

**DRAFT**

**PART 2: ENVIRONMENTAL AUTHORISATION AMENDMENT  
REPORT FOR THE PROPOSED 400MW PHOTOVOLTAIC  
(PV) SOLAR PARK AND ASSOCIATED INFRASTRUCTURE  
IN BRITS WITHIN THE JURISDICTION OF MADIBENG  
LOCAL MUNICIPALITY, NORTHWEST PROVINCE**

**MINING RIGHT NO.: [NW30/5/1/2/2/08MR](#)**

**SUBMISSION DATE**

OCTOBER 2023

**PREPARE FOR**



**PREPARED BY**



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Date of Submission: 31<sup>st</sup> October 2023



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




*“From the world we live to the world we seek ”*

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### PROJECT TITLE:

**DRAFT** PART 2: ENVIRONMENTAL AUTHORISATION AMENDMENT REPORT FOR THE PROPOSED 400 MW PHOTOVOLTAIC (PV) SOLAR PARK AND ASSOCIATED INFRASTRUCTURE IN BRITS WITHIN THE JURISDICTION OF MADIBENG LOCAL MUNICIPALITY, NORTHWEST PROVINCE.

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Draft Part 2 Environmental Authorisation Amendment Report

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Version 1

## EXECUTIVE SUMMARY

Nsovo Environmental Consulting (hereafter referred to as Nsovo) has been appointed by Bushveld Vametco (Pty) Ltd (hereafter referred to as Vametco) as the independent Environmental Assessment Practitioner (EAP) to undertake the Part 2 Environmental Authorisation Amendment for the proposed 400MW photovoltaic (PV) (fixed tilt or tracking) solar park, Battery Energy Storage System (BESS) of up to 200 MW / 800 MWh capacity and associated infrastructure. Vametco is located approximately 5 km west of Brits within the jurisdiction of the Madibeng Local Municipality in the North West Province.

Vametco has an approved Mining Right (NW30/5/1/2/2/08MR) and an Environmental Management Programme (EMPr) in terms of the Mineral Petroleum Development Act, Act 28 of 2002 (MPRDA). Furthermore, the Mine has been issued with a Phase 1 Environmental Authorisation Phase 1 of a 3.5 MW solar photovoltaic (PV) plant and a 1 MW / 4 MWh Vanadium Redox Flow Battery (VRFB) in 2021. Hence, the proposed Phase 2 of the Vametco Hybrid Mini Grid Project is also within the Mining Right Area (MRA).

The electricity generated will be utilised at the Mine, and the surplus will be wheeled to external third-party off-takers through the Eskom network. In addition to its primary goal of providing sustainable and reliable energy to the Bushveld Vametco Alloys mine, the proposed project will provide backup energy during periods of power outages.

The project entails the development of the following

- Solar PV Array: Up to 400 MWp capacity.
- BESS: Up to 200 MW / 800 MWh capacity and
- Associated infrastructure.

As such the activities trigger EIA-listed activities in terms of the EIA Regulation of 2014 as amended and thus an EA amendment application in terms of Regulation 31 of the EIA Regulations, as amended.

*“An environmental authorisation may be amended by following the process prescribed in this Part if the amendment will result in a change to the scope of a valid environmental authorisation where such change will result in an increased level or change in the nature of impact where such level or change in nature of impact was not—*

- assessed and included in the initial application for environmental authorisation; or*
- taken into consideration in the initial environmental authorisation;*

The EA amendment process will include a comprehensive public participation process that aligns with the requirements of the legislation. Furthermore, specialist input has been sought to provide input and assist with rating the impacts and proposing sound mitigation measures.

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**LIST OF ACRONYMS AND ABBREVIATIONS**

<b>CBA</b>	Critical Biodiversity Area
<b>DEA</b>	Department of Environmental Affairs
<b>DMRE</b>	Department of Mineral Resources
<b>DWS</b>	Department of Water and Sanitation
<b>MPRDA</b>	Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
<b>EA</b>	Environmental Authorisation
<b>EAP</b>	Environmental Assessment Practitioner
<b>EIA</b>	Environmental Impact Assessment
<b>EMPr</b>	Environmental Management Programme
<b>GNR</b>	Government Notice Regulations
<b>I&amp;APs</b>	Interested and Affected Parties
<b>MRA</b>	Mining Right Application
<b>MW</b>	Megawatt
<b>NEMA</b>	National Environmental Management Act, 1998 (Act 107 of 1998)
<b>NEMWA</b>	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM: WA)
<b>NFEPA</b>	National Fresh Water Ecosystem Priority Areas
<b>NWA</b>	National Water Act, 1998 (Act No. 36 of 1998)
<b>PV</b>	Photovoltaic
<b>SAHRA</b>	South African Heritage Resources Agency
<b>SANBI</b>	South African National Biodiversity Institute
<b>VRFB</b>	Vanadium Redox Flow Battery
<b>WML</b>	Waste Management Licence
<b>WULA</b>	Water Use Licence Application

## 1. INTRODUCTION

Bushveld Vametco (Vametco) appointed Nsovo Environmental Consulting (hereafter referred to as Nsovo) to undertake the Part 2 Environmental Authorisation Amendment for the proposed 400 MW Solar PV plant, Battery Energy Storage System (BESS of up to 200 MW / 800 MWh. The project proposed within the Bushveld Vametco (MR – NW30/5/1/2/2/08M) Mining Right Area (MRA), approximately 5 km west of Brits within the jurisdiction of the Madibeng Local Municipality in the Northwest Province.

Based on the project scope of work provided, the proposed development must follow Part 2 Environmental Authorisation Amendment process in terms of Regulation 31 of the EIA Regulations, as amended and promulgated under the National Environmental Management Act, 1998 (Act 107 of 1998). In addition, the proposed development triggers water use activities in terms of Section 21 of the National Water Act, 1998 (Act No. 36 of 1998) (NWA). Subsequently, this application aligns with the requirements for an EA amendment and WUL application to be lodged with the Competent Authorities before any listed activity commence.

The project proponent is Bushveld Vametco (Pty) Ltd, whereas the Competent Authority is the North West Department of Mineral Resources and Energy (DMRE). The Mine has also lodged an application for WUL with the Department of Water and Sanitation (DWS).

In fulfilment of the regulatory requirements, Nsovo undertook the following activities as part of the EA amendment process as detailed in the scope of work:

- Site visit to the proposed site;
- Assessing the viability of the project from an environmental perspective using the screening;
- Commissioning specialist studies to provide input on the proposed project;
- Advising on the associated risks and fatal flaws; and
- Advice on the environmental requirements throughout the project cycle.
- Preparation of the Draft Report in line with Chapter 5, Part 2, Sections 30 to 33 of the EIA Regulations as amended.

This draft EA amendment report will be made available to the Interested and Affected Parties (I&APs) and the Organs of State for a thirty (30) days review and comment period. All comments received will be included in the Comments and Response Report (CRR) and incorporated into the final report for submission to the DMRE for decision-making.

## 2. DETAILS OF THE APPLICANT AND EAP

### 2.1. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

Nsovo has been appointed by Vametco as the independent Environmental Assessment Practitioner (EAP) for the proposed project and meets the general requirements stipulated in regulations 13 (3) of the NEMA 2014 EIA Regulations as amended. Nsovo is therefore:

- 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 shows the details of the EAP involved, including the relevant experience. A detailed Curriculum Vitae (CV) and Qualifications are attached as **Appendix C**.

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

Details of EAP	
<b>Name of Company</b>	Nsovo Environmental Consulting
<b>Person Responsible</b>	Rejoice Aphone
<b>Professional Registration</b>	EAP (EAPASA)
<b>Postal Address</b>	40 Lyncon Road, Carlswald, Midrand, 1684
<b>Telephone Number</b>	087 803 9294
<b>Fax Number</b>	086 602 8821
<b>Email</b>	<a href="mailto:rejoice@nsovo.co.za">rejoice@nsovo.co.za</a>
<b>Qualifications &amp; Experience</b>	B.A. Environmental Management <b>10 years of experience</b>
<b>Project Related Expertise</b>	In terms of project-related expertise, the Environmental Assessment Practitioner has completed the following projects: <ul style="list-style-type: none"> <li>• EA Amendment for the proposed DCM West Dense Medium Separation Plant.</li> <li>• EMPr, WULA, and EA amendment for the proposed Juno Gromis 400kV power line in the Western Cape Province.</li> </ul>

	<ul style="list-style-type: none"> <li>• EA amendment for the proposed 275 kV Foskor Merensky power line in Limpopo province.</li> <li>• EIA for the proposed Exxaro Dorstfontein West Expansion project in Mpumalanga Province.</li> <li>• EIA for the proposed Bushveld Vametco Expansion Project in North-West Province.</li> <li>• EIA for the proposed Maphutha-Witkop powerline in Limpopo Province.</li> <li>• EIA for the proposed Tubatse strengthening phase 1 – Senakangwedi B integration within the jurisdiction of Greater Tubatse Local Municipality in Limpopo Province.</li> <li>• Basic Assessment for the proposed Transnet Thabazimbi railway loop expansions and associated activities in Limpopo Province.</li> </ul>
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## 2.2. DETAILS OF THE APPLICANT

The applicant is Bushveld Vametco (Pty) Ltd; the company details are in Table 2.

**Table 2: Details of the applicant and the responsible person for the proposed project**

Applicant Details	
<b>Name of Company</b>	Bushveld Vametco Alloys (Pty) Ltd.
<b>Name of Mine</b>	Bushveld Vametco Alloys (Pty) Ltd
<b>Physical Address</b>	Main Mothutlung Road Extension Farm Krokodilkraal, District ODI North West Province 0250
<b>Postal Address</b>	P.O. Box 595 Brits 0250
<b>Contact Details</b>	012 318 3323
Details of Responsible Persons at the Mine	
<b>Role</b>	Environmental Manager
<b>Contact Person</b>	Mr. Rudzani Mudau

Telephone Number	012 318 3323
Mobile Number	072 902 8403
Email	<a href="mailto:rmudau@bushveldvametco.co.za">rmudau@bushveldvametco.co.za</a>

### 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 describes the location of the proposed project. The main aim is to provide detail on the proposed development area's environmental aspects and a baseline description of the surroundings.

#### 3.1. LOCALITY OF THE PROPOSED PROJECT

The proposed project is located on Portion 1 of the Farm Krokodikraal 426 JQ and the Remaining Extent of the Farm Uitvalgrond 431JQ. It is approximately 5 km west of Ga-Rankuwa and 14 km northeast of Brits town, within the Jurisdiction of the Madibeng Local Municipality in the North West Province. The MRA traverses two farm portions, while the farm affected by the proposed development is Portion 1 of the farm Uitvalgrond 431 JQ. **Figure 1** shows the location and the layout of the site, respectively.

The approximate center for the proposed project area is 25°33'31.62"S, 27°54'2.19" E. Figure 1 below depicts the proposed study area at a scale of 1:50 000. Refer to **Appendix A** for the A3 locality and sensitivity maps



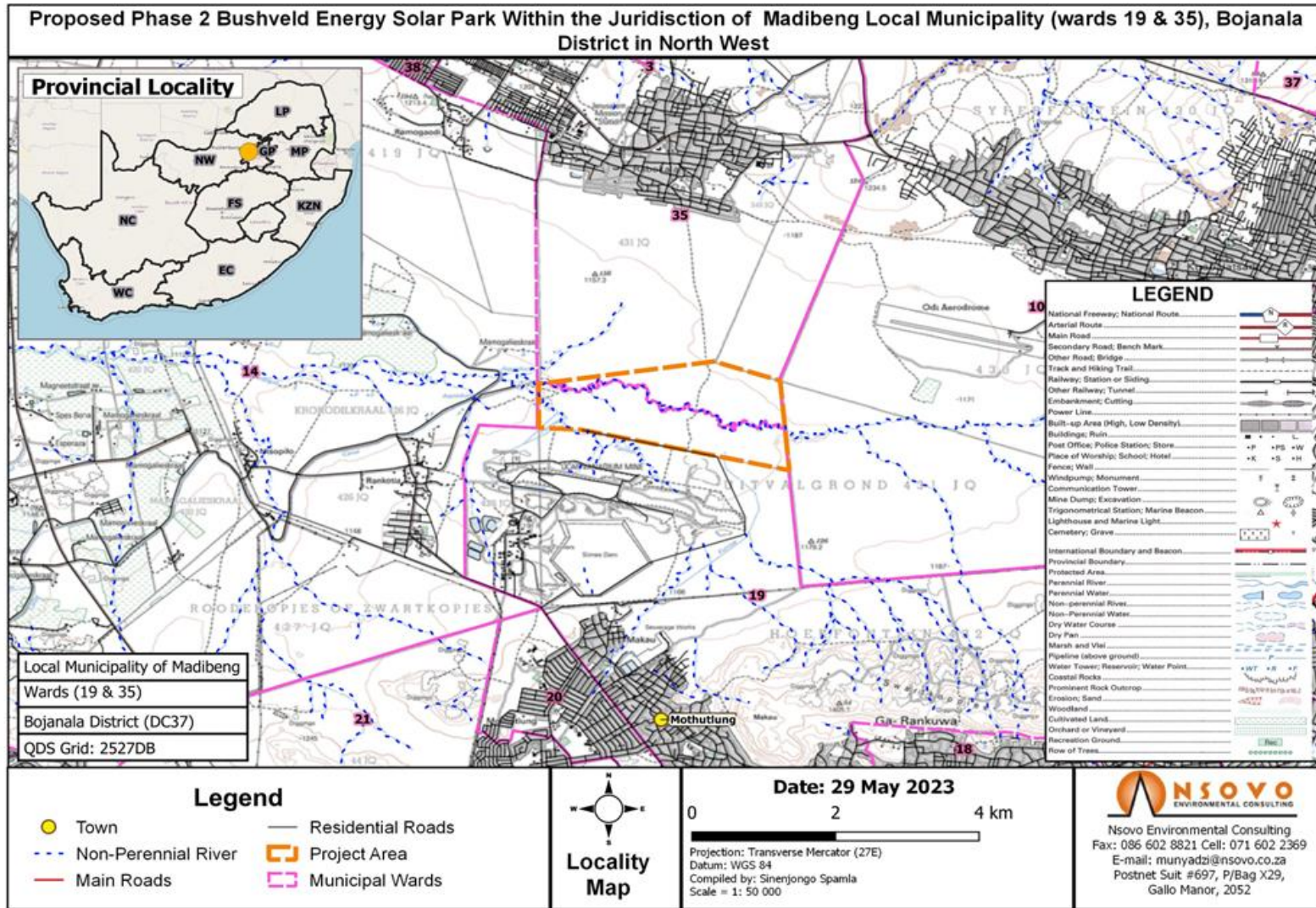


Figure 1: Project Locality Map at a scale of 1:50 000.

### 3.2. DESCRIPTION OF THE AFFECTED PROPERTY

The development is proposed on the properties detailed in Table 3.

**Table 3: Farm portions where the proposed project**

Farm Name	SG Codes	Portion Number	Hectares	Division
Krokodikraal 426	T0JQ0000000042600001	Portion 1	272.1358	JQ
Uitvalgrond 431	T0JQ0000000043100000	RE	1235.6069	JQ

### 3.3. PROVINCE AND PROVINCIAL BOUNDARIES, MUNICIPALITY, AND WARDS

Province and Provincial boundaries	The proposed development is in the NorthWest Province, bordered by the Northern Cape, Free State, Gauteng, and Limpopo Provinces.
Municipality and Wards	The area earmarked for the project is within wards 19 and 35 of the Madibeng Local Municipality in the jurisdiction of the Bojanala Platinum District Municipality.

### 3.4. SURROUNDING LAND USES

Commercial and Industrial Uses	The main economic sectors within Madibeng Municipality are agriculture, mining, manufacturing, and tourism, which contribute considerably to the total Gross Geographic Product (GGP). These sectors are spread across the Municipality, including Brits Town, a more formal urban area characterised by vibrant economic nodes. Furthermore, these sectors potentially encourage and accommodate economic growth and development. Manufacturing is the most dominant sector within the Municipality, with motor industry-related activities being predominant (Madibeng Local Municipality IDP, 2020).
Mining activities	Several mining activities within the Municipality play a considerable role in the socio-economic development of the surrounding communities, thus contributing to income generation, improvement of the local economy, and employment creation for the local community. The mining sector within the Municipality comprises but is not limited to Platinum Group Metals, Chromium, and intensive

	granite and sand mining (IDP, 2018). There are also small-scale mining activities scattered throughout the Municipality.
Residential Communities	<p>Urban settlements:</p> <ul style="list-style-type: none"> <li>• Ga-Rankuwa ~ 12 km to the east;</li> <li>• Mothlutung ~2.5 km to the south-east</li> </ul> <p>Low-density settlements:</p> <ul style="list-style-type: none"> <li>• Rankotea ~800 m to the west.</li> </ul>

### 3.5. SURFACE INFRASTRUCTURE

This section describes the surface infrastructures within the proposed study area, including the road network, existing substations, and powerlines.

