due to vegetation clearing. This may lead to sedimentation and the establishment of alien plant species. However, the cumulative impacts are low.	Further, stormwater management must be monitored as part of the EMP. • Designs must consider soil properties, slopes, and runoff energy to have a neutral effect on the regional hydrograph. A temporary fence or demarcation must be erected around No-Go Areas outside the area of the proposed work before any construction takes place as part of the contractor planning phase.
Avifauna	Negative	**Construction Phase** The immediate impact of PV facilities on avian species is from land transformation and loss of habitat for breeding birds. The impacts of the construction phase on ecology can be direct in terms of vegetation and habitat loss/displacement and indirect due to increased noise and heavy equipment and vehicular movement, which will be limited to the construction phase only. The construction of the PV facility and associated infrastructure can result in a significant amount of movement	The following mitigation measures are recommended: • A site-specific avifaunal walkthrough should be conducted by a qualified specialist as part of the site-specific EMP just before construction, to ensure that no sensitive bird species have started breeding on or near the site. If any such sites are found case -specific mitigation measures will need to be designed;

Aspect	Nature	Impact Description	Proposed Mitigations
		and noise leading to the displacement of avifauna from the development footprint. In addition to these impacts may arise due to habitat transformation. The construction of the PV plant and associated infrastructure will further transform the natural habitat. The remaining vegetation in the PV footprint will be cleared before construction commences. **Operational Phase** During the operational phase, less sunlight will reach the vegetation below the solar panels, which is likely to result in stunted vegetation growth and possibly complete eradication of some plant species. The natural vegetation is likely to persist in the rows between the solar panels. These will favour the persistence of smaller and medium-size birds (e.g. passerines) which can survive in small pockets of suitable habitats and are therefore generally less affected by habitat fragmentation than larger species which require contiguous, unfragmented tracts of suitable habitats.	• Vehicles must be restricted to travelling on designated roadways to limit the ecological footprint of the proposed activity; • Watercourses, drainage lines, must be avoided, and a no-go buffer of m must be applied around them; • Dams and livestock water points should likewise be avoided with a 100 m no go buffer; • Rocky outcrops should be avoided with a 100 m no go buffer; • Signage must be put all around the project site to bring awareness amongst the staff and labourers to be sensitive towards the birds and wildlife that reside in the project area; • All project activities must be undertaken with appropriate noise mitigation measures to avoid disturbance to human as well as avifauna population in the region; • Activities generating high noise shall be restricted to daytime and must be mitigated to minimize the noise level outside the site boundary;

Aspect	Nature	Impact Description	Proposed Mitigations
		Further, During the operational phase, potential collision impacts from PV systems can include direct collisions into guy wires or transmission lines. In addition, the so-called "lake effect "could potentially attract water birds which leads to direct mortality or leaves individuals injured which makes them vulnerable to predators, the "lake-effect" hypothesis suggests that waterbirds mistake large expanses of solar arrays for water bodies, colliding with the infrastructure as they attempt to land, this is a possibility due to the proximity of the project area to Modder river. Other collision risks include glare and polarised light which may attract insects resulting in aggregations of insectivorous birds, further increasing collision risk.	• Solar panels must have an anti-reflective coating to minimise the light reflecting off the panels so that there is very less impact due to glare from the panels; • A carefully considered the use of environmentally friendly cleaning chemicals for cleaning of panels during the operational phase; • Facility lighting during construction & operation should be kept to a minimum and should use the latest technology to ensure that light disturbance is minimised. This will also reduce the attraction of insects (and in turn insectivorous birds) to the facility; • As very little is known about the impacts of solar facilities on birds in South Africa, a construction monitoring regime is recommended for the proposed project area to document any impacts, and this data must be used use for improving mitigation measures to reduce the impact on biological resources, particularly avifauna; and • A follow-up assessment on avian biodiversity and species abundance within the project site and surrounding areas must be conducted.

Aspect	Nature	Impact Description	Proposed Mitigations
Servitudes	Neutral	The existence of servitudes needs to be considered in the design and layout of the proposed project. Regulations pertaining to servitudes must be taken into consideration. Potential impacts on this servitude will be investigated during the EIA phase.	• Communication with the rightful owners of the servitudes as well as other landowners. • Designs to consider all existing servitudes.
Social Environment	Negative/Positive	The construction phase may have a negative impact on the surrounding landowners if not properly managed. The social related issues may include theft and risk of fire. Conversely, a positive impact can emanate from the proposed development through the employment of residents. Also, a micro-economic environment could be created through vending/trade between contract workers and the locals. This impact will be local. The socio-economic benefits of the proposed project are discussed in detail in the motivation above, and the next phase will weigh the benefits against the identified impacts. The proposal seeks to provide a new source of electricity. Electricity is needed to drive the economy, and, as with all electricity generation projects, there will be positive socio-economic impacts through improving the reliability of the	• Where appropriate establish liaison structures with local police and communities to monitor changes during the construction phase. • Employees should be provided with identity cards and should always wear identifiable clothing. • Landowners must be well informed of movements in and around their properties. • Liaise with landowners before entering their property. • Covering of vehicle loads. • Loading and unloading materials must be done in wind-sheltered areas. • Speed restrictions on site must be implemented on site. • Areas stripped of vegetation must be revegetated as soon as possible.

