ABO WIND

ENVIRONMENTAL SCOPING REPORT: THE PROPOSED DEVELOPMENT OF ABO NYALA SOLAR ENERGY FACILITY 3 & ASSOCIATED INFRASTRUCTURE, LOCATED WITHIN THE THABAZIMBI LOCAL MUNICIPALITY AND WATERBERG DISTRICT MUNICIPALITY IN THE LIMPOPO PROVINCE

Draft Report

Report Date: 08 September 2023

Praxos 373 Reference: 220707A
Authority Reference: TBC

PRAXOS 373

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REVISION HISTORY AND APPROVAL

Date	Rev.	Author	Reviewer	Approver
2023.09.08	00	Suhasini Naik	Nishkar Maharaj	Manie Cilliers
				

ENVIRONMENTAL IMPACT ASSESSMENT TEAM

Role	Name	Company / Organisation
Environmental Assessment Practitioner	Suhasini Naik	Praxos 373 (Pty) Ltd
Assistant Environmental Assessment Practitioner	Nishkar Maharaj	Praxos 373 (Pty) Ltd
Agricultural Assessment	John Phipson	Mzansi Agriculture
Aquatic Biodiversity & Wetland Delineation Assessment	Toni Belcher	BlueScience (Pty) Ltd
Archaeological & Cultural Heritage Impact Assessment	Francois P Coetzee	EnviroSaint (Pty) Ltd
Avifauna Impact Assessment	Robyn Phillips	Cossypha Ecological
Battery Energy Storage System (BESS) Risk Assessment	Debra Mitchell	iSHEcon

Role	Name	Company / Organisation
Ecological Impact Assessment (Fauna & Flora)	Johannes Maree	EnviroSaint (Pty) Ltd
Geotechnical Assessment	Carel de Beer	Bare Rock Consulting
Geohydrological Impact Assessment	Marius van Biljon	EnviroSaint (Pty) Ltd
Palaeontological Desktop Assessment	Jacobus Francois Durand	EnviroSaint (Pty) Ltd
Socio-Economic Impact Assessment	Louis Calitz	Urban Econ
Transport Impact Assessment	Iris Wink	iWink Consulting
Visual Impact Assessment (including Glint & Glare)	Jon Marshall	Environmental Planning and Design

PURPOSE OF THE DOCUMENT

The Scoping phase is the first of two phases associated with an application process for Environmental Authorisation (*EA*), as prescribed by the National Environmental Management Act, 1998 (Act 107 of 1998) [*NEMA*]. The purpose of this Draft Scoping Report (*DSR*) is to provide stakeholders with an overview of the Proposed Development, the applicable Listed Activities for which an EA is sought, and the processes undertaken in compliance with the applicable legislative requirements.

In terms of the NEMA, a Scoping Report must comply with the provisions of Section 24N of the Act; and must include all the information specified in Regulation 21 and Appendix 2 of the EIA Regulations, 2014 as amended (*EIA Regulations*) promulgated under the NEMA and published as Government Notice Regulation (*GNR*) 982 as amended. The content of the Scoping Report prepared in terms of the Regulations is outlined in **Table 1** below. The relevant sections of the Scoping Report in which the requirements are addressed, are also provided.

Table 1: Alignment to Appendix 2 of GNR 982 of the EIA Regulations

Prescribed content of Scoping Report		Location in Report
a)	**Details of –**	
(i)	The EAP who prepared the Report.	Section 1.3.4 – 1.3.5
(ii)	The expertise of the EAP, including a curriculum vitae.	Section 1.3.4 – 1.3.5; Appendix A
b)	**The location of the activity, including –**	
(i)	The 21-digit Surveyor General code of each cadastral land parcel.	Section 2.2
(ii)	Where available, the physical address and farm name.	
(iii)	Where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties.	
c)	**A plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is –**	
(i)	a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or	Figure 2
(ii)	on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	
d)	**A description of the scope of the proposed activity, including -**	
(i)	All listed and specified activities triggered.	Section 2.4
(ii)	A description of the activities to be undertaken, including associated structures and infrastructure.	Section 2
e)	**A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process.**	Section 4
f)	**A motivation for the need and desirability for the proposed development including the need and desirability for the activity in the context of the preferred location.**	Section 5
g)	**A full description of the process followed to reach the proposed preferred activity, site and location of the development footprint within the site, including –**	
(i)	Details of all alternatives considered.	Section 3

Prescribed content of Scoping Report		Location in Report
(ii)	Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs.	Section 8; Appendix C
(iii)	A summary of the issues 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.	To be included in the Final Scoping Report (*FSR*).
(iv)	The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.	Section 6
(v)	The impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified impacts, including the degree to which these impacts – (aa) Can be reversed; (bb) May cause irreplaceable loss of resources; and (cc) Can be avoided, managed or mitigated.	Section 7 Will be investigated in more detail during the Environmental Impact Reporting (*EIR*) phase.
(vi)	The methodology used in identifying and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives.	Section 9.2
(vii)	Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.	Section 7
(viii)	The possible mitigation measures that could be applied and level of residual risk.	Section 7
(ix)	The outcome of the site selection matrix.	Section 3
(x)	If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such.	Section 3
(xi)	A concluding statement indicating the preferred alternatives, including preferred location of the activity.	Section 3; Section 10
(h)	**A plan of study for undertaking the environmental impact assessment process to be undertaken, including –**	
(i)	A description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity.	Section 9.3
(ii)	A description of the aspects to be assessed as part of the environmental impact assessment process.	Section 8
(iii)	Aspects to be assessed by specialists.	Section 9.4
(iv)	A description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists.	Section 9.2 - 9.4
(v)	A description of the proposed method of assessing duration and significance.	Section 9.2 - 9.4
(vi)	An indication of the stages at which the competent authority will be consulted.	Section 9.8
(vii)	Particulars of the public participation process that will be conducted during the environmental impact assessment process.	Section 9.7

Prescribed content of Scoping Report		Location in Report
(viii)	A description of the tasks that will be undertaken as part of the environmental impact assessment process.	Section 9.1
(ix)	Identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	Section 9
(i)	**An undertaking under oath or affirmation by the EAP in relation to –**	
(i)	The correctness of the information provided in the report.	Section 11; Appendix A
(ii)	The inclusion of comments and inputs from stakeholders and interested and affected parties.	Section 11; Appendix A
(iii)	Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.	Section 11; Appendix A
(j)	**An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment.**	Section 11; Appendix A
(k)	**Where applicable, any specific information required by the competent authority.**	N/A
(l)	**Any other matter required in terms of section 24(4)(a) and (b) of the Act.**	N/A
(2)	Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a scoping report, the requirements as indicated in such notice will apply.	N/A

The DSR identifies the potential biophysical, social and health aspects and impacts of the Proposed Development on the receiving environment and provides the opportunity for comments to be received from stakeholders in the identification of key issues and areas of concern, to inform the Environmental Impact Assessment (*EIA*) process. The main objectives of the Scoping phase are as follows:

- Provide a description of the Proposed Development, including the project motivation.
- Identify feasible alternatives to the Proposed Development to be assessed in the EIR phase.
- Describe the status quo of the biophysical and socio-economic characteristics of the affected environment where the development will occur.
- Define the legal, policy and planning context for the Proposed Development.
- Identify and describe the anticipated environmental, social and cultural impacts, including cumulative impacts, associated with the Proposed Development and outline Specialist Studies, included within the Scoping and Environmental Impact Reporting (*S&EIR*) process to assess these issues in further detail.
- Identify the key issues to be addressed during the impact assessment phase.
- Undertake a Public Participation Process (*PPP*) which provides all stakeholders and Interested and Affected Parties (*I&APs*) with opportunities to be involved, and to provide their views and concerns.
- Describe the methodology applied to conduct the Scoping phase.
- Describe the Plan of Study (*PoS*) for the Environmental Impact Reporting (*EIR*) phase (second phase of the S&EIR process), which describes the nature and extent of further investigations required in the EIR phase.

A period of 30 calendar days will be provided for public review and comment on the DSR from **Wednesday, 13 September 2023** to **Monday, 16 October 2023**. All I&APs, stakeholders as well as state departments will be notified of this review period.

The DSR contains the following information:

- A description of the project, including project motivation.
- Discussion of applicable alternatives.
- A description of the environment affected by the project.
- Identification of preliminary impacts and mitigation measures.
- The PPP undertaken thus far/planned.
- The PoS for the EIR phase.

Following the commenting period, the Scoping Report will be updated and prepared for submission to the Competent Authority (*CA*) for consideration. All comments received on the report during the public review period of the DSR will be incorporated and responded to in the Comments & Responses Report that will be attached as a separate Appendix. If the Scoping Report is accepted, the EIR phase will be initiated.

The flow diagram in **Figure 1** below highlights the phases in the environmental application and assessment process, as well as where I&APs have the opportunity to participate in this process.

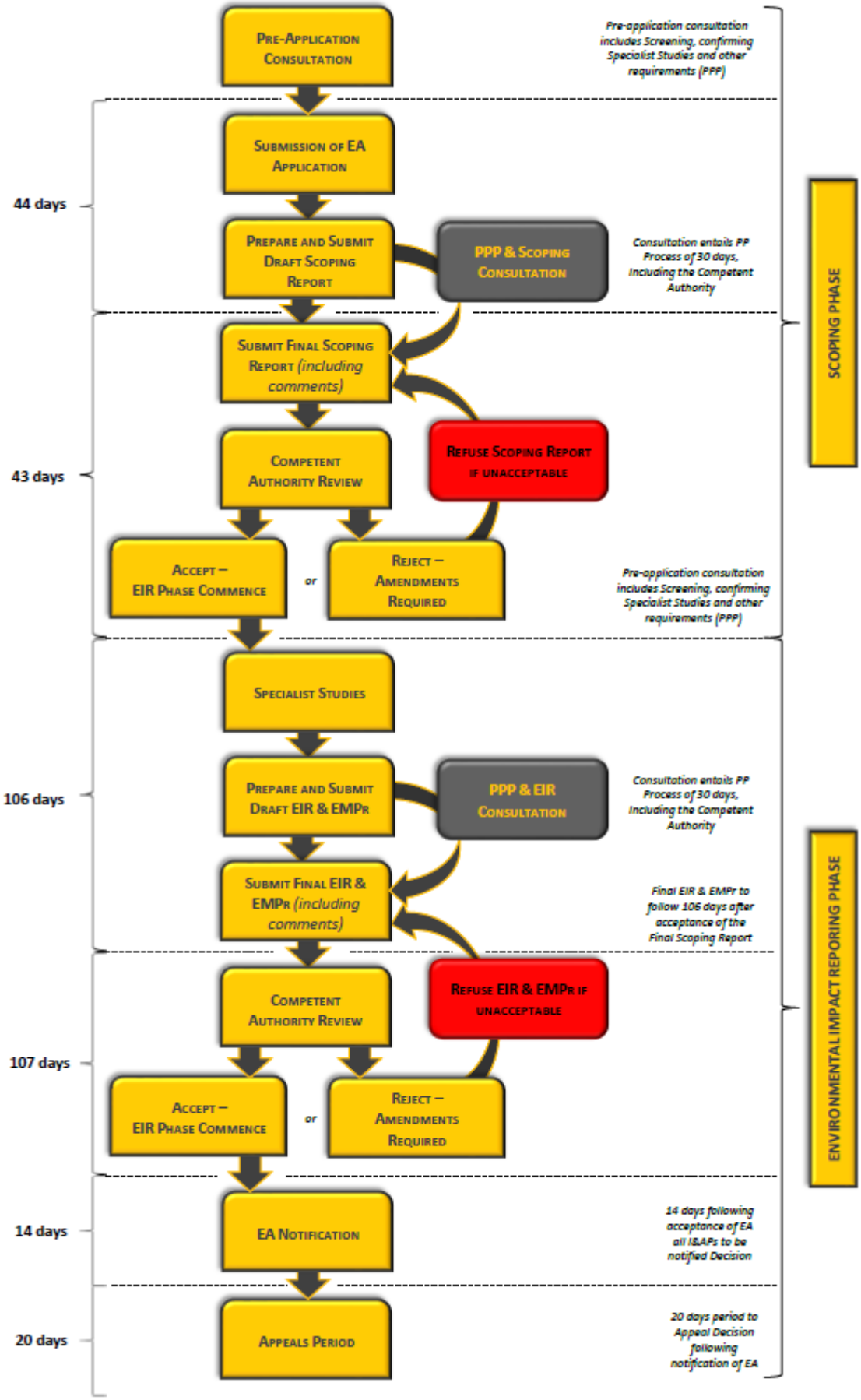

Figure 1: Flow Diagram of the Environmental Application Process & Public Participation Stages of the S&EIR Process

EXECUTIVE SUMMARY

Introduction

Praxos 373 (Pty) Ltd (*Praxos*) was appointed as an Environmental Assessment Practitioner (*EAP*) by ABO Wind Renewable Energies (Pty) Ltd (*ABO Wind*) on behalf of ABO Nyala Solar Energy Facility 3 (Pty) Ltd (*Applicant*), to undertake the S&EIR process for the ABO Nyala Solar Energy Facility 3 (*Proposed Development*), located within the Thabazimbi Local Municipality (*TLM*) and Waterberg District Municipality (*WDM*), in the Limpopo Province, South Africa.

Project Description

Table 2 below provides a brief overview of the project information.

Table 2: General Project Information

<table>
<tr><th colspan="2">Project Information</th></tr>
<tr><td>Project Name</td><td>ABO Nyala Solar Energy Facility 3.</td></tr>
<tr><td>Province</td><td>Limpopo.</td></tr>
<tr><td>District Municipality</td><td>Waterberg District Municipality.</td></tr>
<tr><td>Local Municipality</td><td>Thabazimbi Local Municipality.</td></tr>
<tr><td>Farm Numbers with Portions</td><td>Remaining Extent of Farm Leeuwkopje No. 415.
Portion 5 (Bralbin) of Farm Leeuwkopje No. 415 (access road only).</td></tr>
<tr><td>Development Footprint (ha)</td><td>
<table>
<tr><th>Proposed Infrastructure</th><th>Size</th></tr>
<tr><td>Solar field arrays and internal roads</td><td>53 ha</td></tr>
<tr><td>Access road*</td><td>0.12 ha</td></tr>
<tr><td>On-site sub-station hub</td><td>3 ha</td></tr>
<tr><td>Perimeter fencing</td><td>0.31 ha (assuming ± 1 m trenching/disturbance)</td></tr>
<tr><td>Total Maximum Development Footprint</td><td>56.43 ha</td></tr>
</table>
*Noting that, the alternative access road has been included in this calculation and that existing roadway would mostly be used and widened, so the extent of disturbance would effectively be less.</td></tr>
<tr><td>Water Management Area</td><td>Limpopo Water Management Area.</td></tr>
<tr><td>Vegetation Type(s)</td><td>Dwaalboom Thornveld.</td></tr>
<tr><td>Specialist Studies to be undertaken</td><td>• Agricultural Assessment.
• Aquatic Compliance Statement and Wetland Delineation Assessment.
• Archaeological & Cultural Heritage Impact Assessment.
• Avifauna Impact Assessment.
• BESS Risk Assessment.
• Terrestrial Ecological Impact Assessment.
• Geotechnical Assessment.
• Geohydrological Impact Assessment.
• Socio-Economic Impact Assessment.
• Transport Impact Assessment.
• Visual Impact Assessment (including Glint & Glare).</td></tr>
<tr><th colspan="2">Design Specifications</th></tr>
<tr><td>Facility Capacity</td><td>55 Megawatts (MW).</td></tr>
<tr><td>Battery Technology</td><td>Lithium-ion (Preferred).</td></tr>
</table>

Project Information	
	Redox flow (Alternative).

Identified Listed Activities

The listed activities which are being applied for are provided below:

Listed Activities as set out in Listing Notice 1 (GNR 983)

No. 11 (i) 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.

Description: The Proposed Development will include a substation/ collector infrastructure with a capacity of 132kV. The Proposed Development will include underground cables for internal electrical reticulation; however the capacity of these lines will not exceed 33 kV and is expected to be within the range of 22 – 33 kV. The Proposed Development is located outside an urban area and industrial complex.

No. 12 (ii)(c) The development of –
(ii) infrastructure or structures with a physical footprint of 100 square metres or more;
where such development occurs -
(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.

Description: The layout of the Proposed development has been designed to avoid sensitive aquatic environments on the affected property. A portion of the Proposed development and associated infrastructure (exceeding 100 sqm) would however be located within 32 m of wetland located adjacent (south) to the facility.

No. 24 (ii) The development of a road—
(ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres.

Description: An access road will be constructed to access the Proposed Development. This access road will follow existing farm roads as far as possible and would be a maximum of 10 m in width. Internal roads would also be 8 m in width.

No. 28 (ii) Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development-
(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial, or institutional purposes.

Description: The Proposed Development is defined as an industrial development which would occur outside an urban area. The Proposed Development will extend across an area of 56.43 ha which exceeds the 1 ha threshold. The Proposed Development is outside an urban area and the current land use within the development footprint is for agriculture.

No. 56 (ii) The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre—
(ii) where no reserve exists, where the existing road is wider than 8 metres.
excluding where widening or lengthening occur inside urban areas.

Description: Where possible, existing farm roads on site will be used and upgraded if required. The access road will be widened to a maximum width of 10 m. Where possible, existing farm roads would also be used and lengthened as part of the internal road network, and lengthening would exceed 1 km. The Proposed Development would occur outside an urban area.

Listed Activities as set out in Listing Notice 2 (GNR 984)

No. 1 The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more.

Description: The Proposed Development will entail the construction of a new 55 MW photovoltaic solar facility which exceeds the 20 MW threshold stipulated by this Listed Activity. The Project Area is located outside an urban area where no existing infrastructure is present.

No. 15 (i) The clearance of an area of 20 hectares or more of indigenous vegetation excluding where such clearance of indigenous vegetation is required for—

(i) the undertaking of a linear activity.

Description: The cumulative vegetation clearance to allow for the development of non-linear infrastructure (i.e., the on-site sub-station hub and foundations for the solar PV arrays) will exceed 20 hectares, resulting in the clearance of 56 ha.

Listed Activities as set out in Listing Notice 3 (GNR 985)

No. 3 (a) (b) (e) (i) (gg) The development of masts or towers of any material or type used for telecommunication broadcasting or radio transmission purposes where the mast or tower-

(a) is to be placed on a site not previously used for this purpose; and

(b) will exceed 15 metres in height –

but excluding attachments to existing buildings and masts on rooftops.

e. Limpopo

i. Outside urban areas:

(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas.

Description: A communications tower with a maximum height of 32 m is proposed as part of the on-site substation hub and will be located on a site that was not previously used for this purpose. The Proposed Development is located outside an urban area and within 5 km of the Leeuwkopje Private Nature Reserve, and Arzona Private Nature Reserve which are designated protected areas in terms of NEMPAA. The Project Area is located outside urban areas.

No. 4 (e) (i) (gg) The development of a road wider than 4 metres with a reserve less than 13.5 metres.

e. Limpopo

i. Outside urban areas:

(gg) areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas.

Description: Roads developed for the Proposed Development will be a maximum of 10 m wide. Existing farm roads would be used as far as possible and upgraded. Road Development would occur within 5 km of the Leeuwkopje Private Nature Reserve, and Arzona Private Nature Reserve, which are designated protected areas in terms of NEMPAA. The Project Area is located outside urban areas.

No. 14 (i) (c) (e) (i) (hh) The development of -

(i) infrastructure or structures with a physical footprint of 10 square metres or more;

where such development occurs –

(c) if no development setback has been adopted, within 32 metre of a watercourse measured from the edge of a watercourse;

e. Limpopo

i. Outside urban areas:

(hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve.

Description: The layout of the Proposed development has been designed to avoid sensitive aquatic environments on the affected property. A portion of the Proposed Development and associated infrastructure (exceeding 10 sqm) would however be located within 32 m of a wetland located adjacent (south) to the facility. The Proposed Development and associated infrastructure would also occur outside urban areas and within 5 km of the Leeuwkopje Private Nature Reserve and Arzona Private Nature Reserve which are designated protected areas in terms of NEMPAA. The Project Area is located outside urban areas.

No. 18 (e) (i) (gg) The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 Kilometre.

e. Limpopo

i. Outside urban areas:

(gg) areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas.

Description: Where possible existing roads on site will be used and upgraded if required. The access road will be widened a maximum width of 10 m. Where possible, existing farm roads would also be used and lengthened as part of the internal road network, and lengthening would exceed 1 km. Road construction would occur within 5 km of the Leeuwkopje Private Nature Reserve, and Arzona Private Nature Reserve which are designated protected areas in terms of NEMPAA. The Project Area is located outside urban areas.

Environmental Sensitivities and Screening

Table 3 below serves as a summary of the Specialist Studies required by the DFFE Screening Tool including the sensitivity rating prescribed (i.e., very high, high, medium, and low), and an indication of the sensitivity of the Project Area after the EAP/ Specialist conducted the Site Sensitivity Verification (*SSV*) confirming/ disputing the sensitivity themes as identified by the Screening Tool.

Table 3: Summary of DFFE Screening Tool Sensitivities Vs Site Sensitivity Verification

Specialist Study identified by Screening Tool	Sensitivity as per Screening Tool	Site Sensitivity following Verification
Agriculture Theme	Very high	High
Animal Species Theme	Medium	Medium
Aquatic Biodiversity Theme	Low	low
Archaeological and Cultural Heritage Theme	Low	Low
Avian Theme	Low	High and Medium
Battery Energy Storage System (BESS) Risk Assessment	No sensitivity theme identified	To be confirmed during the EIR phase.
Civil Aviation (Solar PV) Theme	Medium	Low

Specialist Study identified by Screening Tool	Sensitivity as per Screening Tool	Site Sensitivity following Verification
Defence Theme	Low	Low
Geotechnical Theme	No sensitivity theme identified	To be confirmed during the EIR phase.
Geohydrological Theme	No sensitivity theme identified	Low
Landscape (Solar) Theme	Very high	Medium and low
Palaeontology Theme	Medium	Low/ insignificant
Plant Species Theme	Low	Low
Radio Frequency Interference Theme	Medium	Low
Socio-Economic Theme	No sensitivity theme identified	To be confirmed during the EIR phase.
Terrestrial Biodiversity Theme	Low	Low
Traffic & Transport Theme	No sensitivity theme identified	To be confirmed during the EIR phase.

Key Environmental Issues Identified through Scoping

Table 4 below summarises the preliminary impacts associated with the Proposed Development as identified by the project team during the Scoping Phase for all alternatives. All impacts identified will be further investigated during the EIR phase and mitigation measures for significant impacts will be stipulated in the EIR and included in the Environmental Management Programme (*EMPr*).

Table 4: Summary of Preliminary Impacts Identified in Relation to the Proposed Development

Environmental Aspect	Potential Impact	Proposed Method of Investigation
Biodiversity (Fauna and Flora)	• Flora and faunal habitat loss and fragmentation due to the Proposed Development requiring large areas of land. Potential loss of the natural thornveld vegetation. • Impacts on broadscale ecological processes. • Soil erosion, compaction, and disturbance to vegetation, particularly if heavy machinery is used. • Proliferation of alien plant invasion though soil disturbance. • Impacts on wildlife, particularly in sensitive habitats and/ or breeding areas such as noise, and vibration. • Shading of areas from placement of solar panels which may affect the growth of vegetation underneath. • Injury and/ or death to fauna due to collisions and/ or vegetation clearance and excavations.	A Terrestrial Ecological Assessment which includes faunal and floral components will be undertaken by a qualified Specialist during the EIR phase to investigate the identified preliminary impacts and define specific mitigation measures.

Environmental Aspect	Potential Impact	Proposed Method of Investigation
	• Highly reflective panels creating glare, thereby visually distracting or causing harm to nearby wildlife. • General increase in anthropogenic impacts due to an increase in people into the area.	
Biodiversity (Avifauna)	• Loss of vegetation and avifaunal habitat through the clearing of vegetation for installation of solar panels, roads, and buildings that will have an effect on the disturbed thornveld, terrestrial savanna species, large-bodied, ground-dwelling gamebirds, and raptors. • Collision of avifauna such as gamebirds, waterfowl and raptors with reflective surfaces of solar panels leading to injury or death as birds perceive large panel arrays for waterbodies, otherwise known as the 'lake effect'. • Contamination of the environment through the use of hazardous materials from cleaning of solar panels. • Disturbance and displacement of resident bird species, specifically small terrestrial species, through the clearing of the Project Area and construction activities. • Habitat destruction and fragmentation as infrastructure may create barriers to bird movement and disrupt migration patterns. • Noise during construction and utilising associated infrastructural equipment during operation. • Attraction of novel species through the creation of artificial nest sites and shade.	A detailed Avifaunal Impact Assessment will be undertaken during the EIR phase by a qualified Specialist which will include sampling conducted over two seasons (phase 1 and 2) with one undertaken during the peak (summer) season. This will also provide a baseline against which post-construction monitoring can be compared.
Aquatic	• Disturbance and possibly loss of aquatic habitat within the wetland with the associated impact on sensitive aquatic biota. • Disturbance and possibly loss of aquatic habitat within the wetland with the associated impact on sensitive aquatic biota. • Demand for water for construction could place stress on the existing available water resources. • Road crossing structures, if not adequately designed, could impede flow in the wetland. • Alien vegetation infestation within the aquatic feature due to disturbance. • Increased sedimentation due to erosion and risks of contamination of surface water runoff	An Aquatic Compliance Statement which will include wetland delineation will be undertaken during the EIR phase by a qualified Specialist.

Environmental Aspect	Potential Impact	Proposed Method of Investigation
	due to usage/ presence of hazardous substances. • Ongoing disturbance of aquatic features and associated vegetation along access roads or adjacent to the infrastructure that needs to be maintained. • Modified runoff characteristics from hardened surfaces that have the potential to result in erosion or sedimentation of the wetland • Possible increase in water consumption and potential for water quality impacts such as contamination from sewage generated on-site. • Modified runoff characteristics from hardened surfaces that have the potential to result in erosion or sedimentation of the wetland.	
Groundwater	• Accidental spillage or leaks of hazardous substances contained in solar PV panels such as cadmium, lead, and mercury during installation or maintenance, or spillage of hydrocarbons utilised on site during construction that may lead to contamination of productive aquifers and subsequently pose a threat to human health. • Excavation and soil disturbance during construction could affect groundwater quality by increasing the risk of pollutants such as sediment, nutrients, and salts leaching into the water table. • Alteration of the hydrological regime and reduction in groundwater recharge impacting on the sustainability of groundwater resources.	A Geohydrological Impact Assessment will be undertaken during the EIR phase by a qualified Specialist to investigate in detail the identified preliminary impacts and define specific mitigation measures.
Visual	• Potential change to landscape – ○ General degradation of the local landscape through increase in industry and loss of natural landscape. • Potential visual impacts as experienced by travellers on main roads in close proximity to the Project Area – ○ Degradation of views from the R510 in proximity to the Project Area. ○ Loss of views of the natural landscape. • Potential visual impacts as experienced by travellers on local roads in close proximity to the Project Area – ○ Degradation of the local landscape as viewed from adjacent local roads. ○ Industrialisation of views from local roads.	A detailed Landscape and Visual Impact Assessment which will include an assessment of glint and glare issues will be undertaken during the EIR phase by a qualified Specialist and preliminary impacts will be further investigated.