<b>Road Network</b>	The primary access to the Mine is through R511 and R566, that continue to Letlhabile Road. From Brits, the access roads are Tambotie Road Magaliesburg Road, and Mooketsi Road, which provides access to the proposed study areas within the Mine.
<b>Powerlines and Associated Infrastructure</b>	There are existing transmission (22 kV) and distribution (11kV/22 kV) power lines and substations within the proposed study area. Other infrastructure includes roads, discard dumps, beneficiation plants, and pollution control dams. Further, the site has offices and associated facilities.

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

Figure 4 below presents the proposed activities at a scale of 1:5000. An A3 map is attached as **Appendix A** of this report.

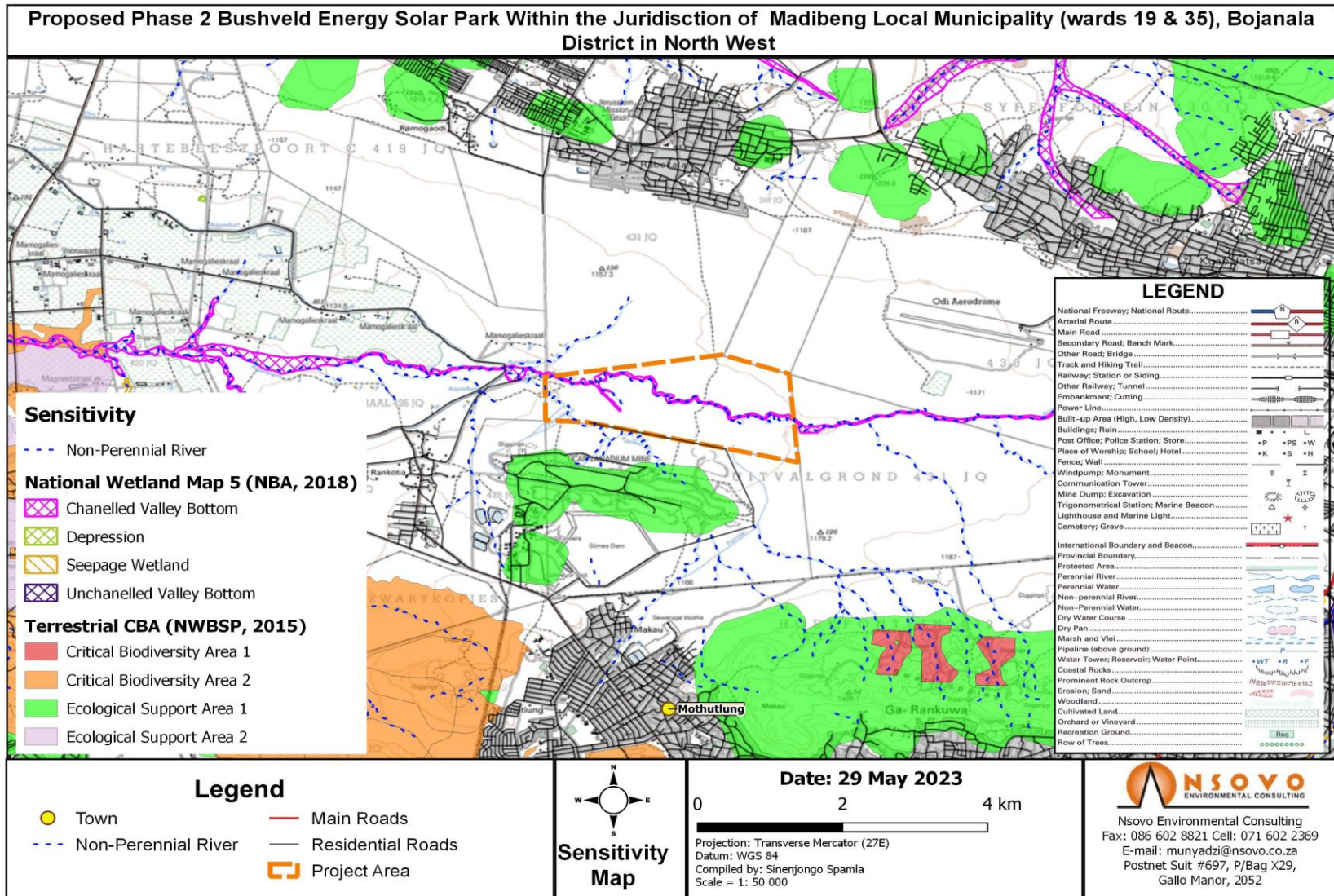


Figure 2: Site Sensitivity Map in relation to the proposed activities

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

This section describes the proposed activities, including the proposed project's scope. It also describes the associated structures and infrastructure related to the proposed development.

### 5.1. THE PROPOSED ACTIVITIES

The proposed project is Phase 2 of Phase 1, a 3.5 MW solar photovoltaic (PV) plant and a 1 MW / 4 MWh Vanadium Redox Flow Battery (VRFB), authorised in 2021 and currently under construction. The development of the Phase 2 Solar Park entails the following:

- A 400MW Solar PV Plant
- An estimated 200 MW / 800 MWh BESS on approximately xx hectares
- Development/upgrading of access roads

The transmission of the electricity generated will entail the following activities:

- An 132kV onsite substation; and
- An approximately 3 km 132kV powerline to connect to the Eskom substation

### 5.2. ALL LISTED AND SPECIFIED ACTIVITIES TRIGGERED AND BEING APPLIED FOR

The proposed development requires Part 2 EA amendment application in terms of Regulation 31 of the EIA Regulations, as amended.

*“An environmental authorisation may be amended by following the process prescribed in this Part if the amendment will result in a change to the scope of a valid environmental authorisation where such change will result in an increased level or change in impact where such level or change in nature of impact was not—*

- a) assessed and included in the initial application for environmental authorisation; or*
- b) taken into consideration in the initial environmental authorisation;*

*and the change does not, on its own, constitute a listed or specified activity.”*

In addition, the Water Use Licence Application will be applied as the project triggers Section 21 (c) and (i) of the NWA.

“Section 21 (c) -” Impeding or diverting the flow of water in a watercourse.”

“Section 21 (i) Altering the bed, banks, course or characteristics of a watercourse.”

The following listed activities are triggered by the proposed development in terms of EIA Regulations as amended:

Table 4: Listed Activities triggering EIA Regulations applicable to the proposed project.

Regulation	Listed activities	Activity/Project Description
<b>Applicable activities listed under the EIA Regulations, Listing Notice 1 (GNR 983) of 2014 as amended</b>		
<b>GN R. 983 Activity 11</b>	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 project entails the construction of a 132kV powerline from the solar PV to the Eskom substation.
<b>Applicable activities listed under the EIA Regulations of 2014 as amended – Listing Notice 2</b>		
<b>GNR 984, Activity 1</b>	<i>“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.”</i>	The proposed project will entail the development of a 400 MW PV Solar plant outside an urban area.
<b>GNR 984, Activity 15</b>	<i>“The clearance of an area of 20 hectares or more of indigenous vegetation”</i>	The proposed PV Solar plant will have a footprint of approximately 1000 hectares. As such, more than 20 hectares of indigenous vegetation would be removed for construction.
<b>Applicable activities listed under the EIA Regulations of 2014 as amended – Listing Notice 3</b>		

Regulation	Listed activities	Activity/Project Description
<b>GN R. 985 Item 12</b>	<p>The clearance of an area of 300 square meters or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p><b>(h) In North West</b></p> <p>(vi) Areas within a watercourse or wetland or within 100 meters from the edge of a watercourse or wetland.</p>	<p>The proposed solar PV and associated infrastructures will be developed within the watercourse.</p>

## 6. A DESCRIPTION OF THE POLICY AND LEGISLATIVE CONTEXT WITHIN THE DEVELOPMENT IS TLOCATED, AND AN EXPLANATION OF HOW THE PROPOSED DEVELOPMENT COMPLIES WITH AND RESPONDS TO THE LEGISLATION AND POLICY CONTEXT

### 6.1. LIST OF APPLICABLE ACTS AND REGULATIONS

This amendment application is being submitted in terms of Regulation 31 of the EIA Regulations of 2014, as amended, under Appendix 2 Section 1(e), which requires a description of applicable legislation in the amendment report. This section lists and describes the acts and legislation relevant to the proposed project and associated infrastructure.

The amendment process equally considered municipal policies, plans, by-laws, Vametco's internal policies, and world best practices. Table 5 below describes legislation that apply to the project; it is not an exhaustive analysis that provides a guideline to the relevant aspects of each legislation.

**Table 5: 22 Legislation pertaining to the proposed project.**

Aspect	Relevant Legislation	Brief Description
Environment	<ul style="list-style-type: none"> <li>• National Environmental Management: Act 1998 (Act No. 107 of 1998) as amended.</li> <li>• Environmental Impact Assessment Regulations, December 2014, as amended</li> </ul>	<p>As reflected in the National Environmental Management Act, 1998 (Act No. 107 of 1998), the overarching principles of sound environmental responsibility apply to all projects triggering listed activities. Construction and operation of activities must be conducted in line with the accepted principles of sustainable development, integrating social, economic, and environmental factors.</p> <p>The requisite environmental approvals must be applied in terms of NEMA and the EIA Regulations as amended. As such, the proposed project will follow the amendment process in terms of Regulation 31 of the EIA Regulations, as amended.</p>
Mining Rights	The Mine Health and Safety Act (Act No. 29 of 1996)	<p>The Mine Health and Safety Act, 1996 (Act No. 29 of 1996) (MHSA) aims to protect the health and safety of all employees and other personnel at the mines of South Africa. The main objectives of the act are:</p> <ul style="list-style-type: none"> <li>• Protection of the health and safety of all persons at the mines;</li> <li>• Requires employers and employees to identify hazards and eliminate, control, and minimise the risks relating to health and safety at the mines;</li> <li>• Gives effect to the public international law obligations of the Republic that concern health and safety at all mines;</li> <li>• Provides for employee participation in matters of health and safety through health and safety representatives and the health and safety committees at the mines;</li> <li>• Provides for effective monitoring of health and safety conditions at the mines;</li> <li>• Provides for enforcement of health and safety measures at the mines;</li> <li>• Provides for investigations and inquiries to improve health and safety at mines and</li> <li>• To promote:             <ul style="list-style-type: none"> <li>○ Culture of health and safety in the mining industry;</li> <li>○ Training in health and safety in the mining industry; and</li> <li>○ Co-operation and consultation on health and safety between the State, employers, employees, and their representatives.</li> </ul> </li> </ul> <p>The EA amendment process will culminate in preparing an EMP, which considers the regulatory requirements.</p>



Aspect	Relevant Legislation	Brief Description
Biodiversity	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	<p>The National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) provides the management and conservation of South Africa's biodiversity within the framework of the NEMA and the protection of species and ecosystems that call for national protection. The National Spatial Biodiversity Assessment was developed as part of its implementation strategy.</p> <p>Given the area's sensitivity for the proposed development, biodiversity considerations have been made, and a specialist studies have been commissioned to assess the impacts and offer mitigation measures.</p>
Protected Areas	National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)	<p>The Act caters to protecting, conserving, and managing ecologically viable areas representative of South Africa's biological diversity and natural landscapes.</p> <p>According to Biodiversity Specialist (2023), The site falls within the regional vegetation type Marikana Thornveld, which is listed as an Endangered ecosystem (EN) by the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA).</p> <p>According to the North-West Biodiversity Sector Plan NWBSP (2015), the Vametco project area is not classified from a terrestrial perspective but is partially an ESA from an aquatic perspective.</p>
Heritage Resources	National Heritage Resources Act, 1999 (Act No. 25 of 1999)	<p>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 that exceed 0.5 ha. The Act provides for the potential destruction of existing sites, pending the archaeologist's recommendations through permitting procedures.</p> <p>No noticeable sites/artifacts of heritage significance were noted during the site assessment.</p>
Water Resources Management	National Water Act, 1998 (Act 36 of 1998)	<p>This Act provides for fundamental law reform relating to water resources and use. The preamble to the Act recognises that water resource management aims 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.</p>

Aspect	Relevant Legislation	Brief Description
		<p>Three watercourse types were recorded on the study site. The watercourses are further classified into the following according to the classification guidelines (Ollis et al., 2013):</p> <ul style="list-style-type: none"> <li>• Channelled Valley Bottom Wetland</li> <li>• Non-Perennial Episodic Riparian Area</li> <li>• Seepage Wetland.</li> </ul> <p>As such, a Water Use Licence Application must be obtained from the DWS before the commencement of the Phase 2 activities.</p>
Agricultural Resources	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	<p>The Act aims to provide control over the use of natural agricultural resources to promote the conservation of the soil, water resources, and vegetation and combat weeds and invader plants. Section 6 of the Act makes provision for control measures to be applied to achieve the objectives of the Act.</p> <p>The proposed project will not affect agricultural activities as the project is within an MRA.</p>
Human	The Constitution of South Africa, 1996 (Act No. 108 of 1996)	<p>The Constitution provides for an environmental right (section 24). The State is obliged “to respect, protect, promote and fulfill the social, economic and environmental rights of everyone...”</p> <p>The environmental right states that:</p> <p>“Everyone has the right -</p> <p>a) To an environment that is not harmful to their health or well-being; and</p> <p>b) To have the environment protected for the benefit of present and future generations through reasonable legislative and other measures that -</p> <ul style="list-style-type: none"> <li>• Prevent pollution and ecological degradation;</li> <li>• Promote conservation; and</li> <li>• Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”</li> </ul> <p>The undertaking of the EA Amendment process is in line with the state’s obligations as outlined in the constitution in its effort to ensure sustainability.</p>

## 6.2. LIST OF APPLICABLE POLICIES AND GUIDELINES

- Local Municipality of Madibeng: 5-Year Integrated Development Plan (2011-2016);
- Madibeng Local Municipality: Spatial Development Framework 2015;
- Bojanala Platinum District Municipality: Integrated Development Plan 2020/2021;
- Bojanala Platinum District Municipality: Environmental Management Framework 2018;
- Bojanala Platinum District Municipality: Spatial Development Framework 2012;
- White Paper on Renewable Energy Policy of 2003; and
- Department of Environmental Affairs (2015): EIA Guideline for Renewable Energy Projects

## **7. 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**

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

### **7.1. 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 an 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).

### **7.2. 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 electricity generation source that presents 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 epicenter of climate change-related issues. Various spheres of government, including environmentalists, 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 people 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 national and provincial energy policy

advocates for the transition to renewable energy to encourage a balanced energy mix and maximise access to energy. Like many other mining operations, the Mine is an energy-intensive industry that relies heavily on electricity to power its operations. By implementing the Vametco Mini-Hybrid power plant, currently under construction, the mine will be able to generate a portion of its energy needs through solar power, a clean and renewable energy source. Additionally, the proposed BESS will provide the mine with energy storage capabilities, enabling it to use stored energy during peak periods when energy prices are higher. This approach will reduce the mine's energy costs while providing a sustainable and reliable energy source. As an added advantage, the renewable energy project will aid the reduction of Vametco's greenhouse gas emissions and contribute to climate change reduction and mitigation strategies.

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<sub>2</sub> 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 if existing solar panels are well maintained. Among other renewable energy sources in the country, solar may hold the most potential because of its location, placing it at an advantage in receiving large amounts of solar energy.

A Mini-Hybrid power plant is a ground-breaking approach representing a new energy investment model in South Africa, where businesses are increasingly looking for ways to reduce their energy costs and become more sustainable. The project has also won the Power Project of the Year award at the South African National Energy Association (SANEA) awards in 2022, highlighting the project's innovation and impact in the energy sector.

### **7.3. MOTIVATION FOR THE PROPOSED DEVELOPMENT**

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 energy bill;
- Improvement in grid security; and
- Creation of jobs.

### **7.3.1. Impact on the environment**

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

### **7.3.2. Reduction of energy bill**

Using solar to generate electricity means using less from the utility supplier (i.e., Eskom), which translates to savings on the mine's energy bills. The mine would also sell the unused electricity generated back to the grid.

### **7.3.3. 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 a high penetration of solar energy has thousands of energy production that are widely spread out. This improves the grid's security in case of overload or natural or human-caused disasters.

### **7.3.4. Creation of jobs**

The establishment of solar parks creates job opportunities at different project phases, i.e., from planning to the decommissioning phases. Jobs created would be at various scale 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.