Aspect	Nature	Impact Description	Proposed Mitigations
		electricity supply. Possible job opportunities would be created during the construction phase, and it is also expected that some jobs will be permanently for the duration of the operational phase.	• Any complaint from the public during the construction and operation of this project must be attended to by the person involved as soon as possible to the satisfaction of the parties concerned. A complaint register must be kept up to date and should be produced upon request. • Dirt construction roads must be sprayed with water to minimise dust generation. • Vehicles and equipment must be kept in good working order to avoid excessive noise. • Ensure close co-operation between traffic authorities and construction and maintenance teams to reduce the risk of traffic incidents. • Strategically placed emergency access points at times when access is restricted to ensure that landowners and emergency services can respond to any outbreak of a fire. • Ensure that both construction and maintenance personnel are made aware of the risks and dangers of veld fires and that they behave and conduct their activities to reduce the risk of fire.

Aspect	Nature	Impact Description	Proposed Mitigations
			• Ensure close co-operation between landowners and construction and maintenance teams to ensure an adequate fire management strategy. • Dust generated by construction activities must be minimised by dust suppression techniques such as the use of water sprinkler. • The applicant must be responsible for compliance with the provisions for duty of care and remediation of environmental damage in accordance with Section 28 of National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.
Topography	Neutral	The topography of the site earmarked for the PV solar plant and 132 kV distribution powerline is undulating. The area is prone to soil erosion during the construction phase.	• Erosion control measures must be put in place. • Storm water management measures must be put in place.
Traffic	Negative	During the construction phase, increased heavy vehicle traffic should 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. The uncontrolled movement of construction vehicles may result in	• 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.

Aspect	Nature	Impact Description	Proposed Mitigations
		disproportionate impacts on the environment through vegetation and habitat destruction.	• Delivery vehicles must comply with all traffic laws and bylaws. • Inform communities of planned construction activities that would affect vehicle/ pedestrian traffic. • Construction-related vehicles should be restricted to daylight hours and the workweek, if possible. Thus, it is recommended that trucks should not be operated after sunset or over weekends. • Roads must be adequately maintained to prevent deterioration of roads surfaces due to heavy vehicle traffic. Road maintenance should not be the sole responsibility of the Local Municipality or the Department of Public Works. Safe travelling speeds must be determined, and measures implemented to ensure that these restrictions are enforced. • Appropriate and visible signaling for safety purposes must be posted at reasonable distances (those that allow sufficient time for reaction by motorists) at every section of the road affected by the construction and operational activities.

Aspect	Nature	Impact Description	Proposed Mitigations
Heritage	Positive	Impacts on the heritage are similar for both the construction and operational phase of the project.	• The footprint impact of the proposed development should be kept within the perimeter to mitigate risk and the possibility of encountering chance find. • Although no places of religious worship, ritual performances, and ancestral worship were noted or identified, should unknown graves and burial sites be discovered during the cause of construction activities, all construction activities should cease, and the site must be barricaded, and SAHRA/FSPHRA or the professional archaeologist must be informed. • Should graves be exposed during construction, affected families must be trekked and consulted. Relevant rescue or relocation permits must be obtained from SAHRA. Burial Grounds and Graves Unit before any grave relocation occurs. Furthermore, a professional archaeologist must be retained to oversee the relocation process in accordance with the National Heritage Resources Act 25 of 1999.

Aspect	Nature	Impact Description	Proposed Mitigations
			• When the removing topsoil and subsoil on the area earmarked for development; caution must be exercised. • A detailed social impact assessment may be required should cultural heritage resources be uncovered as part of the stakeholder engagement process.
Waste Management		The proposed activity will contribute to waste generation during the construction of the solar plant. However, waste management measures are included in this SR and will also be included in the EMPr.	• All hazardous and solid waste must be removed to a licensed waste disposal site for the type of waste produced. • No solid waste may be disposed of on site. The storage of solid waste on site, until such time as it may be disposed of, must be in a manner acceptable to the Local Authority. • Provision must be made for the adequate storage of used and contaminated substances such as oil, lubricants and other petroleum products during the construction and operational phases of the development. The substances must be stored in

Aspect	Nature	Impact Description	Proposed Mitigations
			such a way that it would not pose threat to the environment.

12.2 CUMULATIVE IMPACTS

Cumulative impacts concerning an activity means 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). The most important concept related to a cumulative impact is that of an acceptable level of change to an environment. A cumulative impact only becomes relevant when the impact of the proposed development will lead directly to the sum of impacts of all developments causing an acceptable level of change to be exceeded in the surrounding area. If the impact of the development being assessed does not cause that level to be exceeded, then the cumulative impact associated with that development is not significant. The cumulative impacts significance rating was defined according to the predicted impacts before and after possible mitigation measures as recommended by the specialists. The cumulative impacts significance rating was taken into consideration when preparing the motivation for the need and desirability of the proposed development within the regional landscape.

This section provides cumulative impacts ratings associated with the proposed project, including, socio-economic and visual impacts. Additional cumulative impacts will be assessed during the EIA phase. It also outlines the mitigation measures of each rated cumulative impacts as discussed below. There is an existing solar plant within 30 km of the proposed Klipdrift Solar plant. The impacts identified for the proposed Klipdrift Solar plant will add to those already identified. Figure 12: Grid Map overlain by cumulative impacts below depicts projects of similar nature (solar farms) within a radius of 30km of the proposed site.