Environmental Aspect	Potential Impact	Proposed Method of Investigation

	• Potential visual impacts as experienced by residents and visitors to homesteads and lodges –
	  ○ Degradation of the local landscape as viewed from homesteads.
	  ○ Industrialisation of views from homesteads.
	• Potential visual impacts as experienced by residents and visitors to PA's –
	  ○ Degradation of views from the Private Nature Reserves in the area;
	  ○ Possible reflection from solar panels.
	• Glare affecting drivers south bound on the R510 during late afternoons causing a nuisance and is a potential road safety issue.
	• Lighting required for security, maintenance and safety/ convenience of workers resulting in light pollution thereby affecting adjacent roads and homesteads.	

Noise	• Installation of the facility involves heavy machinery and construction vehicles thus generating high levels of noise and subsequently disrupting nearby communities and/ or wildlife habitats. • Inverters and transformers producing low-frequency noise can potentially affect the quality of life of nearby residents and wildlife.	No significant noise impacts are envisaged. As such, no Specialist Study will be undertaken. A general assessment of impacts based on available information through other studies conducted in the area will be undertaken by the EAP.
Air Quality	• Generation of dust, particulate matter, and other air pollutants resulting from excavation, earthworks, and transportation of materials and equipment to and from the Project Area. • Emissions generated from the operation of the facilities through the use of backup generators, inverters, and other equipment. • Conversion of agricultural land into industrial use leading to reduced air quality by altering the natural balance of ecosystems and increasing the risk of soil erosion.	No significant impacts are anticipated with regards to air emissions from the Proposed Development. As such, no Specialist Study will be undertaken. A general assessment of impacts based on available information through other studies conducted in the area will be undertaken by the EAP.
Traffic	• Increased traffic volume on local and main roads due to the transportation of staff, materials and equipment to the Project Area leading to congestion and delays for commuters and residents in the area. • Noise and dust pollution associated with potential traffic.	A detailed Transport Impact Assessment will be undertaken during the EIR phase by a qualified Specialist to investigate the identified preliminary impacts and will provide more details regarding the

Environmental Aspect	Potential Impact	Proposed Method of Investigation
	• Increased presence of construction vehicles and heavy equipment on local and main roads can pose safety concerns for motorists, pedestrians, and cyclists. The movement of oversized loads and construction equipment may require temporary road closures or traffic diversions. • Damage to local roads and highways due to transportation of heavy equipment.	capacity of the existing road network to accommodate increased traffic.
Cultural and Heritage	• Disturbance or destruction to traditional cultural landscapes resulting in the loss of cultural heritage and historical information. • Impact the landscape and scenic values of the area affecting the aesthetic and cultural values of an area, including the enjoyment of the natural environment by local communities and tourists.	A Phase 1 Heritage Impact Assessment will be undertaken during the EIR phase by a suitable Specialist to investigate the identified preliminary impacts and to define specific mitigation measures.
Waste Generation	• Inadequate handling and disposal of waste (general and hazardous) such as contaminated soil, oil cans, oily rags concrete, and packaging materials generated during construction may affect local biodiversity. • At the end of life, solar PV panels and BESS will need to be disposed of or recycled, which can potentially generate waste and require appropriate management.	Investigation of waste impacts will involve a general assessment based on available information provided in various Specialist Studies as well as through the knowledge of the EAP. Requirements will be aligned to the relevant legislation.
Socio-economic	• Temporary stimulation of the provincial economy and growth in the regional Gross Value Added. • Job creation in areas such as engineering, installation, maintenance, and management, which can contribute to local economic development. • The Proposed Development can bring economic benefits to the local community, such as increased tax revenue and business opportunities for local suppliers and contractors. • Negative temporary change to the sense of place during construction. This can be attributed to the increased presence of people and the general construction activities taking place. • Temporary increase in crime and social conflicts associated with influx (or removal) of people.	A detailed Socio-Economic Impact Assessment will be undertaken during the EIR phase by a qualified Specialist to investigate the identified preliminary impacts and to define specific mitigation measures.

Environmental Aspect	Potential Impact	Proposed Method of Investigation
	• Potential impact on the environment during construction. The construction phase poses potential risks such as clearance of vegetation which may disrupt ecosystems and wildlife habitats, and loss of grazing and cultivated lands. • Disruption to communities through noise, traffic, and visual impacts, which can affect quality of life.	

Conclusion

The DSR will be made available for public review and comment for a period of 30 calendar days (**Wednesday, 13 September 2023** to **Monday, 16 October 2023**). Questions and concerns raised by I&APs and key stakeholders during the PPP will be captured in the Comments and Response Report (*CRR*), which will be included in the Final Scoping Report (*FSR*).

The EIR phase may only commence once the CA accepts the FSR and instructs the EAP to continue with the tasks contemplated in the PoS for the EIR phase. Praxos as the EAP and the project team commits to the following:

- To facilitate a fair and transparent process going forward.
- To capture and consider all comments received from stakeholders and I&APs.
- To remain independent of the Applicant.
- To present the CA with the necessary information to reach a decision.
- To fulfil any and all other obligations placed on the EAP, in terms of the NEMA.

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GLOSSARY OF TERMS AND DEFINITIONS

Term	Description
Bund / Bunded Area	A bund is an embankment or wall of brick, stone, concrete or other impervious material, which forms the perimeter and floor of a compound and acts as a barrier to retain liquids. Bunds are designed to contain spillages and leaks in order to prevent pollution of the receiving environment. Bunds are also used for fire protection, product recovery and process isolation.
Clearing	Means the clearing and removal of vegetation and topsoil, whether partially or in whole, including trees and shrubs, as specified
Construction Activity	A construction activity is any action taken by the Contractor, his subcontractors, suppliers or personnel during the construction process.
Construction Camp	The area designated for key construction infrastructure and services, including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management
Contractor	That main organisation appointed by the Proponent, through the Project Manager, to undertake construction activities on the site.
Dangerous Goods	Means goods containing any of the substances as contemplated in South African National Standard No. 10234, supplement 2008 1.00: designated "List of classification and labelling of chemicals in accordance with the Globally Harmonized Systems (GHS)" published by Standards South Africa, and where the presence of such goods, regardless of quantity, in a blend or mixture, causes such blend or mixture to have one or more of the characteristics listed in the Hazard Statements in section 4.2.3, namely physical hazards, health hazards or environmental hazards
Draft Scoping Report	The 'Draft' Scoping Report (DSR) relates to the report that will undergo public review and is a term applied meant to distinguish between the report that will updated to include the comments received (Final Scoping Report). The DSR is in no way an incomplete report, or missing requisite supporting documentation and information.
Environmental Control Officer	As an independent appointment, the Environmental Control Officer (ECO) monitors compliance with the EMPr during the construction phase and advises the Project Manager on environmental matters relating to construction.
Environmental Management Programme	The Environmental Management Programme (EMPr) for the project sets out general instructions that should be included in a contract document for the construction phase of the project and implemented during the Operational Phase. The EMPr will ensure the activities are conducted and managed in an environmentally sound and responsible manner.
Environment	Means the surroundings within which humans exist and that are made up of: a) The land, water and atmosphere of the earth; b) Micro-organisms, plant and animal life; c) Any part or combination of a) and b) and the interrelationships among and between them; and d) The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Term	Description
Environmental Method Statement	Also referred to as just "Method Statement". This is a written submission by the Contractor to the Project Manager in response to this EMPr or a request by the Project Manager and ECO. The Method Statement must set out the equipment, materials, labour and method(s) the Contractor proposes using to carry out an activity identified by the Project Manager when requesting the Method Statement. This must be done in such detail that the Project Manager and ECO is able to assess whether the Contractor's proposal is in accordance with this specification and/or will produce results in accordance with this specification; Method Statements shall cover applicable details with regard to: (i) Construction procedures; (ii) Plant, materials and equipment to be used; (iii) Transporting the equipment to and from site; (iv) How the plant/ material/ equipment will be moved while on site; (v) How and where the plant/ material/ equipment will be stored; (vi) The containment (or action to be taken if containment is not possible) of leaks or spills of any (vii) liquid or material that may occur; (viii) Timing and location of activities; (ix) Compliance/ non-compliance; and (x) Any other information deemed necessary by the Project Manager.
Environmental Specifications	Instructions and guidelines for specific construction activities designed to help prevent, reduce and/or control the potential environmental implications of these construction activities.
Fauna	Refers to all animals, including insects and micro-organisms.
Final Scoping Report	The 'Final' Scoping Report (FSR) relates to the report where comments and inputs following public review has been considered and incorporated into the report and submitted to the Competent Authority for decision making.
Flora	Refers to all plant species.
Hazardous Chemical Substances	Relates to substances governed by the Hazardous Substances Act, 1973 (Act No. 15 of 1973) as well as the Hazardous Chemical and Substances Regulations, 1995. Hazardous Chemical Substances are solids, liquids, or gases that can harm people, other living organisms, property, or the environment. They are often subject to chemical regulations.
Hazardous Waste	Hazardous waste is waste that poses substantial or potential threats to public health or the environment due to its composition or chemical properties
Landscape Character	Defined as a distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another.
Landscape Character Area	Defined as single unique areas which are the discrete geographical areas of a particular landscape type.
Pollution	The introduction into the environment of any substance caused by the action of man which has, or results in, significant harmful effects to mankind or the environment. Pollutants include any substances which make the environment less fit in any way for its intended use.
Project Area	Defined as the area occupied by the Nyala Solar Energy Facility 3 and associated infrastructure on Remaining Extent of Farm Leeuwkopje No. 415 and Portion 5 (Bralbin) of Farm Leeuwkopje No. 415 (access road only).
Project Manager	The Project Manager (PM) is the appointed firm/person responsible for overall management of the construction phase of the project including the management of all contractors.

Term	Description
Proposed Development	Means the Nyala Solar Energy Facility 3.
Slope	Means the inclination of a surface expressed as one unit of rise or fall for so many horizontal units
Soil	The upper layer of earth in which plants grow a black or dark brown material typically consisting of a mixture of organic remains, clay, and rock particles.
Solid waste	Means all solid waste, including but not limited to construction debris, hazardous waste, excess cement/concrete, wrapping and packaging materials, timber, cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).
Spoil	Refers to excavated material which is unsuitable for use as material in the construction works or is material which is surplus to the requirements of the construction works.
Visual Receptor	Visual Receptors are defined as "individuals and/ or defined groups of people who have the potential to be affected by a development'. Certain areas are also sensitive due to an existing use.
Waste	Means any substance, whether or not that substance can be reduced, reused, recycled and recovered, that a) is surplus, unwanted, rejected, discarded, abandoned or disposed of b) the generator has no further use of - for the purposes of production, reprocessing or consumption; c) that must be treated or disposed of; or d) is identified as a waste by the Minister.
Watercourse	Watercourse means - a) a river or spring; b) a natural channel in which water flows regularly or intermittently; c) a wetland, lake or dam into which, or from which, water flows; and d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks.
Works	Means the Works to be executed in terms of the Contract

ACRONYMS

ACHASM	Association of Construction Health and Safety Management
AEL	Atmospheric Emissions Licence
BA	Basic Assessment
BBBEE	Broad-Based Black Economic Empowerment
BESS	Battery Energy Storage System
BGL	Below Ground Level
C	Contractor
CA	Competent Authority
CAPEX	Capital Expenditure
CARA	Conservation of Agricultural Resources Act
CBA	Critical Biodiversity Area
CBD	Central Business District
CE	Consulting Engineer
CMAs	Catchment Management Agencies
COP	Conference of Parties
CO_2	Carbon Dioxide
CR	Critical Endangered
CRR	Comments and Responses Report
CSIR	Council for Scientific and Industrial Research
CSP	Concentrating Solar-Thermal Power
CV	Curriculum Vitae
DDM	District Development Mode
DEIR	Draft Environmental Impact Report
DFFE	Department of Forestry, Fisheries and the Environment
DMRE	Department of Mineral Resources and Energy
DoE	Department of Energy
DSR	Draft Scoping Report
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAF	Energy Availability Factor
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners Association of South Africa
EC	Electrical Conductivity
ECO	Environmental Control Officer
EGI	Electricity Grid Infrastructure
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMF	Environmental Management Framework
EMPr	Environmental Management Programme
EMZ	Environmental Management Zone
EN	Endangered
EO	Environmental Officer
ESA	Ecological Support Area
FEIR	Final Environmental Impact Report
FEPA	Freshwater Ecosystem Priority Area

FSR	Final Scoping Report
GA	General Authorisation
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GHI	Global Horizontal Irradiation
GHS	Globally Harmonized Systems
GIS	Geographic Information System
GW	Gigawatt
GWh	Gigawatt-hour
GNR	Government Notice Regulation
GVA	Gross Value Add
Ha	Hectare
HAS	Hazardous Substances Act
HCS	Hazardous Chemical Substances
HIA	Heritage Impact Assessment
HSE	Health, Safety and Environment
I&AP	Interested and Affected Party
IBA	Important Bird Area
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
IEP	Integrated Energy Plan
ILO	International Labour Organisation
INDC	Intended Nationally Determined Contribution
IPAP2	Industrial Policy Action Plan
IPP	Independent Power Producer
IRP	Integrated Resource Plan
Km	Kilometres
KV	kilovolt
kWh/m^2	Kilowatt hours per square meter
ℓ/s	Litres per second
LCA	Landscape Character Area
LCC	Land Capability Class
LCP	Limpopo Conservation Plan
LDP	Limpopo Development Plan
LED	Local Economic Development
LEDET	Limpopo Economic Development, Environment and Tourism
LEGDP	Limpopo Employment Growth and Development Plan
LEIP	Limpopo Environmental Implementation Plan
LEMA	Limpopo Environmental Management Act
LGDS	Limpopo Growth and Development Strategy
LIHRA	Limpopo Provincial Heritage Resources Authority
LSDF	Limpopo Provincial Spatial Development Framework
LSU	Large Stock Unit
m	Metres
MDGs	Millennium Development Goals
Mg/m^2/day	Milligrams per square metre per day
Mg/ m^3	Milligrams per cubic metre

MPRDA	Minerals and Petroleum Development Act
mS/m	Millisiemens per meter
MTSF	Medium-Term Strategic Framework
MW	Megawatt
NCCRP	National Climate Change Response Policy
NCR	Noise Control Regulations
NDCs	Nationally Determined Contributions
NDP	National Development Plan
NEMA	National Environmental Management Act
NEMAQA	National Environmental Management Air Quality Act
NEMBA	National Environmental Management Biodiversity Act
NEMWA	National Environmental Management Waste Act
NEMPAA	National Environmental Management: Protected Areas Act
NERSA	National Energy Regulator Act
NFA	National Forests Act
NFEPA	National Freshwater Ecosystem Priority Area
NGPF	New Growth Path Framework
NHRA	National Heritage Resources Act
NIP	National Infrastructure Plan
NNS	National Norms and Standards
NO	Nitric Oxide
NOx	Nitrogen Oxides
NO_2	Nitrogen Dioxide
NPAES	National Protected Area Expansion Strategy
NRTA	National Road Traffic Act
NSBA	National Spatial Biodiversity Assessment
NSDF	National Spatial Development Framework
NSPCA	National Council of Societies for the Prevention of Cruelty to Animals
NT	Near Threatened
NWA	National Water Act
ODL	Orange Data List
OHSA	Occupational Health and Safety Act
OHSE	Occupational Health, Safety, and Environment
OCGT	Open Cycle Gas Turbine
P	Proponent
PAIA	Promotion of Access to Information Act
PAJA	Promotion of Administrative Justice Act
PAR	Protected Areas Register
PDAs	Primary Drainage Areas
PHRA	Provincial Heritage Resources Authority
PICC	Presidential Infrastructure Coordinating Commission
PM	Project Manager
PM	Particulate Matter
PoS	Plan of Study
PPA	Power Purchase Agreement
PPP	Public Participation Process
PSEDS	Provincial Spatial Economic Development Strategy

PV	Photovoltaic
QDAs	Quaternary Drainage Areas
QDGC	Quarter Degree Grid Cell
QDS	Quarter Degree Square
RDL	Red Data List
RE	Resident Engineer
REDZ	Renewable Energy Development Zone
REFIT	Renewable Energy Feed-in Tariff
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
SAAQIS	South African Information System
SACNASP	South African Council for Natural Scientific Professions
SACPCMP	South African Council for the Project and Construction Management Professions
SAHRA	South African Heritage Resources Association
SAHRIS	South African Heritage Resource Information System
SAIOSH	South African Institute of Occupational Safety and Health
SANBI	South African National Biodiversity Institute
SANS	South African National Standards
SAPS	South African Police Station
SCC	Species of Conservation Concern
S&EIR	Scoping and Environmental Impact Report
SDGs	Sustainable Development Goals
SDF	Spatial Development Framework
SEA	Strategic Environmental Assessment
SEMA	Specific Environmental Management Act
SERO	Socio-Economic Review and Outlook
SG	Surveyor General
SIP	Strategic Infrastructure Project
SOx	Sulphur Oxides
SO_2	Sulphur Dioxide
SPLUMA	Spatial Planning and Land Use Management Act
SSV	Site Sensitivity Verification
StatsSA	Statistics South Africa
STC	Strategic Transmission Corridor
SWMP	Storm Water Management Plan
SWSA	Strategic Water Source Area
TIA	Transport Impact Assessment
TLM	Thabazimbi Local Municipality
TOPS	Threatened or Protected Species
ToR	Terms of Reference
TWh	Terawatt-hour
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
VIA	Visual Impact Assessment
VU	Vulnerable
WBPA	Waterber-Bonjanala Priority Area
WDM	Waterberg District Municipality
WHO	World Health Organisation

WMAs	Water Management Areas
WML	Waste Management Licence
WSA	Water Source Area
WUA	Water Use Authorisation
WULA	Water Use Licence Application

1. INTRODUCTION

Praxos, was appointed as an Environmental Assessment Practitioner (*EAP*) by ABO Wind Renewable Energies (Pty) Ltd (*ABO Wind*) on behalf of ABO Nyala Solar Energy Facility 3 (Pty) Ltd to undertake the application process for Environmental Authorisation (*EA*), subject to a Scoping and Environmental Impact Reporting (*S&EIR*) process, for the Proposed Development of the ABO Nyala Solar Energy Facility 3. The Proposed Development will be located within the Thabazimbi Local Municipality (*TLM*) and Waterberg District Municipality (*WDM*) of Limpopo Province, South Africa.

1.1 APPLICATION PROCESS

The Proposed Development is currently in the Scoping phase and is supplemented by this Draft Scoping Report (*DSR*). The purpose of this phase is to determine, in detail, the scope of the Environmental Impact Assessment (*EIA*) required for the Proposed Development.

The primary objectives of the Scoping phase in accordance with the EIA Regulations are to:

- Provide a description of the Proposed Development, including the project motivation.
- Identify feasible alternatives to the Proposed Development to be assessed in the EIR phase.
- Describe the status quo of the biophysical and socio-economic characteristics of the affected environment where the development will occur.
- Define the legal, policy and planning context for the Proposed Development.
- Identify and describe the anticipated environmental, social and cultural impacts, including cumulative impacts associated with the Proposed Development and outline Specialist Studies included within the S&EIR process to assess these issues in further detail.
- Identify the key issues to be addressed in the EIR phase.
- Undertake a Public Participation Process (*PPP*) which provides all Stakeholders and Interested and Affected Parties (*I&APs*) with opportunities to be involved, including their views and concerns.
- Describe the methodology applied to conduct the scoping phase.
- Describe the Plan of Study (*PoS*) for the EIR phase (second phase of the S&EIR process), which describes the nature and extent of further investigations required in the EIR phase.

Following the commenting period, the Scoping Report will be updated in the Final Scoping Report (*FSR)*and prepared for submission to the Competent Authority (*CA*) for consideration. If the Scoping Report is accepted, the EIR phase will be initiated.

1.2 REPORT FORMAT AND LAYOUT

This report is the first of several reports which will be produced during the EIA Process. This report has been compiled in line with the provisions of Section 24N of the Act; and must include all the information specified in Regulation 21 and Appendix 2 of the EIA Regulations, promulgated under the NEMA and published as GNR 982 as amended. Appendix 2 clearly outlines the content of a Scoping Report, and Chapter 6, Sections 39-44 which cover the activities necessary for a successful PPP.

The layout of this Scoping Report is as follows:

1. **Chapter 1: Introduction** – Provides background information on the Proposed Development, a brief description of the EIA process required in terms of the EIA Regulations and reporting requirements, the details and expertise of the EAP who prepared this report and Specialists that have been appointed.

2. **Chapter 2: Project Description** – Provides a description of the Proposed Development, the properties on which the development is to be undertaken, the location of the development within these properties, and the anticipated listed activities triggered. The technical details of the process to be undertaken are also provided in this Chapter.
3. **Chapter 3: Alternatives** – Provides a brief discussion of the feasible and reasonable alternatives to the Proposed Development which have been identified, and which will be investigated further in the EIR phase.
4. **Chapter 4: Legislative Framework** – Identifies all the legislation, guidelines, and plans that have been considered in the preparation of this Scoping Report.
5. **Chapter 5: Needs and Desirability -** Provides the context of the project in South Africa and outlines how it is likely to contribute towards reaching sustainability goals regionally, nationally, and internationally.
6. **Chapter 6: Description of the Receiving Environment** – Provides a brief overview of the bio-physical and socio-economic characteristics of the Project Area and immediate environment which could be affected by the Proposed Development. This information is compiled from published information and available spatial data, but it has been supplemented greatly by information which was gathered during site investigations by the EAP and Specialist team.
7. **Chapter 7: Potential Impacts on the Environment** – Provides a description of the key issues which have been identified by the project team in the Scoping phase thus far as well as through pre-application consultation with the CA, which will be assessed in greater detail during the EIR phase through input from Specialists. It also discusses high-level mitigation measures for potential impacts, and the proposed method for further investigation during the EIR phase.
8. **Chapter 8: Public Participation Process** – Provides details of the PPP which has been conducted thus far, including:
    - The measures undertaken to notify I&APs of the application.
    - Proof that site notices, advertisements and notification letters which notified potential I&APs of the availability of the DSR have been displayed, placed or distributed.
    - A list of all persons and organisations which have been identified and registered in terms of Regulation 57 of the EIA Regulations as I&APs in relation to the application. It is noted that this Chapter will be updated to include all comments received during the PPP of the DSR.
9. **Plan of Study** – Sets out the proposed approach to the EIA for the Proposed Development including:
    - A description of the scope of work that will be undertaken as part of the EIR phase, including any Specialist Studies or specialised processes, and the manner in which the described scope of work will be undertaken.
    - An indication of the stages at which the CA will be consulted.
    - A description of the proposed methodology for assessing the potential environmental impacts and alternatives, including the option of not proceeding (no-go alternative) with the Proposed Development.
    - Particulars of the PPP which will be conducted during the EIR phase.
10. **Chapter 10: Conclusion –** This chapter consists of the EAP's concluding remarks of the Scoping phase and any specific recommendations for the EIR phase.
11. **Chapter 11: EAP Declaration**
12. **Appendices** – Supplementary information has been appended to this report, which includes:
    - Curriculum Vitae (*CVs*) of the Project Team.
    - Record of Authority Consultation.
    - Public Participation Process information.
    - Site Photograph Plate.
    - Specialist desktop studies/Site Sensitivity Verification Reports
    - Maps

1.3 DETAILS OF PROJECT TEAM

1.3.1 *APPLICANT DETAILS*

The Applicant for the Proposed Development is ABO Nyala Solar Energy Facility 3 (Pty) Ltd, represented by ABO Wind Renewable Energies (Pty) Ltd. Further details of the Applicant are presented in **Table 5** below.

Table 5: Applicant Details

Applicant Details	
Company Name	ABO Nyala Solar Energy Facility 3 (Pty) Ltd
Company Registration No.	2023/594318/07
Contact Person	Zandri Hill
Telephone No.	021 276 3620
Cell phone No.	076 104 1372
Email	zandri.hill@abo-wind.com
Physical Address	Unit B1 Mayfair Square, Century Way, Century City, Western Cape, 7441

1.3.2 *COMPETENT AUTHORITY DETAILS*

The Government Notice No. 779 (in GG 40110 of 1 July 2016) of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) identifies the Minister as the Competent Authority in instances where the activities related to the Integrated Resource Plan (IRP) 2010-2030.

The IRP 2010-2030 is a plan, among others, through which commitments to the United Nations Framework Convention on Climate Change (UNFCCC) regarding CO_2 mitigation action are being implemented. The 2010 – 2030 IRP for electricity generation identifies the diversification of the energy mix and the balance between renewable and non-renewable energy sources.

The Proposed Development is a large scale solar photovoltaic (PV) facility to generate renewable electricity and is in direct response to the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), as established by the Department of Energy under the IRP. Therefore, as per Government Notice No. 779 the DFFE is the Competent Authority. Further details of the CA are presented in **Table 6** below.

Table 6: Competent Authority Details

Competent Authority Details	
Competent Authority	Department of Forestry, Fisheries and the Environment (*DFFE*)
Case Officer	To be confirmed.
Telephone No.	012 399 8815
Cell phone No.	--
Email	To be confirmed.
Physical Address	Environment House, 473 Steve Biko Road, Arcadia

1.3.3 *Details and Expertise of the Environmental Assessment Practitioner*

Praxos was established in 2005, with the aim of providing professional services in Occupational Health, Safety and Environment (*OHSE*), as well as Social Participation/Facilitation and Management. Our team has the expertise in developing, managing, and maintaining successful programmes in various organisations structures. The team of Praxos has collectively over 50 years' experience in delivering personalised and professional service to individuals, Corporates as well as Non-Profit organisations. By combining our clinical knowledge and expertise of human behaviour and working systems we help our clients to develop a clearer and broader understanding of the contemporary work environment.

Praxos is a 100% black owned, Level One Broad-Based Black Economic Empowerment (*BBBEE*) and operated empowerment company that currently operates throughout South Africa, that prides itself in delivering professional services. Our clients come first, and our team is registered with the South African Council for Natural Scientific Professions (*SACNASP*), Environmental Assessment Practitioners Association of South Africa (*EAPASA*), South African Council for the Project and Construction Management Professions (*SACPCMP*), South African Institute for Occupational Safety and Health (*SAIOSH*), and Association of Construction Health and Safety Management (*ACHASM*).

The Praxos team has substantial experience in planning, coordination, management and execution of a wide range of HSE projects. We aim to promote environmental sustainability and ensure compliance with HSE regulations. With our experienced team, the firm offers a full range of HSE services, and a proven track record that demonstrates technical excellence.

Our offerings broadly cover HSE solutions, assurance and auditing solutions, social facilitation, licensing services (EIAs, Water Use Licences [*WUL*], Waste Management Licences [*WML*], etc.), mining environmental services, environmental auditing, and strategic projects. We also make use of expert Specialist services to meet the client's and project requirements.

In fulfilment with the legislative requirements, the details of the EAP and the environmental team that prepared this Scoping Report are provided below (please refer to **Appendix A** for the relevant members' CVs).

1.3.4 *The Environmental Assessment Practitioner*

Please refer to **Table 7** below for the contact details and expertise of the lead EAP.