## **7.4. 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 Solar Park would improve energy security in the region. Consequently, balancing the demand and supply for energy across the North West Province. Moreover, developing 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 an important component of the EIA process. The identified alternatives are assessed in terms of environmental acceptability and technical and economic feasibility during this process. The proposed project continues as a phased project within the Bushveld MRA; as such, no site alternative was considered outside the MRA. However, a thorough assessment of the preferred layout alternative within the preferred site was conducted. The identified alternatives are assessed in terms of environmental acceptability and technical and economic feasibility via the EIA process, wherein the preferred alternative is highlighted and presented to the Authorities.

The following methods were used to reach the proposed preferred location within the site earmarked for the development. Furthermore, it was used to ensure that the alignment with the least impact is recommended.

### **Screening Tool**

The DFFE Screening Tool was used to compile the Screening Report, which indicated the environmental sensitivities within the area through several datasets. The screening tool also identified the Specialist assessments required. The site verification indicated medium to low sensitivities for most aspects.

### **ArcGIS**

GIS was used to map the proposed project and identify ecologically sensitive features. According to the C-Plan, the site is located partially in an Ecological Support Area (ESA), as well as a Critical Biodiversity Area (CBA), categorized as "Important."

### **Technical / Desktop Studies**

Desktop assessment of the baseline environment, including a literature review to assess the site characteristics. Understanding the baseline environment forms the backdrop against which impacts are rated and evaluated.

### **Site Inspection**

The EAP and specialists conducted several site visits and identified potential sensitive environments. The identified sensitivities were red flagged to be investigated further and excluded from development as deemed appropriate. This allowed for realignment and maximum avoidance of sensitive areas.

### **Specialist Study Findings**

The sensitivities identified during the screening phase guided the need for specialist input. As such, biodiversity and wetland assessment specialists were commissioned to provide the required input into the EA amendment Report. The studies were prepared as per the protocols provided in the regulations, and the findings are included in this report and associated EMPr.

## Stakeholder Input

The Draft reports will be shared with stakeholders and I&APs for review and comment. The comments will be considered in rating and identifying the impacts.

Consideration of specialist and technical input will culminate in selecting the preferred alternative. After the Department approves, the EAP recommends that the exact footprint within the approved site alternative be determined. Such will be achieved by undertaking a walk down with the specialist team, mainly aquatic and terrestrial biodiversity, heritage, and avifauna specialists. The proposed site is within the MRA with minimal sensitive receptors, as a mining site is usually heavily degraded from mining activities and associated infrastructure developments. The site has been assessed to determine sensitivities and create the necessary buffer to ensure environmental protection. Furthermore, mitigation approaches have been duly proposed.

## 9. 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, 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 and public input.

This section describes the alternatives considered and include:

- Site Alternatives
- Layout Alternatives within the preferred site
- Technical alternative - the technology to be used in the activity; and
- The no-go alternative.

### 9.1. SITE ALTERNATIVE CONSIDERED

As indicated above the proposed site has been earmarked for the development of the proposed and it is the most suitability for the proposed Sola Park, as such no location alternative was considered. The rationale behind the one site alternative is centered on it been within the MRA and furthermore phased project. Other factors such as the existing Eskom servitude for the transmission line, access road, and current land use have been considered and seem favorable to the proposed location. An agreement to connect the proposed to the grid will be obtained from Eskom before the project's construction phase. Figure 3 below indicates the preferred option and attached in **Appendix A**.



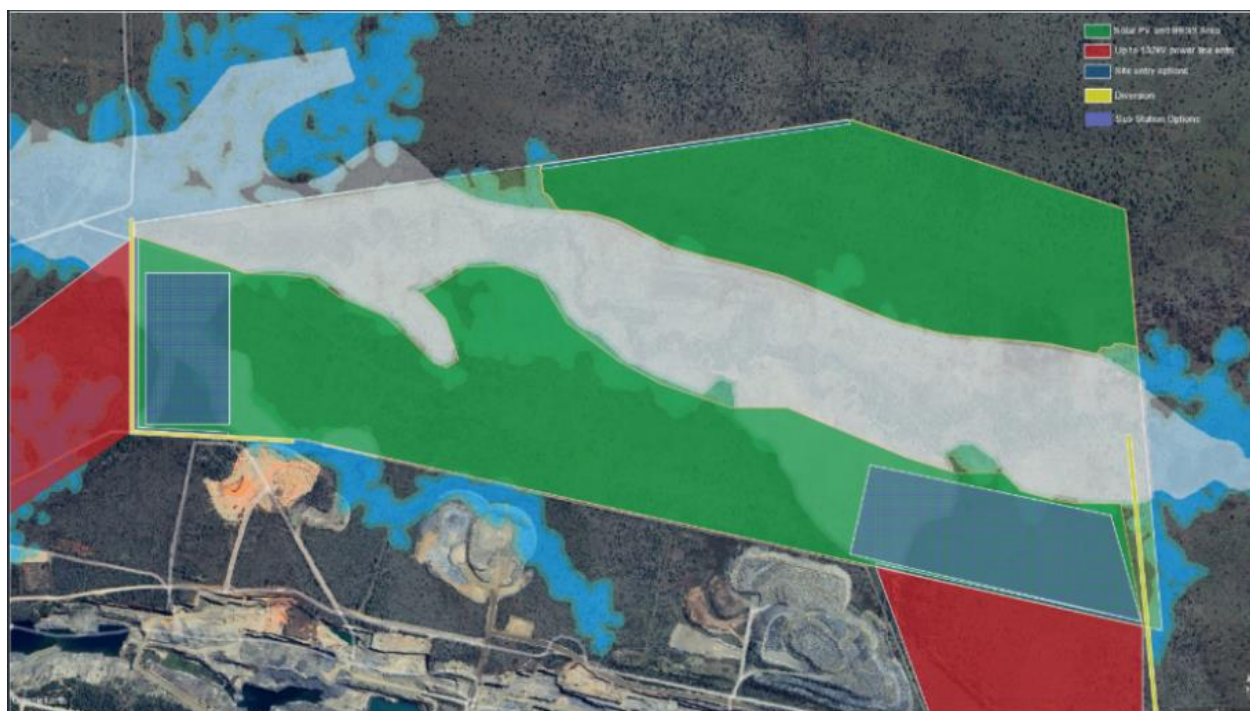


Figure 3: Preferred Option

**Land Ownership** – The proposed land/site is owned by the proponent which 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.

## 9.2. TECHNICAL ALTERNATIVES CONSIDERED

Two technical alternatives have been identified for the proposed project, i.e., the PV Solar Power versus Concentrated Solar Power (CSP). 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.

### 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 decreased power losses.

### 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.

The PV Solar Power is more preferred in many projects as alternative solar power technology. Table below show the comparative analysis of the PV and CSP.

**Table 6: Comparative analysis of the alternatives considered.**


Technical alternatives	
Photovoltaic Solar Power	Concentrated Solar Power
<ul style="list-style-type: none"> <li>• PV Solar can be installed anywhere.</li> <li>• Technical simplicity of the PV Solar makes it easy to deploy and requires much less water.</li> <li>• PV Solar only requires revolving around solar cells to generate.</li> <li>• PV system is not dispatchable as a feasible commercial energy storage does not yet exist.</li> <li>• High reliability under harsh conditions, the photovoltaic arrays ensure continuous, uninterrupted operation of critical supplies.</li> <li>• The manufacturing process for PV panels creates less pollution.</li> <li>• Involves shorter transmission distances, thus decreased power losses.</li> <li>• Low maintenance costs, the photovoltaic system requires regular inspections and occasional repairs, which are extremely low cost compared to conventional fuel systems.</li> </ul>	<ul style="list-style-type: none"> <li>• Requires high level of irradiance (i.e. those of sunbelt countries).</li> <li>• Requires high access to water and a large -scale deployments (i.e. more than 20MW).</li> <li>• CSP requires solar cells as well as a combination of many critical mechanical and chemical components.</li> <li>• CSP system is dispatchable, it can store thermal energy up to 16 hours.</li> <li>• Consists of lower energy densities.</li> <li>• The manufacturing processes often creates pollution.</li> <li>• Involves longer transmission distances, thus increased power losses.</li> </ul>

Considering that power outage is a challenge in South Africa, a solar energy system enabling higher energy densities is preferred. Further, from an environmental point of view, it is highly recommended that renewable energy developments ensure reduced pollution for sustainability purposes. It has been determined that photovoltaic technology is favourable 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.

## MOUNTING OPTION

Other technical alternatives include mounting, wherein two alternatives for mounting solar panels were considered and are detailed below:

**Table 7: Mounting Structures**

Description	Image
<p><b>Fixed Tilt (Fixed-Angle Mounting):</b> Fixed-tilt solar panels are mounted at a fixed angle to the ground or rooftop in fixed tilt systems. This angle is usually set to maximise energy production based on the average sun position throughout the year. While cost-effective and low-maintenance, fixed-tilt systems do not adjust to follow the sun's path, which means they are most efficient during specific times of the day.</p>	
<p><b>Tracking Systems:</b> Tracking systems, also known as solar trackers, are designed to move solar panels to follow the sun as it moves across the sky. This dynamic adjustment optimizes the angle at which sunlight strikes the panels, resulting in higher energy production throughout the day. Although tracking systems are more expensive and require regular maintenance, they can significantly increase the overall energy output of a solar PV system.</p>	

The selection between the fixed tilt and tracking systems depends on the economics of the modelled scenario, which would yield the highest return for the project. It should be noted that the specific solar PV design has not been decided and will be decided during the detailed design phase.

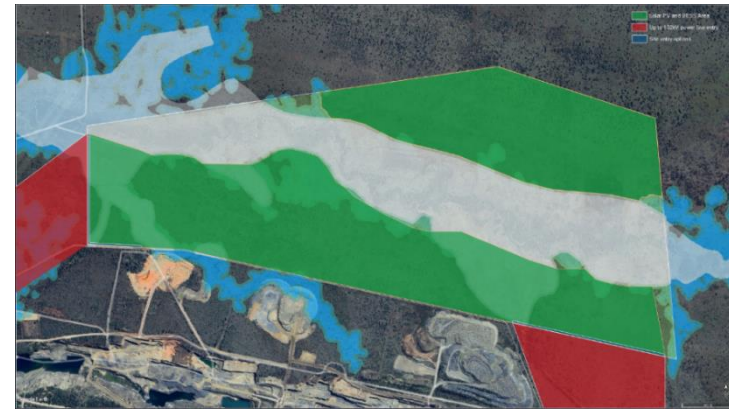
### 9.3. Site Layout Considered

Three site layout options were considered. The selection of the most suitable site is based on specialist input and consideration of the legislated wetland buffers. Several scenarios were assessed, and this section provides detailed information on site layout options considered. The proposed site layout options are *in Table 7* below and attached as Appendix A.

**Table 8: Comparative analysis**

Comparative analysis	
<b>Option 1</b>	
<p>The Option excludes the identified wetland buffers; however, it will necessitate the establishment of multiple substations, connections between sites, and the construction of additional access roads and bridges. No wetlands loss.</p>	<p>The map shows a site layout overlaid on an aerial photograph. The site layout includes a large central area in white, a red area on the left, and a green area on the right. Wetland buffers are shown in green, red, and blue. A legend in the top right corner identifies the colors: green for 'Wetland buffer 100m', red for 'Wetland buffer 50m', and blue for 'Wetland buffer 20m'.</p>
<b>Option 2</b>	

Option 2 entails the construction of Solar PV within the wetland. It also., entails the construction of a bridge and access roads. Will result in a direct loss of between 42.86ha of wetland area.



Option 3

This option includes the diversion of the sewerage pipeline (yellow lines) to the south of the site and redirecting a smaller stream to the west. It excludes a smaller portion of the wetland area in the central west. Access to the site will be facilitated by existing roads and eliminating the need for a bridge. Option 3 will result in a direct loss of 38.93 of wetland area.



Based on the assessment undertaken, Option 3 is preferred as it will have the least impact on the environmentally sensitive areas and has lesser impact on, or loss of wetlands; it affects an estimated 38.93 hectares (buffer zones). This option omits a smaller section of the wetland in the central-western region, thereby minimising the environmental repercussions on critical wetland areas.

It should be noted that the size of the two watercourses has been substantially augmented due to anthropogenic water inputs. The specialist comparative analysis of the site layout options is presented in Table 9 below.

Table 9: Specialist comparative analysis of the site layout options.

Specialist	Layout Options			Specialist preference
	Option 1	Option 2	Option 3	
<b>Wetland</b>	Preferred as it minimises the environmental impact on the wetlands by circumventing any development within the wetlands or their associated buffer zones. Nevertheless, the feasibility of this option is significantly constrained by the limited spatial dimensions of the site. The complexity is further exacerbated by the site's subdivision into three sub-areas. Such division mandates the installation of multiple electrical substations, the establishment of inter-site connections, and the construction of supplementary roadways and bridges.	Least preferred as it would impact or result in the loss of approximately 42.86 hectares of wetland area, excluding buffer zones. This will result in a loss of wetland, which is the least preferred.	Second most preferred, as it is projected to have a lesser impact on, or loss of, wetlands, affecting an estimated 38.93 hectares (sans buffer zones). Furthermore, this alternative omits a smaller section of the wetland in the central-western region, thereby effectively minimising the environmental repercussions on critical wetland areas. Access to the site will be provided through a northern roadway, capitalising on existing road infrastructure and obviating the necessity for bridge construction.	Option 1
<b>Avifauna</b>	Option 1 is the preferred option from an avifauna perspective as it avoids the high-sensitivity areas	Least preferred	Least preferred	Option 1
<b>Biodiversity</b>	The primary anticipated impact includes the clearing of vegetation, which will ultimately lead to habitat destruction and the proliferation of alien plant species along the roads		Option 3 is preferred as it will utilise the existing roads and eliminate the construction of the bridge.	Option 3

	<p>and cleared areas, as well as the severing of movement corridors for fauna, loss of fauna and flora SCCs (if present) and the fragmentation of habitat.</p> <p>It is least preferred as it will require the construction of supplementary access roads and bridges.</p>		
<b>Visual</b>	<p>The construction and operation of the proposed solar park may visually impact users in proximity to the site. After mitigation, the visual impact for most users is expected to range between moderate and low; therefore, all options are viable.</p>		Any option is acceptable.
<b>Heritage</b>	<p>There are no identified heritage resources within the proposed site. However, it is recommended that caution be exercised in case heritage resources are discovered during the construction and operational phases.</p>		Any option is acceptable.



## 9.4. POWERLINE ALTERNATIVES

### 9.4.1. 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 overhead powerline, underground construction is an alternative. The advantages of the underground alternative would include reduced bird interaction and a distinct visual impact benefit.

Technically, underground cables need to be insulated against the surrounding soil. On low voltage reticulation networks (11kV & 22kV), cable heat is low enough for standard insulation to be used; however, on larger power lines (i.e., 400kV as proposed), the electrical and heat insulation method becomes more burdensome.

Control of electrical losses and heat is critical for underground cables. As a result, cables are as much as four times the diameter and ten times the weight of equivalent overhead lines. Heat control is also a factor in the laying of the cables. The three phases of low and medium-voltage cables (up to 132kV) can be placed in the same trench, while the phases for high-voltage cables must be spaced apart, typically in a flat formation.

Bush fires, lightning strikes, and bird-related faults make up 80% of faults on overhead transmission power lines in South Africa; however, such risks are not associated with underground cables. Further, faulting on underground cables is rare. When faults occur on overhead lines, they are usually re-energised by automatically reclosing the circuit breaker within a few seconds of the fault. More serious faults, such as a damaged line, may be easily found and repaired within a few days. Underground cables have almost permanent faults, requiring inspection and correction on site. This usually requires excavating a section of the powerline. As a result, finding the location of faults is not easy unless there is clear evidence of excavation damage. Therefore, the search and repair of underground cables can take several weeks. This may severely compromise the network of the operation.

Economically, costs vary and depend on terrain, land use, and size of the powerline. However, underground cabling is in orders of magnitude greater than overhead power lines. In terms of maintenance, underground cables are reported to be much more dependable. Still, outages are more challenging to fix as it is harder to find the faults, and therefore, the outages last much longer. The lifespan for underground cables is reported to be much shorter, about half that of overhead power lines.

Given the site's sensitivity from a wetland point of view, the above-ground option is recommended.

## 9.5. NO-GO ALTERNATIVE

According to GN R.982 of the 2014 EIA Regulations, 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 and socioeconomic development. The no-go alternative would be the option of not undertaking the development of the proposed project. It would imply that the identified benefits would not be realized, including a move to cleaner energy sources and a contribution to the advancement of the energy sector. Further, integrating potential renewable energy in the area will not be possible. Should the no-go alternative be adopted, the country will be deprived of adding power to the grid, which is a much-needed essential service, particularly given the already existing energy supply challenge countrywide.