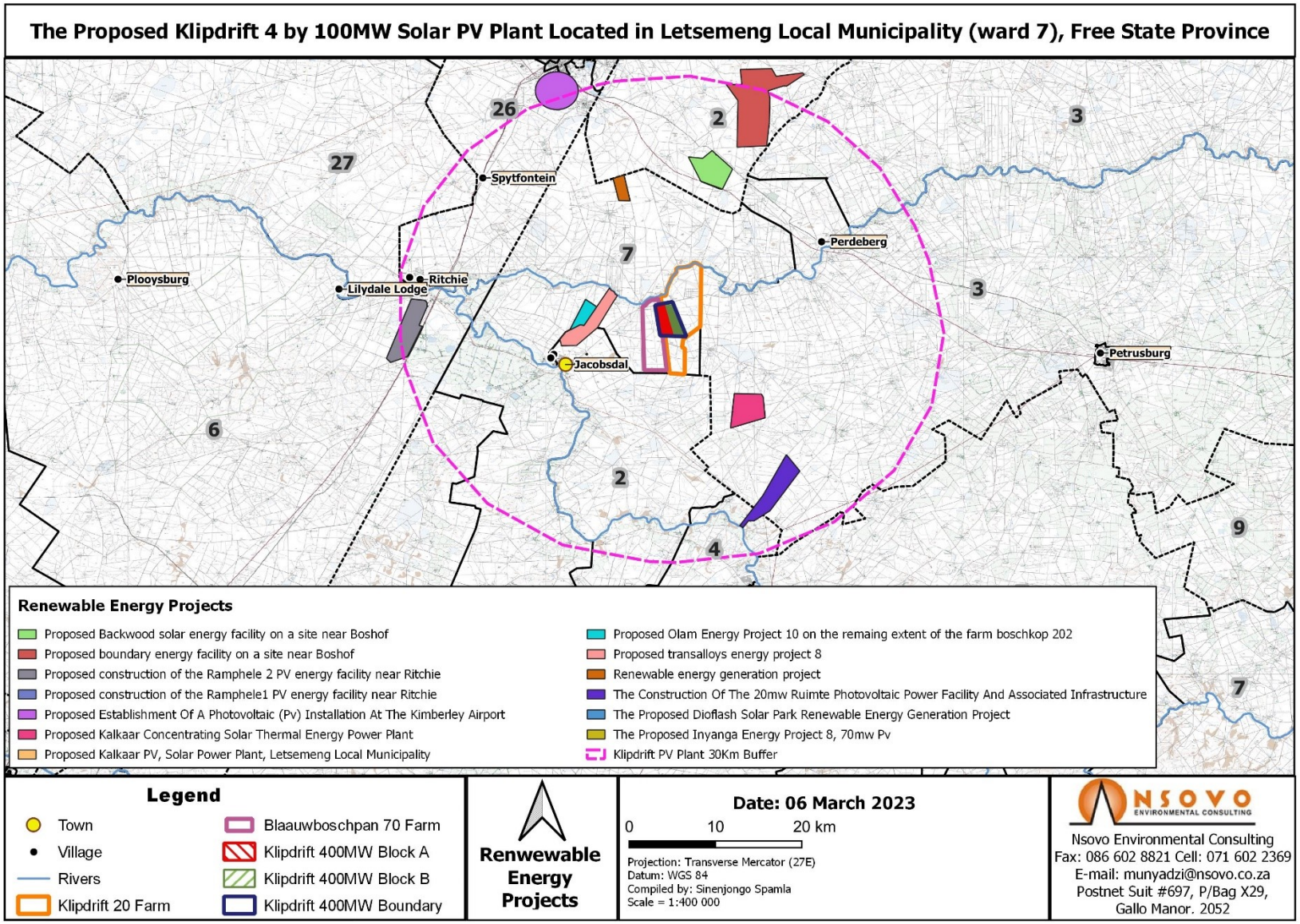

Figure 12: Grid Map overlain by cumulative impacts.

12.2.1 POWERLINES

There are already existing (Eskom) powerlines within the vicinity of the Klipdrift Solar plant (132 kV) to which the proposed powerline will add to the visual impact. Further, the powerlines will add to the impact on avifauna, as powerlines impacts negatively on avifauna through electrocution, habitat destruction, and collision.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Impact on avifauna	No	Negative	3	4	3	4	40 (Low)
	Yes	Negative	3	4	2	3	27 (Low)

Mitigation Measures

- A site-specific avifaunal walkthrough should be conducted by a qualified avifauna specialist as part of the site-specific EMP just before construction, to ensure that no sensitive bird species have started breeding on or near the site. If any such sites are found case specific mitigation measures will need to be designed;
- Vehicles must be restricted to travelling on designated roadways to limit the ecological footprint of the proposed activity;
- Rocky outcrops should be avoided with a 100 m no go buffer;
- Signage must put all around the project site to bring awareness amongst the staff and labourers to be sensitive towards the birds and wildlife that reside in the project area;
- All project activities must be undertaken with appropriate noise mitigation measures to avoid disturbance to human as well as avifauna population in the region;
- Activities generating high noise shall be restricted to daytime and must be mitigated to minimize the noise level outside the site boundary;
- Solar panels must have an anti-reflective coating to minimise the light reflecting off the panels so that there is very less impact due to glare from the panels;
- A carefully considered surface water/drainage management plan must be developed for the site including attention to the use of environmentally friendly cleaning chemicals for cleaning of panels during the operational phase;
- Facility lighting during construction & operation should be kept to a minimum and should make use of the latest technology to ensure that light disturbance is minimised. This will also reduce the attraction of insects (and in turn insectivorous birds) to the facility;
-