Table 7: Lead EAP Details

Lead Environmental Assessment Practitioner Details	
Company Name	Praxos 373 (Pty) Ltd
Name of EAP	Suhasini Naik
EAP Qualifications	B.Sc. (Honours) Geography
Professional Registration	EAPASA (2022/5012)

Lead Environmental Assessment Practitioner Details	
Summary of EAP's Experience	Suhasini Naik is an experienced Environmental Scientist with more than eight years' experience in the field of environmental consulting. Suhasini has undertaken a variety of projects with a focus on environmental compliance auditing over the years. Key experience includes: • Environmental Impact Assessments. • Basic Assessments. • Environmental Management Programmes. • Waste Management Licence Applications. • Integrated Water Use Licence Applications. • Environmental Compliance Auditing. • Public Participation. • Stakeholder Engagement. • Project Screening. • Business Development. The full CV of the EAP is included in **Appendix A**.
Telephone No.	011 453 8727
Cell phone No.	065 816 9419
Email	Suhasini.Naik@praxos373.co.za
Physical Address	31 Saint Margaret Street, Hurlyvale, Edenvale, 1611

1.3.5 ASSISTANT EAP

Please refer to **Table 8** below for the contact details and expertise of the assistant EAP.

Table 8: Assistant EAP Details

Assistant Environmental Assessment Practitioner Details		
Company Name	Praxos 373 (Pty) Ltd	
Name of EAP	Nishkar Maharaj	
EAP Qualifications	B.Sc. (Honours) Environmental Science	
Professional Registration	EAPASA (2019/1447)	SACNASP (116421)
Summary of EAP's Experience	Nishkar is an Environmental Scientist with ten years' experience. Nishkar has extensive experience in environmental licensing having served as the lead EAP on multiple projects. He further plays a role in the post licensing process of projects as an Environmental Control Officer, guiding Developers in minimising negative environmental impacts during construction. Nishkar is an expert in client liaison, which is a critical skill in marrying developer's interests with sustainable development. Key experience includes: • Environmental Impact Assessments.	

Assistant Environmental Assessment Practitioner Details	
	• Basic Assessments. • Environmental Management Programmes. • Screening Reports. • GIS Mapping. • Waste Management Licence Applications. • Integrated Water Use Licence Applications. • Environmental Compliance Auditing. • Due Diligence Assessments. • Project Coordination. • Public Participation. • Stakeholder Engagement. • Business Development. The full CV of the EAP is included in **Appendix A**.
Telephone No.	031 700 2500
Cell phone No.	082 226 6888
Email	Nishkar.Maharaj@praxos373.co.za
Physical Address	Park 2000 Building, 10 Kyalami Road, Westmead, Pinetown, 3610

1.3.6 SPECIALIST DETAILS

A variety of Specialist assessments will be undertaken to identify and analyse the potential positive and negative impacts of the Proposed Development. **Table 9** below indicates the Site Sensitivity Verification (*SSV*) reports that have been undertaken during Scoping and details where further assessment will be required during the EIR phase.

Table 9: Specialist Details

Specialist Details		
Specialist Studies	**Specialist**	**Status**
Agricultural Assessment	John Phipson Mzansi Agriculture	The Agricultural Potential SSV report is included in **Appendix F1**. An Agricultural Impact Assessment will be undertaken during the EIR phase.
Archaeological & Cultural Heritage Impact Assessment	Francois P Coetzee on behalf of EnviroSaint (Pty) Ltd	The Cultural Heritage SSV report is included in **Appendix F4**. A Heritage Impact Assessment will be undertaken during the EIR phase.
Aquatic Biodiversity & Wetland Delineation Assessment	Toni Belcher BlueScience (Pty) Ltd	The Aquatic SSV report is included in **Appendix F2**.

Specialist Details		
Specialist Studies	**Specialist**	**Status**
		An Aquatic Compliance Statement including Wetland Delineation will be undertaken during the EIR phase.
Avifauna Impact Assessment	Robyn Phillips Cossypha Ecological	The Avifaunal SVV report is included in **Appendix F3**. An Avifaunal Impact Assessment will be undertaken during the EIR phase.
BESS Risk Assessment	Debra Mitchell iSHEcon	To be undertaken during the EIR phase.
Ecological Impact Assessment (Fauna & Flora)	Johannes Maree on behalf of EnviroSaint (Pty) Ltd	The Terrestrial Ecological SSV report is included in **Appendix F8**. A Terrestrial Ecological Impact Assessment will be undertaken during the EIR phase.
Geotechnical Assessment	Carel de Beer Bare Rock Consulting	The Geotechnical SSV report is included in **Appendix F9.** A Geotechnical Investigation will be undertaken during the EIR Phase.
Geohydrological Impact Assessment	Marius van Biljon on behalf of EnviroSaint (Pty) Ltd	The Geohydrological Desktop report is included in **Appendix F5**. A Geohydrological Impact Assessment will be undertaken during the EIR Phase.
Palaeontological Desktop Assessment	Jacobus Francois Durand on behalf of EnviroSaint (Pty) Ltd	The Cultural Heritage SSV report including Palaeontology sensitivity is included in **Appendix F4**. The palaeontological sensitivity map available from the SAHRIS database indicates the Project Area lies within an area of zero/insignificant sensitivity. The Palaeontologist has confirmed that no further palaeontological assessment will be required for the Project Area.
Socio-Economic Impact Assessment	Louis Calitz and Nthabiseng Makhoali Urban Econ	The Socio-Economic Preliminary Assessment report is included in **Appendix F7**.

Specialist Details		
Specialist Studies	**Specialist**	**Status**
		A Socio-Economic Impact Assessment will be undertaken during the EIR phase.
Transport Impact Assessment	Iris Wink iWink Consulting	A Transport Impact Assessment will be undertaken during the EIR phase.
Landscape and Visual Impact Assessment (including Glint & Glare)	Jon Marshall Environmental Planning and Design	The Landscape and Visual Baseline report is included as **Appendix F6**. A Landscape and Visual Impact Assessment including Glint and Glare will be undertaken during EIR phase.

1.4 ASSUMPTIONS & LIMITATIONS

The assumptions and limitations listed below are applicable to the undertaking of this DSR by the EAP:

- The information provided by the Applicant and the Specialists to the EAP were precise and were pertinent to the preparation of the DSR.
- A GA/WUL will be required, separate to this S&EIR process, as the Proposed Development is located within 500 m of a wetland, south of the facility.
- All obligatory permits (e.g., alien and listed invasive species, protected tree permits etc.) will be applied for and obtained by the Applicant and is therefore beyond the scope of this S&EIR process.
- All considered and presented alternatives for the Proposed Development can be executed.
- Throughout the duration of the Scoping phase, the identification and registration of I&APs was undertaken on a continuous basis and the I&AP database will continue to be updated throughout the S&EIR process.
- Comments received from I&APs through the communication channels provided during the PPP have been responded to, in consultation with Specialists but within the legal allowances, towards changes to this DSR and the preparation of the FSR.

2. PROJECT DESCRIPTION

2.1 PROPOSED PROJECT ACTIVITY

2.1.1 PROJECT OVERVIEW

The ABO Nyala project/cluster comprises the following three facilities:

1. ABO Nyala Solar Energy Facility 1 and associated infrastructure.
2. ABO Nyala Solar Energy Facility 2 and associated infrastructure.
3. ABO Nyala Solar Energy Facility 3 and associated infrastructure.

Each facility will require a stand-alone EA, thus requiring separate applications and environmental assessment processes. It is however intended to combine the required PPP of the three applications where possible. For the purpose of this EA application, this report solely focuses on the ABO **Nyala Solar Energy Facility 3** and associated infrastructure (herein after referred to as *Nyala 3* or the *Proposed Development).*

2.1.2 NYALA SOLAR ENERGY FACILITY 3

ABO Nyala Solar Energy Facility 3 (Pty) Ltd proposes the development of Nyala 3, a PV solar energy generation facility, of 55 MW in capacity, and associated infrastructure with a total development footprint of approximately 56.43 ha, located on the Remaining Extent of the Farm Leeuwkopje No. 415 and Portion 5 (Bralbin) of the Farm Leeuwkopje No. 415 (access road only), 1.5 km north of Northam within the Limpopo Province.

The Project Area (i.e., the Nyala 3 site) falls within the jurisdiction of the TLM, within the Waterberg District. The Proposed Development is not located within any Strategic Transmission Corridor (*STC*) or Renewable Energy Development Zone (*REDZ*) nor is it classified as Electricity Grid Infrastructure (*EGI*). The Proposed Development is a large-scale solar PV facility to generate renewable electricity and is in response to the IRP and the REIPPPP as established by the Department of Energy.

A development area has been identified for the Proposed Development. Within this identified development area, a maximum development footprint has been defined in a manner which has considered the environmental sensitivities present on the affected property and which intentionally remains beyond highly sensitive areas. The affected properties have been considered in this S&EIR process (which includes the independent Specialists' assessments undertaken) and assessed in terms of its suitability from an environmental and social perspective.

The Proposed Development is located outside of an urban area and industrial complex with a current zoning that is agricultural in nature. A change in zoning will be required from agricultural to special use.

The Proposed ABO Nyala Solar Energy Facility 3 would comprise the following to be located within the proposed maximum development footprint:

- Solar Field/Solar Arrays [Note that the mounting structures will be either fixed-tilt, single-axis tracking or double-axis tracking PV. Module types would be either mono-facial or bi-facial and would be 3.5 m in height.
- One access road (noting that existing farm roads would be used as far as possible, and the road width would be a maximum of 10 m). Two alternative access roads are under assessment.
- Internal service roads (noting that existing farm roads would be used as far as possible a, and that the maximum road width would be 8 m).
- An on-site substation hub and associated infrastructure (such as substation, transformation infrastructure, collector infrastructure, step-up infrastructure, BESS etc.) including auxiliary buildings (such as operation &

maintenance buildings, admin buildings, workshops, gatehouse, security building, offices, visitor centre, warehouses, etc.) contained within a 3-ha footprint.
- A communications tower as part of the 3-ha on-site substation hub with a maximum height of 32 m.

Associated infrastructure would include the following to be located within the proposed maximum development footprint:

- Internal electrical reticulation (i.e., low and medium voltage cables) to be placed underground where feasible.
- Perimeter fencing.

A temporary laydown area would be established during the construction period but would be within the maximum development footprint to be assessed i.e., within the fenced area allocated for development and beyond any identified no-go areas. The laydown area would move as required while construction is underway.

In terms of connecting to the electricity grid, technical alternatives are available and application for grid connection will be made through a separate process and assessed accordingly.

Alternatives:
The Proposed Development as described above will be assessed with the following alternatives:

1. Location: One access road is proposed with two alternatives under assessment i.e., the preferred access road which is directly off the R510 and would allow access to the Project Area from the east, and the alternative access road that would start approximately 1 km north of the Project Area via an existing intersection with the R510 and would run parallel to the R510. The alternative access road would allow access to the Project Area at the same access point as the preferred access. Existing roads will be utilised as far as reasonably possible and upgraded where necessary (as recommended by the TIA). Roads would be a maximum of 10 m wide.
2. Technology: With regard to the proposed Battery Energy Storage System (BESS), the technology thereof is dynamic and so the specific type/technology to be developed would be selected based on market demands and technology availability at the time of construction. Therefore, both Lithium-ion and redox-flow will be assessed as technology alternatives, with Lithium-ion being the current preferred technology. The Lithium-Ion BESS will arrive to site pre-assembled.

The no-go alternative will also be assessed.

A pre-liminary site layout of the PV area, proposed location of the on-site substation hub and access roads can be seen on the maps in **Appendix G**.

2.1.3 CIVIL SERVICES

a) Electricity
The operations of the Proposed Development would require some servicing, noting that the operational electrical requirements would be nominal and would be supplied by the facility.

b) Water and Sanitation
During the construction phase, the Proposed Development may use some water for activities such as cleaning of equipment, drinking, cement mixing, etc. During the operational phase, water would be used for the staff (i.e., drinking and washing hands, food, etc.), cleaning of equipment, scheduled cleaning of the solar panels to

prevent dust build-up (which can cause reduced power output if it gathers on the panels), and dust control on internal roads (where needed).

Operationally, staff would be encouraged to use water sparingly. The PV panels would be washed as part of a maintenance schedule. This is expected to typically be twice per year but would depend on site and weather conditions, or after high-dust events (i.e., not daily). The panels can be washed with non-potable water, where feasible. Furthermore, washing would either be with clean water, or using bio-degradable/green detergents/soaps.

Water would preferably be sourced from the local municipality in terms of a Service Level Agreement established between the Municipality and the facility. A non-binding confirmation of capacity from the LM will be requested by the applicant, with the view to have the confirmation in hand at draft EIR stage. If this is not possible, then other options for water supply will be investigated such as sourcing water commercially. Where required, a storage tank (i.e., Jo-Jo tank) of up to approximately 10,000L may be used on site for temporary water storage.

Sanitation requirements would be minimal, given that there would only be a small staff complement during the operations of the facility. Sanitation for auxiliary buildings would be connected to the existing municipal sewage system. If the Municipality does not approve, or not have capacity for such a connection, sewage would be stored in a conservancy tank and collected either by a honey-sucker truck or by a service provider for treatment at a licensed disposal site. Alternatively, a standalone system would be used (i.e., porta-loos) which would be regularly serviced by an independent contractor. Note that it is not intended to make use of soakaways or on-site treatment solutions. A non-binding confirmation of capacity from the LM was requested by the applicant in June 2023, with the view to have the confirmation in hand at draft EIR stage. If the local municipality confirms that no capacity is available, private solutions will be investigated and implemented.

Water and sanitation requirements during the construction phase will be the primary responsibility of the appointed Contractor. It would be preferable for water to be sourced from the local Municipality, if available, with alternative arrangements to be made where required (for example transporting water to site with trucks).

Any new sewage lines (if required) would be constructed within the road limits of either existing or new internal roads, noting that these would be limited as they are only necessary for servicing the auxiliary buildings. No bulk service infrastructure is proposed.

c) Solid Waste

During the construction phase, waste such as oily rags, containers, rubble, etc. would be produced. This would be managed through specifications contained in the EMPr. The Contractor would be responsible for waste management in this regard. During the operational phase, waste would emanate from the auxiliary buildings and would largely comprise office-type waste such as packaging, paper, food waste, as well as waste from the maintenance aspects which would comprise packaging, metals, cement, glass, etc. These wastes would also be controlled through the operational EMPr.

Refuse/solid waste produced on site, during the operational phase, would be minimal (approximately two wheelie bins per week are anticipated) and would ideally be removed by the local municipality, however, if this is not possible, the Proposed Development would employ private contractors to remove the refuse and dispose of it appropriately.

Disposal of batteries will be done in accordance with South African Regulations (by the supplier). When a battery module reaches its end of life or needs to be replaced, it will be returned to the original manufacturer for disassembly and further processing.

Solid and hazardous waste produced during the construction phase would be managed in accordance with the specifications of the site-specific EMPr.

d) Stormwater

There are no specific stormwater and/or landscaping initiatives proposed as part of the Proposed Development at this stage, but any interventions prescribed by the relevant Specialist/s through the EIR process would be implemented with further management measures also being addressed in the EMPr.

2.2 Project Location and Site Description

The Proposed Development will be located on the Remaining Extent of the Farm Leeuwkopje No. 415 and Portion 5 (Bralbin) of the Farm Leeuwkopje No. 415 (access road only) and is known as the Nyala 3 site (*Project Area*). The Project Area is located adjacent to R510 road with a development footprint approximately 56.43 ha in extent. Refer to the locality map in **Figure 2** below.

The Project Area is located within the jurisdiction of the TLM, within the Waterberg District, near the town of Northam, Limpopo Province. The nearest residential areas are Amandelbult Mine Town in the North, the towns of Northam in the South and Swartklip in the West. No residential areas are evident towards the East of the Project Area. The direction and distance from the Project Area to the nearest towns are indicated in **Table 10** below.

Table 10: Towns in Proximity to the Project Area

Town	Distance (km)	Direction
Amandelbult	11	North
Leeupoort Vakansiedorp	36.5	East
Northam	2	South
Swartklip	11	West

The immediate surroundings of the Project Area are sparsely populated and largely undeveloped, vacant land. The Leeuwkopje Private Nature Reserve and Arzona Private Nature Reserve are located within 5km of the Project Area, whereas there are several agricultural farms surrounding the Project Area. The Project Area and adjacent properties are zoned as "Agricultural". Refer to **Table 11** for the surrounding land uses to the Project Area.

Table 11: Surrounding Land Uses

Direction	Distance	Land Uses
North	0.0 km	Vacant Land
	1.1 km	Amandebult Readymix Plant
North-east	443 m	Cultivated Land
	900 m	Private Property (Small Farm)

Direction	Distance	Land Uses
	2.8 km	Miltons Guestfarm
	4.3 km	Miltons Guesthouse
East	100 m	Cultivated Land
South-east	100 m	Cultivated Land
	1.7 km	Private Property (Small Farms)
South	0.0 km	Cultivated Land
South-west	0.0 km	Cultivated Land
	1.3 km	Private Property (Small Farm)
	5.3 km	Tirammogo Lodge
West	0.0 km	Vacant Land
	10 km	Mining Operation
North-west	0.0 km	Vacant Land
	5.1 km	Private Property (Small Farm)

The Project Area occurs in Ward 5 of the TLM. The properties are currently made up of two title deeds made out to JCM Farming (Pty) Ltd, with Title Deed numbers: T1280/2018 and T1466/2018. Refer to **Table 12** for the property description and Surveyor General (*SG*) Codes for the Project Area.

Table 12: SG Code and Property Description

Property Description	SG Code	Extent (Ha)
Remaining Extent of the Farm Leeuwkopje No. 415	T0KQ00000000041500000	**386.50**
Portion 5 (Bralbin) of the Farm Leeuwkopje No. 415 (access road only)	T0KQ00000000041500005	**386.50**
	Total	**773**

Refer to **Table 13** below for the GPS co-ordinates of the Project Area boundary.

Table 13: GPS Co-ordinates of the Corner Points of the PV Facility

Corner Points	Latitude	Longitude
Point 1	24°55'36.76"S	27°16'9.92"E
Point 2	24°55'43.76"S	27°16'38.89"E
Point 3	24°56'6.30"S	27°16'31.09"E
Point 4	24°55'49.90"S	27°15'59.25"E
Central Point	24°55'49.17"S	27°16'20.87"E

Refer to **Table 14** for the co-ordinates of the proposed access roads.

Table 14: GPS Co-ordinates of the Proposed Access Roads

Corner Points	Latitude	Longitude
Preferred Access Road Start	24°55'48.99"S	27°16'38.40"E
Preferred Access Road Middle	24°55'48.82"S	27°16'37.83"E
Preferred Access Road End	24°55'48.68"S	27°16'37.28"E
Alternative Access Road Start	24°55'12.54"S	27°16'51.59"E
Alternative Access Road Middle	24°55'31.14"S	27°16'43.78"E
Alternative Access Road End	24°55'48.68"S	27°16'37.28"E

Refer to **Figure 2** below for the locality map of the Proposed Development.

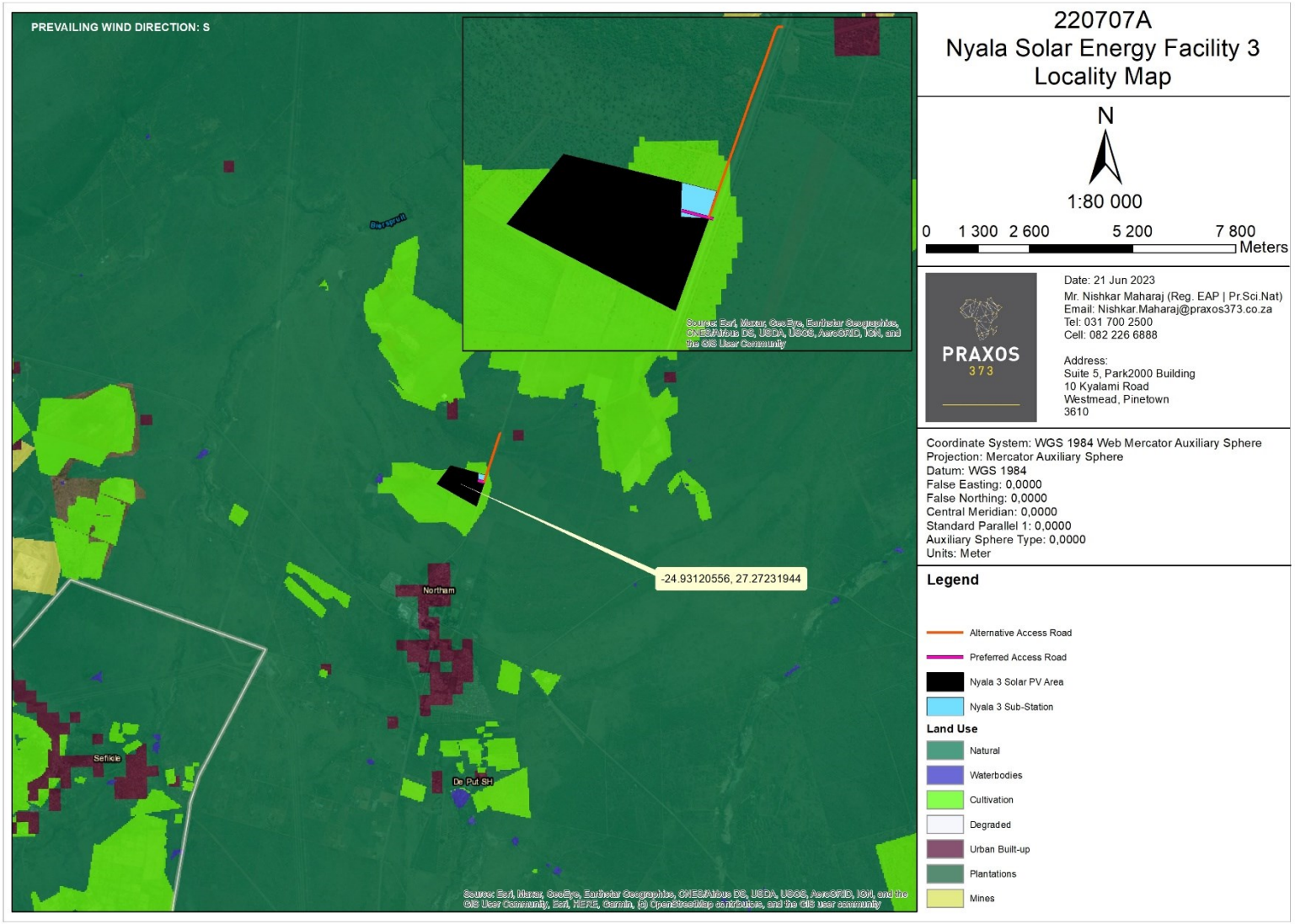

Figure 2: Locality Map (Praxos, 2023)

2.3 TECHNICAL INFORMATION ON PROPOSED ACTIVITY

The technical information available at this very early stage of the project development and the S&EIR process is included in the sub-sections below.

2.3.1 DESIGN OF PV PANELS

The exact design of the PV Panels will be confirmed during the detail design stage. For the purpose of this application, a 'PV Area' where panels will be installed has been defined and will be assessed. It is anticipated that the mounting structures for the PV panels will either be fixed-tilt, single-axis tracking or double-axis tracking PV. Module types would be either mono-facial or bi-facial and would be 3.5 m in height. At present, the width of the PV panels cannot be specified as it is dependent on the module type. However, it should be noted that the PV panel width will not be considered as an abnormal load, therefore would be able to be transported by a standard sized truck.

2.3.2 BESS TECHNOLOGY

A BESS with up to 500 MW/MWh storage capacity would be developed within the substation compound footprint, if required. With regard to the proposed BESS, the technology thereof is dynamic and so the specific type/technology to be developed would be selected based on market demands and technology availability at the time of construction. Therefore, both lithium-ion and redox-flow are to be assessed as technology alternatives, **with lithium-ion being the current preferred technology**. It should be noted that the lithium-ion BESS will arrive to site pre-assembled. Any maintenance, service or repairs required to be carried out on the BESS will be conducted by the supplier's personnel or their authorised agent. When a battery module reaches its end of life or needs to be replaced, it will be returned to the original manufacturer for disassembly and further processing. Disposal of batteries will be done in accordance with South African Regulations (by the supplier). Lithium-ion batteries (**preferred**) is a solid-state battery i.e., the electrolyte (which is considered hazardous) is contained within the battery. As part of the installation and maintenance of the redox flow batteries (the alternative technology which is not preferred) electrolyte may need to be stored and handled on site. Further details are provided in **Section 3.4** of this report.

2.4 IDENTIFIED LISTED ACTIVITIES

The EIA Regulations allow for a Basic Assessment (*BA*) process for activities with limited environmental impact (listed in GNR 983 & GNR 985), and a more rigorous two-tiered approach which is the Scoping and EIA process for activities with potentially greater environmental impact (listed in GNR 984).

The Proposed Development activities trigger the need for a Scoping and EIR process in accordance with the EIA Regulations. The listed activities which are being applied for are provided in **Table 15** below.

Table 15: Listed Activities Triggered by the Proposed Development

Listed Activities as set out in Listing Notice 1 (GNR 983)		
No.	**Description of Activity**	**Reference to the Proposed Development**
11 (i)	The development of facilities or infrastructure for the transmission and distribution of electricity—	The Proposed Development will include a substation/ collector infrastructure with a capacity of 132 kV.

No.	Description of Activity	Reference to the Proposed Development
	(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts;	The Proposed Development will include underground cables for internal electrical reticulation; however the capacity of these lines will not exceed 33 kV and is expected to be within the range of 22 – 33 kV. The Proposed Development is located outside an urban area and industrial complex.
12 (ii)(c)	The development of— (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.	The layout of the Proposed development has been designed to avoid sensitive aquatic environments on the affected property. A portion of the Proposed development and associated infrastructure (exceeding 100 sqm) would however be located within 32 m of a wetland located adjacent (south) to the facility.
24 (ii)	The development of a road— (ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres.	An access road will be developed to access the Proposed Development. This road will follow existing farm roads as far as possible. The access road would have a maximum width of 10 m. Internal roads would be a maximum of 8 m in width.
28 (ii)	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.	The Proposed Development is defined as an industrial development which would occur outside an urban area. The Proposed Development will extend across an area of 56.43 ha which exceeds the 1 ha threshold. The current land use within the development footprint is for agriculture.
56 (ii)	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre— (ii) where no reserve exists, where the existing road is wider than 8 metres. excluding where widening or lengthening occur inside urban areas.	Where possible, existing farm roads on site will be used and upgraded if required. The access road will be widened to a maximum width of 10 m. Where possible, existing farm roads would also be used and lengthened

No.	Description of Activity	Reference to the Proposed Development
		as part of the internal road network, and lengthening would exceed 1 km. The Proposed Development would occur outside an urban area.
Listed Activities as set out in Listing Notice 2 (GNR 984)		
1	The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more.	The Proposed Development will entail the construction of a new 55 MW photovoltaic solar facility which exceeds the 20 MW threshold stipulated by this Listed Activity. The Project Area is located outside an urban area where no existing infrastructure is present.
15 (i)	The clearance of an area of 20 hectares or more of indigenous vegetation excluding where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity.	The cumulative vegetation clearance to allow for the development of non-linear infrastructure (i.e., the on-site sub-station hub and foundations for the solar PV arrays) will exceed 20 hectares, resulting in the clearance of 56 ha.
Listed Activities as set out in Listing Notice 3 (GNR 985)		
No.	**Description of Activity**	**Reference to the Proposed Development**
3 (a) (b) (e) (i) (gg)	The development of masts or towers of any material or type used for telecommunication broadcasting or radio transmission purposes where the mast or tower- (a) is to be placed on a site not previously used for this purpose; and (b) will exceed 15 metres in height – but excluding attachments to existing buildings and masts on rooftops. e. Limpopo i. Outside urban areas: (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas.	A communications tower with a maximum height of 32 m is proposed as part of the on-site substation hub and will be located on a site that was not previously used for this purpose. The Proposed Development is located outside an urban area and within 5 km of the Leeuwkopje Private Nature Reserve, and Arzona Private Nature Reserve which are designated protected areas in terms of NEMPAA. The Project Area is located outside urban areas.
4 (e) (i) (gg)	The development of a road wider than 4 metres with a reserve less than 13.5 metres. e. Limpopo i. Outside urban areas:	Roads developed for the Proposed Development will be a maximum of 10 m wide. Existing farm roads would be used as far as possible and upgraded.