Furthermore, should it not be adopted, the identified economic benefits, i.e., employment opportunities for local communities and socioeconomic development, would not be realised. This would result in the loss of sustainable jobs at the mine and reduce employment opportunities over the medium and long term.

## 10. DETAILS OF THE PUBLIC PARTICIPATION PROCESS UNDERTAKEN IN TERMS OF REGULATION 41 OF THE REGULATIONS, INCLUDING COPIES OF THE SUPPORTING DOCUMENTS AND INPUTS

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. This amendment application is being submitted in terms of Regulation 31 of the EIA Regulations of 2014. This regulation sets out the process to be followed in applying for a Part 2 amendment of a valid EA. In terms of this regulation, this report must be subjected to a Public Participation Process (PPP).

The PPP is any process that involves the public in problem-solving and decision-making and forms an integral part of this process. The PPP provides I&APs with an opportunity to provide comments and raise issues of concern or make suggestions that may result in enhanced benefits for the project.

The primary purpose of the PPP report is as follows:

- To outline the PPP that was undertaken;
- To synthesise the comments and issues raised by the key stakeholders, I&APs; and
- To ensure the EIA process fully addresses the issues and concerns raised.

## 10.1. PUBLIC PARTICIPATION PRINCIPLES

The principle of Public Participation holds that those affected by a decision have the right to be involved in the decision-making process (i.e., the public's contribution will influence the decision). One of the primary objectives of conducting the PPP is to provide Interested and Affected Parties with an opportunity to express their concerns and views on the proposed project. The principles of public participation are to ensure that the PPP achieves the following:

- Communicate the interests of and meet the process needs of all participants.
- Seek to facilitate the involvement of those potentially affected.
- Involves participants in defining how they participate.
- Is as inclusive and transparent as possible.

The PPP must be conducted per the requirements of Regulations 39 through 44 of the EIA Regulations as amended. Q

### 10.1.1. Approach And Methodology

The Public Participation approach adopted in this process aligns with the process contemplated in Regulation 39 through 44 of the EIA Regulations as amended, in terms of NEMA, which provides that I&APs must be notified about the proposed project.

### 10.1.2. Pre-Application Consultation

Pre-application meetings were held with the DMRE, and the details of all engagements with the DMRE are provided in **Table 10**.

**Table 10: Details of Consultation with DMRE**

Organisation	Meeting type	Date
Department of Mineral Resources and Energy	Pre-application meeting	15 February 2023 at 09:30 AM

### 10.1.3. Identification of interested and affected parties.

Interested and Affected Parties (I&APs) can register as such. Furthermore, pre-identified stakeholders (government departments), include landowners, and the public. Notification and request for comments will be submitted to the following key stakeholders:

- North West Department: Agriculture and Rural Development;
- North West Department of Mineral Resources;
- Department of Water and Sanitation;
- North West Department of Public Works and Roads;
- North West Provincial Heritage Resources Authority;
- South African Heritage Resource Agency;
- Madibeng Local Municipality;
- Eskom SOC Limited – Transmission;
- Bojanala Platinum District Municipality;
- Landowners; and
- Community Leaders

The notifications will be sent to stakeholders and I&APs to inform them of the availability of the draft EA Amendment Report for 30 days of review and comment; proof of the notification will be submitted with the final report.

#### **10.1.4. Public Participation Database**

In accordance with the requirements of the EIA Regulations under Section 24 (5) of NEMA, Regulation 42 of GN R. 326 (as amended), the Public Participation Practitioner must keep a register of I&APs. To fulfill this requirement, such a register has been prepared, and details of I&APs, including their comments, will be updated throughout the project cycle. The database attached will be attached with the final report.

#### **10.1.5. Site notices**

A2 size notices will be fixed at conspicuous locations within and around the proposed study area. The identified locations include Bushveld Vametco Mine main entrance, Rankotia: Mothutlung: Post office, clinic, Municipality office, public library, and along the main access road. Photographic evidence of the site notices will be attached to the final report.

#### **10.1.6. Placement of an advertisement in the local newspaper**

An advertisement will be placed in the local newspaper (Brits POS) to inform I&APs of the proposed development and availability of the draft reports for review and comments.

#### **10.1.7. Placement of Draft report for review and comment**

The draft EA amendment report will be placed for review and comment for 30 days at the Mothutlung Post Office and Library from the 20<sup>th</sup> of October to the 20<sup>th</sup> of November 2023. Proof of placement will be included in the final report.

### 10.1.8. PUBLIC MEETINGS

As the project progresses, the EAP will determine the requirement for a public meeting, and should it be required, the I&APs will be notified via notices and newspaper advertisements. Public and focus group meetings will be scheduled. The details will be published in the local newspaper, and notices will be placed at the above-mentioned identified sites near the proposed project area.

## 10.2. A SUMMARY OF COMMENTS RAISED BY INTERESTED AND AFFECTED PARTIES AND AN INDICATION OF THE MANNER IN WHICH THE ISSUES WERE INCORPORATED OR THE REASONS FOR NOT INCLUDING THEM

Comments and concerns raised and the responses provided by the Environmental Assessment Practitioner (EAP) will be presented in the Comments and Response Report (CRR).

## 11. DESCRIPTION OF ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE ALTERNATIVES FOCUSING ON THE GEOGRAPHICAL, PHYSICAL, BIOLOGICAL, SOCIAL, HERITAGE, AND CULTURAL ASPECTS THE SOCIOECONOMIC AND PHYSICAL ENVIRONMENT

This section outlines parts of the socio-economic and biophysical environment likely to be affected during the construction and operational phases 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, and physical and cultural resources are also presented.

### 11.1. SOCIO-ECONOMIC DESCRIPTION

This section presents the socio-economic aspects focusing on the Province and Municipality that houses the proposed project.

#### 11.1.1. DISTRICT AND LOCAL MUNICIPALITY'S DESCRIPTION OF THE PROPOSED PROJECT

**District Municipality - Bojanala Platinum District Municipality, a Category C in North West Province.**

Bordered by:

Waterberg District Municipality to the north, Dr Kenneth Kaunda District Municipality to the south, City of Tshwane Metro to the east, West Rand District Municipality to the southeast, and Ngaka Modiri Molema District Municipality to the west.

Socio-Economic Activities	<p>The mining and quarrying industry in the district remains the backbone of the district's economic output.</p> <p>Agricultural activities account for 19% of the district's land area and are mainly geared towards commercial dry-land farming, commercial irrigated farming, and subsistence dry-land activities. Mixed-crop farming and in the areas of Rustenburg and Brits, maize and sunflower are abundant in the district.</p> <p>Manufacturing: This sector contributed an estimated R2.5 bn to the GVA of the district by 2001 and has grown by about 6.6% between 1996 and 2001.</p> <p>Tourism: 45% of all provincial tourism establishments are within the BPDM. The district is home to the world-famous Sun City Complex.</p>
<b>Local Municipality – Madibeng Local Municipality</b>	
Bordered By:	Rustenburg, Morelete, and Moses Kotane are bordering neighbors.
Socio-Economic Activities	<p>Madibeng is characterised by diverse economic sectors, i.e., agriculture, mining, manufacturing, and tourism. Mining is predominant, with Madibeng being the world 's third largest chrome producer, including the richest Platinum Group Metals Reserve (situated on the Merensky Reef). Granite is another mining commodity in the Municipality.</p> <p>The turf soil is ideal for vegetation, and Brits are known for the extensive variety and quality of fruit and vegetables supplied to, amongst others, the Tshwane Market. Due to the industrial area comprising various industries, manufacturing is considered one of the dominant sectors.</p>

### 11.1.2. Climatic Condition of the Proposed Area

The region is a middle-velde climate zone with long, warm, and partly cloudy summers. Summer (mid-October to mid-February) is characterized by hot, sunny weather, often with afternoon thunderstorms of short duration. Frost occurs during winter but is not common. The local climate is semi-arid, with high-velde conditions with hot summers and moderate dry winters.

Regional average rainfall occurs predominantly in summer and autumn with an average annual rainfall of 150mm, and the least rain falls in winter and spring. There is a distinct seasonal variation in rainfall, and the evaporation follows the same seasonal trend during the year for this region.

Vametco records rainfall onsite; an average annual rainfall of 297 mm has been recorded in 2022. There are six South African Weather Service rainfall stations near the Vametco; the closest station is the Magalieskraal. This station has indicated that the site experiences slightly more rain than that recorded in other stations.

### 11.1.3. Hydrology of the Proposes Area

The proposed project is located upstream of Roodekoppies Dam within the A21J Quaternary catchment, 4 below. The Rosespruit is one of the three tributaries of the Crocodile between the Hartbeespoort Dam and the Roodekoppie Dam. Furthermore, the quaternary catchment A21J represents 1.05% of the drainage area of the Limpopo catchment.

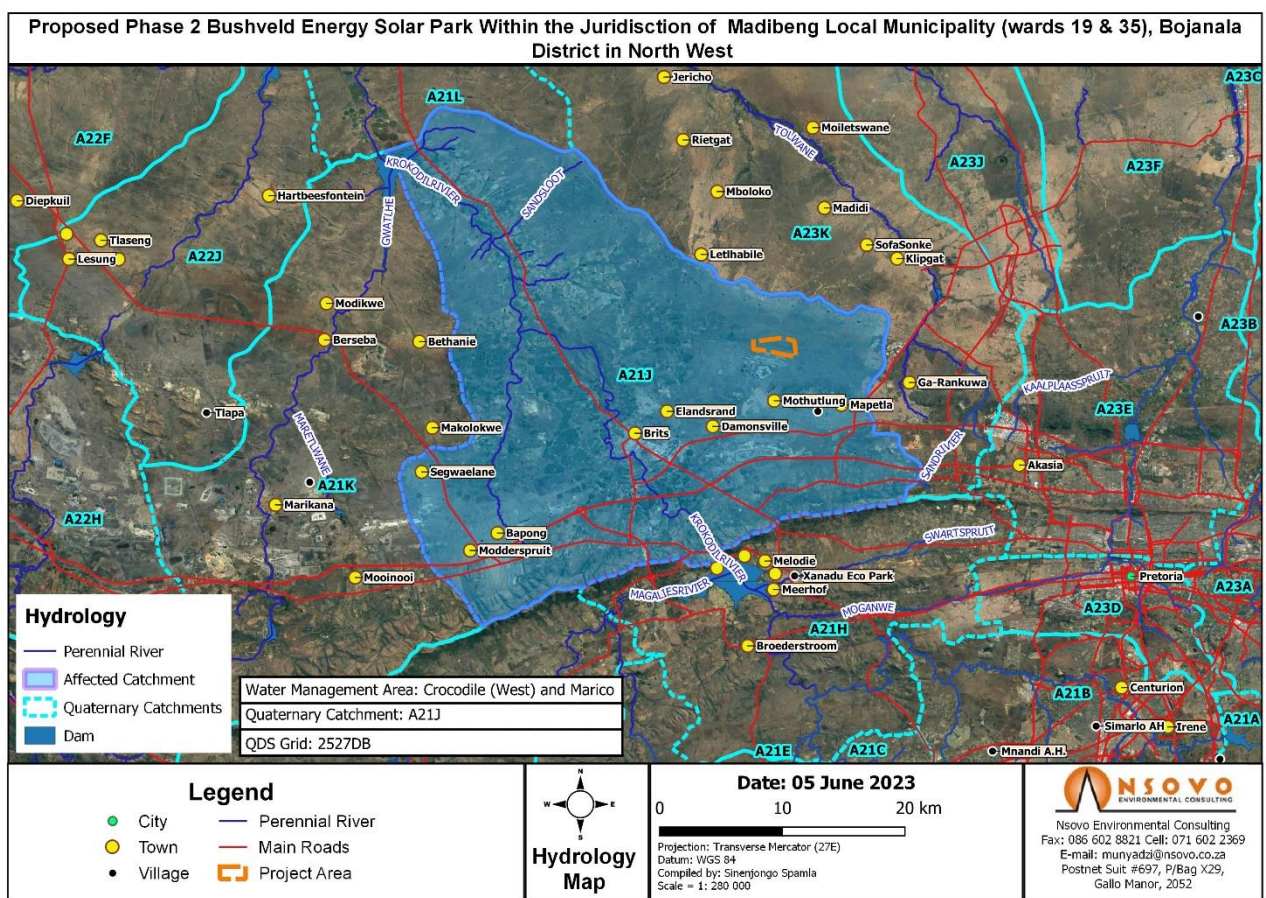


Figure 4: Hydrology Map

### 11.1.4. Water Management of the Proposed Area

The study area falls under Quaternary Catchment A21J, and the upstream Rosespruit catchment is divided into two sub-catchments: the Rosespruit North sub-catchment and the Rosespruit South sub-catchment.

Vametco is primarily situated in the Rosespruit South-sub catchment, which is drained by poorly defined watercourses, which could be classified as shallow and flat (<1% slope) grassland (veld) flow conditions. However,

surface water run-off emanating from the Bushveld Vametco Holdings lease area is mainly collected in the Kgowe Spruit and another unnamed small watercourse draining the western side of the lease area.

### 11.1.5. Wetlands

According to the Wetland specialist study, three (3) watercourse types were identified on the study site (see Figure 5 below). The watercourses are further classified into the following according to the classification guidelines (Ollis et al., 2013):

- Channelled Valley Bottom Wetland
- Non-Perennial Episodic Riparian Area
- Seepage Wetland

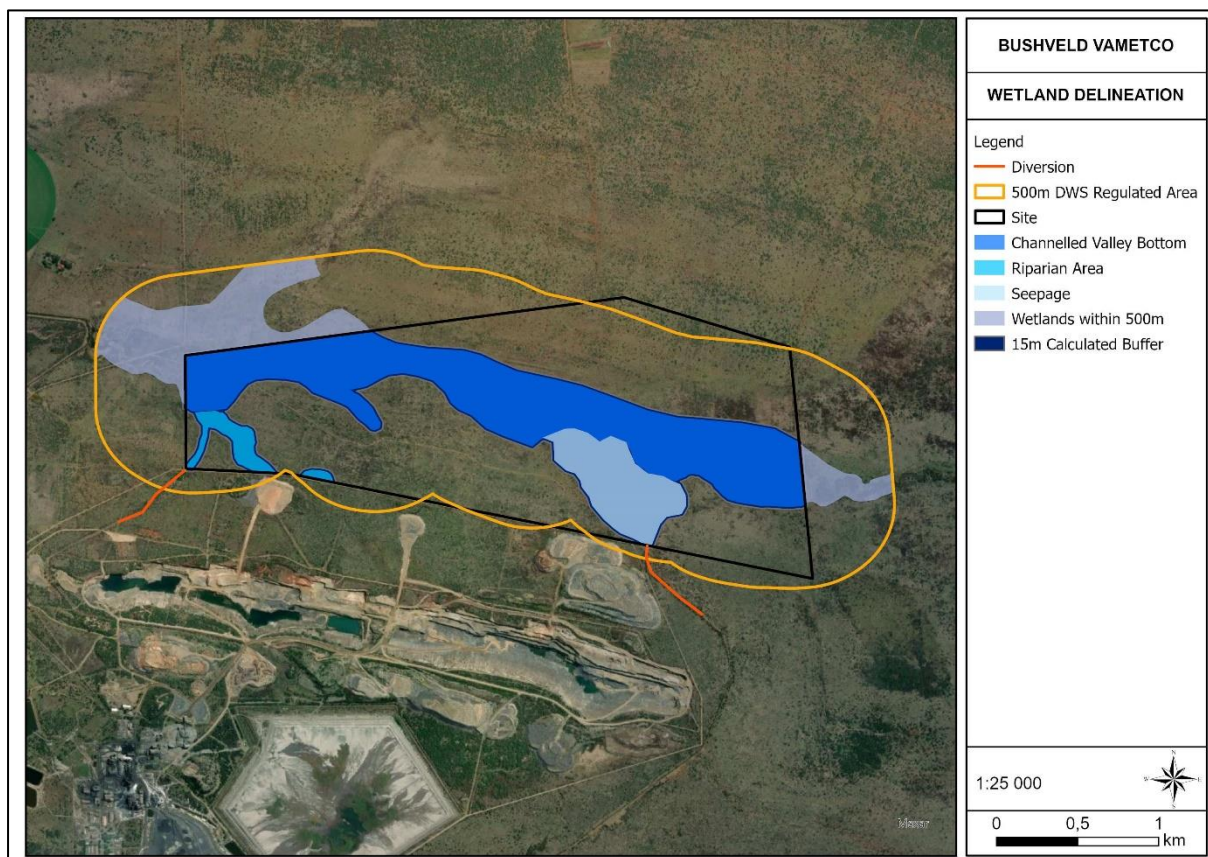


Figure 5: Delineated wetlands

- **Present Ecological Status (PES)**

The site's hydrology is altered with what seems to be a diversion around the mining operations. The Present Ecological Status of each wetland on the study site is indicated below.