12.2.2 HERITAGE IMPACT

No cumulative impacts were applicable in this study, the impacts on heritage features, sites or materials is low or negligible, with mitigation measure provided by a watch-and-brief approach.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Impact on heritage	No	Negative	1	4	2	5	25 (Low)
	Yes	Negative	1	4	4	5	25 (Low)
Mitigation Measures							
• It is mandatory to report any incident of human remains encountered to the South African Police Services, SAHRA staff member, and professional archaeologist. Any measure to cover up the suspected archaeological material or to collect any resources is illegal. The developer should induct field works about archaeology, and steps that should be taken in the case of exposing archaeological materials.							

12.2.3 HYDROLOGICAL FUNCTION

The sources of this impact include the compaction of soil, the removal of vegetation, surface water redirection, changes to watercourse morphology or input of high energy surface water which could occur during construction of access roads. Cumulative impacts are low to moderate and could include edge effects to remaining natural vegetation as the footprint of the activities may result in vegetation clearing. This may lead to sedimentation and establishment of alien plant species. Cumulative impacts on changes in sediment regime are expected to be limited provided that the mitigation measures are implemented effectively, and sedimentation is appropriately managed.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Impact on hydrological function	No	Negative	3	2	4	3	27 (Low)
	Yes	Negative	2	2	4	4	24 (Low)
Mitigation Measures							

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
• Effective stormwater management should be a priority during both construction and operational phase. This should be monitored as part of the EMP. • Designs should consider soil properties, slopes, and runoff energy with the aim of having a neural effect on the regional hydrograph. • A temporary fence or demarcation must be erected around No-Go Areas outside the proposed works area prior to any construction taking place as part of the contractor planning phase. • Consider the various methods and equipment available and select whichever method(s) that will have the least impact on watercourses. • Sediment traps should be installed. • Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area. • Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. • During the construction phase measures must be put in place to control the flow of excess water so that it does not impact on the adjacent surface vegetation. • Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas. • Monitoring should be done to ensure that sediment pollution is timeously dressed							

12.2.4 TRAFFIC IMPACT

During the construction phase, increased heavy vehicle traffic should 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 impacts to the environment through vegetation and habitat destruction.

12.2.5 TERRESTRIAL BIODIVERSITY

If mitigation measures are not implemented, the development may result in continued fragmentation and degradation of habitats, ecosystems areas; soil erosion; spread of alien and/or invasive species; displacement and direct mortalities of faunal community due to disturbance (road collisions, collisions with solar panels and substation, noise, light, dust, vibration); reduced dispersal/migration of fauna; chemical pollution associated with measures to keep PV clean; and

fencing of PV site. The PV panels and associated infrastructure are expected to have a moderate cumulative impact as they form part of a powerline network.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Terrestrial biodiversity	No	Negative	2	4	8	4	40 (Medium)
	Yes	Negative	1	4	4	3	29 (Low)

Mitigation Measures

- No un-authorized construction activities, staff, vehicles or activities, dumping or clearing is permitted in medium sensitivity area, thus declared a "No-Go" area, until preconstruction walk throughs are completed.
- Access to these areas should be limited and delegated.
- A management plan to maintain the ecological integrity of remaining property is required and implementation is the responsibility of the developer.
- The footprint of disturbance area should be kept as small as possible and only existing access roads should be used to reach the site for clearing and vehicles should not be allowed to traverse natural areas or leave the demarcated road.
- All laydown, chemical toilets etc. should be restricted to low sensitivity areas. Any materials may not be stored for extended periods of time and must be removed from the project area once the construction/closure phase has been concluded. No storage of vehicles or equipment will be allowed outside of the designated project areas.
- Areas that are cleared during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood and wind events. This will also reduce the likelihood of encroachment by alien invasive plant species.

12.2.6 TRAFFIC IMPACT

During the construction phase, increased heavy vehicle traffic should 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. The uncontrolled movement of construction vehicles may result in disproportionate impacts on the environment through vegetation and habitat destruction.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Impact on Traffic	No	Negative	2	1	8	3	33 (Medium)
	Yes	Negative	2	1	4	2	14 (Low)
Mitigation Measures							
• 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. • Construction-related vehicles should be restricted to daylight hours and the workweek, if possible. Thus, it is recommended that trucks should not be operated after sunset or over weekends. • Roads must be adequately maintained to prevent deterioration of roads surfaces due to heavy vehicle traffic. Road maintenance should not be the sole responsibility of the Local Municipality or the Department of Public Works. Safe travelling speeds must be determined, and measures implemented to ensure that these restrictions are enforced. • Appropriate and visible signalling for safety purposes must be posted at reasonable distances (those that allow sufficient time for reaction by motorists) at every section of the road affected by the construction and operational activities.							

Cumulative impact environmental statement: From the cumulative impacts assessment and rating provided above, the EAP is of the opinion that the proposed development may proceed due to the impacts being of low significance.