No.	Description of Activity	Reference to the Proposed Development
	(gg) areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas;	Road development would occur within 5 km of the Leeuwkopje Private Nature Reserve and Arzona Private Nature Reserve which are designated protected areas in terms of NEMPAA. The Project Area is located outside urban areas.
14 (i)(c)(e)(i)(hh)	The development of – (i) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs – (c) if no development setback has been adopted, within 32 metre of a watercourse measured from the edge of a watercourse; e. Limpopo i. Outside urban areas: (hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve.	The layout of the Proposed development has been designed to avoid sensitive aquatic environments on the affected property. A portion of the Proposed development and associated infrastructure (exceeding 10 sqm) would however be located within 32 m of wetland located adjacent (south) to the facility. The Proposed Development and associated infrastructure would also occur within 5 km of the Leeuwkopje Private Nature Reserve and Arzona Private Nature Reserve which are a designated protected areas in terms of NEMPAA. The Project Area is located outside urban areas.
18 (e)(i)(gg)	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 Kilometre. e. Limpopo i. Outside urban areas: (gg) areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas.	Where possible existing roads on site will be used and upgraded if required. The access road will be widened to a maximum of 10 m. Where possible, existing farm roads would also be used and lengthened as part of the internal road network, and lengthening would likely exceed 1 km. Road construction would occur within 5 km of the Leeuwkopje Private Nature Reserve and Arzona Private Nature Reserve which are designated protected areas in terms of NEMPAA. The Project Area is located outside urban areas.

3. ALTERNATIVES

In terms of the NEMA and the EIA Regulations, the purpose of 'alternatives' in an EIA is to promote sustainable development by requiring the Applicant to identify and assess a range of alternatives to the Proposed Development during the Scoping phase. The aim is to ensure that the Proposed Development minimizes its negative impacts on the environment and maximizes its benefits for society, while taking into account the costs and feasibility of the different options. This could include identifying a range of reasonable and feasible alternatives that could potentially achieve the same objectives of the Proposed Development, but with different approaches or in different locations.

By evaluating alternatives in an EIA, decision-makers can make informed choices about which course of action to take based on the potential environmental, social, and economic impacts of each option. This allows for a more comprehensive and objective assessment of a project and helps to identify opportunities to reduce or avoid negative impacts. In some cases, alternatives identified through the EIA process may result in modifications to the design, location, or technology used.

Both the biophysical and socio-economic aspects are considered when investigating alternatives. The term "alternatives" as per GNR 982 is defined as follows:

"…in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to:

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

All proposed alternatives are described below. During the EIR phase of the project, the alternatives identified below will be investigated further and the preferred alternatives will be identified.

3.1 LOCATION ALTERNATIVE

As indicated in preceding sections, the Proposed Development is located near the town of Northam in the Limpopo Province of South Africa, which has become a popular location for solar PV farms due to good solar irradiation levels and a relatively low population density, making it a suitable location for large-scale solar PV projects. The location of the Proposed Development was selected based on the factors described below.

Solar irradiance: Solar irradiance is an important factor to consider when planning solar energy projects as it directly affects the amount of electricity that can be generated by solar panels. Regions with higher solar irradiance receive more solar energy per unit area, and therefore are more suitable for solar energy projects. Areas with lower solar irradiance may not be as efficient for solar energy generation and may require larger solar panel arrays to produce the same amount of electricity as a smaller array in a region with higher solar irradiance. As per the map in **Figure 3** below generated from the Global Solar Atlas, the broader area between Bloemfontein and Kimberly, which includes the area of Proposed Development, is situated in an area of high levels of solar irradiance, with a value of 2291 kilowatt hours per square meter (kWh/m^2). This level of solar irradiance makes the Project Area an ideal location for a solar PV facility.

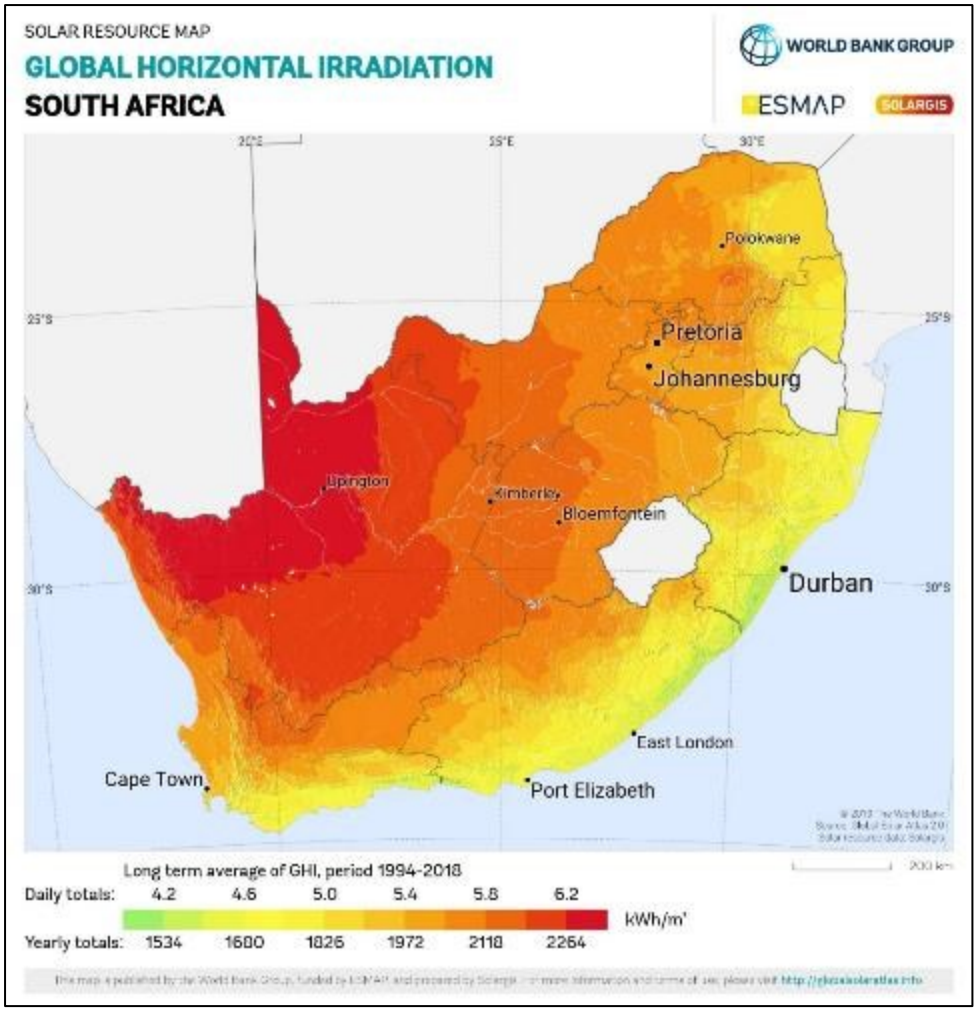

Figure 3: Solar Irradiation (Source: Global Solar Atlas, 2023)

Land availability: The availability of land is a critical criterion in the location selection process. The location of the Project Area within a rural context is preferred to an urban area where dense development would shade the PV facility and where there would be several neighbours in close proximity that could be impacted. Fortunately, there are extensive open areas of land in Limpopo that are suitable for such installations, with low levels of human habitation, which reduces the impact on local communities. The farms consisting of the Project Area were identified though desktop screening. The Applicant has entered into agreements with the landowners within the development footprint to secure sufficient land for the Proposed Development. The Project Area is of a suitable size to provide a viable solar PV facility, whilst ensuring that environmental sensitivities are not compromised.

Topography: The topography of a site can impact the efficiency and cost-effectiveness of a solar PV project. The ideal topography for these types of projects is generally flat or gently sloping land with minimal shading from trees, buildings, or other structures. The orientation of solar PV panels is an important consideration when determining the optimal topography for a project. Solar panels are typically installed facing north in the Southern Hemisphere to maximise exposure to the sun. This orientation allows the panels to capture the most sunlight throughout the day, as the sun moves from east to west. Sloping terrain can affect the orientation of solar panels, and special mounting systems may be required to ensure that the panels are angled correctly. The topography of the Project Area can be described as flat an average slope of 0.6 % and was therefore deemed to

be acceptable in terms of slope and shading. This topography also means that little cut and fill would be required in order to develop the required levels for the PV platforms.

Road Network: The Project Area is located directly adjacent to the R510 (a provincial road) and thus easily accessible via the existing local road network. An existing farm road also flanks the Project Area to the east.

Proximity to transmission infrastructure: The proximity to existing transmission infrastructure can significantly reduce the cost of developing renewable energy projects by minimising the need for new transmission lines. There are multiple promising options for connection to the national electricity grid. An 88 kV line runs past the Project Area and there are 132 kV lines located approximately 1km to the north of the Project Area. There are also two Eskom sub-stations in proximity to the Project Area i.e., Phoko located approximately 7 km to the north of the Project Area and Spitskop, located approximately 6 km to the south-west of the Project Area. Connection to the national grid would be considered in the future, subject to a separate EIA process.

As a result of the factors outlined above, the chosen location for the PV facility, substation and adjoining ancillary buildings are considered to be suitable, therefore no location alternatives will be further investigated during the EIR phase.

In terms of the access road, one road is proposed with two alternatives under assessment i.e., the **preferred access road** which is directly off the R510 allowing access to the Project Area from the east and the **alternative access road** that is approximately 1 km north of the Project Area via an existing intersection with the R510. This road would run parallel to the R510 and would also allow access to the Project Area from the same point. Existing roads will be utilised as far as reasonably possible and upgraded where necessary in accordance with the recommendations of TIA. These roads would a maximum of 10 m wide.

3.2 Land Use Alternative (Type of Activity)

The Proposed Development will be for the construction of a solar PV facility for the generation of electricity. It is the type of activity chosen by the Applicant due to several factors including location (as outlined in the previous section), climate, economic viability, and the need and desirability. Therefore, no alternatives will be investigated further during the EIR phase in respect to activity alternatives.

3.3 Design/Layout Alternatives

During the Scoping phase of the Proposed Development, the DFFE Screening Tool was used to determine the environmental sensitivities of the Project Area. Subsequently, a team of Specialists conducted SSV's on terrestrial and aquatic biodiversity, avian life, agricultural potential, cultural heritage, geohydrology, and the landscape component. The mitigation hierarchy was applied to determine the suitable areas for construction (buildable areas), areas that need to be avoided, and the necessary buffers to be applied around the sensitive areas to mitigate potential impacts. In addition, the landowner was consulted to ascertain which areas of the property were to be excluded from development activities.

The layout of the Proposed Development and its associated infrastructure was thereafter considered and developed based on the findings of each Specialist, together with the allowable buildable areas defined by the landowner. Further detailed studies will be undertaken on the areas affected by the proposed design/ layout and a more detailed analysis will be conducted during the EIR phase. Presently, there are no layout alternatives that are being considered for the PV area because, according to the available information, the existing layout is considered to be a low-impact development deliberately designed to avoid highly sensitive areas.

3.4 TECHNOLOGY ALTERNATIVE

The Proposed Development will utilise solar PV technology for the generation of electricity. Solar PV technology is a method of harnessing the energy from the sun and converting it directly into electricity. It works through the use of photovoltaic cells, which are made of semiconducting materials such as silicon. The cells are activated by sunlight, which stimulates the movement of electrons and results in the production of an electric current. This current can be used immediately or stored in batteries for later use. This technology can be used in a variety of settings, from small residential installations to large-scale solar farms. It is a popular and increasingly cost-effective form of renewable energy and is considered one of the key technologies for reducing carbon emissions and combating climate change. Solar PV can be used in combination with other energy sources such as batteries, wind turbines, or grid power to create a hybrid energy system that can provide reliable and sustainable power.

Battery Technology

BESS is a system that stores excess energy generated by renewable energy sources in chemical form and can release it as electrical energy when it is needed. These energy storage systems can help to smooth out fluctuations in energy supply and demand and can help to ensure that energy is available when required. The Applicant will consider two types of BESS as detailed below.

Lithium-Ion Batteries **(Preferred)**: These batteries are the most commonly used batteries in BESS. They are lightweight, have a high energy density, and can be charged and discharged quickly. They are also widely used in consumer electronics and electric vehicles. BESS with lithium-ion batteries can store excess energy generated by the solar panels during peak sunlight hours and release that energy during times when there is less sunlight, such as at night or on cloudy days. Lithium-ion batteries have a high energy density, meaning they can store a large amount of energy in a relatively small space. They also have a long lifespan and can be charged and discharged multiple times without losing capacity, making them a cost-effective solution for energy storage. In addition, lithium-ion batteries are modular and can therefore be configured in a variety of ways to meet the specific needs of the solar PV facility. They can also be easily integrated with inverters and other control systems to optimise the charging and discharging of the battery.

Redox-Flow Batteries **(Alternative)**: Redox-flow batteries are a type of rechargeable battery that store energy in a liquid electrolyte solution. Unlike lithium-ion batteries that use a solid electrolyte, flow batteries separate the energy storage component from the power generation component. This allows the energy capacity of the battery to be easily increased or decreased by adjusting the volume of the electrolyte. They have a longer lifespan than lithium-ion batteries as the electrolytes can be easily replaced when they start to degrade over time. In addition, flow batteries can be charged and discharged simultaneously, allowing for continuous power output. Flow batteries are still a relatively new technology and are not yet widely used in solar PV facilities. However, they have potential for large-scale energy storage applications, such as providing backup power to the electric grid during peak demand periods.

Since BESS technology is dynamic, the Applicant will determine the specific technology to be developed based on market demands and technology availability at the time of construction. Accordingly, both lithium-ion and redox-flow batteries will be assessed as technology alternatives during the EIR phase, with lithium-ion currently being the preferred technology.

3.5 OPERATIONAL ALTERNATIVE

There are no operational alternatives considered for the Proposed Development given the nature of the development which only allows for electricity generation during operations.

3.6 No - Go Alternative

The 'no-go' alternative refers to the option of not proceeding with the Proposed Development due to significant adverse environmental impacts that cannot be adequately mitigated or avoided. It is only considered after all reasonable measures to mitigate or avoid adverse environmental impacts have been explored and evaluated. It is an important option in the EIA process, as it ensures that environmental considerations are taken into account when making decisions about whether or not to proceed with a project.

If the Proposed Development is not approved, all of the preliminary impacts identified in the following Chapter during the construction and operational phases will not occur. However, it is worth noting that South Africa is currently facing an energy crisis, with frequent power shortages and blackouts. The country's electricity supply is heavily strained and reliant on coal-fired power plants, which are old, outdated, and struggle to meet the growing demand for electricity. Lack of maintenance due to budget constraints has also resulted in increased downtime and reduced capacity, contributing to the country's electricity supply challenges.

South Africa has recognised the need to transition to a low-carbon, sustainable energy system in order to reduce GHG emissions, improve energy security, and promote economic development. As a result, there is an urgent need to diversify the country's energy mix and increase the use of renewable energy sources such as solar PV. These energy sources have been incorporated into the country's energy plans and policies for the next several years.

The 'no-go' alternative also means that the benefits associated with the Proposed Development will not be realised. These include the following:

- **Economic development:** The development of solar PV projects can create jobs in construction, installation, operation, and maintenance. This can provide economic opportunities for local communities and contribute to local economic development. The REIPPPP, for example, has attracted significant private sector investment and created thousands of jobs in the renewable energy sector.
- **Utilisation of solar energy as a clean and renewable energy source:** Solar PV generates electricity from the sun's energy, which is abundant and renewable. Unlike coal-fired power plants, solar PV does not emit GHG's, air pollutants or waste that can harm human health and the environment. It can help to reduce South Africa's dependence on fossil fuels, decrease GHG emissions and contribute to the country's efforts to mitigate its carbon footprint.
- **Energy security:** Solar PV can be deployed in both grid-connected and off-grid settings, making it a versatile energy source. In areas with limited access to electricity, solar PV can provide reliable and affordable energy, improving energy access, improving the quality of life for people, and reducing energy poverty. It can also improve energy security by diversifying the country's energy mix and reducing reliance on imported fossil fuels.

Consequently the 'no-go' alternative is currently not the preferred alternative but will be assessed in more detail during the EIR phase.

4. LEGISLATIVE FRAMEWORK

In this chapter, detailed information about the specific legal framework governing the EIA process is provided. **Table 16** outlines the key environmental Acts, associated Regulations, policies, and guidelines that aim to guide project development, and comment is provided on the applicability of this legislation to the Proposed Development and the environmental application process underway. To ensure that the project aligns with sector-specific requirements, an overview of sector-specific environmental legislation that is related to areas such as water resources, heritage preservation, and biodiversity conservation is also provided. International environmental strategies are also discussed.

In addition to environmental legislation, constitutional and administrative legal principles in South Africa are noted and how spatial, land-use and development planning at a local, regional/provincial and national scale have been taken into consideration is discussed.

Compliance with these laws, policies and guidelines demonstrates a commitment from the Applicant to responsible environmental management.

Table 16: Legislative Framework and Requirements

Legislation and guidelines used to compile the report	Description	Applicability
International Strategies		
United Nations Framework Convention on Climate Change *(UNFCC),* 1992	The UNFCCC was formed in 1992 due to the global commitment by countries to cooperatively find solutions to limit global average temperature increased. The UNFCCC is a platform for global recognition and emphasising the significance of addressing the harmful effects of climate change. Since 1997, South Africa has been a party to the UNFCCC. As a signatory, South Africa must comply to and participate in meetings and discussions of the UNFCCC. The final outcomes of the 2022 Conference of Parties *(COP)* 27 focused on the urgency of the climate crisis, and the need to adhere to the 1.5-degree temperature target as per the Paris Agreement. The UNFCCC requests the countries (i.e., signed parties) to adopt policies and mitigation measures to report periodically. South Africa remains committed in stabilising the GHG atmospheric concentration and reports every two years to the UNFCCC.	The Proposed Development is a clean energy solution that contributes to the climate change goals recognised by the UNFCCC.
The Kyoto Protocol, 1997	The Kyoto Protocol was adopted on 11 December 1997 and was enforced in 2005. It is based on the principles and provisions of the UNFCCC and implements the goals of the UNFCCC by requiring industrialised countries and economies in transition to commit to limiting and minimising GHG emissions in accordance with agreed individual targets. South Africa ratified the Kyoto Protocol in 2002. It also created a meticulous monitoring, review, verification system, and compliance system to guarantee transparency and hold Parties accountable. Under the Protocol, countries' actual emissions	The Proposed Development is defined as a renewable energy technology that will assist in South Africa's overall commitment to limiting and minimising GHG emissions.

Legislation and guidelines used to compile the report	Description	Applicability
	must be monitored, and precise records must be kept of the trades carried out.	
The Paris Agreement, 2015	The Paris Agreement is a legally binding international treaty on climate change. On 12 December 2015, at the COP 21 in Paris, France, it was adopted by 196 Parties. It was enforced on 4 November 2016, bringing all nations together to combat climate change and adapt to its effects. The main goal of the Paris Agreement is to maintain and limit global warming to 1.5°C. To limit global warming to 1.5°C, GHG emissions must peak before 2025 at the latest and decline 43% by 2030. The Paris Agreement requires each Party to prepare, communicate and maintain successive Nationally Determined Contributions *(NDCs)* that it intends to achieve. NDCs represent efforts by each country to reduce national GHG emissions and adapt to the impacts of climate change. The Paris Agreement requests each country to outline and communicate their post-2020 climate actions. NDCs are submitted every five years by Parties to the UNFCCC secretariat regardless of their respective implementation time frames.	The Proposed Development will aid in the reduction of GHG emissions and contribute to meeting the committed reduction target.
National Legislation		
Constitution of the Republic of South Africa, No. 108 of 1996	The Constitution of the Republic of South Africa is the supreme law of the country and provides the framework for the legal and political system. One of the core principles of the Constitution is the protection of the environment. Section 24 of the Constitution sets out the right to an environment that is not harmful to health or well-being and requires the government to take reasonable measures to ensure that this right is protected. This means that environmental considerations are a	The Proposed Development complies with Section 24 by ensuring that activities that are likely to have a significant impact on the environment are subject to a rigorous environmental assessment process, and that these potential impacts are assessed, and addressed, and that local communities and stakeholders are involved in the decision-making process.

Legislation and guidelines used to compile the report	Description	Applicability
	crucial component of all government policies and decision-making processes, including environmental practices. This constitutional mandate is reflected in various environmental laws and regulations, including the NEMA and the EIA Regulations.	
Promotion of Access to Information Act *(PAIA)*, Act No. 2 of 2000	The PAIA is to promote transparency, accountability, and good governance in both the public and private sectors. PAIA is closely linked to the EIA Regulations, as it provides a means for members of the public to access information necessary to participate effectively in the EIA process and to hold decision-makers accountable for their decisions. PAIA and the EIA Regulations work together to promote public participation and transparency in environmental decision-making process.	Public Participation will be undertaken in line with the NEMA and EIA requirements throughout the authorisation process to keep registered I&APs notified of the process and any decisions taken by the CA. Please refer to **Section 8** for details on the process followed.
Promotion of Administrative Justice Act *(PAJA)*, Act No. 3 of 2000	The PAJA is to promote administrative justice by providing a framework for the review of administrative action. The PAJA is linked to the EIA Regulations since the EIA process involves a range of administrative actions, i.e. the screening of projects, the preparation of EIA reports, the provision of public notice and consultation, and the granting or refusal of environmental authorisations. PAJA provides a means for individuals or groups who are adversely affected by administrative decisions made in the EIA process to seek a review of those decisions. It also promotes fairness and accountability in the EIA process and helps to ensure that decisions made in the process are lawful, reasonable, and procedurally fair.	Public Participation will be undertaken in line with the NEMA and EIA requirements throughout the authorisation process to keep registered I&APs notified of the process and any decisions taken by the CA. Please refer to **Section 8** for details on the process followed.
National Environmental Management Act *(NEMA)*, Act No. 107 of 1998	NEMA is a crucial piece of environmental legislation in South Africa that provides a legal framework for the sustainable	NEMA and its associated EIA Regulations are directly relevant to this application. The Proposed Development triggers listed

Legislation and guidelines used to compile the report	Description	Applicability
	management of the country's natural resources and protection of the environment. The Act seeks to ensure that economic development is balanced with the protection of the environment, and that environmental management is integrated into all aspects of decision-making, planning, and implementation of projects and activities. NEMA requires that an EIA be conducted for certain activities that may have a significant impact on the environment. The EIA process helps to identify potential environmental impacts and develop measures to avoid or mitigate these impacts.	activities in terms of the EIA Regulations as listed in **Table 15** therefore requiring a S&EIR process to be undertaken for the Proposed Development.
Environmental Impact Assessment *(EIA)* Regulations, 2014 (as amended)	In South Africa, NEMA requires that EIAs be conducted for certain activities that may have significant impacts on the environment. The legal requirements for EIAs in South Africa are set out in the EIA Regulations, which were developed under the authority of NEMA. The role of the EIA Regulations is to ensure that proposed projects or activities that are likely to have a significant impact on the environment are subject to a rigorous environmental assessment process i.e. either a Basic Assessment or S&EIR. The EIA process is designed to identify potential environmental impacts and propose measures to avoid, minimize or mitigate those impacts. The EIA Regulations outline the procedures that must be followed during the EIA process, including requirements for public participation and consultation, the content of the EIA report, and the timeframes for completing the process.	The listed activities triggered by the Proposed Development have been identified in **Table 15.** The Public Participation process is outlined in **Section 8** and the anticipated impacts and mitigation measures have been included under **Section 7** of this report. This report complies with Appendix 2 of GNR 982 of the EIA Regulations.

Legislation and guidelines used to compile the report	Description	Applicability
		The DFFE Screening Report determined that the Project Area has a 'low' sensitivity in terms of the Aquatic Biodiversity theme. As such, an SSV and desktop investigation was undertaken by both an Aquatic Specialist and Hydrogeologist respectively, which concurred with the 'low' sensitivity of the screening tool. The Aquatic Specialist concluded that the only aquatic feature of high sensitivity is an unchanneled valley-floor wetland which occurs within 500 m to the south of the Project Area which the Proposed Development will avoid. A 10 m buffer has been recommended.
National Water Act *(NWA)*, Act No. 36 of 1998	The NWA provides a comprehensive framework for the management of South Africa's water resources by ensuring that water resources are protected, used, developed, conserved, managed, and controlled in a sustainable and equitable manner for the benefit of all South Africans, in both the present and future. It establishes the principles and mechanisms for allocating water rights, managing water resources, and regulating activities that impact on water resources. Section 21 of the NWA requires water users to register their water use activities with the DWS. The purpose of Section 21 is to provide the DWS with information on water use activities and to ensure that water resources are managed and used in a sustainable and equitable manner. Registration is required for all water use activities, and failure to register may result in penalties under the NWA.	Additionally, the Project Area was not located within a Strategic Water Source Area *(SWSA)* for surface and groundwater. The findings of both the surface and groundwater investigations are detailed in **Section 0**. Potential water use activities will include the following: • Section 21(c): Impeding and diverting the flow of a watercourse. The Proposed Development will occur within the regulated areas of watercourses. • Section 21(i): Altering the bed, banks, characteristics, or course of a watercourse. This activity also includes any development within the regulated area of a wetland. The Proposed Development will occur within the regulated areas of watercourses.
National Environmental Management: Biodiversity Act *(NEMBA)*, Act No. 10 of 2004	This Act provides a framework for the management and conservation of South Africa's biodiversity in a sustainable	The DFFE Screening Tool determined that the Project Area has a 'low' sensitivity in terms of the Terrestrial Biodiversity and Avian themes. As such, an SSV was carried out which

Legislation and guidelines used to compile the report	Description	Applicability
	manner, while also taking into account the socio-economic needs of the country. It provides for the protection and conservation of ecosystems, species, and genetic diversity, as well as the sustainable use of biological resources. It also establishes a system for the management of protected areas, including national parks, nature reserves, and wilderness areas. Section 28 of NEMBA makes provisions for the identification and management of biodiversity hotspots. It requires the Minister of DFFE to identify and declare areas of high biodiversity importance as biodiversity hotspots. These hotspots are areas that are rich in biodiversity and are threatened by human activities. Section 52 of NEMBA makes provisions for the listing and management of critically endangered ecosystems therefore providing legal protection against activities that could harm the ecosystem. NEMBA seeks to ensure that the management of biodiversity is integrated into all aspects of decision-making, planning, and development in South Africa. It also establishes a range of measures to prevent and control invasive alien species and to regulate activities that may have a negative impact on biodiversity.	determined that the Project Area was not located within a Critical Biodiversity Area (*CBA*) and Ecological Support Area *(ESA),* nor is it located within any hotspots for lizards, snakes and butterflies. However, the Project Area is located within the Northern Turf Thornveld: Important Bird Area (*IBA*). Refer to **Section 0** for details on the avifaunal component. There were also no ecosystems present that are listed under GN 689 of 2022.
NEMBA Alien and Invasive Species Regulations, 2020	The Alien Invasive Species Regulations were enacted under NEMBA. These regulations aim to prevent the introduction and spread of invasive species that have the potential to harm	As per the Terrestrial Ecological SSV, a few alien plant species were recorded within the Project Area which will require management/ removal.