- **Present Ecological Status (PES) (Kotze et al., 2020) for the Channelled Valley Bottom**

The Channelled Valley Bottom achieved a Combined Impact Score of **2.0 – C – Moderately Modified Table 6 below**. A moderate change in ecosystem processes and loss of natural habitats has occurred, but the natural habitat remains predominantly intact. The condition of this wetland is likely to likely to remain stable over the next 5 years.

**Table 11: Summary of the WetHealth (Version 2) assessment results conducted for the Channelled Valley Bottom Wetland.**

PES Assessment	Hydrology	Geomorphology	Water Quality	Vegetation
Impact Score	3.1	2.2	2.3	5.8
PES Score (%)	69%	78%	77%	42%
<b>Ecological Category</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>D</b>
Trajectory of change	→	→	→	→
Confidence (revised results)	Moderate			
<b>Combined Impact Score</b>	3.3			
<b>Combined PES Score (%)</b>	67%			
<b>Combined Ecological Category</b>	<b>C</b>			

- **Present Ecological Status (PES) (Kotze et al., 2020) for the Seepage Wetland**

The Seepage wetland has significantly been impacted by increased water input from a diversion channel to the south. Due to the increased water input, the wetland has expanded from its initial size. The wetland achieved a Combined Impact Score of **6.8 – E – Seriously Modified**, indicating it to be Seriously Modified (see Table 7 below). The change in ecosystem processes and loss of natural habitat and biota is excellent, but some remaining natural habitat features are still recognizable. The condition of this wetland is likely to likely to remain stable over the next 5 years.

**Table 12: Summary of the WetHealth (Version 2) assessment results conducted for the Seepage Wetland.**

PES Assessment	Hydrology	Geomorphology	Water Quality	Vegetation
Impact Score	6.9	7.1	6.3	6.5
PES Score (%)	31%	29%	37%	36%
<b>Ecological Category</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>
Trajectory of change	→	→	→	→

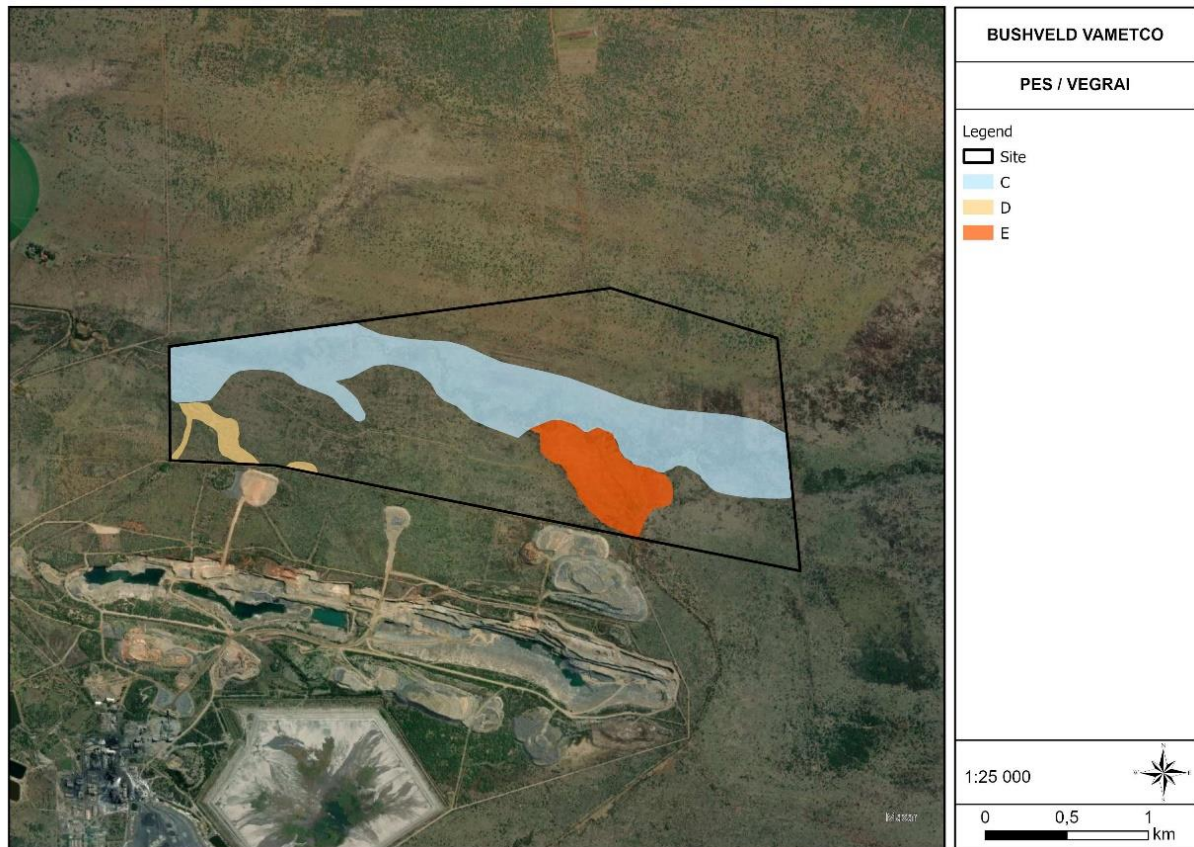
Confidence (revised results)	Moderate
<b>Combined Impact Score</b>	6.8
<b>Combined PES Score (%)</b>	32%
<b>Combined Ecological Category</b>	<b>E</b>

- **Ecological Category (VEGRAI) for the Episodic Stream**

The Episodic Streams scored an EC of **D**, which was calculated for the Non-Perennial Episodic Stream (Table 13). This score refers to watercourses that are **Largely modified**. A significant loss of natural habitat, biota, and essential ecosystem functions has occurred. (Kleynhans, 1996 & Kleynhans, 1999).

**Table 13: Results of the VEGRAI scores obtained by the Episodic Stream (Kleynhans *et al.*, 2008).**

Level 3 Assessment					
Metric Group	Calculated Rating	Weighted Rating	Confidence	Rank	% Weight
Marginal	55.4	15.8	2.5	2.0	40.0
Non-Marginal	53.3	38.1	2.5	1.0	100.0
	2.0				140.0
Level 3 Vegrai (%)				53.9	
<b>Vegrai EC</b>				<b>D</b>	
Average Confidence				2.5	



**Figure 6: Present Ecological Status of each wetland**

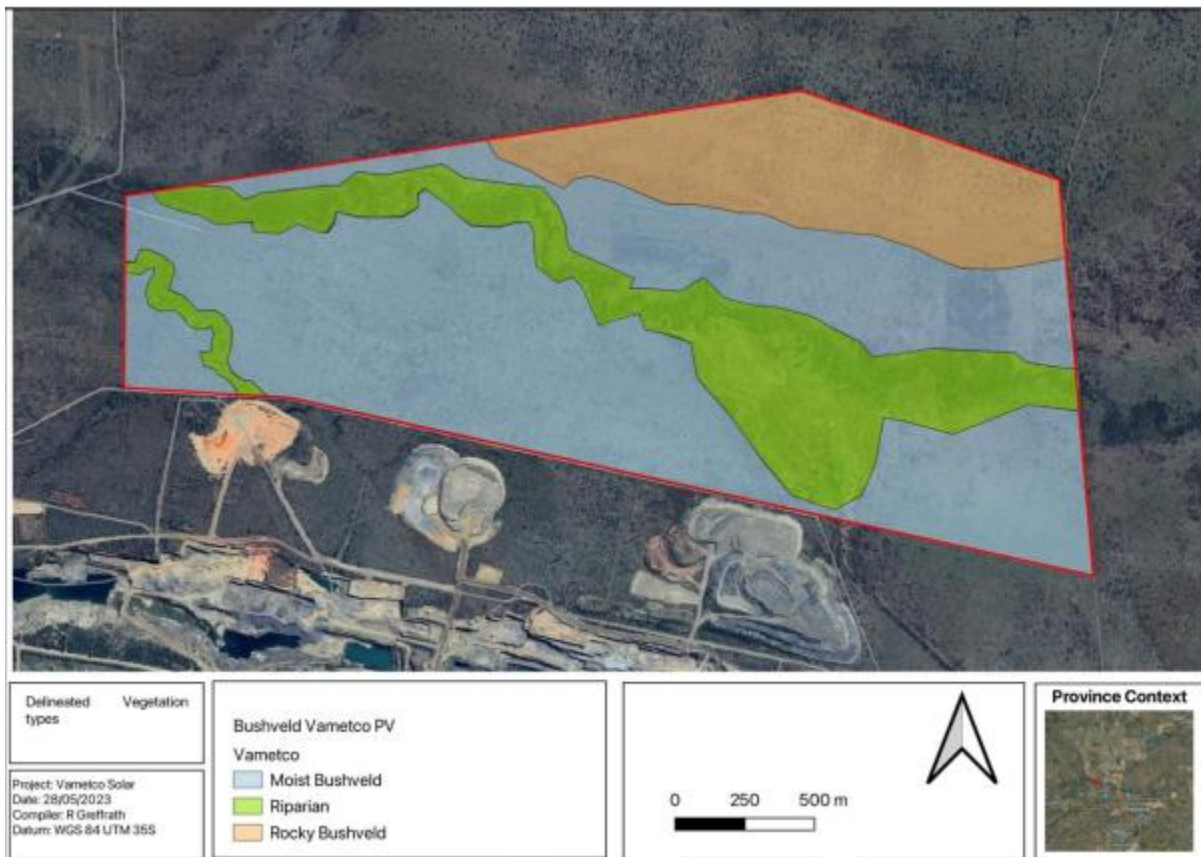
#### 11.1.6. Biodiversity

The Savanna Biome is the largest in southern Africa, occupying 46% of its area and over one-third of the area of South Africa. It is well developed over the Lowveld and Kalahari regions of South Africa and is also the dominant vegetation in Botswana, Namibia, and Zimbabwe. A grassy ground layer and a separate upper layer of woody plants distinguish it. Where this upper layer is near the ground, the vegetation may be referred to as Shrubveld, where it is as dense as Woodland, and the intermediate stages are locally known as Bushveld. The study area itself falls within the Marikana thornveld vegetation type, according to Mucina and Rutherford (2012). The study site can be divided into three main sections: moist bushveld, rocky bushveld, and riparian areas (Figure 7 below).

The Open Bushveld Habitat Unit includes patches of less impacted bushveld habitat containing a higher abundance of indigenous species. This habitat unit occurs throughout the subject property and is sub-divided into moist and rocky bushveld, depending on elevation and location within the topography.

The Rocky Bushveld Habitat Unit comprises several small rocky outcrops with largely intact vegetation composition and structure, a high diversity of floral species, and an increased diversity and abundance of faunal species.

Riparian areas are located at the lowest point in the landscape, where water runoff collects and forms small river systems.



**Figure 7: Delineated Vegetation type**

## 11.2. Groundwater of the Proposed Area

The primary aquifer type underlying the proposed site is a shallow weathered zone aquifer occurring in weathered zones within the granitic geological environment. The aquifer displays unconfined to semi-unconfined conditions. The mean annual recharge to the groundwater system is estimated to be between 37 mm and 50 mm per annum. The groundwater contribution to surface stream base flow is relatively low and is expected to be between 0 mm and 10 mm per annum.

## 11.3. Topography of the Proposed Area

The regional topography is characterised by slightly undulating plains, hills, and lowlands. The topography is relatively flat locally and within the project area. The natural slope varies between 1 to 2%, except for the small and localised mountainous area south of BVA. Surface elevations range between 1185 mamsl in the southwest and 1140 mamsl in the northwest perimeter with a general slope towards the Rosespruit.

## 11.4. Regional and Local Geology of the Proposed Area

The Bushveld Igneous Complex (“BIC”) is separated into five limbs across South Africa, namely the Eastern limb, a South-Eastern/Bethal limb, a Northern/Potgietersrus Limb, a Western Limb, and a Far Western Limb. The

Vametco Mine falls within the Western Limb of the BIC, which is still mined extensively for chromium, platinum, and the associated platinum group elements.

The BIC is subdivided into a felsic suite, namely the Rooiberg Group, and three mafic suites, namely the Lebowa Granite Suite, the Rashoop Granophyre Suite, and the Rustenburg Layered Suite. The Rustenburg Layered Suite is economically the most important suite in the BIC and underlies the Vametco Mine.

Regarding local geology, the proposed site comprises well-developed, sandy clay layers.

### **11.5. Soils of the Proposed Area**

The Vertic A horizon soil type of the Acadia soil group dominates the proposed site. Vertic soil forms are characterised by a high clay content and a predominance of smectite minerals, which swell and shrink in response to changes in their moisture content.

### **11.6. Civil Aviation**

No major or other types of civil aviation aerodromes are close to the site.

### **11.7. Defense**

The defense theme was low in sensitivity on the Screening Tool and does not have to comply with the GN 320.

### **11.8. Sensory Aspects**

#### **11.8.1. NOISE**

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

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

There will be an upward shift in the immediate environmental noise levels during the construction phase temporarily and on a more permanent basis during the operational phase in the vicinity of the proposed activities. However, the noise increase at the abutting properties will 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.

### **11.8.2. 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 and the impact of new developments and structures tend to be complicated. It is evident from previous experience that a large diversity of opinion exists when dealing with the reaction to landscape changes. 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 must be utilized when selecting an alignment to minimize visual impacts and intrusions.

The study area consists of predominantly agricultural land used for commercial purposes. There are few human settlements, like small towns and farming communities. Within the receiving environment, specific viewers (visual receptors) experience different views of the graphic resource and value it differently. They will be affected by alterations to their views due to the proposed project.

Much of the study area is used for purposes of agriculture. 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 rural communities, farmers, and other land users. Many topographical features influence this environment, which must be used when selecting substation location and loop alignment to minimise visual impacts and intrusions.

## **12. METHODOLOGY FOR ASSESSING THE SIGNIFICANCE OF POTENTIAL IMPACTS**

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

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

The criteria given in the 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.

**Table 14: Methodology used in determining the significance of potential environmental impacts.**

<p><b>Status of Impact</b></p> <p>The impacts are assessed as either having a:</p> <p>The negative effect (i.e., at a 'cost' to the environment),</p> <p>positive effect (i.e., a 'benefit' to the environment) or</p> <p>Neutral effect on the environment.</p> <p><b>Extent of the Impact</b></p> <p>(1) Site (site only),</p> <p>(2) Local (site boundary and immediate surrounds),</p> <p>(3) Regional (within the City of Johannesburg),</p> <p>(4) National, or</p> <p>(5) International.</p> <p><b>Duration of the Impact</b></p> <p>The length that the impact will last for is described as either:</p> <p>(1) immediate (&lt;1 year)</p> <p>(2) short-term (1-5 years),</p> <p>(3) medium-term (5-15 years),</p> <p>(4) long-term (ceases after the operational life span of the project),</p> <p>(5) Permanent.</p> <p><b>The magnitude of the Impact</b></p> <p>The intensity or severity of the impacts is indicated as either:</p> <p>(0) none,</p> <p>(2) Minor,</p> <p>(4) Low,</p> <p>(6) Moderate (environmental functions altered but continue),</p>	<p><b>Probability of Occurrence</b></p> <p>The likelihood of the impact occurring is indicated as either:</p> <p>(0) None (the impact will not occur),</p> <p>(1) improbable (probability very low due to design or experience)</p> <p>(2) low probability (unlikely to occur),</p> <p>(3) medium probability (distinct probability that the impact will occur),</p> <p>(4) high probability (most likely to occur), or</p> <p>(5) Definite.</p> <p><b>Significance of the Impact</b></p> <p>The potential impacts are assigned a significance rating (S) based on the information above. This rating is formulated by adding the sum of the numbers assigned to an extent (E), duration (D), and magnitude (M) and multiplying this sum by the probability (P) of the impact.</p> $S=(E+D+M)P$ <p><b>The significance ratings are given below.</b></p> <p>(&lt;30) low (i.e., where this impact would not have a direct influence on the decision to develop in the area),</p> <p>(30-60) medium (i.e., where the impact could influence the decision to develop in the area unless it is effectively mitigated),</p> <p>(&gt;60) high (i.e., where the impact must influence the decision process to develop in the area).</p>
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(8) High (environmental functions temporarily cease) or  
(10) Very high / Unsure (environmental functions permanently cease).