13 PLAN OF STUDY FOR EIA

The Scoping phase is fundamental as it allows for the identification of potential impacts on the environment, and facilitation of the process of compiling the EIA and Environmental Management Programme (EMPr). This report incorporates information from the client, specialist studies, site visits, literature reviews as well as previous environmental studies conducted in the area; it, therefore, provides a comprehensive baseline of the environment of the study area.

This Scoping Process has followed the appropriate standards and procedure for the EIA application, as set out in the NEMA and the EIA Regulations as amended. The study includes a description of the various alternatives and indicates alternatives, which should be pursued as part of the detailed assessment of the EIA process. The impact significance

of the proposed activity on the environment will be assessed in the EIA phase with the assistance of the various specialist studies.

This section aims to outline how the EIA for the proposed development will proceed during the EIA phase. The detailed assessment phase of the EIA process entails integrating the specialist studies for those potential impacts evaluated to be of significance. 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 provide a summary of the key findings of the Scoping Phase and describe the activities to be undertaken during 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
- Identification of 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 EIA will entail the sections detailed below.

13.1 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 assessed technical and structural alternatives for the proposed development. These alternatives will be assessed further during the EIA. The preferred technical and structural alternatives will be the alternative with the least environmental impacts as well as providing the most benefits to the socio-economy. The Scoping Report will assess the alternatives described below.

13.1.1 LOCALITY ALTERNATIVE

The Scoping focuses on one location alternative: Portions 0 of Klipdrift which is feasible and the only available site. It should be noted that this alternative has been assessed and sensitivities mapped out on the attached maps (**Appendix A**).

13.1.2 TECHNICAL ALTERNATIVES

The scoping phase assessed one option for the solar power technology, i.e., the Photovoltaic power generation. The advantages of the PV alternative would include a reduced impact on the environment during the manufacturing of the PV material, considerable land required, and the construction/installation is not as costly compared to other technologies such as the Concentrated Solar Power (CSP).

13.1.3 STRUCTURAL ALTERNATIVES

As mentioned, in Section 7.1.4, the Scoping phase has assessed several design alternatives, and they include one or more of the following pylons:

- Twin bunting conductor suspension structure.
- Steel pole angle strain structure; and
- Double strain pole.

The selection of the tower to be used for the proposed powerline will consider various aspects, including terrain, topography, visual impact, etc. None of the options highlighted above are dismissed as options.

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

The following are aspects that have been identified and briefly described as part of the Scoping Report. Further, detailed assessment will be undertaken during the EIA phase:

- Biodiversity (flora and fauna).
- Heritage.
- Palaeontology.
- Socio-economic.
- Visual impacts; and
- Avifauna.

13.3 ASPECTS TO BE ASSESSED BY THE SPECIALISTS

The DFFE Screening tool Report (**Appendix B)** identified the following themes as highly sensitive and would thus require specialist input:

1. Archaeological and Cultural
2. Biodiversity (Terrestrial and Plant Species)
3. Palaeontology Assessment

The studies will be undertaken as per the gazetted requirements and protocols under GNR No. 320 of 20 March 2020.

Solar power generation, like other energy sources, has an impact on the environment. Although solar has been instrumental in lowered emissions and improved air quality, solar does have an environmental footprint, i.e., methane emissions and carbon emissions.

All specialist studies will be prepared in line with Appendix 6 of the EIA Regulations of 2014 as amended and will be undertaken by qualified, experienced, and registered specialists with knowledge of the region. The specialist studies 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.

13.3.1 HERITAGE TERMS OF REFERENCE

This HIA study will be commissioned under the guidance of the requirements of Section 38(3) of the FSHRA, and the activities would include:

- Hypothesizing and conducting a detailed desk-top level investigation to identify all archaeological, cultural, and historic sites in the area earmarked for the proposed Solar Plant receiving areas.
- Conducting appropriate physical cultural properties field work and survey to verify results of the desk top investigation.
- During the field survey to document (GPS coordinates and map) all archaeological and/ heritage sites, objects and structures and physical cultural properties identified within the project's receiving environment.
- Compilation of the Archaeological/Heritage Impact Assessment report which would include:
    - Identification of archaeological, cultural, and historic sites within the affected.
    - Assessing the sensitivity and significance of archaeological remains within the affected development areas.
    - Estimation and evaluation of the potential impacts of the proposed construction, operation, and maintenance of the proposed development on archaeological, cultural, and historic sites in the proposed project receiving areas.
    - Measuring the impacts in terms of the scale of impact.

- Providing appropriate recommendations of mitigation measures that may add positive impacts while reducing the identified negative impacts on archaeological, cultural, and historic sites in the proposed project receiving areas.
- The recommendations should be applicable enough to effectively guide the compliance authorities in issuing a decision regarding the authorization of the proposed development.
- Consideration of relevant NWPHRA and SAHRA as well and international best practices guidelines; and
- Development of the Heritage Management Planning guideline: "Guideline for involving heritage stakeholders in the processes.