Legislation and guidelines used to compile the report	Description	Applicability
	ecosystems, biodiversity, and the economy. These regulations provide a legal framework for the control and management of invasive species, with the ultimate goal of protecting South Africa's natural resources and promoting sustainable development. It requires that all persons in South Africa, including landowners and land users, take reasonable measures to prevent the introduction and spread of invasive alien species. The regulations establish a system for the identification and listing of invasive alien species that pose a threat to South Africa's biodiversity. It also sets out procedures for the management of invasive alien species, including the removal or destruction of such species and the control of their movement and trade. Additionally, the regulations provide for the issuing of permits for the introduction or keeping of invasive alien species, subject to certain conditions and requirements. These permits are only issued where it is deemed that the introduction or keeping of such species is in the national interest and will not result in harm to the environment or human health.	Further investigation will be carried out and detailed by Specialists during the EIR phase.
NEMBA **Threatened or Protected Species *(TOPS)* Regulations, 2015**	The TOPS Regulations were enacted under NEMBA and aims to protect and conserve species that are threatened with extinction or are of special concern in South Africa. It establishes a list of species that are deemed to be threatened or protected, including animals, birds, plants, and other organisms. The regulations also set out procedures for the	The Project Area contains several Species of Conservation Concern *(SCC)* in terms of avifauna and priority species that were classified as near threatened, critically endangered, endangered or vulnerable. The Terrestrial Ecological Specialist indicated that it is possible that faunal Red Data List (*RDL*) and SCC may occur within the

Legislation and guidelines used to compile the report	Description	Applicability
	management of these species, including the issuing of permits for their capture, possession, or trade. The regulations prohibit the hunting, killing, or capturing of any species listed as threatened or protected, except under certain circumstances and with the appropriate permits, and provides for the protection of habitats and ecosystems that are important for the survival of threatened and protected species. This includes the establishment of protected areas, such as national parks, nature reserves, and wilderness areas, where these species can live and thrive in a natural environment. The regulations also establish penalties for non-compliance, including fines and imprisonment.	Project Area as ideal habitat exists. Refer to **Section 0** for further details. Further investigation will take place during the EIR phase.
National Heritage Resources Act *(NHRA)*, Act No. 25 of 1999	The NHRA aims to protect the country's heritage resources by providing for the identification, protection, management, and promotion of South Africa's heritage resources in a sustainable manner. The Act defines heritage resources as "all things and places that are of cultural significance, aesthetic value, historical significance, scientific interest, or archaeological value." This includes buildings, structures, monuments, landscapes, artefacts, archaeological remains and human remains older than 60 years. The NHRA establishes a system for the management of heritage resources, which includes the identification and declaration of heritage sites, the establishment of a national inventory of	The DFFE Screening Report determined that the Project Area has a 'low' sensitivity in terms of the archaeological and cultural heritage theme. A cultural heritage SSV investigation was undertaken, and it has been recommended by the Specialist that a Phase 1 Heritage Impact Assessment be undertaken and submitted to the South African Heritage Resources Agency *(SAHRA)* and the Provincial Heritage Resources Authority *(PHRA)* i.e., Limpopo Provincial Heritage Resources Authority *(LIHRA)* for comment and decision making during the Draft EIR phase. Please refer to **Section 0**. In terms of Section 38 (1) of the NHRA, the following activities are applicable to the Proposed Development:

Legislation and guidelines used to compile the report	Description	Applicability
	heritage resources, and the development of management plans for heritage resources. It provides for the protection of heritage resources, including measures to prevent damage, destruction, or alteration of heritage sites, and the establishment of penalties for non-compliance. It also provides for the preservation of heritage resources through conservation and restoration efforts. Section 35(4) of NHRA requires that an application for a permit be submitted to the relevant heritage resources authority for any activity that may affect an archaeological, palaeontological or meteorite site such as excavation, alteration, demolition, or development.	• Section 38(1)(a): The construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length. • Section 38(1)(c)(i): Any development or other activity which will change the character of a site exceeding 5 000 m^2 in extent.
National Environmental Management: Air Quality Act *(NEMAQA)*, Act No. 39 of 2004	The purpose of NEMAQA is an act of the South African Parliament that provides for the prevention of air pollution and the promotion of air quality in South Africa. The purpose of the act is to protect the environment and human health by establishing a framework for managing air quality, including the regulation of emissions from industrial and other sources, the monitoring of air quality, and the implementation of air quality management plans. It sets out various standards and regulations for ambient air quality, emissions, and Atmospheric Emission Licenses *(AEL)*, and provides for the establishment of a National Air Quality Officer and provincial air quality officers to oversee the implementation of the act. It also provides for public participation in air quality management, including the right to access information about air quality and the opportunity to	The Project Area is located within the Waterberg-Bojanala Priority Area (*WBPA*) for air quality. This was due to several energy-based development initiatives in South Africa and Botswana which would pose a threat to the current state of ambient air quality in the WDM. As such, government had recognised the need for management planning in the WBPA to consider the current and future threats to air quality. During normal operation of the Proposed Development, it is not anticipated that any pollutants will be emitted. Praxos conducted a detailed analysis of GN 983, which outlines the minimum emission standards associated with listed activities as per Section 21 of NEM:AQA. Based on this analysis, it was determined that none of the listed activities are triggered by the Proposed Development, therefore an AEL will not be required.

Legislation and guidelines used to compile the report	Description	Applicability
	participate in the development of air quality management plans.	Dust will be generated from construction activities and potential emissions from the operation of the facilities through the use of backup generators and inverters which will be further investigated during the EIR phase.
NEMAQA **National Dust Control Regulations, 2013**	The National Dust Control Regulations were published in 2013 under the NEMAQA and provides a framework for the control of dust emissions. The purpose of these regulations is to regulate dust emissions from various sources, including industrial and mining activities, construction sites, and unpaved roads. Under these regulations, responsible parties are required to implement dust control measures, monitor dust emissions, and maintain records to demonstrate compliance with the regulations. It provides for enforcement measures and penalties for non-compliance. The regulations also establish emission limits taking into account factors such as the size of the particulate matter, the frequency and duration of the activity, and the distance from sensitive receptors such as residential areas. For construction activities in residential areas or areas with sensitive receptors, such as hospitals, schools, and old age homes, the regulations specify a maximum allowable dust fall of 600 milligrams per square metre per day *(mg/m²/day).* Dust fall refers to the amount of dust that settles on a surface over a given period of time. For construction activities in non-residential areas or areas without sensitive receptors, the regulations specify a maximum allowable dust concentration of	The Proposed Development is anticipated to generate dust from activities associated with the construction phase, i.e., site preparation, such as grading and excavation, and transportation of materials. However, it is located in a non-residential area away from old age homes. The nearest hospital and school are 10 km and 6 km respectively. During the EIR phase, measures for dust control will be detailed for implementation.

Legislation and guidelines used to compile the report	Description	Applicability
	600 milligrams per cubic metre *(mg/m³)* for a 24-hour period. If the construction activity is expected to last for a longer period, the average dust concentration over a 30-day period must not exceed 240 mg/m³. The responsible party must develop and implement a dust monitoring program to ensure compliance with the applicable emission limits.	
National Environmental Management: Waste Act *(NEMWA)*, Act No. 59 of 2008	NEMWA provides a legal framework for the management of waste in South Africa in a manner that is environmentally sound and sustainable. The NEMWA aims to promote a hierarchy of waste management, with the prevention of waste as the most preferred option, followed by minimisation, reuse, recycling, recovery, treatment, and, as a last resort, disposal. The act provides for the licensing and registration of waste management activities in terms of Section 44 and sets out the duties and responsibilities of waste generators, waste transporters, and waste management facilities. It also establishes a system for the classification and characterization of waste, and sets out the procedures for the handling, storage, and disposal of different types of waste.	Waste will be generated during the construction phase of the Proposed Development which will require adequate management and disposal. Praxos conducted a detailed analysis of GN 921, which lists waste management activities as per Section 44 of NEMWA. Based on this analysis, it was determined that none of the listed activities are triggered by the Proposed Development, therefore a Waste Management Licence *(WML)* will not be required.
NEMWA **Waste Classification ad Management Regulations, 2013**	The purpose of these regulations is to provide a legal framework for the management of different types of waste, from their generation to their disposal or reuse. It aims to promote the sustainable management of waste, reduce its	The type of waste that will be associated with the Proposed Development is general waste (domestic – item 2(a)(i)) and potentially general waste containing hazardous chemicals (item 2(b)(ii)) due to hazardous substances such as hydrocarbons and the potential electrolyte storage on site. In accordance with

Legislation and guidelines used to compile the report	Description	Applicability
	environmental impact, and protect human health and well-being. The regulations classify waste into different categories based on their characteristics, such as toxicity, corrosiveness, and flammability. The categories include general waste, hazardous waste, and medical waste, electronic waste, among others. Each category of waste is subject to different management requirements to ensure that it is managed safely and appropriately. It also requires waste generators to ensure that waste is managed in a manner that protects human health and the environment, and that waste is disposed of at authorised facilities. It establishes requirements for waste transport, storage, treatment, and disposal facilities to ensure that they operate safely and comply with environmental and health regulations.	Annexure 1 of these regulations, these waste streams have been listed as waste that do not require classification or assessment. The requirements pertaining to these waste streams will be detailed and included in the EIR phase.
National Environmental Management: Protected Areas Act *(NEMPAA)*, No. 57 of 2003	NEMPAA provides a legal framework for the establishment, management, and protection of protected areas in the country. The purpose of the Act is to conserve South Africa's biodiversity and heritage by ensuring the effective management and protection of its protected areas. Chapter 3 of the Act provides for the declaration of protected areas which includes national parks, nature reserves, wilderness areas, and other areas that have been declared as protected by the government. The Act requires that protected areas be managed in accordance with conservation principles and that management	The Project Area is situated near several Protected Areas (PA's) that are officially listed in the DFFE's PAR. These include Leeuwkopje Private Nature Reserve (established on 27/1/1960) and Arzona Private Nature Reserve (established on 27/1/1960) which are located within a 5 km radius of the Project Area. It is important to note that the Proposed Development will take place outside these protected areas. Appropriate buffers will be investigated during the EIR phase. Refer to **Section 0** for further details.

Legislation and guidelines used to compile the report	Description	Applicability
	plans be regularly reviewed and updated to ensure that they remain effective. Any development activity proposed within a protected area must be compatible with the conservation objectives of the protected area. This means that development activities must not have a significant negative impact on the biodiversity, ecosystems, or cultural heritage of the protected area. The DFFE relies on the provisions of NEMPAA to form the Protected Areas Register *(PAR)*. The PAR is a database of all declared protected areas in South Africa, and it serves as a tool for managing and monitoring the protected area system. Once a protected area has been declared, its details are recorded in the PAR, including its name, location, size, and legal status.	
National Protected Area Expansion Strategy *(NPAES)*, 2010	The NPAES is a national-level strategic plan that provides a strategic framework for expanding the protected area network in South Africa. The NPAES sets out a series of targets and strategies for expanding protected areas in the country, based on ecological and social criteria, and it aims to ensure that South Africa's protected area network is representative of the country's biodiversity and ecosystems. The NPAES is closely aligned with the objectives of NEMPAA, as it seeks to implement the provisions of the Act by expanding and strengthening the protected area network in South Africa. It is also intended to be a dynamic and flexible plan, which can be adapted and revised	There are several PAs within close proximity to the Project Area which are on the official PAR of the DFFE i.e., Leeuwkopje Private Nature Reserve and Arzona Private Nature Reserve. The NPAES area of the Limpopo Central Bushveld occurs south of Project Area but does not expand into the Project Area. Appropriate buffers will be investigated during the EIR phase.

Legislation and guidelines used to compile the report	Description	Applicability
	over time in response to changing conservation priorities and emerging threats to biodiversity.	
NEMA **Procedures for the assessment and minimum criteria for reporting on identified environmental themes when applying for environmental authorisation (terrestrial plant and animal species), 2020**	The document aims to establish protocols that pertain to the plant and animal species environmental theme, in order to evaluate and determine the minimum reporting criteria that Specialists are to follow when undertaking their assessments. Whenever a protocol is applicable, its guidelines will be given priority over the requirements stated in Appendix 6 of the EIA Regulations. However, if there is no prescribed protocol, the requirements of Appendix 6 of the EIA Regulations will be enforced.	The protocol outlined in this document has been referenced in the Specialist Terms of Reference *(ToR)* and has already been applied to the Terrestrial Biodiversity SSV undertaken during the Scoping phase. Similarly, the protocol outlined in this document will be used to conduct the Specialist Studies for the plant and animal species theme during the EIR phase.
NEMA **Procedures for the assessment and minimum criteria for reporting on identified environmental themes when applying for environmental authorisation (agriculture, avifauna, biodiversity, noise, defence, civil aviation), 2020**	The document aims to establish protocols that pertain to the agriculture, avifauna biodiversity, noise, defence, and civil aviation environmental themes, in order to evaluate and determine the minimum reporting criteria that Specialists are to follow when undertaking their assessments. Whenever a protocol is applicable, its guidelines will be given priority over the requirements stated in Appendix 6 of the EIA Regulations. However, if there is no prescribed protocol, the requirements of Appendix 6 of the EIA Regulations will be enforced.	The protocol outlined in this document has been referenced in the Specialist ToR and has already been applied to the agricultural, and avifaunal SSV's undertaken during the Scoping phase. Similarly, the protocol outlined in this document will be used to conduct the Specialist Studies required for these themes during the EIR phase.
Conservation of Agricultural Resources Act *(CARA)*, No. 43 of 1983	The act provides a framework for the sustainable use and management of agricultural land, including measures to prevent soil erosion, maintain soil fertility, and conserve water resources. CARA also addresses the issue of invasive alien plants, which can have negative impacts on agricultural productivity and the environment. The Act provides for the control and eradication of invasive alien plants on agricultural land and requires	In terms of the Proposed Development, alien plant species were noted within the Project Area. The management of these species will be required and detailed in the EIR phase.

Legislation and guidelines used to compile the report	Description	Applicability
	landowners to take measures to prevent the spread of these plants.	
The Sub-Division of Agricultural Land Act, No. 70 of 1970	The Act is intended to regulate the subdivision of agricultural land and promote the sustainable use and development of these resources. It seeks to address issues such as soil degradation, land fragmentation, and the conversion of agricultural land for non-agricultural purposes. The Act requires landowners who wish to change the use of their agricultural land to obtain the necessary approval from the relevant authorities. This approval is granted based on certain conditions, such as the submission of an EIA and a land use plan that outlines how the land will be used and managed sustainably. It recognises the importance of agricultural land for food security and sustainable development and seeks to prevent the conversion of this land for non-agricultural purposes unless it is justified and sustainable.	The Project Area is zoned for agricultural purposes and is currently being used for the grazing of livestock. The Proposed Development is industrial in nature and will therefore require a change in land use. As per the DFFE Screening Report, the agricultural sensitivity of the Project Area was 'very high'. An Agricultural Potential SSV was conducted, which determined that the Project Area has 'high' soil potential, and is therefore well suited to food crop production, provided that there is sufficient rainwater or irrigation water available. Please refer to **Section 0** of this report. Agricultural potential and associated impacts will be further investigated during the EIR phase.
National Forests Act *(NFA)*, Act No. 84 of 1998	The NFA provides for the protection, conservation, and sustainable management of forests in South Africa with the aim of promoting ecological, social, and economic benefits for present and future generations. The Act establishes a legal framework for the protection of forests and the regulation of activities that may impact forests, such as logging, grazing, and development. It also provides for the establishment of protected areas and the conservation of biodiversity in forests, as well as the promotion of sustainable forest management practices.	The Terrestrial Biodiversity SSV did not record any protected trees within the Project Area. Further investigations will take place during the EIR phase.

Legislation and guidelines used to compile the report	Description	Applicability
	The Act recognizes the important role that forests play in providing ecosystem services, such as clean air and water, carbon sequestration, and biodiversity conservation. It also acknowledges the social and economic benefits that forests provide, including the provision of livelihoods, recreation, and tourism opportunities. Section 7 regulates the removal of trees and forests through a permit system and requires anyone who wishes to remove trees or conduct forestry operations on forest land to obtain a permit from the relevant authority. The Act also provides for the protection of specific categories of forests, such as protected forests, indigenous forests, and heritage forests. Removal of trees or forestry operations in these forests is subject to additional requirements and restrictions.	
National Building Regulations and Building Standards Act, No. 103 of 1977	The Act provides for the promotion of uniformity in the law relating to the erection, demolition, and the maintenance of buildings to ensure that all buildings erected in South Africa meet minimum safety, health, and functional requirements. The regulations cover a wide range of building-related matters, including structural safety, fire protection, energy efficiency, ventilation, and sanitation. Section 13 of the Act also applies to temporary buildings erected during construction such as site offices, storage sheds, worker accommodation, etc. must comply with the relevant building regulations and standards, just like permanent	The Proposed Development will entail the development of associated infrastructure such as offices, operations and maintenance buildings, workshops, and warehouses. This Act must be considered during the construction phase regarding the erection of infrastructure.

Legislation and guidelines used to compile the report	Description	Applicability
	buildings. This includes compliance with the minimum safety, health, and functional requirements set out in the regulations.	
National Road Traffic Act *(NRTA)*, No. 93 of 1996)	The Act establishes a framework for the regulation of road infrastructure and road traffic, including the registration and licensing of vehicles, the testing and certification of drivers, and the enforcement of traffic laws and regulations. It sets out the responsibilities and obligations of drivers, vehicle owners, and traffic authorities, and provides for the establishment of national and provincial traffic authorities to enforce the provisions of the Act. The act emphasises the importance of designing and constructing roads in a manner that ensures safety for all road users. The Act also provides for the establishment of a National Road Traffic Regulator, which is responsible for the development and implementation of national road traffic regulations and standards. The Regulator is also responsible for the collection and management of road traffic information, and for promoting road safety awareness and education.	Solar PV equipment and materials will be transported to and from the Project Area. The Act sets out regulations and standards for the use of public roads, the transportation of goods and equipment to minimize the risk of road accidents or incidents. A Transport Impact Assessment will be undertaken during the EIR phase to investigate the impact of the Proposed Development on the surrounding road network and to determine safe access points to the Project Area.
Occupational Health and Safety Act *(OHSA)*, No. 85 of 1993	The Act establishes a framework for the regulation and management of health and safety in all workplaces, and sets out the responsibilities and obligations of employers, employees, contractors, and other parties in relation to this. It requires employers to provide a safe working environment, to identify and manage workplace hazards and risks, and to provide appropriate training and supervision to employees.	The developer and contractors on site will be required to provide training to staff regarding specific hazards associated with solar panel installation and maintenance. This will involve conducting a risk assessment of the Proposed Development, identifying potential hazards, and implementing appropriate control measures to eliminate or minimize these hazards.

Legislation and guidelines used to compile the report	Description	Applicability
	For solar PV projects, this may involve providing training on working with electricity or on the specific hazards associated with solar panel installation and maintenance.	
Hazardous Substances Act, No 15 of 1973	The Act regulates the import, export, sale, use, and disposal of hazardous substances. Its main purpose is to ensure that hazardous substances are handled in a way that protects public health and safety, as well as the environment. The Act requires that hazardous substances be properly labelled and packaged, and that they are only used for their intended purposes and in accordance with the conditions of use specified on their labels. In addition, the Act requires that hazardous substances be stored, handled, and disposed of in a safe and responsible manner. This includes the establishment of safety procedures for the handling and storage of hazardous substances.	Solar panels and associated equipment may contain hazardous substances such as lead, cadmium, and other heavy metals. Other potential hazardous substances are hydrocarbons and the potential electrolyte storage on site. As a result, developers and operators of these facilities must comply with the requirements of the Act to ensure that these substances are handled in a safe and responsible manner.
Spatial Planning and Land Use Management Act *(SPLUMA)*, Act No. 16 of 2013	SPLUMA provides a framework for spatial planning and land use management that is integrated, sustainable, and equitable while also ensuring that the rights and interests of local communities are taken into account. The act also promotes transparency, accountability, and public participation in land use and development decision-making processes. Under SPLUMA, each municipality is required to develop a Spatial Development Framework *(SDF)* that sets out the municipality's spatial vision, goals, and objectives. The SDF provides a basis for the development of land use schemes, which guide the use and development of land in the municipality. Through this integrated approach, SPLUMA aims	The Proposed Development will require a rezoning of the property under discussion from agriculture to special use. An Agricultural Potential SSV of the Project Area was undertaken. Results indicated that the soil had high potential, making it suitable for food crop production, provided that there is sufficient rainwater or irrigation water available. Agricultural potential and associated impacts will be further investigated during the EIR phase.

Legislation and guidelines used to compile the report	Description	Applicability
	to promote sustainable and equitable development across South Africa.	
Noise Control Regulations *(NCR)*, 1992	The regulations provide a framework for managing noise levels and establishing permissible noise limits in various settings, such as industrial and residential areas, as well as public spaces like parks and beaches and outlines the procedures for monitoring and measuring of these noise levels. It sets out the requirements for noise control equipment and specifies the circumstances under which noise-producing equipment may be used. The regulations also establish the procedures for applying for noise exemptions, which may be granted in specific circumstances, such as during construction activities or for emergency situations.	During the construction phase, heavy machinery and equipment used for excavating, grading, and installing solar panels will generate noise that may cause a nuisance. During operation, there may be noise emissions from inverters, transformers, or other equipment. The guideline for measuring and monitoring noise levels with be investigated further during the EIR phase to sure that noise remains within permissible limits.
National Energy Act, No. 34 of 2008	The Act provides a legislative framework for the promotion and regulation of South Africa's energy sector and provides for the development and implementation of a national renewable energy strategy. The purpose of the act is to ensure the provision of sustainable and affordable energy to all South Africans, while promoting economic growth and development. Key objectives include the following: • Promoting energy efficiency and the conservation of energy resources. • Encouraging the development and use of renewable energy sources. • Ensuring the security and diversity of the country's energy supply. • Promoting investment in the energy sector and facilitate the participation of historically disadvantaged individuals and communities.	The objectives of the Act are met by the Proposed Development, which involves a renewable energy source aimed at diversifying the national energy mix and ultimately integrating with the national electricity grid. The Applicant intends to participate in the REIPPPP and the development supports the country's plan for energy security by reducing dependence on imported energy sources and providing a reliable source of electricity.

Legislation and guidelines used to compile the report	Description	Applicability
	• Regulating the energy sector in a manner that is transparent, fair and consistent with national policy objectives. • Promoting research and development in the energy sector. Furthermore, the Act provides for the establishment of the Independent Power Producer *(IPP)* programme, which allows private companies to generate and sell electricity to the national grid. It also establishes the National Energy Regulator of South Africa *(NERSA)*, which is responsible for regulating the energy sector and ensuring compliance with the provisions of the act. Including granting licenses for the generation, transmission and distribution of energy, as well as for setting tariffs for the sale of energy to consumers.	
National Energy Regulator Act *(NERSA)*, Act No. 40 of 2004	The Act establishes the NERSA and sets out its powers, duties and functions with the primary purpose of providing for the regulation of the electricity, piped gas and petroleum pipeline industries in South Africa. The Act aims to ensure that the energy sector is developed in a sustainable and efficient manner, with due consideration for social and environmental factors. NERSA is responsible for issuing licenses and regulating the activities of electricity generation, transmission, and distribution companies in the country.	The Proposed Development will entail obtaining a license from NERSA and will have to comply with the regulations and standards set out in the Act.

Legislation and guidelines used to compile the report	Description	Applicability
	One of the key mechanisms introduced by the Act is the Renewable Energy Feed-in Tariff *(REFIT)* system, which incentivises the development of renewable energy projects by guaranteeing a minimum price for the electricity generated. NERSA's role is to promote the development of a competitive energy market, ensure that prices charged for energy are fair and reasonable, and protect the interests of consumers.	
Electricity Regulation Act, No. 4 of 2006	The purpose of the Act is to establish a regulatory framework for the electricity supply industry, promote transparency, accountability, and fairness in the industry, and provide for the licensing and regulation of persons involved in the generation, transmission, distribution, and trading of electricity. It aims to ensure the efficient, effective, and sustainable development and use of electricity infrastructure in the country, as well as the provision of electricity services to all citizens, while promoting competition and encouraging investment in the sector. The Act also establishes NERSA as the regulatory authority responsible for implementing and enforcing the Act. It establishes the legal framework within which IPPs can generate and sell electricity to the national grid. IPPs are required to comply with the regulations and licensing requirements set out in the Act and must obtain licenses from NERSA in order to operate.	The Proposed Development will entail obtaining a license from NERSA and will have to comply with the regulations and standards set out in the Act.

Legislation and guidelines used to compile the report	Description	Applicability
Electricity Regulations on New Generation Capacity, 2009 (as amended)	The purpose of these regulations is to regulate the process of new electricity generation capacity in South Africa. The regulations provide a framework for this including the technical and commercial requirements that must be met by generators. It provides a clear process for developers to follow, including the requirements for obtaining licenses and permits, conducting EIA's, and connection to the grid. The regulations also aim to ensure that new generation capacity is developed in a way that is reliable, efficient, and cost-effective, and that it is consistent with national energy policies and objectives. It establishes standards and requirements for the design, construction, operation, and maintenance of new generation capacity, as well as the safety and environmental standards that must be met.	The Proposed Development will entail obtaining a license from NERSA to be allowed to generate 55 MWac and will have to comply with the regulations and standards set out in the Act. The technical standard of the facility complies with those set out by the regulatory authority. Please refer to **Section 2.3** of this report. In addition, the required EIA process is currently underway.
Infrastructure Development Act, No. 23 of 2014	The purpose of the Act is to provide a framework for the planning, financing, and implementation of infrastructure projects in South Africa. It aims to promote sustainable development by ensuring that infrastructure projects are implemented in a transparent, efficient, and effective manner, and that they meet the needs of the economy and society. It establishes a National Infrastructure Plan *(NIP)* and a process for prioritising and selecting projects based on their potential economic and social benefits and includes sectors, such as energy, transportation, water, and telecommunications. The act may also establish an infrastructure development fund to finance the implementation of priority projects.	The Proposed Development is included in the NIP's priority areas established under this Act, specifically the development of renewable energy projects.