### 13. DESCRIPTION OF THE ENVIRONMENTAL ISSUES AND POTENTIAL IMPACTS INCLUDING CUMULATIVE IMPACTS IDENTIFIED

This section describes the pose proposed project's potential impacts 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 in consultation with specialist studies. Refer to the Tables below for the potential impacts identified, and they include the following:

#### Pre-construction Phase

- Employment opportunities

#### Construction Phase:

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

#### 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 energy source. This is a positive impact with a positive outlook; although it may have negative aspects, the longer term is 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 include the following:

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

### **13.1. SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS IDENTIFIED**

Potential environmental impacts identified are described in Table 15 below. This is not an exhaustive list but insight into the potential impacts associated with the proposed project.

Table 15: Potential Environmental Impact Identified

Aspect	Impact	Description	Proposed Mitigations
Employment	Positive	<p>The development of a solar plant and associated infrastructures promotes the area for further investment by stimulating and contributing towards the economy as well as creates several jobs within the area, including:</p> <ul style="list-style-type: none"> <li>• The opportunities for skilled and semi-skilled personnel in the local community during the construction and operational phases.</li> <li>• The initiatives to contribute towards educating and developing necessary skills for the locals to take advantage of opportunities associated with the proposed project.</li> <li>• Local businesses could be incubated and developed to take highly technical opportunities.</li> </ul>	<ul style="list-style-type: none"> <li>• There could be initiatives developed to contribute towards educating and acquiring the necessary skills for the locals to take advantage of opportunities associated with the proposed construction project.</li> <li>• When appointing sub-contractors, Vametco should prefer sub-contractors/SMMEs located in the surrounding communities, then in the municipal area, and only to contractors located elsewhere or outside the province.</li> <li>• Employment of skilled, semi-skilled, and unskilled labours during the proposed project's construction.</li> <li>• Vametco must promote the creation of employment opportunities for women and youth. The positions reserved for the youth and women may only be filled with persons outside of these categories if it can be demonstrated that no suitable persons could be employed.</li> <li>• It is recommended that Vametco consult with local business forums.</li> </ul>
Visual Impact	Negative	<p>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 a quarter of the impact viewed from 500 m, and the visual impact at 2km is one-eighth of the impact from 500 m. Therefore, objects appear insignificant in any landscape beyond 5km.</p> <p>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.</p> <p>The proposed activity will change the visual character of the site, particularly considering that the proposed site is in an agricultural area; the elevated points</p>	<ul style="list-style-type: none"> <li>• Trees must be planted around the site to soften the facility's appearance.</li> <li>• The facility should, as far as possible, be designed to have its tallest elements towards the north of the site.</li> <li>• It is recommended that trees be planted on the northern section of the proposed power plant to reduce the visual impact on viewers.</li> <li>• Keep the construction sites and camps neat, clean, and organised to portray a tidy appearance.</li> <li>• If possible, locate construction camps in areas that are already disturbed or where it is unnecessary to remove established vegetation, such as naturally bare areas.</li> <li>• Use existing screening features such as dense vegetation stands or topographical features to place the construction camps and lay-down yards out of the view of sensitivity visual receptors.</li> </ul>

Aspect	Impact	Description	Proposed Mitigations
		<p>of the site can be viewed from the nearby roads. The construction and operation of the proposed solar park may have a visual impact on users close to the site. After mitigation, the visual impact for most users is expected to range between moderate and low.</p> <p>If mitigation is undertaken as recommended, it can be concluded that the significance will remain or can be managed to acceptable levels.</p>	
Flora and Fauna	Negative	<p>Anthropogenic activities drive habitat destruction, causing displacement of fauna and flora and direct mortality. Land clearing destroys local wildlife habitat and can lead to the loss of local breeding grounds, nesting sites, and wildlife movement corridors such as rivers, streams, drainage lines, or other locally important features. Removing natural vegetation may reduce the habitat available for fauna species and reduce animal populations and species compositions within the area.</p> <p>Anticipated impacts for the proposed development and activities associated with the pre-construction, construction, and operational phases of the project are:</p> <p><b>Construction Phase</b></p> <ul style="list-style-type: none"> <li>• Physical vegetation removal for infrastructure construction results in vegetation loss within the development footprint.</li> <li>• Dust precipitation</li> <li>• Spilling of hazardous waste</li> <li>• Water and wastewater leakages</li> <li>• Dumping of waste products</li> <li>• Random events such as fire (cooking fires or cigarettes)</li> </ul>	<p>The focus of mitigation measures is to reduce the significance of potential impacts associated with the development, and these include:</p> <ul style="list-style-type: none"> <li>• All high-sensitivity areas should be avoided as far as possible, and development must be prioritised in low or medium areas.</li> <li>• Watercourses, drainage lines, streams, and wetlands must be avoided, and a no-go buffer of 20 m must be applied around them.</li> <li>• Existing access routes, especially roads, must be made use of.</li> <li>• Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should not be fragmented or disturbed further.</li> <li>• Clearing of vegetation should be minimized and avoided where possible.</li> <li>• All activities must be restricted to within the low/medium sensitivity areas. No further loss of high sensitivity areas should be permitted. <ul style="list-style-type: none"> <li>○ It is recommended that areas to be developed be specifically demarcated so that during the construction phase, only the demarcated areas be impacted upon.</li> </ul> </li> <li>• All lay down, chemical toilets, etc., should be restricted to low-sensitivity areas.</li> <li>• No storage of vehicles or equipment will be allowed outside the designated project areas.</li> </ul>

Aspect	Impact	Description	Proposed Mitigations
		<p>These could lead to the following impacts:</p> <ul style="list-style-type: none"> <li>○ Loss of flora (including possible SCC)</li> <li>○ Increased potential for soil erosion</li> <li>○ Habitat fragmentation</li> <li>○ Increased potential for the establishment of invasive alien vegetation.</li> </ul> <p><b>Operational Phase</b></p> <ul style="list-style-type: none"> <li>● Continued fragmentation and degradation of habitats, ecosystems areas (Habitat loss for flora and fauna0;</li> <li>● Erosion;</li> <li>● Spread of alien and invasive species;</li> <li>● Displacement and direct mortalities of the faunal community (including possible SCC) due to disturbance (road collisions, collisions with solar panels and substation, noise, light, dust, vibration);</li> <li>● Reduced dispersal/migration of fauna;</li> <li>● Spreading of potentially dangerous diseases due to pest species</li> <li>● Alteration of fauna assemblages due to habitat modification and</li> <li>● Fencing of Solar PV site.</li> </ul> <p><b>Closure and Rehabilitation</b></p> <ul style="list-style-type: none"> <li>● Continued fragmentation and degradation of habitats and ecosystems;</li> <li>● Erosion; and</li> <li>● Spread of alien and invasive species</li> </ul> <p><b>Cumulative Impacts</b></p>	<ul style="list-style-type: none"> <li>● Areas cleared during construction must 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.</li> <li>● All livestock must always be kept out of the project area, especially areas that have been recently re-planted.</li> <li>● The Contractor shall have an emergency spill kit that must always be complete and available on site.</li> <li>● Drip trays or oil absorbent material must be placed underneath vehicles/machinery and equipment when unused. No servicing of equipment on site unless necessary.</li> <li>● All contaminated soil/yard stones shall be treated in situ or removed and placed in containers.</li> <li>● No indigenous or exotic plant species must be brought into or taken from the project area to prevent the spread of exotic or invasive species or the illegal collection of plants.</li> <li>● An Alien Invasive Plants (AIP) management plan must be implemented whereby existing AIPs within the project area are eradicated, and the disturbed site is monitored quarterly for at least two years to ensure that alien invasion does not occur.</li> <li>● For the threatened species that may not be destroyed, it is recommended that professional service providers that deal with plant search and rescue be used to remove such plants and use them for later rehabilitation work or other conservation projects.</li> <li>● The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas. The footprint of the roads must be kept to the prescribed widths.</li> </ul>

Aspect	Impact	Description	Proposed Mitigations
		Localised cumulative impacts include dust deposition, noise and vibration, and wildlife corridors or habitat disruption.	<ul style="list-style-type: none"> <li>A fire management plan needs to be complied with and implemented to restrict fire's impact on the surrounding areas.</li> </ul>
Alien Invasive Plants	Negative	<p><b>Construction and Operational Phase</b></p> <p>Introducing seed on-site through building materials and construction vehicles can impact hydrology by reducing the water entering a watercourse and outcompeting natural vegetation, decreasing the natural biodiversity.</p> <p>The operational phase of the impact of daily activities is anticipated to spread the alien invasive plants further, as well as the deterioration.</p> <p><b>Cumulative impacts</b></p> <p>Since alien vegetation is already present in the catchment, the proposed development may expose the area to increased exotic vegetation.</p>	<ul style="list-style-type: none"> <li>Areas denuded during construction must be re-vegetated with indigenous vegetation to prevent erosion during flood and wind events.</li> <li>Implement an Alien Plant Control Plan which specifies actions and measurable targets.</li> <li>Long-term and regular monitoring for the establishment of alien invasive species within the areas affected by the construction and maintenance. Take immediate corrective action where invasive species are observed to establish, as specified in the Alien Vegetation Management Pan.</li> </ul>
Watercourse habitat	Negative	<p><b>Construction and Operational Phase</b></p> <p>The construction of a solar plant will entail land clearing and grading, which can increase surface runoff and potentially lead to increased erosion and sedimentation in nearby water bodies. Additionally, installing infrastructure, such as access roads and transmission lines, can disrupt natural drainage patterns and impede water flow. If not properly managed, water extraction for plant operations can reduce base flows and impact downstream ecosystems.</p> <p><b>Cumulative impacts:</b> Medium - The cumulative impacts of a solar plant on hydrological function encompass a range of effects that can occur over time. These impacts can include changes in water availability, alterations in surface and groundwater flow patterns, and modifications to the overall hydrological regime of the surrounding area. The cumulative effects of these various factors</p>	<ul style="list-style-type: none"> <li><b>Implementing effective stormwater management systems:</b> Designing and implementing proper stormwater management systems, such as detention basins, vegetated swales, or permeable surfaces, can help mitigate the impact of increased runoff from the solar plant site. These measures can reduce the volume and velocity of stormwater runoff, minimizing the risk of downstream flooding and erosion.</li> <li><b>Preserving natural drainage patterns:</b> By preserving the natural drainage patterns and avoiding the alteration of existing watercourses, the hydrological regime can be maintained to a greater extent. This approach helps to sustain natural flow patterns and minimize disruptions to aquatic ecosystems.</li> <li><b>Implementing water conservation practices:</b> Incorporating water conservation practices within the solar plant operations can help reduce water demand. This includes utilizing water-efficient technologies and practices such as drip irrigation,</li> </ul>

Aspect	Impact	Description	Proposed Mitigations
		<p>can influence the hydrological function of the area, affecting water quantity, quality, and the overall ecological processes and services provided by the hydrological system. Proper planning, monitoring, and implementation of mitigation measures are crucial to minimize and address these cumulative impacts and ensure the long-term sustainability of the hydrological function.</p>	<p>efficient cooling systems, and water recycling, which can help minimize the impact on water resources.</p> <ul style="list-style-type: none"> <li>• <b>Designing and maintaining erosion control measures:</b> Implementing erosion control measures, such as installing sediment barriers, stabilizing slopes, and revegetating disturbed areas, can help minimize soil erosion and sedimentation in nearby water bodies. This reduces the potential negative impacts on water quality and aquatic ecosystems.</li> <li>• <b>Implementing best management practices (BMPs):</b> Utilising BMPs specifically designed for solar plant development can help minimize the impact on hydrological functioning. These practices may include minimizing impervious surfaces, incorporating green infrastructure, promoting soil conservation practices, and establishing buffer zones along water bodies to filter runoff.</li> <li>• <b>Conducting regular monitoring and maintenance:</b> Regular monitoring of hydrological conditions, including water flow rates, water quality parameters, and sediment deposition, can help identify potential issues and enable timely interventions. Regularly maintaining stormwater management systems, erosion control measures, and other infrastructure ensures their effectiveness and prevents unintended impacts.</li> </ul> <p>Effective control of stormwater from access roads should be undertaken.</p>
Avifauna	Negative	<p><b>Construction Phase</b></p> <p>vegetation clearing for the associated infrastructure will lead to direct habitat loss. Vegetation clearing will create a disturbance and potentially lead to the displacement of avifaunal species. The operation of construction machinery on site will generate noise pollution. Increased human presence can lead to poaching; increased vehicle traffic and heavy machinery may lead to roadkill.</p> <p><b>Operational Phase</b></p>	<ul style="list-style-type: none"> <li>• Solar panels must be mounted on pile driven or screw foundations, such as post support spikes, rather than heavy foundations, such as trench-fill or mass concrete foundations, to reduce the adverse effects on natural soil functioning, such as its filtering and buffering characteristics, while maintaining habitats for both below and above-ground biodiversity.</li> <li>• Indigenous vegetation should be maintained under solar panels to ensure biodiversity and prevent soil erosion (Beatty et al., 2017; Sinha et al., 2018).</li> </ul>

Aspect	Impact	Description	Proposed Mitigations
		During the operational phase, the impacts are electrocution, collisions, fencing, and habitat loss. Solar panels have been implicated as a potential risk for bird collisions.	<ul style="list-style-type: none"> <li>• Areas denuded during construction must be re-vegetated with indigenous vegetation to prevent erosion. This will also reduce the likelihood of encroachment by alien invasive plant species. Topsoil must also be utilised, and any disturbed area must be re-vegetated with indigenous plant and grass species.</li> </ul>
Heritage	Neutral	The proposed development did not yield any heritage resources within the footprint of the surveyed area. Although certain constraints and limitations may have inhibited identification, it is highly unlikely that any surface archaeology was not identified.	<p>The following is recommended:</p> <ul style="list-style-type: none"> <li>• Should any archaeological material be unearthed accidentally during construction, SAHRA should be alerted immediately, and construction activities be stopped within a radius of at least 10m of such indicator. The area should then be demarcated by a danger tape and protected until the authorities finish the investigation.</li> <li>• Accordingly, a professional archaeologist or SAHRA officer should be contacted immediately.</li> <li>• Report any incident of human remains encountered to the South African Police Services, SAHRA staff member, and professional archaeologist.</li> <li>• Before construction, contractors should be trained to identify and protect archaeological remains that may be discovered during the project.</li> </ul>
Social	Negative	This assessment aims to analyse all the factors to provide an unbiased assessment of the potential social impacts of the proposed construction of Bushveld Vametco's Phase 2 Solar Photovoltaic (PV) Power Plant, BESS, and associated infrastructures.	<ul style="list-style-type: none"> <li>• Implement a grievance mechanism in the mine's community engagement plan.</li> <li>• Implement a 'locals first' policy regarding labour needs. This can be incorporated into a Workforce Recruitment Policy. The Workforce Recruitment Policy should include: <ul style="list-style-type: none"> <li>○ Develop a selection criterion for allocating jobs;</li> <li>○ A database of locals and their relevant skills and experience should be developed;</li> <li>○ Reserve employment, where possible, for locals and subcontract to local construction companies where possible.</li> </ul> </li> </ul>

Aspect	Impact	Description	Proposed Mitigations
			<ul style="list-style-type: none"> <li>○ Consultation with local authorities is essential to manage job creation expectations and ensure all eligible workers in the primary study area are informed of the opportunities.</li> <li>○ Establish on-the-job training skills development program for workers.</li> <li>○ Standardised minimum wage for unskilled laborers. Main contractors to provide guidelines with standardised working conditions to be shared across</li> </ul>
Air Pollution	Neutral	Potential air pollutants may be dust emanating from site preparation and excavations during construction. Given the nature and magnitude of the proposed project, it is anticipated that the impact will be local in extent and short term before mitigation.	<ul style="list-style-type: none"> <li>● According to the Australian NPI, dust generation from material transfer points can be reduced by 50% where water sprays are applied. Adding windbreak can reduce dust emissions by 30%.</li> <li>● Keep the soil moist using sprays or water tanks, or windbreaks.</li> </ul>
Noise	Negative	<p>In South Africa, the assessment of noise levels in the environment is governed by the South African Bureau of Standards (SABS) noise standard 0103 – ‘The measurement and rating of environmental noise with respect to annoyance and speech communication’ (SABS 1994). Additional SABS standards cover noise measurement over different distances from the source (SABS 0357 – ‘The calculation of sound propagation by the Concave method’), and standards for other sectors (e.g., industry).</p> <p>The proposed development will not have a significant noise increase as the noise will not exceed the threshold and has been identified as potentially low due to the nature of the proposed development.</p>	<ul style="list-style-type: none"> <li>● No mitigation measure is required as the noise impact is low due to the nature of the proposed development</li> </ul>
Hazardous substances	Negative	The risk of spillage of a variety of hazardous substances may occur during the use of heavy machinery. For example, spillage may occur because of fuel leaks or refuelling electrolytes from the Vanadium Redox Flow Battery (should it be used). This impact can be mitigated successfully if the contractor implements a rigorous environmental management and control plan.	<ul style="list-style-type: none"> <li>● All fuel and oil must be stored with adequate spill protection and no leaking vehicles should be permitted on site.</li> <li>● Accidental spillage must be prevented, contained, and reported immediately. After mitigation, the impact of accidental spillage is ‘very low.’</li> </ul>



Aspect	Impact	Description	Proposed Mitigations
			•
Topography	Negative	The topography of the catchment can be categorized as a very gentle terrain with an average catchment slope of approximately 0.01%.	No mitigation measures are required.