13.3.2 Terrestrial Biodiversity Terms of Reference

As part of the draft EIA phase a field terrestrial biodiversity impact assessment will be undertaken, and the terms of reference deliverables will include the following:

- Recorded representative samples of the plant species that occur within the study area based on seasonal field surveys;
- Recorded representative samples the animal species (mammals herpetofauna and invertebrates that occur within the study area based on field surveys;
- Identified which of these species are SCC based on the following lists:
- International Union for the Conservation of Nature (IUCN) red data list,
- The South African National Biodiversity Institute (SANBI) red data list,
- The South African Red Data lists for mammals, amphibians, reptiles and invertebrates,
- The National Environmental Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA), and
- The Convention on International Trade in Endangered Species of Flora and Fauna (CITES) list.
- Determined if any of the recorded species are alien invasive species or problem species in terms of NEMBA alien invasive species classification;
- Use data gathered from the field to determine the vegetation communities occurring within the study area and mapped these;
- Mapped important habitats for fauna within the study area;
- Determined the biodiversity value of the study area using information gathered on both flora and fauna and map this; and
- Assessed the identified impact of the proposed project and recommend mitigation measures to avoid or mitigate negative impacts.

13.3.3 AVIFAUNA IMPACT ASSESSMENT

As part of the draft EIA phase an avifauna impact assessment will be undertaken, and the terms of reference deliverables will include the following:

- A desktop and literature review of the area under investigation to collate as much information as possible prior to the fieldwork exercise. The main objectives of the desktop assessment was to collect and synthesise all relevant literature pertaining to the project as well as to compile an expected species list which will help to identify target Red Data or conservation important species and prioritise fieldwork efforts. These will include (although not limited to):
    - The IUCN Red list for bird species, Version 2019;
    - The national Red Data Book of Birds (Taylor et al., 2015)
    - The South African Bird Atlas Project 2 (SABAP2, 2020);
    - Coordinated Waterbird Counts (CWAC, http://cwac.adu.org.za, Taylor et al. 1999), where relevant;
    - Birds in Reserves Project (BIRP) data, where relevant;
    - The DEA national screening tool as relevant to avifauna;
    - Global flyways;
    - Important Bird and biodiversity areas (Birdlife, 2020); and
    - Communication with any relevant provincial authorities or stakeholders (e.g. EWT), if required.
- Sampling will consist of a series of standardised point counts as well as random diurnal and nocturnal incidental surveys.
- Standardized points counts (following Buckland et al. 1993) will be conducted to gather data on the species composition and relative abundance of species within the various habitats as well as the general flight behaviour of the local avifauna.
- The horizontal detection limit will be set a 50 m but may be adjusted based on the visibility afforded by the habitat on site. At each point the observer will document the date, start time and end time, habitat, numbers of each species, detection method (seen or heard), behaviour (perched or flying) and flight direction and general notes on habitat and nesting suitability for conservation important species.
- To supplement the species inventory with cryptic and illusive species that may not be detected within the rigid point count protocol, diurnal and nocturnal (if deemed logistically feasible, safe and permissible) incidental searches will be conducted. This will involve the opportunistic sampling of species between point count periods, scanning, spotlighting and road cruising. During diurnal surveys any significant raptor nests will be documented and the location and status (active or non-active) of the nests recorded.
- This will involve the opportunistic sampling of species between point count periods, scanning, spotlighting and road cruising. During diurnal surveys any significant raptor nests will be documented and the location and status (active or non-active) of the nests recorded.

- The compilation of avifaunal report and will consist of the following:
  - A description of the biophysical environment;
  - A description of the avifaunal community per habitat type on site including dominant species, relative abundances, species diversity indices, and avifaunal hotpots;
  - A conservation important species section including data on red-listed species, range restricted species and migratory species;
  - A detailed impact assessment that ties in with the habitat assessment; and
  - Mitigation and recommendations
- The deliverables include the following:
  - Avifauna Assessment report.

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

Figure 13: The different stages at which the Competent Authority will be consulted. below depicts the project progress to date and shows the various stages at which the DFFE will be consulted.