Legislation and guidelines used to compile the report	Description	Applicability
	Specifically, the act establishes the Presidential Infrastructure Coordinating Commission *(PICC)* and assigns it the responsibility of coordinating and monitoring the implementation of national infrastructure projects. This includes large-scale solar PV projects that contribute to the development of the country's renewable energy sector. It may include provisions for public-private partnerships, which can provide a means of attracting private sector investment and expertise into infrastructure development. It may also include provisions for environmental and social impact assessments, which are important to ensure that infrastructure projects are developed in a sustainable and responsible manner.	
Animals Protection Act, No. 71 of 1962	The purpose of the Act is to protect animals from cruelty and mistreatment. It seeks to prevent the infliction of unnecessary suffering on animals and to promote their welfare and prohibits various forms of animal cruelty, such as beating, kicking, or physically abusing an animal, confining an animal in a way that causes it to suffer, depriving an animal of food, water, or shelter, administering poison or harmful substances to an animal, Transporting animals in a way that causes them to suffer, using animals for fighting or baiting, and performing unnecessary surgical procedures on animals. It is enforced by the National Council of Societies for the Prevention of Cruelty to Animals *(NSPCA)* and other animal welfare organizations, as well as by law enforcement agencies. It provides for the investigation and prosecution of animal	The Terrestrial Biodiversity SSV indicates that the animal species sensitivity theme is rated as 'medium', and it is anticipated that various native wild animal species may be present within the Project Area. Please see **Section 6.2.5** of this report for further details. As such encounters during the construction and operational phases are anticipated and the required measures are to be investigated further during the EIR phase.

Legislation and guidelines used to compile the report	Description	Applicability
	cruelty offenses, and offenders can face fines and imprisonment.	
Provincial and Local Legislation and Plans		
Limpopo Conservation Plan *(LCP)*, Version 2 of 2013	The LCP in South Africa is designed to conserve biodiversity, promote sustainable use of natural resources, and support the social and economic development of the region. The plan was developed through a collaborative effort between government agencies, non-governmental organizations, and local communities. The LCP seeks to address the environmental challenges facing the Limpopo region, including habitat loss, degradation of ecosystems, and loss of biodiversity. It aims to achieve this by establishing protected areas, restoring degraded ecosystems, and promoting sustainable land-use practices. It identifies CBAs and ESAs in the region, defines their management objective, the compatible and incompatible land uses, and seeks to promote their conservation.	The Project Area does not occur within a CBA or ESA in terms of the LCP but is in close proximity to such areas. Appropriate buffers will be investigated during the EIR phase.
Limpopo Environmental Management Act *(LEMA)*, No. 7 of 2003	The purpose of the LEMA is to provide for the sustainable management of natural resources and the protection of the environment in the Limpopo Province of South Africa. The act aims to ensure that development in the province is sustainable and takes into account the long-term environmental and social impacts of any proposed activities. It provides for the establishment of an environmental management framework for the Limpopo Province, which includes the identification and management of environmental risks and the implementation of measures to mitigate these	The EIA process has been aligned to the objectives of the LEMA to ensure potential impacts arising from the Proposed Development are investigated and appropriate alternatives and mitigation measures are considered.

Legislation and guidelines used to compile the report	Description	Applicability
	risks. It also establishes a system of EIAs for proposed developments, to ensure that the potential environmental and social impacts of these developments are identified and addressed before they are approved. Furthermore, the act establishes the Limpopo Department of Economic Development, Environment and Tourism *(LEDET)* as the primary authority responsible for the implementation of environmental management policies and regulations in the province. LEDET is responsible for the administration of the act, and for ensuring that all developments in the province comply with the environmental management framework and EIAs.	
Limpopo Green Economy Plan, 2013	The Limpopo Green Economy Plan is a strategic plan developed by the government of Limpopo Province in South Africa to promote the transition to a low-carbon, resource-efficient, and socially inclusive economy. The plan is focused on identifying and supporting economic sectors that can contribute to sustainable development and job creation, while also promoting environmental sustainability. It sees the Limpopo Province as having an advantage in terms of its geographic position to develop a variety of green industries and economies of scale. The key objectives of the Limpopo Green Economy Plan include: • Promoting green growth while also promoting environmental sustainability. This includes promoting the development of green sectors, such as renewable energy, waste management, and sustainable agriculture.	The Proposed Development aligns to the key objectives of the Limpopo Green Economy Plan in terms of promoting the use of green energy sources, which contribute towards the province's effort to a reduced carbon footprint and promoting economic growth through job creation.

Legislation and guidelines used to compile the report	Description	Applicability
	• Promoting job creation by promoting the development of green sectors and supporting the growth of existing green businesses. • Promoting environmental sustainability by reducing the province's carbon footprint and promoting the conservation and sustainable use of natural resources. • Promoting social inclusion by ensuring that the benefits of green growth are shared equitably and by supporting the development of green businesses owned by historically disadvantaged individuals and communities.	
Limpopo Development Plan *(LDP)* 2020 -2025	The LDP is a strategic plan developed by the government of the Limpopo Province in South Africa and aims to guide the development of the province over a 15-year period, from 2015 to 2030, with the goal of promoting economic growth, social development, and environmental sustainability. The key objectives of the Limpopo Development Plan include promoting: • Economic growth by identifying and supporting key economic sectors, such as mining, agriculture, tourism, and manufacturing. The plan also seeks to promote trade and investment in the province and to develop infrastructure, such as roads, rail, and ICT networks, to support economic growth. • Social development by promoting access to education, healthcare, and social services. The plan also seeks to address issues of poverty, inequality, and unemployment, particularly among disadvantaged communities in rural areas.	The Proposed Development aligns to the key objectives of the LDP in terms of promoting the use of renewable energy sources, contributing to the country's effort toward a reduced carbon footprint and promoting economic growth through job creation.

Legislation and guidelines used to compile the report	Description	Applicability
	• Environmental sustainability by promoting the conservation and sustainable use of natural resources, such as water, land, and biodiversity. The plan also seeks to mitigate the impact of climate change on the province and to promote the use of renewable energy sources.	
Limpopo Environmental Implementation Plan *(LEIP)*, 2015-2020	The LEIP 2015-2020 is a strategic plan developed by the LEDET in South Africa to address environmental challenges and promote sustainable development in the province. The plan provides a framework for implementing environmental policies and programs in Limpopo and is focused on achieving sustainable development outcomes that promote social, economic, and environmental well-being. The key objectives of the LEIP 2015-2020 include: • Environmental management and governance by promoting effective implementation of environmental laws, policies, and regulations. • Biodiversity conservation: The plan aims to promote the conservation and sustainable use of biodiversity in Limpopo by identifying and protecting priority ecosystems and species. • Climate change adaptation and mitigation: The plan aims to promote climate change adaptation and mitigation in Limpopo by identifying and implementing measures to reduce GHG emissions and build resilience to the impacts of climate change. • Waste management: The plan aims to promote sustainable waste management practices in Limpopo by promoting waste reduction, recycling, and responsible disposal.	The Proposed Development aligns to the objectives of the LEIP by generating electricity from a renewable energy source, which can help to reduce GHG emissions and decrease reliance on fossil fuels and their associated emissions. Currently, an EIA is being conducted to assess the impacts of the Proposed Development on biodiversity and other relevant factors. The aim is to develop appropriate mitigation measures that are aligned with the objective of achieving sustainable development.

Legislation and guidelines used to compile the report	Description	Applicability
	• Environmental education and awareness: The plan aims to promote environmental education and awareness in Limpopo by raising public awareness of environmental issues and promoting environmental education in schools and communities.	
Limpopo Spatial Development Framework *(LSDF)*, 2022	The purpose of the LSDF is to provide a long-term spatial vision and framework for the province's development, which includes identifying priority areas for investment and development, and guiding land use and infrastructure planning. The LSDF plays both a directive and coordinating role in planning and implementation in the province. It sets the strategic direction for sector planning and municipal planning in the province. The LSDF provides a strategic link between national and municipal spatial planning, contextualising the National Spatial Development Framework *(NSDF)* for the realities, aspirations and challenges of Limpopo. To facilitating alignment of planning and implementation, it is a tool to guide the spatial targeting of investment and spending in the province. The relevance of the LSDF towards renewable energy projects lies in its ability to guide the spatial planning and development of these projects in a sustainable manner. The SDF can identify suitable areas for renewable energy development, taking into account factors such as land use, biodiversity, and infrastructure. By doing so, the LSDF can help to ensure that renewable energy projects are developed in a way that minimizes negative environmental impacts, promotes social equity, and contributes to economic growth.	The Proposed Development aligns to the objectives of the SDF by promoting the transition to a low-carbon economy and support the achievement of national and international climate change objectives.

Legislation and guidelines used to compile the report	Description	Applicability
	The LEGDP provides a framework for the provincial government to prioritise strategies in the National Medium-Term Strategic Framework *(MTSF)*. It highlights the correlation between growth and development and meeting service delivery targets (i.e., provision of electricity). One of the main objectives of the LEGDP is to ensure more inclusive economic growth, decent employment, and sustainable livelihoods. Another strategic priority of the LEGDP, is the management and utilisation of sustainable resources. The LEGDP recognises the impacts of climate change, biodiversity loss and diminishing water resources. Therefore, it emphasises on solutions such as diversifying the energy mix by focusing on renewable energy technologies, supporting energy efficiency, and implementing a zero-tolerance method to illegal and unsustainable exploitation of resources etc.	
Limpopo Employment Growth and Development Plan *(LEGDP)*, 2009-2014		The Proposed Development reinforces the strategic priorities set out in the LEGDP.
Waterberg District Municipality Integrated Development Plan *(IDP)*, 2022-2023	The WDM IDP is a strategic planning tool that sets out the development priorities and objectives for the district over a five-year period. The WDM IDP emphasises the difficulties in providing basic services (e.g., electricity due to excessive backlogs). Other challenges include illegal connections, ageing infrastructure, theft, insufficient funds, and an increase in informal settlements. Since the WDM is a mining-intensive area, the IDP identifies the importance of electricity supply to continue with mining operations. The IDP recognises the use of the District Development Model (*DDM*) to promote integrated planning and will be achieved through the One Plan long-term strategic framework. One plan	The Proposed Development aligns to the purpose of the IDP and Waterberg One Plan as it will promote infrastructure growth and create an environment which is conducive for investment. Solar PV facilities are also carbon-free energy generation facilities which will contribute towards protecting and conserving the environment. By harnessing the power of a renewable energy source, it will assist in meeting the demand of the area in terms of electricity supply.

Legislation and guidelines used to compile the report	Description	Applicability
	guides all state and private investment with the district municipality. The Waterberg One Plan is based on the DDM Theory of Change, which focuses on transformation areas relating to social development, economic growth, environmentally sustainable development, building infrastructure and provision of basic services. The purpose of the Waterberg One Plan is to: • To promote sustainable economic development. • To provide basic services and infrastructure. • To ensure effective governance and service delivery. • To protect and conserve the environment. • To promote social development and inclusion. These objectives provide a broad framework for guiding the development and implementation of the IDP, with the aim to achieve a balanced and sustainable development in the WDM. The IDP further focuses on the Economic Reconstruction and Recovery Plan, as a priority intervention, to promptly increase energy generation capacity. The IDP recognises the option of purchasing electricity from independent power producers as one of the solutions. Another anticipated solution mentioned is the potential procurement of 1 800 MW of power from renewable energy, natural gas, battery storage and coal in line with the IRP 2019. The IDP also reiterates the commitment towards the reduction of GHGs under the UNFCCC and the Paris Agreement.	

Legislation and guidelines used to compile the report	Description	Applicability
Waterberg District Municipality Local Economic Development (*LED*) Strategy, 2014	Waterberg LED strategy document is centered on economic growth in a sustainable manner. The LED recognises the increasing demand for electricity within the district municipality and its importance towards alleviating poverty and meeting MDGs. The document points to the poor electrical infrastructure negatively affects small businesses and commercial areas, which ultimately negatively affects the economy. The LED outlines several strategies that will promote local economic development and address the key challenges identified by the WDM. The objectives of the LED strategies are as follows: Promote economic growth and development by: • Supporting entrepreneurship and small businesses. • Enhancing skills development and education. • Promoting tourism and cultural heritage. • Fostering partnerships and collaboration. • Manufacturing and trade. These objectives provide a roadmap for the WDM LED strategy, guiding its interventions and initiatives to drive economic development, create employment opportunities, and improve the overall economic well-being of the district and its communities. The LED also emphasizes the need for investment in renewable energy and promotes the green economy. It reiterates the province's advantages such as large open spaces that could be	The Proposed Development and associated infrastructure align with the LED by promoting sustainable economic growth, creating job opportunities, and attracting investments in the renewable energy sector. It is also located near the town of Northam and is identified as an alternative green energy technology. It therefore supports and commits to the movement towards the green economy with the WDM.

Legislation and guidelines used to compile the report	Description	Applicability
	utilised in the low-carbon market and the high solar intensity which can be used in solar energy generation. The LED reflects the significance of the electricity sector towards economic growth, which is under performing. However, the LED acknowledges the potential of the electricity sector to make WDM an integral part of the nation's power grid.	
Waterberg District Environmental Management Framework (*EMF*), 2010	Section 24(2)(e) of NEMA makes provision for the use of an EMF to ensure environmental protection instead of control measures. It makes provision for the minister to exclude certain listed activities from need to obtain an EA based on an EMF. The purpose of the EMF is to develop a framework that will integrate policies and frameworks and align different government mandates in a way that will streamline decision-making to improve cooperative governance and guide future development in an environmentally responsible manner. The objectives of the EMF are as per the following: • Encourage sustainable development. • Establish development priorities. • Identify strategic guidance and development management proposals. • Identify the status quo, development pressures and trends in the area. • Determine opportunities and constraints. • Identify geographical areas in terms of NEMA.	As per the EMZ's that have been delineated in the EMF, the Project Area falls within Zone 11 which is a major infrastructure corridor. 'Preferred activities' in this zone include linear infrastructure including major roads, railway lines, electricity distribution lines, and pipelines. 'Undesired activities' in this zone refer to any activity or development that will compromise the functioning of the areas as a corridor. Although the Proposed Development is not a linear activity, it does entail the construction of a solar energy facility which will eventually feed into the national grid in the future (subject to a separate EA process). Existing electrical distribution lines in the area include an 88 kV line which runs past the Project Area and 132 kV lines located approximately 1km to the north of the Project Area. As such, the Proposed Development is ideally located to establish this future connection and will not compromise the functioning of this corridor.

Legislation and guidelines used to compile the report	Description	Applicability
	• Specify additional activities in identified geographical areas that will require an EIA based on the environmental attributes of such areas. • Specify currently listed activities that will be excluded from EIA in certain geographical areas based on the environmental attributes of such areas. • Develop a decision support system for development in the area to ensure that environmental attributes, issues, and priorities are taken into account. The EMF provides for Environmental Management Zones (*EMZ*) which indicate the preferred, compatible and undesired activities of each zone. It does not however mean that undesired activities for example will not be allowed under any circumstances, but rather that such activities will have to meet very high standards and be considered very carefully by the relevant competent authorities before they are allowed. The following EMZ's have been identified in the EMF: • Zone 1: Protection of natural vegetation, scenic landscape and rock painting areas, with limited appropriate tourism; • Zone 2: Nature and cultural tourism focus areas within a high quality natural setting; • Zone 3: Game and cattle farming (including hunting) areas with commercial focus; • Zone 4: Mining focus areas; • Zone 5: Potential large industrial and related activities focus area;	

Legislation and guidelines used to compile the report	Description	Applicability
	• Zone 6: Restricted mining focus areas in aesthetic and/or ecological resource areas; • Zone 7: Urbanisation focus areas and nodes; • Zone 8: Rural settlement areas; • Zone 9: Agriculture focus areas with a tourism component; • Zone 10: Agriculture areas with a commercial focus; and • Zone 11: Major infrastructure corridors. EMZ 1 corresponds with the core areas of the Waterberg Biosphere Reserve and buffer zones (which are adjacent to or surrounds the core areas). These areas include nature reserves and parks, and areas which are in the process of seeking formal protection. In addition to the EMZ's, there are also transitional zones divided in two sub-zones for the Waterberg Biosphere Reserve. These are defined in terms of the biosphere as areas which may contain a variety of agricultural activities, settlements and other uses and in which local communities, management agencies, scientists, non-governmental organisations, cultural groups, economic interests and other stakeholders work together to manage and sustainably develop the area's resources. Transition Zone 1 allows for a higher level of tourism development but still retains the overall undisturbed natural character of the area. This transition zone corresponds with EMZ 1 and EMZ 2. Transition Zone 2 provides for more intensive cultivation, agroindustry's, human settlements and support services to the agricultural and tourism industries. This	

Legislation and guidelines used to compile the report	Description	Applicability
	transition zone corresponds with Zone 9, which is described as an agriculture focus areas with a tourism component surrounded by natural areas.	
Waterberg Bonjanala Priority Air Quality Management Plan, 2015	The Waterberg District Municipality Air Quality Management Plan was completed in June 2009 and included an emissions inventory for the Waterberg District. In June 2012, the minister declared the Waterberg-Bonjanala Priority Area in terms of air quality. The WDM and Botswana (the WDM forms a boarder with Botswana) have significant coal reserves that are largely unexploited, with the Matimba Power Station and Morupule Power Station currently in operation. The NDP acknowledges that the lack of stable power to meet the energy demands is an impediment to economic growth in the region, proposing Strategic Infrastructure Projects (*SIPs*) to accelerate growth and development in the WDM. In addition, the Government of Botswana requires that the energy sector be augmented through the development of new coal-fired power plant generation capacity. The energy-based development initiatives in South Africa and Botswana pose a threat to the current state of ambient air quality in the region. Management planning in the WBPA therefore needs to consider the current and future threats to air quality. Pollution sources in the districts included power generation, mining, industrial emissions, domestic fuel burning, vehicle emissions, agricultural activities, biomass burning, waste treatment & disposal, and dust from various sources.	The Project Area is located within the WBPA for air quality. However, the Proposed Development entails carbon-free energy technology which is not anticipated to be a potential source of pollution. Dust will be generated from construction activities and potential emissions from the operation of the facilities through the use of backup generators and inverters which will be further investigated during the EIR phase.

Legislation and guidelines used to compile the report	Description	Applicability
Thabazimbi Local Municipality IDP, 2022-2023	The TLM IDP is a strategic planning tool that sets out the development priorities and objectives for the municipality over a five-year period. The aim of the TLM IDP is to present a coherent plan in order to achieve the vision of the municipality. This IDP intends to link, integrate and co-ordinate development plans for TLM which are aligned with national, provincial and district development plans as well as planning requirements binding on the municipality in terms of legislation. The TLM IDP provides key principles for development within the area. It is used to inform and guide the municipality's plans. Its main objectives include the following: • To develop and improve community infrastructure facilities. • To create an enabling environment for social development and economic growth. • To develop and maintain infrastructure to provide basic services. • To establish economically, socially and environmentally integrated sustainable land use and human settlement. The TLM IDP focuses on the service delivery of electricity within the local municipality by identifying operational and maintenance requirements, as well as the need for new infrastructure to ensure sustainable electricity. The IDP recognises some of the electrical supply challenges experienced, such as increased illegal connections, a backlog in	The Proposed Development aligns to the plans and vision of the IDP in terms of utilising renewable energy to meet the demand of the area whilst contributing towards job creation and reducing its carbon footprint. The Proposed Development and associated infrastructure align with the TLM IDP as it will help create an enabling environment for social development and economic growth.

Legislation and guidelines used to compile the report	Description	Applicability
	access to electricity for households, overloading of the network, unplanned outages, and high electricity losses. It further mentions the significant impacts and rising threat of climate change to the Thabazimbi natural environment. The IDP identifies challenges in policies and a lack of environmental management efforts that have been attributed to the environmental issues. It highlights the LED analysis in order to improve the local economy through increasing sustainable growth initiatives, as it strongly aligns with the goals and objectives outlined in the NDP 2030 vision.	
Thabazimbi Local Municipality SDF, 2010	The TLM SDF provides a strategic and integrated planning framework for guiding development within the area. It serves as a long-term vision and planning tool that outlines the desired spatial organization, land use patterns, and development priorities for the municipality. According to Development Principle 6 of the TLM SDF, all areas in the TLM (urban and rural) should at least be provided with the constitutionally mandated minimum level of services as prescribed by the NDP and enshrined in the Constitution. The TLM SDF further states that the municipal area is totally under capacity with respect to most of its bulk infrastructure services. Electricity in the TLM is largely generated and distributed by Eskom. The largest power station of its kind in the country is the Matimba Station at Lephalale just to the north, which supplies electricity to various towns in the WDM including Thabazimbi. Eskom is also the provider for Northam, Regorogile Extensions 2, 4, farms and mining areas. One of the	The Proposed Development aligns to the principles of the TLM SDF by generating clean and renewable energy which will later feed into the national grid. It will also contribute to local economic development by creating job opportunities, attracting investments, and stimulating the growth of related industries.

Legislation and guidelines used to compile the report	Description	Applicability
	key issues the SDF identified is that the majority of the households in informal settlements and farm areas in Thabazimbi are yet to be supplied with electricity. Infrastructure investment and development will therefore be a key priority. The SDF incorporates environmental considerations and principles of sustainability into the planning process. It aims to protect environmentally sensitive areas, preserve natural resources, promote biodiversity conservation, and minimize the environmental impacts of development.	
Guidelines, Policies and Plans		
DEA: Guideline on Alternatives, 2010	The purpose of this guideline is to provide a framework for identifying, assessing, and comparing alternative options for proposed developments that may have significant environmental impacts. The guideline aims to promote the consideration of alternative approaches to development that may have a lower impact on the environment or be more sustainable, and to ensure that environmental impacts are considered in the decision-making process for proposed developments. This guideline must be read in conjunction with NEMA, EIA Regulations, and Specific Environmental Management Acts *(SEMAs)* and is not intended to be a substitute to the provisions of such Acts.	The Scoping and EIR process will consider the most feasible alternatives for the Proposed Development. Please refer to **Section 3** of this report.
DEA: Public Participation Guideline in terms of NEMA EIA Regulations, 2017	The purpose of this guideline is to provide guidance on the public participation process required under the NEMA and EIA	PPP for the Proposed Development will be conducted in accordance with the requirements set forth in DEA Public

Legislation and guidelines used to compile the report	Description	Applicability
	Regulations. It aims to ensure that members of the public and other stakeholders have an opportunity to participate in the EIA process and to provide their input and feedback on proposed developments that may have significant environmental impacts.	Participation Guideline during the Scoping and EIR phase. Please refer to **Section 8** of this report.
DEA: Guideline on the Need and Desirability, 2017	The guideline provides a framework for assessing the need and desirability of proposed developments, taking into account factors such as economic, social, and environmental considerations. It also aims to ensure that proposed developments are consistent with relevant policies, plans, and regulations, and that they contribute to the overall sustainable development objectives of South Africa.	The Proposed Development complies with the requirements of the Guideline on Need and Desirability, published in terms of Section 24J of the NEMA in 2014, and second version in 2017. Please refer to **Section 5** of this report.
DEA: EIA Guideline for Renewable Energy Projects, 2015	The guideline provides a framework for assessing the potential environmental impacts of renewable energy projects, including solar PV, wind, hydroelectric, and biomass projects. It provides guidance on the scoping of the EIA, the identification of potential impacts, the assessment of the significance of impacts, and the development of mitigation measures to minimise or avoid negative impacts. It aims to ensure that renewable energy projects are developed in a manner that is consistent with the principles of sustainable development, and that they contribute to the overall well-being of the country and its citizens. It also seeks to promote the development of renewable energy projects that are economically viable and socially acceptable, while minimizing negative environmental impacts.	The Scoping and EIR process for the Proposed Development has taken into account the requirements of this guideline.
National Development Plan *(NDP)*, 2012	The NDP is a long-term plan for South Africa that was adopted by the government in 2012. It provides a vision for the country's	The Proposed Development contributes to the vision of the NDP and proposes a generation capacity of 55 MWac from a

Legislation and guidelines used to compile the report	Description	Applicability
	development by identifying key challenges, opportunities, and priorities for the next 20 years. The NDP is aimed at addressing the country's socio-economic challenges and achieving a better life for all South Africans. The NDP focuses on a number of priority areas, including: • Economy and Employment: It aims to address high unemployment and inequality by creating an inclusive and growing economy that provides decent work and sustainable livelihoods for all South Africans. • Education and Skills Development: It aims to improve the quality of education and skills development in the country to ensure that all South Africans have the skills and knowledge needed to participate fully in the economy and society. • Health: It aims to ensure that all South Africans have access to quality healthcare services and that the country's healthcare system is sustainable and effective. • Infrastructure Development: By improving the quality and availability of infrastructure, including transport, energy, water, and ICT. • Rural Development: It aims to promote inclusive and sustainable rural development by addressing poverty, inequality, and underdevelopment in rural areas. The NDP recognizes the important role that renewable energy, can play in achieving the country's socio-economic goals and identifies energy as a critical enabler of economic growth and development, highlighting the need for a diverse energy mix that includes renewable energy sources. The plan sets out a	renewable energy source. It will also contribute to other priority areas such as the economy and employment, and skills development.

Legislation and guidelines used to compile the report	Description	Applicability
	goal of generating 20 GW of renewable energy by 2030, which includes a mix of solar, wind, and other renewable energy sources. It recommends the implementation of policies and programs that promote investment in renewable energy infrastructure. This includes the establishment of incentives and regulations to encourage private sector investment in renewable energy projects, as well as the development of financing mechanisms and technical assistance to support the deployment of solar PV facilities. It emphasizes the need for skills development and training programs to support the growth of the renewable energy industry and ensure that South Africans have the skills and knowledge needed to participate in this sector. This includes initiatives to support research and development of new renewable energy technologies and to build local capacity for the manufacturing and installation of solar PV systems.	
National Infrastructure Plan 2050 *(NIP)*, 2022	The NIP of South Africa is a long-term infrastructure development plan that was launched as part of the country's NDP. The plan is aimed at addressing the country's infrastructure backlog and promoting economic growth and development through the development of key infrastructure projects. The NIP identifies a number of priority areas for infrastructure development, including energy and sets out a number of goals and targets for development.	The Proposed Development would contribute to the goal of the NIP by helping to achieve the plan's objective of expanding access to electricity, promoting economic growth, development, and sustainability. It helps to increase the country's energy generation capacity by proposing a generation capacity of 55 MWac from a renewable energy source (solar), reduce its reliance on fossil fuels, and contribute to the development of a more sustainable and low-carbon energy system.

Legislation and guidelines used to compile the report	Description	Applicability
	The plan identifies the development of renewable energy infrastructure (especially solar and wind) as a key objective in the country's energy sector and outlines a number of specific targets for renewable energy development. By 2050, energy demand is projected to double. Installed generation capacity will therefore need to expand, from 53 GW in 2018 to between 133 and 174 GW by 2050, depending on energy demand at that time. By 2030, at least 25 GW will have to be added to installed capacity with the requisite supportive transmission and distribution network infrastructure.	
Integrated Energy Plan (*IEP*)	The IEP is a long-term energy planning document that sets out the country's energy policy framework and provides a roadmap for the development of its energy sector over the next few decades. The primary purpose of the IEP is to provide a coherent and coordinated approach to energy planning that takes into account the country's economic, social, and environmental priorities. The IEP aims to achieve the following goals: • Ensure a secure and reliable supply of energy for the country to meet its growing energy needs. This includes reducing dependence on imported energy sources, diversifying the country's energy mix, and promoting energy efficiency and conservation measures. • Promote economic growth and development by providing a stable and predictable energy policy framework that encourages investment in the energy sector. It also seeks to promote the development of local industries and create employment opportunities through the development of renewable energy projects.	The Proposed Development is in line with the objectives of the IEP, as it has been designed to generate 55 MWac of renewable energy, thereby helping to reduce the country's carbon footprint.