The following section presents the impacts and the significance as rated by the EAP. The Tables below highlight the significance of the identified impacts for the proposed development's construction and operational phases.

The ratings are assessed with and without mitigation and color-coded as follows to indicate the significance:

High	
Medium	
Low	

## 13.2. SUMMARY OF THE POSITIVE AND NEGATIVE IMPACTS AND RISKS OF THE PROPOSED ACTIVITIES

### 13.2.1. Impacts on Wetlands

The wetland impact assessment identified surface water pollution, including sedimentation and increased erosion, loss of wetland and riparian functionality, and decreased downstream water quality as significant potential impacts during the construction and operational phases. The wetland impacts were rated medium during the construction and operation phases without mitigation measures, low with the implementation of phases without mitigation measures, and low with the appropriate mitigation measures. Furthermore, several general and specific mitigation measures were proposed to reduce negative impacts and incorporate some potentially positive impacts of the proposed development.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
<b>Impact on wetland during construction and operation phase</b>							
Changes to hydrological function at a landscape level	No	Negative	3 (Regional)	3 (Medium term)	6 (Moderate)	4 (High )	48 (Medium)
	Yes	Negative	2 (Local)	2 (Short term)	4 (Low)	3 (Probable)	24 (Low)
Changes in sediment regimes of the aquatic ecosystem	No	Negative	3 (Regional)	3 (Medium term)	6 (Moderate)	4 (High)	48 (Medium)
	Yes	Negative	2 (Local)	2 (Short term)	4 (Low)	2 (Low)	16 (Low)
Introduction and spread of alien vegetation	No	Negative	3 (Regional)	4 (Long term)	6 (Moderate)	3 (Medium)	39 (Medium)
	Yes	Negative	2 (Local)	2 (Short term)	4 (Low)	3 (Medium)	24 (Low)
Loss and disturbance of watercourse habitat and fringe vegetation	No	Negative	2 (Local)	3 (Medium term)	4 (Low)	5 (High)	45 (Medium)
	Yes	Negative	2 (Local)	3 (Medium term)	4 (Low)	3 (Probable)	27 (Low)
<b>Mitigation Measures</b>							

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
<ul style="list-style-type: none"> <li>Implementing effective stormwater management systems: Designing and implementing proper stormwater management systems, such as detention basins, vegetated swales, or permeable surfaces, will mitigate the impact of increased runoff from the solar plant site.</li> <li>Preserving natural drainage patterns: By preserving the natural drainage patterns and avoiding the alteration of existing watercourses, the hydrological regime can be maintained to a greater extent. This approach helps to sustain natural flow patterns and minimize disruptions to aquatic ecosystems.</li> <li>Implementing water conservation practices: Incorporating water conservation practices within the solar plant operations can help reduce water demand. This includes utilizing water-efficient technologies and practices such as drip irrigation, efficient cooling systems, and water recycling, which can help minimize the impact on water resources.</li> <li>Designing and maintaining erosion control measures: Implementing erosion control measures, such as installing sediment barriers, stabilizing slopes, and revegetating disturbed areas, can help minimize soil erosion and sedimentation in nearby water bodies. This reduces the potential negative impacts on water quality and aquatic ecosystems.</li> <li>Implementing best management practices (BMPs): Utilising BMPs specifically designed for solar plant development can help minimize the impact on hydrological functioning. These practices may include minimizing impervious surfaces, incorporating green infrastructure, promoting soil conservation practices, and establishing buffer zones along water bodies to filter runoff.</li> <li>Conducting regular monitoring and maintenance: Regular monitoring of hydrological conditions, including water flow rates, water quality parameters, and sediment deposition, can help identify potential issues and enable timely interventions. Regularly maintaining stormwater management systems, erosion control measures, and other infrastructure ensures their effectiveness and prevents unintended impacts.</li> <li>Locate the infrastructure outside the calculated buffer zone.</li> <li>Training and Education: Train personnel involved in the solar plant's operation and maintenance on best practices for water quality protection. Promote awareness and understanding of the potential impacts of the solar plant on water quality and the importance of adhering to mitigation measures.</li> </ul>							
<b>Impacts on wetlands during the operational phase</b>							
The wetland impacts were rated medium during the decommissioning phase without mitigation measures and low with the implementation of the appropriate mitigation measures.							
Introduction and spread of alien vegetation	No	Negative	4 (Regional)	3 (Medium term)	4 (Low)	3 (Medium)	33 (Medium)
	Yes	Negative	2 (Local)	3 (Medium term)	4 (Low)	2 (Low)	18 (Low)
Change is sediment regime.	No	Negative	4(Regional)	3 (Medium term)	6 (Moderate)	4 (High)	52 (High)
	Yes	Negative	2 (Local)	2 (Short term)	4 ( Low)	2 (Low)	16 (Low)

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
<b>Mitigation Measures</b>							
<ul style="list-style-type: none"> <li>Undertake an Alien Plant Control Plan which specifies actions and measurable targets.</li> <li>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 afterward.</li> <li>Long-term monitoring for the establishment of alien invasive species within the areas affected by the construction and maintenance and immediate corrective action where invasive species are observed to establish, as specified in the Alien Vegetation Management Plan.</li> <li>Rehabilitate or revegetate disturbed areas.</li> <li>Seed Control and Prevention: Develop and implement seed control measures to prevent the transportation and spread of alien plant seeds. This includes inspecting and cleaning construction equipment, vehicles, and personnel clothing to remove any seeds before entering or leaving the site.</li> <li>Vegetation Management and Restoration: Implement a comprehensive vegetation management plan that includes regular monitoring and removal of alien species. Promote the restoration of native vegetation through the establishment of native plant communities that are well-suited to the local ecosystem.</li> <li>Early Detection and Rapid Response: Establish protocols for early detection and immediate response to newly introduced alien species. Regularly monitoring and rapidly removing identified alien plants can help prevent their establishment and spread.</li> </ul>							

### 13.2.2. Impacts on Terrestrial Biodiversity

Loss of vegetation and habitat types.							
Issues	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Fauna	No	Negative	2 (Local)	4 (Long-Term)	8 (High)	5 (Definite)	70 (High)
	Yes	Negative	1 (Site only)	4 (Long-Term)	4 (Low)	4 (High)	36 (Medium)
Flora	No	Negative	2 (Local)	4 (Long-Term)	8 (High)	5 (Definite)	70 (High)
	Yes	Negative	1 (Site only)	4 (Long-Term)	4 (Low)	4 (High)	36 (Medium)
Degradation of surrounding habitats due to improper waste disposal, dust precipitation, and spilling of hazardous waste							

Aspect	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Fauna	No	Negative	2 (Local)	4 (Long-Term)	8 (High)	4 (High)	40 (Medium)
	Yes	Negative	1 (Site only)	4 (Long-Term)	4 (Low)	3 (Medium)	29 (Low)
Flora	No	Negative	2 (Local)	4 (Long-Term)	8 (High)	4 (High)	40 (Medium)
	Yes	Negative	1 (Site only)	4 (Long-Term)	4 (Low)	3 (Medium)	29 (Low)

Destruction of threatened and protected plant species and Direct mortality of fauna (including possible SSC).

Aspect	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Fauna	No	Negative	2 (Local)	4 (Long-Term)	8 (High)	5 (Definite)	70 (High)
	Yes	Negative	1 (Site only)	4 (Long-Term)	4 (Low)	4 (High)	36 (Medium)
Flora	No	Negative	2 (Local)	4 (Long-Term)	8 (High)	5 (Definite)	70 (High)
	Yes	Negative	1 (Site only)	4 (Long-Term)	4 (Low)	3 (Medium)	27 (Low)

Spread and/or establishment of invasive alien species

Aspect	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Fauna	No	Negative	2 (Local)	4 (Long-Term)	8 (High)	5 (Definite)	70 (High)
	Yes	Negative	1 (Site only)	4 (Long-Term)	4 (Low)	4 (High)	36 (Medium)
Flora	No	Negative	2 (Local)	4 (Long-Term)	8 (High)	5 (Definite)	70 (High)
	Yes	Negative	1 (Site only)	4 (Long-Term)	4 (Low)	3 (Medium)	27 (Low)

Operational Phase

Continued fragmentation and degradation of habitats and ecosystems.

Aspect	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	

Fauna	No	Negative	2 (Local)	4 (Long-Term)	8 (High)	4 (High)	40 (Medium)
	Yes	Negative	1 (Site only)	4 (Long-Term)	4 (Low)	3 (Medium)	29 (Low)
Flora	No	Negative	2 (Local)	4 (Long-Term)	8 (High)	4 (High)	40 (Medium)
	Yes	Negative	1 (Site only)	4 (Long-Term)	4 (Low)	3 (Medium)	29 (Low)

**Spread and/or further establishment of alien and/or invasive species**

Aspect	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Fauna	No	Negative	2 (Local)	4 (Long-Term)	8 (High)	4 (High)	40 (Medium)
	Yes	Negative	1 (Site only)	4 (Long-Term)	4 (Low)	3 (Medium)	29 (Low)
Flora	No	Negative	2 (Local)	4 (Long-Term)	8 (High)	4 (High)	40 (Medium)
	Yes	Negative	1 (Site only)	4 (Long-Term)	4 (Low)	3 (Medium)	29 (Low)

Corrective Actions	<ul style="list-style-type: none"> <li>• All high sensitivity areas should be avoided as far as possible, and development must be prioritised in low or medium areas.</li> <li>• Watercourses, drainage lines, streams, and wetlands must be avoided, and a no-go buffer of 20m must be applied around them.</li> <li>• Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should not be fragmented or disturbed further. Clearing vegetation should be considered, and susceptible areas must be avoided, with areas not earmarked for clearance conserved. All activities must also be restricted to the low/medium sensitivity areas. No further loss of high sensitivity areas should be permitted. It is recommended that areas to be developed be specifically restricted so that only the demarcated areas will be impacted during the construction phase.</li> <li>• Existing access routes, especially roads, must be used.</li> <li>• 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 after the construction phase. Construction buildings should preferably be prefabricated or constructed of re-usable/recyclable materials. No storage of vehicles or equipment will be allowed outside the designated project areas.</li> <li>• Areas denuded during construction must 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. All livestock must always be kept out of the project area, especially areas that have been recently re-planted.</li> <li>• A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over, it does not run into the surrounding areas. The Contractor shall have an emergency spill kit that must always be complete and available on-site.</li> </ul>
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	<ul style="list-style-type: none"> <li>• It should be an offense for any staff to take/ bring plant species into/out of any portion of the project area. No indigenous or exotic plant species should be brought into/taken from the project area to prevent the spread of exotic or invasive species or the illegal collection of plants.</li> <li>• A fire management plan needs to be complied with and implemented to restrict fire's impact on the surrounding areas.</li> <li>• Any individual of the protected plants that are present needs a relocation or destruction permit for any individual that may be removed or destroyed due to the development. High visibility flags must be placed near any threatened/protected plants to avoid any damage or destruction of the species. If left undisturbed, these species' sensitivity and importance must be part of the environmental awareness program. Development areas where protected plants cannot be avoided must adhere to an SCC management plan, and these plants should be removed and relocated/ re-planted in similar habitats where they should be able to resprout and grow again. All protected and red-data plants and as many other species as possible should be relocated.</li> <li>• For the threatened species that may not be destroyed, it is recommended that professional service providers that deal with plant search and rescue be used to remove such plants and use them for later rehabilitation work or other conservation projects.</li> <li>• A suitably qualified ecologist suggests a site walk through before any construction activities, preferably during the wet season, and any SSC should be noted.</li> <li>• Compilation of and implementation of an alien vegetation management plan for the project area.</li> <li>• The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas. The footprint of the roads must be kept to the prescribed widths.</li> </ul>
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### 13.2.3. Impacts on Avifaunal

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
<b>Impact on wetland during construction and operation phase</b>							
Habitat destruction within the project footprint	No	Negative	3 (Regional)	3 (Medium term)	6 (Moderate)	4 (High )	48 (Medium)
	Yes	Negative	2 (Local)	3 (Medium term)	4 (Low)	3 (Probable)	18 (Low)
Destruction, degradation, and fragmentation of surrounding habitats	No	Negative	3 (Regional)	3 (Medium term)	6 (Moderate)	4 (High)	48 (Medium)
	Yes	Negative	2 (Local)	2 (Short term)	4 (Low)	2 (Low)	16 (Low)
	No	Negative	3 (Regional)	4 (Long term)	6 (Moderate)	3 (Medium)	39 (Medium)

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Displacement/emigration of avifauna community (including SCC) due to noise pollution	Yes	Negative	2 (Local)	2 (Short term)	4 (Low)	3 (Medium)	24(Low)
Direct mortality from persecution or poaching of avifauna species and collection of eggs	No	Negative	2 (Local)	3 (Medium term)	6 (Moderate)	4 (High)	48 (Medium)
	Yes	Negative	2 (Local)	2 (Short term)	6 (Moderate)	2 (Probable)	20 (Low)
Chemical pollution associated with dust suppressants	Yes	Negative		4 (Long term)	4 (Low)	4 (High)	48 (Medium)
	No	Negative	2 (Local)	2 (Short term)	4 (Low)	1 (very low)	10 (Low)
<b>Mitigation Measures</b>							



- The areas to be developed must be specifically demarcated to prevent movement into surrounding environments.
- High sensitivity areas must be declared No-go areas and restricted to ensure no vehicles or people move into these areas.
- Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should not be fragmented or disturbed further.
- Solar panels must be mounted on pile driven or screw foundations, such as post support spikes, rather than heavy foundations, such as trench-fill or mass concrete foundations, to reduce the adverse effects on natural soil functioning, such as its filtering and buffering characteristics, while maintaining habitats for both below and above-ground biodiversity.
- Indigenous vegetation should be maintained under solar panels to ensure biodiversity and prevent soil erosion (Beatty et al., 2017; Sinha et al., 2018).
- Areas denuded during construction must be re-vegetated with indigenous vegetation to prevent erosion. This will also reduce the likelihood of encroachment by alien invasive plant species. Topsoil must also be used, and any disturbed area must be re-vegetated with plant and grass species indigenous to this vegetation type.
- A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill, it does not run into the surrounding areas.
- Leaking equipment and vehicles must be repaired immediately or removed from the project area to facilitate repair.
- A fire management plan must be complied with to restrict fire impact.
- All personnel should undergo environmental induction regarding avifauna and awareness about not harming, collecting or hunting terrestrial species and owls, often persecuted out of superstition. Signs must be put up to enforce this.
- The duration of the construction should be kept to a minimum to avoid disturbing avifauna.
- Outside lighting should be designed and limited to minimize impacts on avifauna. All outside lighting should be directed away from susceptible areas. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (red/green) lights should be used wherever possible.
- All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on complying with the speed limit (20 km/h) to respect all forms of wildlife. Speed limits must still be enforced to limit road killings and erosion.
- All project activities must be undertaken with appropriate noise mitigation measures to avoid disturbance to the avifauna population in the region
- All areas to be developed must be walked through before any activity to ensure no nests or avifauna species are found in the area. Should any Species of Conservation Concern be found and not move out of the area, or their nest is found there, a suitably qualified specialist must be consulted to advise on the correct actions to be taken.
- The design of the proposed PV and grid lines must be of a type or similar structure as endorsed by the Eskom-EWT Strategic Partnership on Birds and Energy, considering the mitigation guidelines recommended by Birdlife South Africa (Jenkins et al., 2015). It therefore must be a bird-friendly design.
- Infrastructure should be consolidated where possible to minimise the amount of ground and air space used.
- All the parts of the infrastructure must be nest-proofed, and anti-perch devices placed on areas that can lead to electrocution.
- Use environmentally friendly cleaning and dust suppressant products.
- Fencing mitigations for ClearVu or similar fencing.
- If needed, any top strands must be smooth wire, barbed wire must be avoided.