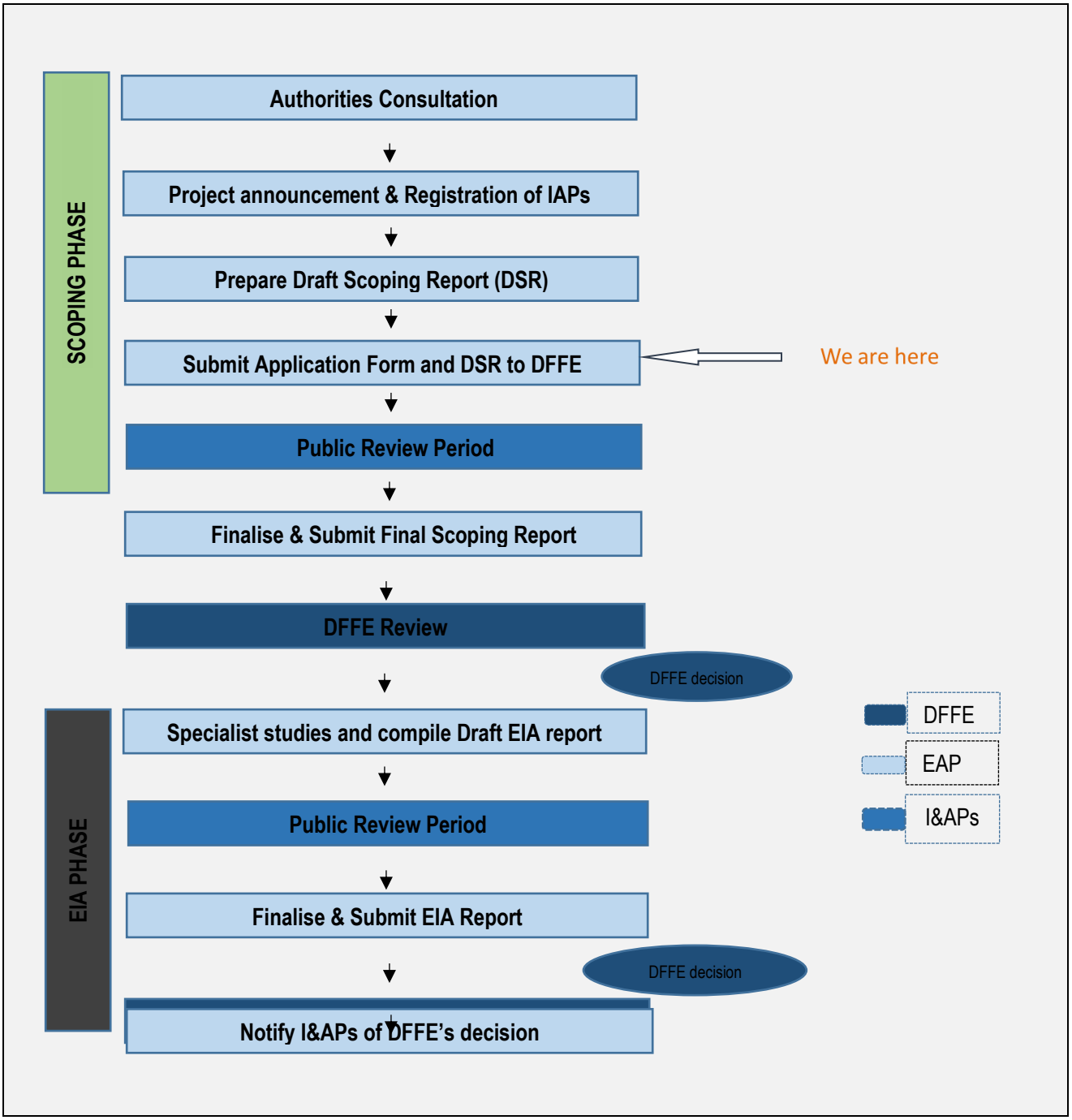

Figure 13: The different stages at which the Competent Authority will be consulted.

13.4.1 SCOPING PHASE

The draft Scoping Report will be submitted to DFFE and other stakeholders for review and comment. The EAP will consider the comments and addressed them accordingly in the Final Report to be submitted to the DFFE for decision making.

13.4.2 ENVIRONMENTAL IMPACT ASSESSMENT PHASE

The draft Environmental Impact Report (EIR) will be prepared and distributed for public review and comments. Further, copies of the draft EIR will be submitted to the DFFE and other relevant stakeholders for comment. The final EIR, which includes all comments received, specialist reports, and recommendations will be submitted to DFFE for decision making.

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

The database of stakeholders developed during this 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 that wish to be involved in the process. Registered I&APs will be informed of the availability of the draft EIR for review and will be given 30 days to provide their comment. The comments received during the review period will be incorporated into an updated Comments & Response Report.

Further public consultation will be arranged accordingly. The purpose of the public meetings would be to present the findings of the draft EIA Report as well as the alternatives considered to the relevant stakeholders, registered I&APs and the affected landowners. Nsovo will use this forum to provide more information about the proposed development, including the specialist input and provide the stakeholders with the opportunity to further comment on the proposed development. If the comments and issues raised highlight information that changes or influences the impact evaluation provided in the draft EIA Report. In that case the necessary amendments will be made, and the final EIA Report will be compiled and submitted to the DFFE.

13.5.1 PUBLIC NOTIFICATION

The commencement of the EIA process i.e., the Scoping Phase, will be advertised in the local newspapers in English. The proposed project will be announced publicly through the following forms of information sharing:

- Newspaper adverts providing a description 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 EIR for review and comment;
- A2 and A3 notices in English will be placed at conspicuous locations along the study area; and

- Emails will be submitted to key stakeholders.

Further advertising will take place during the EIA phase and will relate to the availability of the reports for public review and announcement of public meetings.

13.5.2 Interaction with DFFE and Provincial Departments

Interaction with DFFE and other provincial authorities within the jurisdiction of the proposed development 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 EIRs following a public review period to DFFE; and
- Notification of registered I&APs of the EA once it is issued.

The draft EIR will be reviewed by I&AP's, authorities, and key stakeholders. Furthermore, the report will also be published and made available on the Nsovo website for public review and comment. Table 19: I&AP's, Authorities, and Key Stakeholders to review draft Scoping Report below shows some of the key stakeholders to be consulted further:

Table 19: I&AP's, Authorities, and Key Stakeholders to review draft Scoping Report

- Department of Forestry, Fisheries, and the Environment.
- Department of Water and Sanitation.
- Free State Department of Rural, Environment and Agricultural Development.
- South African Heritage Resource Agency.
- Free State Heritage Resources Agency.
- Eskom SOC Limited – Transmission.
- South African National Roads Agency SOC Ltd.
- Letsemeng Local Municipality; and
- Xhariep District Municipality.