Legislation and guidelines used to compile the report	Description	Applicability
	• Reduce the country's carbon footprint: The IEP recognizes the need to address climate change and reduce the country's carbon footprint. It sets out a roadmap for the transition to a low-carbon economy by promoting the development of renewable energy sources, increasing energy efficiency, and promoting the use of cleaner technologies. Ensure affordable energy prices for all South Africans by promoting energy efficiency and conservation, increasing the use of renewable energy sources, and promoting competition in the energy sector.	
Integrated Resources Plan *(IRP)*, 2019	The IRP 2019 is a comprehensive energy plan developed by the South African government in response to the Integrated Energy Plan to guide the country's electricity generation mix over the next decade. It provides a framework for the development of new electricity generation capacity, including renewable energy sources, as well as the decommissioning of older and less efficient power plants. The IRP 2019 replaces the previous version of the plan, which was published in 2011, and provides a more detailed and updated roadmap for the country's energy sector. The plan outlines the government's energy objectives, including reducing the country's dependence on coal-fired power plants, increasing the use of renewable energy, and promoting energy efficiency and demand-side management.	The Proposed Development responds to the IRP 2019 as it entails the development of a solar PV facility which is identified as a key technology for the country's future energy mix.

Legislation and guidelines used to compile the report	Description	Applicability
	The plan includes a mix of energy sources, including solar PV, wind, hydroelectric, gas, and coal, with a focus on increasing the contribution of renewable energy to the country's energy mix. The plan also includes targets for the procurement of renewable energy to be added to the grid by 2030. The IRP 2019 aims to create a more diversified and sustainable energy sector in South Africa, while also promoting economic growth and job creation. Developers of new solar PV facilities in South Africa will need to follow the procurement process outlined in the IRP 2019 to secure a Power Purchase Agreement *(PPA)* with the government. The PPA sets out the terms under which the developer will sell the electricity generated by the solar PV facility to the government.	
Renewable Energy Independent Power Producer Procurement Program *(REIPPPP)*	The REIPPPP is a program established by the South African government in response to the IEP to promote the development of renewable energy projects in the country. The program was established to encourage private sector investment in the renewable energy sector. Under the REIPPPP, private sector developers are invited to bid for the development of renewable energy projects, including solar PV, with the aim of increasing the country's renewable energy capacity.	The intention of the Applicant is to participate in the REIPPPP rounds and contribute towards achieving the goals of the program by proposing the development of the solar PV facility.
White Paper on Energy Policy, 1998	The White Paper on Energy Policy of 1998, also known as the Energy White Paper, was a significant policy document released	In terms of renewable developments, the policy recognised the importance of diversifying South Africa's energy mix and

Legislation and guidelines used to compile the report	Description	Applicability
	by the South African government in 1998. Its purpose was to provide a framework for guiding the country's energy sector, including various aspects such as energy supply, consumption, and planning. The white paper set a target of achieving 10,000 GWh of renewable energy generation by 2013. This goal aimed to encourage the development and utilisation of renewable energy sources such as solar, wind, hydro, and biomass. The policy promoted the concept of Integrated Resource Planning as a tool for evaluating and selecting energy supply options, including renewables. It recommended that the IRP process should incorporate a long-term perspective on renewable energy development. It's important to note that this policy laid the foundation for subsequent energy policies and frameworks in South Africa. Over the years, the government has introduced additional policies and programs to promote renewable energy development, such as the REIPPPP. The REIPPPP has been instrumental in attracting private sector investments and driving the deployment of renewable energy projects in the country.	reducing dependence on fossil fuels. It acknowledged the potential of renewable energy sources in contributing to a sustainable and environmentally friendly energy sector. The Proposed Development entails the development of a solar PV facility for electricity generation which will eventually feed into the national grid at a later stage and through a separate EIA process. The intention of the Applicant is also to participate in the REIPPPP rounds.
White Paper on Renewable Energy, 2003	The White Paper on Renewable Energy published by the Department of Minerals and Energy *(DMRE)* in November 2003, and aimed to establish a framework and guidelines for the development and utilisation of renewable energy sources in South Africa. The document outlined the ten (10) year targets	The Proposed Development entails the development of a solar PV facility for electricity generation which will eventually feed into the national grid at a later stage and through a separate EIA process. It also provides the opportunity for securing additional energy from a 'clean source'.

Legislation and guidelines used to compile the report	Description	Applicability
	for the role of renewable energy technologies in South Africa's diverse energy mix and securing cleaner energy. It identified specific renewable energy technologies for development and deployment. These included wind energy, solar energy (both photovoltaic and solar thermal), biomass energy, biogas, small-scale hydropower, and landfill gas. The policy set a target of deriving 10,000 GWh or 10% of South Africa's total energy consumption from renewable energy sources by 2013. This target aimed to promote the integration of renewable energy into the national energy mix. It also laid the groundwork for subsequent renewable energy policies and programs in South Africa, such as the REIPPPP.	The intention of the Applicant is to participate in the DMRE REIPPPP rounds.
National Energy Efficiency Strategy, 2016	The White Paper on Energy Policy (1998) was used as a basis to create this strategy document and influences methods towards improving energy usage, by focussing on energy intensity and differentiating economic growth from energy demand. The Draft Post-2015 National Energy Efficiency Strategy (2016) aims to build further on energy efficiency improvements, through a combination of economic and financial incentives, a vigorous legal and regulatory framework, and supportive facilitating measures. The National Energy Efficiency Strategy's vision is to ultimately support energy efficiency in a manner that is socially inclusive and environmentally sustainable whilst achieving economic growth (i.e., increasing job creation and adding to technological innovation). It prioritises the goals set out in the NDP 2030 and	The introduction and continuous growth of the green energy sector within South Africa supports the vision and aims of the National Energy Efficiency Strategy. One of the measures mentioned towards promoting renewable generation is the REIPPPP. The Proposed Development is part of the REIPPPP and hence is in support of the National Energy Efficiency Strategy.

Legislation and guidelines used to compile the report	Description	Applicability
	South Africa's Intended Nationally Determined Contribution *(INDC)* under the UN Framework on Climate Change.	
National Climate Change Response Policy White Paper (NCCRP), 2011	The White Paper on the NCCRP is a policy document released by the South African government in 2011. It provides a framework for addressing climate change issues and guiding the country's response to climate change challenges. While the NCCRP does not specifically focus on renewable energy developments, it does have implications for renewable energy as part of the broader efforts to mitigate GHG emissions and transition to a low-carbon economy.	The Proposed Development entails the construction of a solar PV facility which is regarded as a source of 'clean energy' and will assist in South Africa's efforts towards reducing its carbon footprint.

5. NEED AND DESIRABILITY

5.1 PROJECT MOTIVATION

As per the 2008 Local Government Budgets and Expenditure Review, electricity is an imperative component of modern life and essential to the South African economy. People use electricity for a variety of uses such as lighting, heating, cooling, food preparation and refrigeration and for operating appliances, computers, electronics, machinery, and public transportation systems. According to the South African Energy Sector Report 2021, electricity is vital for societies to function effectively in multiple sectors (i.e., residential, commercial, industrial and transportation).

According to the IRP 2019, electricity has transformed how people live and survive, as it provides a better quality of life for those that have access to it. Electricity fuels a broad range of devices that can be used for food storage and preparation, heated water, faster communication, and entertainment. Apart from convenience, it allows people to achieve a healthier, happier, and safer lifestyle. The Proposed Development is a large-scale solar PV facility to generate renewable electricity and is in direct response to the REIPPPP, as established by the Department of Energy under the IRP.

As per the World Health Organisation (*WHO*) electricity is extremely crucial for medical care. Healthcare facilities such as hospitals/clinics heavily rely on consistent electricity. Medical equipment, electronic health records, lighting, security systems, and air conditioning all need energy. Hence, power outages are tremendously dangerous for healthcare facilities because they are unable to suspend their operations, as it is life threatening to patients. When outages occur, hospitals and nursing homes rely on generators or often have to evacuate, which comes with its own risks.

According to the International Labour Organisation (*ILO*), the electric power industry is a huge job creator. It uses a lot of skilled workers to maintain and repair the electrical grid. That incorporates checking and repairing power lines, getting power back after a severe weather event, and wiring homes and businesses. The green energy sector is also creating lots of job opportunities.

The National Energy Efficiency Campaign indicates that South Africa is one of the world's least energy efficient nations. South Africa uses approximately 40% of Africa's electricity and are the 12th highest emitter of GHGs in the world (2022). The heavy dependence on energy has led to the situation where the reserve margin is unsustainably low, and the reliability of the electricity supply is under threat. Therefore, South Africa's energy habits have adverse effects on the economy, environment, and the health of its citizens.

According to the annual statistics on power generation in South Africa for 2022, by the Council for Scientific and Industrial Research (*CSIR*), the total system demand was similar to 2021, but still 5.2 Terawatt-hours (*TWh*) (2.2%) less than the pre-lockdown levels of 2019. Coal continues to dominate the South African energy mix, by contributing 80.1% of the total system load. Renewable energy technologies (i.e., wind, solar PV and Concentrated Solar Power [*CSP*]) contributed towards an increase in 2022 to a total of 6.2 GW installed capacity and provided 7.3% of the total energy mix (13.7% including hydro). Nuclear energy contributed 4.6%, whereas the remaining 1.6% was attributed to diesel.

It was the first year that solar (PV and CSP) generation output decreased to 6.2 TWh from achieving 6.8 TWh in 2021. In 2022, 16 TWh of wind, solar PV & CSP electricity was produced in South Africa. Indicating a 6% increase from the previous year (15.1 TWh). This escalation can be attributed to the increased generation output by wind energy (9.7 TWh).

South Africa's electricity crisis has worsened as power cuts (i.e., loadshedding), which began in 2007, intensified in 2022. The percentage availability of South Africa's total installed capacity of 53.7 GW at the end of 2021 plunged to below 60% in October 2022 as Eskom's coal-fired power stations continue to break down, resulting in continuous power cuts to prevent the electricity grid from failing.

The Eskom fleet Energy Availability Factor (*EAF*) continued its decreasing trend in 2022, with an average EAF of 58.1%, compared to the EAF of 61.7% for 2021 and 65% for 2020. This is largely due to the increase of unplanned outages (detailed by the unplanned capacity loss factor) experienced by Eskom. In 2022, loadshedding occurred for 3 773 hours (i.e., 43% of the hours) with an upper limit of 11 529 GWh relative to actual energy shed of 8 301 GWh.

The year 2022 surpassed 2021 as the most intensive load shedding year yet, occurring most often in the latter half of the year, which encompassed over 80% of the annual total. December 2022 was recorded as the highest loadshedding month ever. The month alone experienced more loadshedding than in any previous year. This is the first year that a majority of the load shedding was not Stage 2, having been predominantly Stage 4. Stage 6 load shedding for 2022 has far bested that of which was experienced in 2019, with the situation not improving in 2023.

Once fully operational, the Proposed Development is estimated to generate an output of 55 MW. The intention is for the generated electricity from the Proposed Development to be supplied to the national grid, following necessary approvals.

5.2 LOCATION

Data obtained from Solar Geographic Information System (*GIS*) indicate that the solar resource in the broader area between Bloemfontein and Kimberly, which includes the Project Area is high, having a Global Horizontal Irradiation (*GHI*) value of 2291 kWh/m^2 making it very suitable for PV. In terms of the road network, the Project Area is directly adjacent to the R510 (a provincial road) and thus easily accessible via the existing local road network. An existing farm road also flanks the Project Area to the east.

The property is of a suitable size to provide a viable solar PV/BESS facility, while ensuring that environmental sensitivities present on the property are not compromised. The location of the Project Area within a rural area is preferable to an urban area where dense development would shade the Proposed Development, and where there would be several neighbours in proximity that could be impacted. The Project Area topography is flat with an average slope of 0.6 %. This means little cut and fill is required in order to develop the required levels for the PV platforms. The landowner has also provided consent for the Proposed Development.

There are multiple promising options for connection to the national electricity grid. An 88 kv line runs past the site and there are 132 kV lines located approximately 1 km to the north of the Project Area. Additionally, there are two Eskom sub-stations in close proximity to the Proposed Development i.e., Phoko, located approximately 7 km north of the Project Area, and Spitskop, located approximately 6 km south-west of the Project Area.

5.3 SOCIAL AND ECONOMIC DEVELOPMENT

The construction and operation of the Proposed Development will stimulate the economy, leading to increased household income and tax revenue. It will generate temporary employment during the construction phase and provide long-term, sustainable employment for at least 20 years during operations. Furthermore, the project's focus on renewable energy will contribute to sustainable practices. Additionally, the facility has the potential to support the growth of small businesses in the area, for example, aid the growth of the local construction

industries as well as those in the business of manufacturing and supply of materials and components for the renewable industry. There would be opportunities for secondary income streams should the Proposed Development go ahead. Local sources are preferable if available and can meet the requirements which would further benefit the local economy.

The Proposed Development is anticipated to have a Capital Expenditure (*CAPEX*) of approximately R 1 billion. Some of this is expected to be spent in South Africa, which will resultantly stimulate the national economy. Approximately 100 construction staff are expected at peak of the construction phase. Skills split would be in line with applicable procurement requirements but would be roughly 60 % low-skilled, 25 % semi-skilled and 15 % skilled workers. During the operational phase, approximately 8 staff would be required to manage and maintain the facility. The skills split would be in line with applicable procurement requirements but would be roughly 70 % low skilled, 25 % semi-skilled and 5 % skilled workers. The Proposed Development would align its socio-economic initiatives with applicable procurement requirements. This commonly entails prioritising local job opportunities and promoting local job creation.

5.4 International Strategies

The UNFCCC, the Kyoto Protocol and the Paris Agreement (explained in further detail in **Section 4**) are international strategies that form part of the needs and desirability of the Proposed Development. The Proposed Development is a renewable energy technology (i.e., a clean energy solution) that contributes to the climate change goals recognised by the UNFCCC, will assist in South Africa's overall commitment to limiting and minimising GHG emissions, and contribute to meeting the committed reduction target.

5.5 National Strategies

The supply of electricity consists of three phases (i.e., generation, transmission, and distribution). National government is responsible for the generation of electricity and its transmission nationwide. According to the 2011 Local Government Budgets and Expenditure Review published by the National Treasury, the state-owned electricity company, Eskom, is responsible for over 95 per cent of electricity generation and all transmission in the country. However, Eskom is currently unable to supply enough electricity to meet the current demand, yet alone prospective demand projections.

The Proposed Development, which is identified as a type of renewable energy, is in support of Section 24 of the Constitution of South Africa, as it aims to generate energy from natural resources (i.e., sunlight) that produces no GHG emissions from fossil fuels and reduces some types of air pollution. Thus, it creates an environment that is not harmful and additionally, protects the environment in a sustainable manner.

The Proposed Development also aligns with several other national strategies (discussed in detail in **Section 4**), such as the White Paper on Energy Policy (1998), White Paper on Renewable Energy (2013), National Energy Efficiency Strategy (2016), National Integrated Energy Plan (*IEP*) and the National Climate Change Response Policy White Paper (*NCCRP*) amongst others.

According to the IRP 2019, South Africa's power system consists of a variety of energy generation sources, of which a large contribution is produced by coal (38 GW) whilst 3.8 GW is produced from diesel, 3.7 GW from renewable energy, 2.7 GW from pumped storage, 1.8 GW from nuclear and 1.7 GW from hydro. The IRP aims to achieve and prioritise energy security within the country by developing suitable energy generation capacity to match electricity demands, whilst considering both the current low-growth economic environment and eventually when the future economy changes and improves to a projected 4% growth per annum.

In terms of renewable energy, the IRP 2019 emphasises that Solar PV, Wind and CSP allow for a diversification of the energy mix, to generate and distribute electricity, and provide off-grid energy whilst minimising air emissions. Renewable energy sources also align with government objectives by creating new industries, employment opportunities and localisation of the full lifecycle of a product/service. The Proposed Development aims to support the overall aim and proposed goals set out in the IRP 2019, by adding to the diverse energy mix and providing off-grid renewable energy.

The REIPPPP is one of the South African government's crucial interventions to improve power generation capacity by securing investment via the private sector and therefore diversifying the energy mix as expressed in the White Paper on Energy Policy (1998). The REIPPPP has also been created to support other national developmental objectives such as job creation, social upliftment, and economic transformation. The REIPPPP contributed to providing additional energy into the current electricity system through private sector investment in solar PV technologies, amongst others.

The Proposed Development will aim to form part of the REIPPPP and therefore will be in support of the goals set out in the NDP and IRP towards improving power generation capacity whilst achieving low carbon emissions.

5.6 PROVINCIAL STRATEGIES

According to the 2018/19 Limpopo Socio-Economic Review and Outlook (*SERO*) report published by Limpopo Provincial Treasury, the Limpopo province is faced with three major challenges: unemployment, inequality, and poverty. The Limpopo SERO recognises the need for creating higher economic growth in order to address the challenges. A higher economic growth rate will result in more opportunities for job creation and thus, will aid in alleviating poverty and inequality. The Limpopo SERO states that the province is adversely affected by low industrial activity (i.e., an extractive economy). However, it is highlighted that the province is well endowed with substantial natural resources such as the land mass, sun and other minerals to allow for renewable energy exploration. The report suggests that renewable energy technologies can be a niche for Limpopo to capitalise on by aligning the current skills profile with market needs.

The provincial strategies that form part of the needs and desirability of the Proposed Development such as the 2005 LGDS, 2009 – 2014 LEGDP, 2015-2019 LDP, 2014 Limpopo Green Economy Plan and the 2016 LSDF are detailed in **Section 4**. The Proposed Development underpins the essence of the goals, objectives, and focus areas, outlined in the abovementioned documents, towards the provision of electricity within Limpopo and thus, support efforts towards economic growth.

5.7 LOCAL STRATEGIES

Local government plays a crucial role within the electricity industry in South Africa. Schedule 4B of the Constitution lists electricity and gas reticulation as a local government responsibility. Section 153 of the Constitution places the obligation on municipalities to make certain that the provision of services (which incorporates electricity reticulation) to communities is in a sustainable way as well as promote economic and social development. Electricity is a vital funding source for local government, particularly for larger urban municipalities.

As a tier of government, municipalities are responsible for the distribution of electricity to consumers. However, it should be noted that municipalities do not exclusively provide electricity to all households and businesses. Eskom directly supplies electricity to numerous customers, as is the case in the TLM and Northam area. The TLM and WDM IDP 2022/23, and the 2014 Waterberg LED (explained in further detail in **Section 4**) are local strategies that form part of the needs and desirability of the Proposed Development.

The Proposed Development aligns with the main purpose and objectives of the WDM and TLM IDP, and reinforces the actions required to achieving a growing economy through renewable energy developments. The Proposed Development is identified as an alternative green energy technology and therefore supports the initiative of the green economy and commits to the movement towards a Smart City. The Proposed Development is an energy efficient solution that will contribute towards achieving Thabazimbi's sustainable green energy and climate mitigation goals, whilst meeting energy demands[1].

[1] Thabazimbi Local Municipality, Integrated Development Plan, 2022/2023

6. DESCRIPTION OF RECEIVING ENVIRONMENT

This chapter provides a description of the biophysical and socio-economic environment of the Project Area, which may be affected by or could affect the Proposed Development. It also summaries the environmental theme sensitivities as indicated in the DFFE Screening Tool Report versus the outcome of the SSV undertaken by various Specialists and the EAP.

6.1 DFFE SCREENING TOOL RESULTS

The DFFE Screening Tool Report was generated for the Proposed Development which identifies environmental sensitivities and prescribes the relevant Specialist Assessments associated with a development footprint. The outcome of the screening in terms of environmental theme sensitivity is summarised in **Table 17** below. The Screening Tool Report is attached as **Appendix E**.

Table 17: DFFE Screening Tool Sensitivities

Theme	Very High	High	Medium	Low
Agriculture Theme	×			
Animal Species Theme			×	
Aquatic Biodiversity Theme				×
Archaeological and Cultural Heritage Theme				×
Avian Theme				×
Civil Aviation (Solar PV) Theme			×	
Defence Theme				×
Landscape (Solar) Theme	×			
Palaeontology Theme			×	
Plant Species Theme				×
Radio Frequency Interference Theme			×	
Terrestrial Biodiversity Theme				×

6.2 BIOPHYSICAL ENVIRONMENT

The receiving environment of the Project Area (defined as the area occupied by the Nyala Solar Energy Facility 3 and associated infrastructure, located on the Remaining Extent of the Farm Leeuwkopje No. 415 and Portion 5 (Bralbin) of the Farm Leeuwkopje No. 415 [access road only]) has been described below in terms of the current geographical, physical, biological, socio-economic and cultural character which were aided by the findings of Specialist SSV reports.

6.2.1 CLIMATE

The Proposed Development is situated in the Temperate Interior climatic zone of South Africa. This climatic zone receives a medium rainfall regime ranging from 400 – 601 mm per annum with the surrounding region having an annual average rainfall of approximately 551 mm. It falls within a summer rainfall region characterized by dry winters and extended periods of clear skies. As a temperate climate zone, the summers are typically warm to hot, while winters are cool with rare instances of severe frost or very low temperatures[2]. Usually, winter mornings are cool but tend to become warm and pleasant later in the day. During the summer months, Northam experiences hot weather with daily maximum average temperatures ranging from 27-33°C but may reach as high as 45°C. The winter season is milder with temperatures ranging from 5-20°C[1].

The region receives low to moderate rainfall, primarily during the summer months. The average yearly precipitation is around 450 mm, with most of it falling as thunderstorms. Rainfall is highly seasonal, concentrated from October to April, corresponding to the summer period[1].

Figure 4 below depicts the Project Area in relation to the Temperate Interior climatic zone.

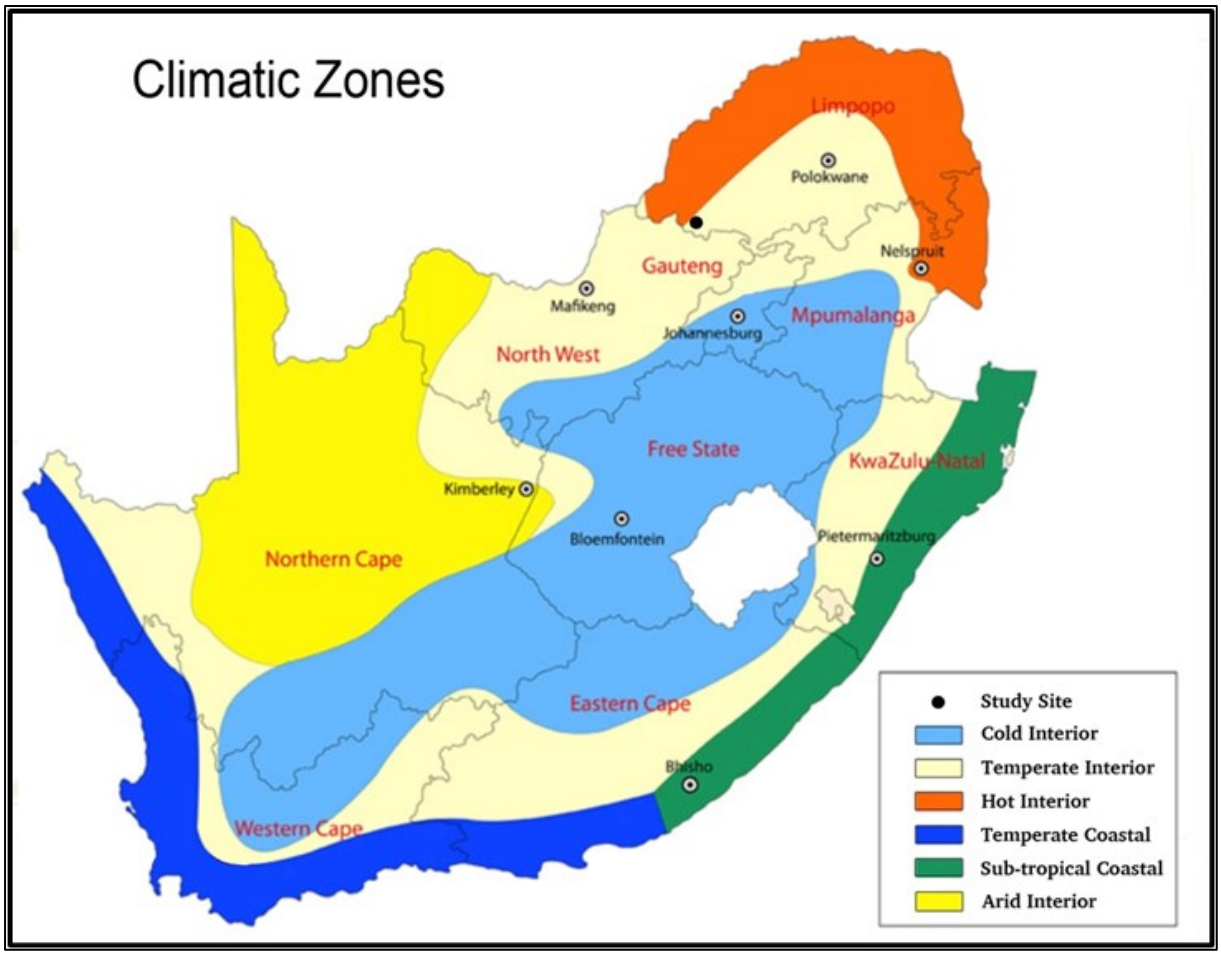

Figure 4: Climate Region of Northam (Source: Terrestrial Ecological SSV Report, 2023)

6.2.2 TOPOGRAPHY AND DRAINAGE

The topography of the eastern parts of the TLM varies from plains which have a moderate to low relief to more complex lowlands, hills and mountains to closed hills and mountains with relief varying from moderate to high[1].

[2] Flori Scientific Services, Terrestrial Ecological Site Sensitivity Verification, 2023.

However, the Project Area is located towards the south of the TLM and consists of a flat topography with an average slope of 0.6%.

In terms of drainage, South Africa is geographically divided up into a number of naturally occurring Primary Drainage Areas *(PDAs)* and Quaternary Drainage Areas *(QDAs)*. Areas are classified into Water Management Areas *(WMAs)* and Catchment Management Agencies *(CMAs)*. The Project Area is within PDA 'A' and QDA A24E, and within the Limpopo WMA (1) and CMA (1)[2]. The Project Area lies in the Brakspruit Sub-Catchment of the Crocodile Tributary of the Limpopo River.

Drainage is predominately north-westwards via minor drainage features that drain from the Project Area towards the Brakspruit River. The Brakspruit River rises in the Pilanesberg and flows in the north-easterly direction to join the Crocodile River approximately 31 km north of the Project Area. The Brakspruit River passes approximately 6 km to the west of the Project Area[3].

6.2.3 GEOLOGY

The underlain geology in the immediate vicinity of the Project Area is mainly composed of mafic and ultramafic intrusive rocks made up of dolerite, diabase, diorite, gabbro, dunite, pyroxenite, norite, anorthosite, hornblendite and carbonatite rocks. Further away from the Project Area, other rock types including argillaceous, carbonaceous and various acidic to alkaline intrusive rock outcrops [4].

6.2.4 SOILS AND LAND CAPABILITY

The Agricultural Specialist was able to examine the cross sections of 22 soil profiles up to a depth of 700 mm and concluded that the Project Area falls within soils of Land Capability Class (*LCC*) I and II, indicating that these soils are well suited to food crop production, provided that there is sufficient rainwater or irrigation water available[5].