**13.2.4. Impacts on Heritage and Cultural**

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
No archaeological objects were observed during the survey.							
<b>Mitigation Measures</b>							
<ul style="list-style-type: none"> <li>• Before construction, contractors should be trained to identify and protect archaeological remains that may be discovered during the project.</li> <li>• Report any incident of human remains encountered to the South African Police Services, SAHRA staff member, and professional archaeologist.</li> <li>• Should any archaeological material be unearthed accidentally during construction, SAHRA should be alerted immediately, and construction activities be stopped within a radius of at least 10m of such indicator. The area should then be restricted by a danger tape and protected until the authorities finish the investigation. Accordingly, a professional archaeologist or SAHRA officer should be contacted immediately.</li> </ul>							

**13.2.5. Impacts on Social**

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Employment Opportunities and Skills Development.							
<b>Construction Phase</b>							
SMME's support, local employment opportunities, Workers influx, occupational health and safety.	No	Positive	3	3	6	3	36 (Medium)
	No	N/A	N/A	N/A	N/A	N/A	N/A
<ul style="list-style-type: none"> <li>• Implement a 'locals first' policy regarding labour needs. This can be incorporated into a Workforce Recruitment Policy. The Workforce Recruitment Policy should include:                             <ul style="list-style-type: none"> <li>○ A clear definition of locals; known as the Project Affected People (PAP).</li> </ul> </li> </ul>							

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
	<ul style="list-style-type: none"> <li>○ Develop a criterion of characteristics considered to identify a given job seeker as a PAP (a selection criterion for allocating jobs);</li> <li>○ A database of locals and their relevant skills and experience;</li> <li>○ Reserve employment, where practically possible, for locals and</li> <li>● Where possible, subcontract to local construction companies.</li> <li>● Consultation with local authorities is essential to manage job creation expectations and ensure all eligible workers in the primary study area are informed of the opportunities.</li> <li>● Contracts ensuring that on-the-job training is included and enforced as a condition for developing this project.</li> <li>● Improve the chances of skills development during the construction phase; contractors are encouraged to provide learnerships and encourage further knowledge sharing.</li> <li>● To ensure that skills are adequately acquired, additional training programmes must be held during the construction phase to prepare the identified community members to be employed in the next phase, i.e., the operational phase.</li> <li>● Employ labour-intensive construction methods where economically feasible and technically possible.</li> <li>● Standardised minimum wage for unskilled laborers. Main contractors to provide guidelines with standardised working conditions to be shared across</li> <li>● Recruitment of professional security will play a significant role in managing crime.</li> <li>● Vametco needs to take all necessary measures to ensure that proper due diligence has been conducted on their suppliers</li> <li>● Budget allocation for the decommissioning or an agreement with Eskom where the facility can be transferred.</li> </ul>						

**13.2.6. Impacts on Visual**

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
The VAC of the study area is considered moderately low for the development of the proposed activities, and a relatively low overall screening capacity is expected for this project.							
Solar Arrays and Associated Infrastructure, including BESS	No	Negative	2 (Local)	3 (medium term)	6 (Moderate)	3 (Medium)	33 (Medium)
	Yes	Negative	2 (Local)	3 (medium term)	4 (Low)	3 (Medium)	27 (Low)

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
<b>Mitigation Measures</b>							
<ul style="list-style-type: none"> <li>Disturbed areas should be revegetated with endemic, indigenous species, especially veld grass and trees. Hydroseeding application is recommended in disturbed areas as a rehabilitation measure.</li> <li>Retain existing vegetation adjacent to the development footprint to minimise the visual impact caused by clearing vegetation and exposing soil areas.</li> <li>Plant fast-growing endemic trees along the boundaries of the solar park. The trees will, with time, create a screen and increase the area's biodiversity.</li> <li>Make use of existing access roads where possible.</li> <li>Where new access roads are required, the disturbance area should be minimal. A two-track dirt road will be the most preferred option.</li> <li>Locate access routes to limit modification to the topography and to avoid the removal of established vegetation.</li> <li>Avoid crossing over or through ridges, rivers, pans, or any natural features with visual value. This also includes centers of floral endemism and areas where vegetation is not resilient and takes extended periods to recover.</li> <li>Road verges that need to be cleared should be kept to a minimum.</li> <li>Access routes should be located on the perimeter of disturbed areas such as cultivated/fallow lands to not fragment intact vegetated areas.</li> <li>If clearing vegetation for a road is necessary, avoid doing so in a continuous straight line. Alternatively, curve the road to reduce the visible extent of the cleared corridor.</li> <li>Avoid a continuous linear path of cleared vegetation that strongly contrasts with the surrounding landscape character. Feather the edges of the cleared corridor to avoid a clearly defined line through the landscape.</li> <li>If practically possible, locate construction camps in areas already disturbed or where it isn't necessary to remove established vegetation, such as naturally bare areas. Keep the construction sites and camps neat, clean, and organised to portray a tidy appearance.</li> <li>Utilize existing screening features such as dense vegetation stands or topographical features to place the construction camps and lay-down yards out of the view of sensitivity visual receptors.</li> </ul>							

### 13.3. CUMULATIVE IMPACTS

Cumulative impacts to an activity, means the past, present and reasonably near future impacts of an activity, considered together with the impacts of activities associated with that activity, which 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). This section provides cumulative impacts ratings associated with the proposed project, including the waste generation, traffic, socio-economic, and visual impacts. It also outlines the mitigation measures of each rated cumulative impact as follows:

### 13.3.1. Waste Generation

Aspect	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Given the nature and magnitude of the proposed project, very little dust is expected to be generated. The potential impact on air quality will be short-term and can be controlled. Proper implementation of recommended corrective measures will reduce the impact to low significance.							
Waste	No	Negative	2 (Local)	2 (short term)	4 (Low)	8 (High)	36 (Medium)
	Yes	Negative	1 (Site)	2 (short term)	4 (Low)	3 (Medium)	21 (Low)
<b>Corrective Actions</b>							
<ul style="list-style-type: none"> <li>No waste will be buried on-site.</li> <li>The workforce must be encouraged to sort waste into recyclable and non-recyclable waste.</li> <li>No burning of waste will be allowed on-site.</li> <li>Waste must be regularly removed from the site and disposed of at a registered disposal facility.</li> </ul>							

### 13.3.2. Wetlands Impacts

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
<b>Impact on wetland</b>							
Loss of habitat and disruption of surrounding ecological corridors	No	Negative	3 (Regional)	4	4	3 (Probable)	48 (Medium)
	Yes	Negative	4	5	4	4	18 (Low)
<b>Mitigation Measures</b>							

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
<ul style="list-style-type: none"> <li>• The areas to be developed must be specifically restricted to prevent movement into surrounding environments.</li> <li>• High sensitivity areas must be declared No-go areas and restricted to ensure no vehicles or people move into these areas.</li> <li>• Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should not be fragmented or disturbed further.</li> </ul>							

#### **14. UNDERTAKING UNDER OATH OR AFFIRMATION BY THE EAP**

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

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

Refer to **Appendix D** for the Declaration of the EAP.

#### **15. WHERE APPLICABLE, DETAILS OF ANY FINANCIAL PROVISION FOR THE REHABILITATION, CLOSURE, AND ONGOING POST-DECOMMISSIONING MANAGEMENT OF NEGATIVE ENVIRONMENTAL IMPACTS**

The proposed new activities, i.e., the proposed 400 MW Solar PV plant and BESS: Up to 200 MW / 800 MWh capacity. Storage system and associated infrastructure will add to the current footprint and thus require the necessary financial provisions for the Project to comply with GN R 1147. Therefore, the scope will be calculated according to the requirements encapsulated in the Financial Provision Regulations, 2015 (Government Notice Regulation [GN R] No. 1147), published under the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) as amended, in Government Gazette 39425.

Vametco undertakes annual closure reviews and updates of its financial provisions in line with the requirements of the Regulation. The Financial Provision for the proposed activities will be submitted with the final d EA Amendment report.

#### **16. ENVIRONMENTAL IMPACT STATEMENT**

Positive and negative environmental impacts (ranging from habitat loss to operational effects) were identified and assessed for the proposed development. From an avifauna perspective, the main expected impacts of the proposed PV and associated infrastructure will include habitat loss and fragmentation, electrocutions, and collisions. Impacts were identified as Moderately High to Moderate during the Construction Phase, most of which could be reduced to Moderate to Low. Solar panels have been implicated as a potential risk for bird collisions. Collisions are thought to arise when birds (particularly waterbirds) mistake the panels for waterbodies. Impacts in the operational phase are expected to be Moderately High to Moderate and can be reduced to Moderate to Low

with mitigation measures. The overall impact of the proposed development on water resources was scored a “medium impact” before mitigation and “low” after mitigation.

The biodiversity specialist indicated that the main anticipated impact includes the clearing of vegetation, which will lead to habitat destruction and the proliferation of alien plant species along the roads and cleared areas, as well as the severing of movement corridors for fauna, loss of fauna and flora SCCs (if present) and the fragmentation of habitat. The loss of vegetation within the development footprint is rated as a ‘High’ significance and cannot be lowered significantly as the loss of vegetation is unavoidable; however, it can be reduced to a ‘Moderate’ risk after implementing mitigation measures. The destruction of threatened and protected plant species within the development footprint is rated as a ‘Moderate’ significance and can be lowered to a ‘Low’ risk after implementing mitigation measures.

## **16.1. SUMMARY OF THE POSITIVE AND NEGATIVE IMPLICATIONS AND RISKS OF THE PROPOSED ACTIVITY AND IDENTIFIED ALTERNATIVE**

### **Layout Options.**

Three options were assessed, and option three was preferred as it excludes a smaller portion of the wetland area in the central west. And will utilise the existing roads and eliminate the need for a bridge.

### **BESS and Substation site alternatives.**

Two site alternatives for the BESS and substation were assessed (eastern and western sections of the proposed site), and the west option was preferred as it will have shorter powerlines than the east section.

### **Powerline technical alternatives**

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

Technically, underground cables need to be insulated against the surrounding soil. On low voltage reticulation networks (11kV & 22kV), cable heat is low enough for standard insulation to be used; however, on larger power lines (i.e., 400kV as proposed), the electrical and heat insulation method becomes more burdensome.



## PV Solar Power and Concentrated Solar Power

Two technical alternatives have been identified for the proposed project, i.e., PV Solar Power versus Concentrated Solar Power (CSP). The PV Solar Power is preferred as an alternative solar power technology, as photovoltaic technology is much quicker to implement and requires much less water when compared to CSP.

Given the comprehensiveness of the impact assessment undertaken to this end, it is recommended that the proposed project be authorised, i.e., the proposed Solar Park and associated infrastructure. The conditions that must be included in this EA are as follows:

- All mitigation measures described in this report and the specialist studies must be implemented;
- The EMP, as contained within Appendix D, must be used as a blueprint throughout all phases of the project;
- A WUL must be obtained from the Department of Water and Sanitation before commencement;
- A site walkthrough must be undertaken before the clearance of the development footprint. A suitably qualified botanist must undertake the site walkthrough, which must be conducted during the growing season to map all protected tree species that may potentially be affected for permitting purposes;
- Appropriate/Adequate fire management plans need to be implemented before the commencement of the construction activities;
- Rehabilitation and erosion monitoring plans must be compiled before the commencement of the construction activities;
- A spill response kit must be always available. All incidents must be reported on, and if necessary, a biodiversity specialist must investigate the extent of the impact and provide rehabilitation recommendations;
- Vehicles must be restricted to travelling on designated roadways to limit the ecological footprint of the proposed activity;
- Watercourses, drainage lines, streams, and wetlands must be avoided, and a no-go buffer must be applied around them;
- 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;
- Monitoring of any subsurface material remains or topographic features or sites that were unobserved during the initial field investigation due to vegetation cover;
- 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 it may be disposed of, must be in a manner acceptable to the Local Authority and the Department of Water and Sanitation (DWS);

- Precautionary measures must be taken during the construction phases of the project to reduce the possibility of soil erosion and pollution occurring;
- Clearing of vegetation should be restricted to areas where construction is to take place;
- 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 such a way that it would not pose a threat to the environment;
- 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.
- Dust generated by construction activities must be minimised by dust suppression techniques such as the use of water sprinklers.
- 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 the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended; and
- It is therefore requested that all relevant legislation and other requirements of other government departments (i.e., National, Provincial, and Local) must be complied with.

## **16.2. NO GO ALTERNATIVE**

According to GN R.982 of the 2014 EIA Regulations 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 and socioeconomic development. The no-go alternative would be the option of not undertaking the development of the proposed project. It would imply that the identified benefits, including moving to cleaner energy sources and contributing to advancing the energy sector, would not be realised.

Further, integrating potential renewable energy in the area will not be possible. Should the no-go alternative be adopted, the country will be deprived of adding power to the grid. This is a much-needed essential service, particularly given the nationwide energy supply challenge.

## **17. DESCRIPTION OF ANY ASSUMPTIONS, UNCERTAINTIES AND KNOWLEDGE GAPS**

It is assumed that the technical information provided by Vametco was correct and valid at the time of compilation of this report.

### **17.1. PUBLIC PARTICIPATION PROCESS**

The Public Participation Process is undertaken per Chapter 6 of the 2014 EIA Regulations. The EAP will endeavor to reach all the stakeholders. During this process, it is likely that some I&APs may not be reached. However, an effort will be made to contact the stakeholders and I&APs through newspaper adverts, site notices, and the Nsovo website.

### **17.2. LITERATURE REVIEWS IS VIEWED AS CORRECT**

The compilation of the reports was based on various literature reviews and previous specialist studies, which were considered correct at the time. However, it is acknowledged that there might be some gaps in knowledge regarding the literature reviewed, although concerted efforts were made to attain as much information as possible.

### **17.3. BIODIVERSITY ASSESSMENT**

It is possible that some plant and animal species that are present on site were not recorded during the field investigations. However, an effort was made to identify all plant species present on-site during field investigations; this being the wet season, any winter flowering species would have been omitted from field data.

### **17.4. HERITAGE ASSESSMENT**

Phase I Archaeological and Cultural Heritage Impact Assessment for the proposed development did not yield any heritage resources within the footprint of the surveyed area. Although certain constraints and limitations may have inhibited identification, it is highly unlikely that any surface archaeology was not identified.

### **17.5. AVIFAUNA ASSESSMENT**

Some areas of the PAOI were inaccessible and could not be surveyed during the site visit. While every effort was made to cover as much of the PAOI as possible, it is possible that some species that are present within the PAOI were not recorded during the field investigations due to their secretive behaviour.

## **18. CONCLUSION**

This report has been compiled per Regulation 32 of the EIA Regulations, 2014 (as amended). This report has comprehensively addressed the potential positive and negative impacts of the proposed solar PV and associated infrastructures. Furthermore, the EA amendment process has identified critical issues and concerns based on inputs from the specialist and the EAP's professional judgment based on experience and expertise in the field.

No fatal flaws or highly significant impacts were identified that would necessitate substantial redesign or termination of the project. Potential negative impacts have been identified, and where the impacts were detrimental to the environment, mitigation measures were recommended.

The report will be subjected to a 30-day comment and review period to allow input from stakeholders and I&APs. The comments received via email, calls, and meetings will be considered and incorporated in the report and comprehensively addressed in the CRR. Furthermore, the report provides a detailed assessment of the identified issues and significance ratings and proposes mitigation measures as applicable. Recommendations to be made by the DMRE will be addressed and incorporated before submission of the final report for decision-making.

Based on the conclusions of the specialist studies and impact assessment for the proposed project and the EAP assessment of impacts, the impacts associated with the construction and operation of the proposed Solar Park project are expected to be medium to low significance with the implementation of adequate mitigation measures. No environmental and social fatal flaws were identified to be associated with the proposed project.

Furthermore, based on the nature and extent of the proposed development, the local levels of disturbance predicted versus the expected benefits at a regional and national scale, the findings of the assessment, and the understanding of the significance level of potential environmental and social impacts. The EIA project team believes that the proposed project can proceed subject to implementing the mitigation measures detailed in this report and the EMPr.

The project should thus be authorised for the following reasons:

- The proposed project will have cumulative job opportunities for permanent key personnel on the operational facilities and temporary jobs for construction and implementation, which will also include skills transfer;
- The project would contribute to green energy initiatives;
- Considering the current state of power generation in South Africa, the project would improve grid security;
- The project would contribute to the reduction of energy demands. Thus, allowing for affordable access to power for basic needs such as lighting and cooking;
- The proposed activities seek to ensure the least impact on the environment by adhering to the legislative and regulatory requirements as well as world best practices;
- The proposed activities will allow for the identified positive impacts to be realised at a local, regional, and national scale; and

- It is acknowledged that the various phases of the proposed project will yield negative impacts on the environment; however, given the mitigation proposed, it can be confirmed that the identified socioeconomic benefits far outweigh the negative consequences determined.

Considering the current state of the economy following the worldwide pandemic, i.e., COVID-19 and its adverse effects on South Africa's economy, any activity that seeks to stimulate the economy and create jobs where possible must be encouraged.

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### Specialist Reports

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