13.5.3 Developing a Strategy and Resolving Key Issues

A strategy for addressing and resolving critical 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 other engagements; and
- Allowing the public to understand the consequences of the proposed development on the area and their livelihoods.

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

The section below indicates the tasks that will be undertaken as part of the EIA process.

13.6.1 PREPARATION OF THE DRAFT EIR AND EMPR

The draft EIR and EMPr will be prepared as per Appendices 3 and 4 of the 2014 EIA Regulations and will include input from the specialist studies as indicated in Section 12.3 above. Contents of the draft EIR (Appendix 3) will include the following:

- Details and expertise of the EAP;
- Location of the activity;
- A plan which 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 full description of the process followed to reach the proposed development footprint within the approved site;
- A full 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;
- 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 which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment;
- Aspects which 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 which 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;

An indication of any deviation from the approved Scoping Report, including the Plan of Study including (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 which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that 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 the way the impact management outcomes contemplated above will be achieved, and must, where applicable, include actions as indicated on (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 time 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 the manner in which-
- (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and
- (ii) risks must be dealt with to avoid pollution or the degradation of the environment; and
- Any specific information that may be required by the competent authority.

The EMPR will include project related recommendations made by specialist, stakeholders, and I&Aps as well as the EAP

13.6.2 Public Participation Process

The public participation process will be undertaken as indicated on Section 9 above.

13.6.3 Preparation of the Final EIA Report and EMPr

The final EIR and EMPr will be prepared as per Appendices 3 and 4 of the 2014 EIA Regulations as amended, with thorough inclusion of input received during the PPP and stakeholder engagements. It will be submitted to DFFE via their electronic portal.

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. Detailed impact assessment as well as the mitigation measures will be elaborated further in the EMPr in the next phases. The proposed method of assessing environmental aspects is included on Table 17 above.

14 UNDERTAKING UNDER OATH OR AFFIRMATION BY THE EAP

In undertaking the draft Scoping phase of the project, the EAP has taken into consideration the requirements stipulated in the EIA 2014 Regulation as amended, as well as other relevant Acts and Regulations. The EAP hereby confirm that,

with the information available at the time of preparing the Scoping Report and the reports prepared by the specialists, 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 I&APs; and
- Any information provided by the EAP to the I&AP and any responses by the EAP to comments or inputs made by I&APs.

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

The draft Plan of Study for EIA, as detailed above, forms part of the draft Scoping Report that will be made available to I&APs and Organs of State for a 30 days review and comment period. Comments/issues raised will be addressed and included in the Issues and Response Report. No agreement between the EAP and I&APs is in place.

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

Comments on the draft Scoping Report will be addressed accordingly in the final Scoping Report.

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

This Report has been prepared in terms of NEMA, its respective 2014 EIA Regulations as amended as well as other various Acts. Information that is required by the NEMA will be included in the final Scoping Report and in the EIA phase.

15 DESCRIPTION OF ANY ASSUMPTIONS, UNCERTAINTIES AND KNOWLEDGE GAPS

15.1 ASSUMPTIONS AND LIMITATIONS

It is assumed that technical data supplied by the client was correct and valid at the time of compilation of the draft Scoping Report. Furthermore, it is assumed that the alternatives presented are technically feasible.

15.1.1 PUBLIC PARTICIPATION PROCESS

It is likely that some I&APs may not be reached. However, effort will be made as part of the process to advertise on local media as well as placing of notices at noticeable places within the affected communities.

15.1.2 LITERATURE REVIEWS IS VIEWED AS CORRECT

The compilation of the report was based on various literature reviews viewed as correct at the time. However, it is acknowledged that there might be some gaps in knowledge with regards to the literature reviewed although conceited efforts were made to attain as much information as possible.

16 FATAL FLAWS

No fatal flaws or highly significant impacts were identified during the Scoping phase that would necessitate substantial redesign or termination of the project. Potential negative impacts have been identified and where the impacts are unavoidable and detrimental to the environment, alternatives will be proposed together with mitigation measures.

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

- Impacts on terrestrial flora and fauna.
- Impacts on visual.
- Impacts on avifauna.
- Impacts on palaeontology; and
- Impacts on heritage and archaeology.

The subsequent EIA phase will provide a detailed assessment of the identified aspect, rate the significance, and propose mitigation measures as applicable.

17 CONCLUSION

The Scoping study was undertaken as dictated by the NEMA and the EIA Regulations of December 2014 as amended as well as associated Regulations. The Scoping phase entailed a detailed description of the baseline environment, which would form the backdrop of the impact assessment phase. Various alternatives for the solar plant and associated infrastructure, i.e., solar panels, and transmission powerline were identified and assessed.

The alternatives have been proposed and the primary objective was to assess the suitability of each alternative for the intended use and desired outcome, as well as to assess the overall project development on the environment. Information provided has been supported by previous specialist studies that were undertaken in the area and more project specific specialist input will be sought in the next phases. Further the report will be subjected to a 30-day comment and review period which allowed more input from stakeholders and I&APs. Their comments on the draft will be considered and comprehensively addressed through email correspondence, calls, meetings, and inclusion in the

report. The subsequent EIA phase will provide a detailed assessment of the identified issues, rate the significance accordingly and propose mitigation measures as applicable.

18 REFERENCES

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