The soil profiles taken were representative of the Hutton soil form which are easy to manage and give good to very good yields. In addition to the 22 soil profiles examined, the Specialist observed soil profiles at the edge of roads and drainage lines which confirmed that those 22 profiles were fully representative of the soil forms across the entire Project Area. In addition, the quality of both veld and woody vegetation present in the Project Area confirmed that the soils have a good yield potential[5].

Other criteria considered for crop yield potential was climate and management practices. The Project Area is considered a summer production area and receives moderate rainfall with a high annual variation coefficient, meaning that the planting of annual arable crops is a risk, even if suitable soils were available. A combination of good soils and annually variable rainfall is sufficient to maintain large livestock in good condition during the summer months, but the breeding and dairy herds would require supplementary feeding in the winter months in order to maintain calving rates and lactation levels. The veld carrying capacity of 5 ha per Large Stock Unit (*LSU*) corresponds with the soil quality and climate of the Project Area[5].

Upon conducting the SSV, the Specialist established that the Project Area's agricultural theme sensitivity is classified as 'high', rather than 'very high' as indicated in the DFFE Screening Tool. Further investigation will be undertaken and detailed during the EIR phase. Please refer to **Appendix F1** of this report for the Agricultural Potential SSV report.

[3] Antonia Belcher, Aquatic Site Sensitivity Verification Report, 2023.
[4] Luhlaza Advisory and Consulting, Geohydrological Desktop Investigation, 2022.
[5] Mzanzi Agriculture, Agricultural Potential Site Sensitivity Verification Report, 2023.

6.2.5 ECOLOGY

A SSV was undertaken by the Terrestrial Ecological Specialist in November 2022. In terms of terrestrial biodiversity, the SSV revealed a sensitivity rating of 'low', which is consistent with the sensitivity rating in the DFFE Screening Tool.

From a desktop perspective, the Proposed Development is not located within an area demarcated as a CBA or ESA. The Project Area is situated near several Protected Areas (PA's) that are officially listed in the DFFE's PAR. These include Leeuwkopje Private Nature Reserve (established on 27/1/1960) and Arzona Private Nature Reserve (established on 27/1/1960), both of which are located within 5 km of the Project Area. The Proposed Development will be located outside the boundaries of all these PAs. The Specialist also noted that the Leeuwkopje and Arzona seem to no longer be functional[2].

A Terrestrial Ecological Assessment will be conducted and detailed during the EIR stage due to the 'low' sensitivity rating from the Specialist SSV undertaken. Please refer to **Appendix F8** of this report for the Terrestrial Ecological SSV report.

Figure 5 below illustrates all the sensitive areas in relation to the Proposed Development from a desktop perspective whilst **Figure 6** below illustrates the terrestrial ecological sensitivity of the Project Area post SSV. Please also refer to **Appendix G**.

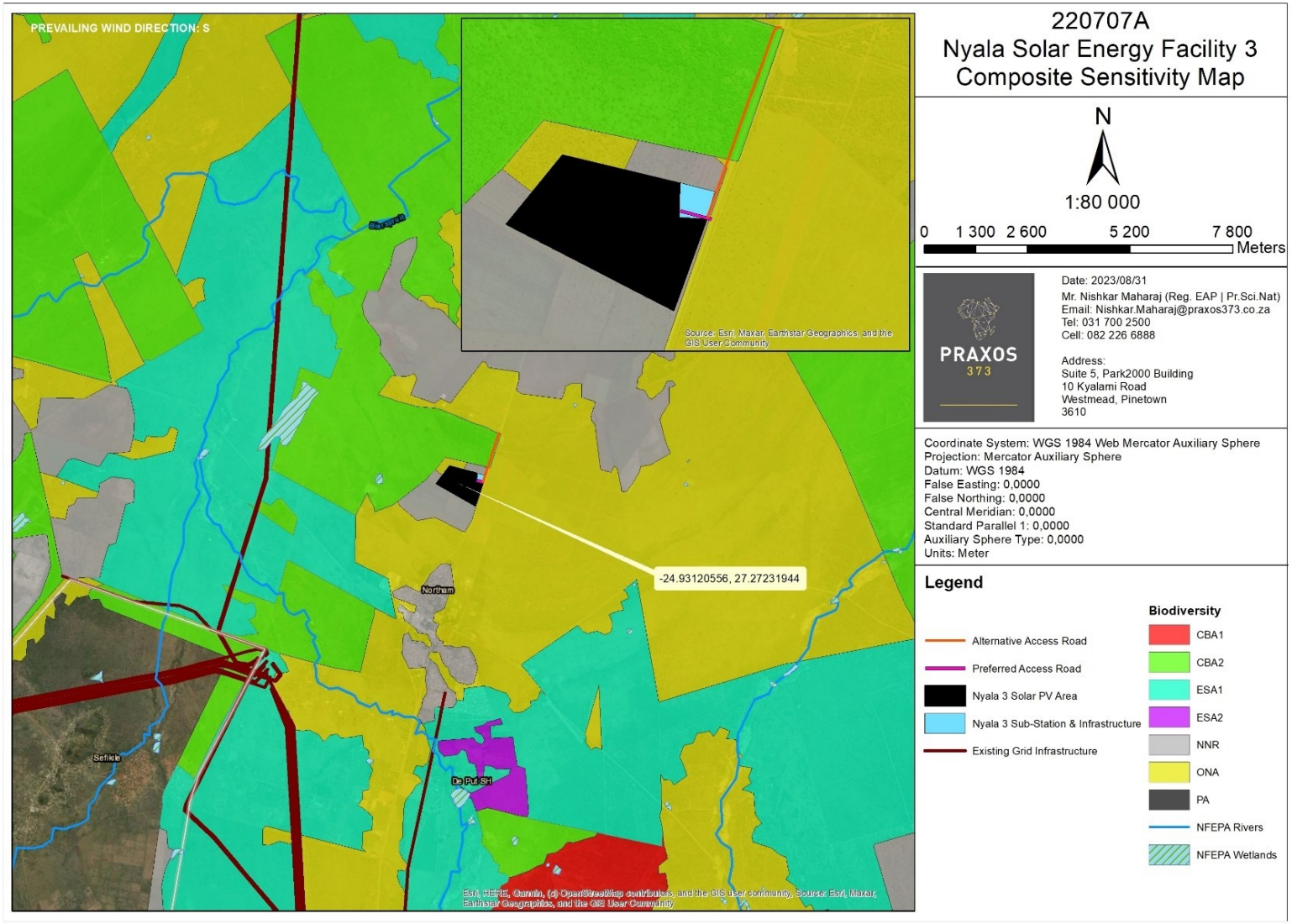

Figure 5: Composite Sensitivity Map (Praxos 373, 2023)

Figure 6: Terrestrial Biodiversity Sensitivity Map After SSV (Source: Terrestrial Ecological SSV Report, 2023)

a) Flora

In terms of the plant species theme, the Specialist's SSV aligned to the 'low' sensitivity rating in accordance with the DFFE Screening Tool.

The Project Area is located within the Central Bushveld Bioregion of the Savanna Biome and within the original extent of the Dwaalboom Thornveld, which is not a threatened veldtype/ ecosystem. The Dwaalboom Thornveld is characterised by flat to slightly undulating bushveld plains with a layer of scattered, low- to medium-high, deciduous *microphyllous* (small-leaved) trees and shrubs with a few broad-leaved tree species, and an almost continuous herbaceous layer dominated by grass species[2].

The Proposed Development is within old, cultivated farmlands, therefore the vegetation in this area has been degraded and altered, where no original or pristine Dwaalboom Thornveld is present. In some areas where cultivation is now not ongoing, some secondary thornveld has started to reemerge. It is important to note that there was no pristine Dwaalboom Thornveld present in the Project Area. The thornveld found in the region does not typically have a significant concentration of floral species that are listed as RDL species. However, there is a possibility of encountering a few floral species listed as ODL species, although they may be sporadic and scattered throughout the Project Area[2].

There were also several species of alien invasive plants present within the Project Area. A Compliance Statement for the plant species theme will be undertaken during the EIR phase due to the 'low' sensitivity rating from the Specialist SSV undertaken. Please refer to **Appendix F8** of this report for the Terrestrial Ecological SSV report.

b) Fauna

In terms of the animal species theme, the Specialist's SSV aligned to the 'medium' sensitivity rating in accordance with the DFFE Screening Report.

The Project Area is located amidst open thornveld, rocky hills and low mountains which provide ideal habitats for a number of faunal species, including medium-sized mammals. Additionally, the region is home to several game reserves. Consequently, the Specialist anticipates the possibility of observing a few faunal species listed as RDL and other species that are deemed to be SCC within the Project Area and its surrounding regions. While the Project Area does not fall within any hotspots for butterflies, lizards, or snakes, it is located within the boundaries of the Northern Turf Thornveld IBA. These factors were not considered fatal flaws to development however will require further assessment[2].

The sensitivity for the faunal component of biodiversity was found to be higher than that of the floral component. A more detailed assessment of fauna will be undertaken during the EIR phase. Please refer to **Appendix F8** of this report for the Terrestrial Ecological SSV report.

c) Avifauna

As per the DFFE Screening Tool, the avian theme was of 'low' sensitivity at a desktop level. Following the SSV undertaken by the Specialist, it was concluded that the Project Area was instead of 'medium and high' sensitivity.

A desktop screening followed by a site visit from 06 to 10 February 2023 was undertaken by the Avifaunal Specialist. In consultation with a combination of literature/ sources including electronic databases, maps, and bird atlas's, a comprehensive list of bird species occurring within the Project Area and surrounds was compiled

and confined to a Quarter Degree Grid Cell *(QDGC)*. The Project Area falls within the Northern Turf Thornveld IBA[6].

The Project Area is situated next to cultivated fields and natural thornveld, the latter occupying majority of the greater study area (i.e., outside the Project Area). The Project Area itself mostly comprises of old fields with ~23 % comprising of natural thornveld[6].

The most important habitat for avifauna occurring in the greater study area includes the natural thornveld vegetation that is located towards the north, south and west of the Project Area. The extensive thorny bushveld vegetation in the greater study area supports the terrestrial savanna bird species found in the region, including priority species such as gamebirds, raptors, and gregarious passerines. This natural thornveld appears to have had no major disturbance such as clearing or ploughing in the recent past (within the last 30-40 years) and provides the main savanna habitat for the avifauna found in the area.

Other important habitat for birds includes the small farm dam situated on the western border of the greater study area. Wetlands and dams provide important habitat for waterfowl and other wetland associated species where surface water and hygrophilous vegetation such as sedges and restios attract birds such as egrets, herons, ducks, and plovers[6].

Cultivated and fallow fields also provide foraging habitat for many bird species. In the greater study area, large flocks of the Yellow Throated Sandgrouse *Pterocles gutturalis*, a resident species currently listed as Near Threatened (*NT*) at the national level, is known to utilise the fields for foraging, and old or fallow fields are often utilised for breeding where nests are made as a shallow scrape in the soil. Flocks of Yellow Throated Sandgrouse were observed by the Specialist foraging in the cultivated fields adjacent to the Project Area, as well as to the west of it. This is the trigger species for the Northern Turf Thornveld IBA[6].

Refer to **Figure 7** below depicting the habitat features within the Project Area and greater study area.

[6] Cossypha Ecological, Preliminary Avifaunal Assessment & Site Sensitivity Verification, 2023

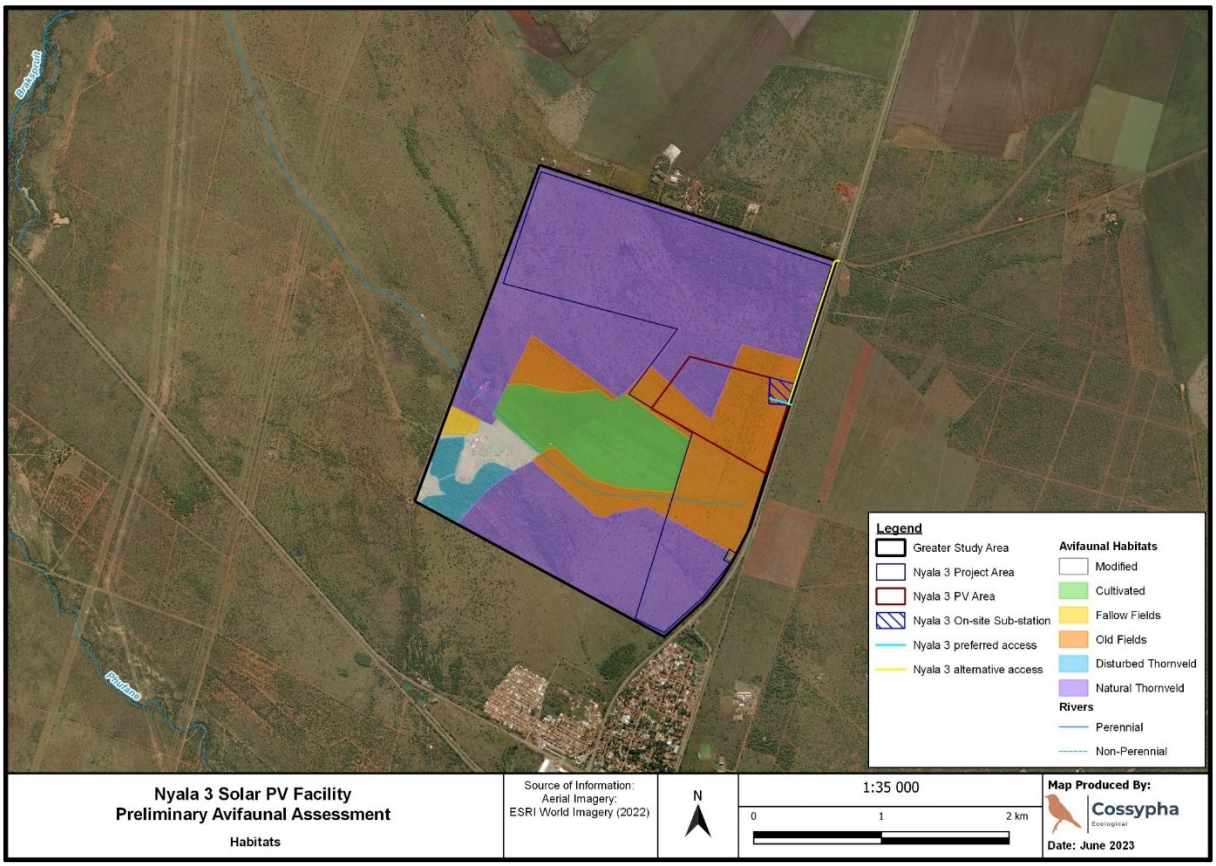

Figure 7: Avifaunal Habitat Features (Source: Avifaunal SSV Report, 2023)

The Specialist recorded 148 species in the greater study area which were identified by sightings, callings or field signs (tracks or feathers). These birds were mainly typical bushveld savanna species such as francolin, barbets, hornbills, rollers, shrikes, starlings, tchagras, robin-chats, babblers, prinias, waxbills, crombecs, and many raptors with a few species more typical of grassland habitats such as cisticolas, pipits, finches, quelea, and widowbirds. Many priority species such as gamebirds, waterfowl, and raptors were also recorded during the preliminary survey. The Greater Painted-snipe *Rostratula benghalensis*, a resident species, and European Roller *Coracias garrulus*, a non-breeding migrant to the area, both listed as NT at a national level, were recorded in the greater study area. In addition, 19 species that are endemic to the Southern African region were recorded in and around the greater study area[6].

Bird SCC observed in the greater study area during the field assessment were as follows:

- White-Backed Vulture *Gyps africanus*, listed as Critically Endangered (*CR*) at the national level and global level – recorded circling overhead.
- Cape Vulture *Gyps coprotheres*, listed as Endangered *(EN*) at the national level and Vulnerable (*VU*) at the global level – recorded circling overhead.
- Steppe Eagle *Aquila nipalensis*, listed as EN at the global level.
- Lanner Falcon *Falco biarmicus*, listed as VU at the national level.

Preliminary assessment of species recorded in during the preliminary field surveys show that there are numerous bird species that may be susceptible to the impacts of solar PV development occurring in the greater study area and surroundings. These include large-bodied and ground-welling species such as francolin, spurfowl, waterfowl and other species that are attracted to waterbodies such as ducks, lapwings, and cormorants, and raptors such

as kites, falcons, sparrowhawks, eagles, and vultures. These species may also be affected by habitat loss and includes displacement of gregarious passerines such as finches, bishops, queleas, and widowbirds[6].

The Specialist noted that the extensive natural thornveld vegetation in the greater study area which represents the most important habitat for birds in the area was considered to be of 'high' sensitivity and should be avoided by the Proposed Development layout. The Specialist also observed many raptors in and around the greater study area, including an active Wahlberg's Eagle nest towards the south of the Project Area (beyond the Nyala 3 site) that showed evidence of recent use. The more disturbed thornveld or areas where thornveld is re-establishing in the Project Area such as old fields, are considered to be of 'medium' sensitivity and although it provides habitat for avifauna, it is the preferred site for the Proposed Development compared to the natural thornveld[6].

While cultivated and fallow fields are usually considered to be of low sensitivity due to the modified and transient nature of the habitat, certain fields with specific conditions such as presence of moist areas and/or dark clay-rich soils are considered to be important habitat for certain bird species such as the Yellow-throated Sandgrouse observed by the Specialist in the cultivated fields. These fields are situated on a non-perennial drainage or seep that feeds the small farm dam towards the west of the Project Area and continues to the Brakspruit River. This field and the surrounding fallow areas therefore provide suitable foraging and potential nesting habitat for these birds and are thus considered to be of medium sensitivity. The field does however fall within the landowner exclusion zone and will therefore be avoided by the Proposed Development[6].

Refer to **Figure 8** below depicting habitat sensitivity in and around the Project Area.

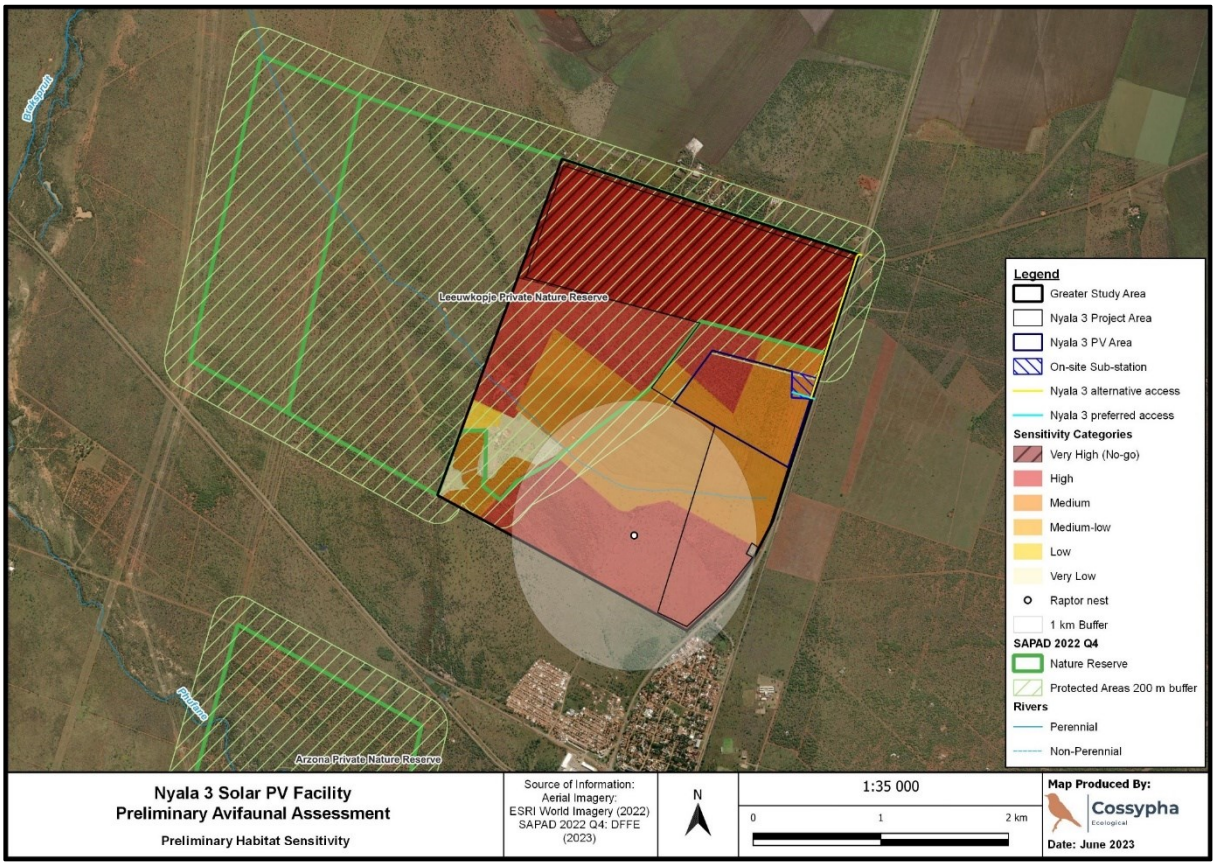

Figure 8: Preliminary Avifaunal Habitat Sensitivity (Source: Avifaunal SSV Report, 2023)

Further investigation will be undertaken during the EIR phase which includes structured and repeated data collection on which the Specialist will base the impact assessment report and provide a baseline against which post-construction monitoring can be compared. Please refer to **Appendix F3** of this report for the Avifaunal SSV report.

6.2.6 HYDROLOGY

As per the DFFE Screening Tool, the Project Area lies within a 'low' sensitivity area in terms of aquatic biodiversity. The outcome of the SSV indicated that the aquatic sensitivity of the Project Area aligned to that of the DFFE Screening Tool.

a) Surface Water

A desktop screening followed by a SSV was undertaken by the Aquatic Specialist in January 2023. As previously indicated, the Project Area lies within the Brakspruit Sub-Catchment of the Crocodile Tributary of the Limpopo River. The Brakspruit River serves as the main watercourse in QDA A24F. Drainage of the Project Area is north-westwards towards the Brakspruit River. Notably, the Project Area is not located within an aquatic CBA and Freshwater Ecosystem Priority Area (*FEPA*) River Sub-catchment, nor is it situated within a Strategic Water Source Area (*SWSA*) for surface water or important Water Source Area (*WSA*) of the province[3].

From the Specialist's site assessment, no natural FEPA wetlands were present within the Project Area. However, an artificial channelled valley-bottom wetland occurs to the west of the Project Area. There was also a small artificial FEPA wetland associated with a dam at Leeukoppies Farm. These have low aquatic ecosystem significance but may provide aquatic habitat for biota, such as the Giant Bullfrog, a SCC that breeds in ephemeral pans and farm dams. However, it is unlikely that Giant Bullfrogs are present within the Project Area, given the general absence of suitable breeding habitats in the vicinity[3].

A channelled valley-bottom wetland was also mapped that is associated with the Brakspruit River further to the south of the Project Area. A valley-floor wetland is also mapped to the south-east that is associated with the Renosterspruit River, a tributary of the Crocodile River. These natural wetlands are not likely to be impacted by the Proposed Development since they are located 3-5 km's away from the Project Area. There are no watercourses present within the Project Area[3].

The Specialist noted that from past imagery of the Project Area and immediate surrounds from 1948 and again in 2009 indicates that there was definitely a minor drainage system with an associated unchanneled valley floor wetland present towards the south of the Project Area. The wetland area has been targeted for cultivation even prior to 1948. During the site visit, no aquatic features of any significance were found within the Project Area. There was however some indication of wetness visible in terms of the topography, soils and vegetation along the drainage feature and within the location of the valley bottom wetland towards the south. The drainage feature was only marginal and not supportive of functional aquatic ecosystems. The area is dominated by cultivated alien grasses and did not display any distinctive wetland characteristics, having had a long history of modification. The soils however did comprise clay that is seasonally wet, indicating the presence of wetland habitat within this area[3].

The Specialist concluded that the only aquatic feature of high sensitivity and is recommended to be avoided is the valley bottom wetland to the south of the Project Area. By implementing suitable buffers (10m) adjacent to the wetland and minimising the disturbance within the wetland, the impact of the Proposed Development would be low and unlikely to impact the integrity of the aquatic ecosystem. **Figure 9** below depicts the sensitive areas south of the Proposed Development. The proposed layout and technology alternatives are all within low

sensitivity areas and thus will have very similar impacts such that there is no preferred alternative from an aquatic ecosystem point of view[3].

Due to the low sensitivity rating after the SSV was conducted, an Aquatic Compliance Statement and wetland delineation will be undertaken during the EIR phase including impacts, recommendations and mitigation measures. Please refer to **Appendix F2** of this report for the Aquatic SSV report.

Figure 9: Sensitivity of Aquatic Features (Source: Aquatic SSV Report, 2023)

b) Groundwater

The Hydrogeologist conducted a desktop investigation utilising various sources and in accordance with the South African National Standards *(SANS)* 10299:2003 guideline. It was established that the Project Area is not located within a SWSA for groundwater[4].

The Project Area is underlain by an intergranular and fractured aquifer system with an approximate yield range of 0.1 – 0.5 litres per second (*ℓ/s*). This indicates that the aquifer is poorly productive even though the region is characterised as semi-arid. The area surrounding the Project Area is characterised by a moderate yielding aquifer system with yields ranging from 0.5 to 2 ℓ/s. Since the aquifer within the Project Area has mafic to ultramafic intrusive rocks, in addition to the weathered profile, zones of interest for encountering groundwater are likely to be along the contact zones between the rock units and/or at the contact zone of the various intrusive rocks[4].

The Project Area is located in close proximity to the local surface water divide, i.e., between two quaternary catchments[4].

In terms of Electrical Conductivity *(EC)*, values range from 70 to 300 millisiemens per meter *(mS/m)* with some areas showing EC values between 0 and 70 mS/m which is indicative of a moderate to good groundwater quality. The depth to groundwater within the Project Area ranges from 25 m to 35 m below ground level *(bgl)* and is regarded as moderately deep. This corresponds to the mean annual precipitation of the area and the region's groundwater recharge rate of between 14 mm/year, which indicates that groundwater resources within the Project Area are limited[4].

A desktop hydro census was also conducted at a 2 km and 5 km radius of the Project Area. The information indicated that there are a number of boreholes in the vicinity of the Project Area however detailed information such as groundwater level, use, type and pumping rates were unavailable[4].

The Specialist noted that the Proposed Development may not have a considerable impact on geohydrological conditions, therefore the Project Area is classified as having 'low' sensitivity. A more detailed assessment of geohydrological conditions including a field hydro census will be undertaken during the EIR phase. Please refer to **Appendix F5** of this report for the Geohydrological Desktop Assessment Report.

6.2.7 LANDSCAPE

The Landscape and Visual Specialist undertook an SSV over a single day period (14th May 2023) to verify the likely visibility of the Proposed Development, the nature of the affected landscape and affected receptors. The site visit was planned to ensure that weather conditions were clear ensuring reasonable visibility.

In terms of the Landscape Character, influencing factors include landform and drainage, nature and density of the development, and vegetation patterns. The Project Area and surrounds has 'a strong rural character, interspersed with agriculture and industrial activities, particularly mining, and settlement'. The Landscape Character of the Project Area can be described as per the following[7]:

- Landform and Drainage: The Project Area is located close to a watershed that runs in an approximate north-east to south-west direction. The watershed is marked by a low, flat ridgeline. Topography is relatively flat and generally falling towards the south. The visual implication is that the topography of the Project Area and immediate surrounds is unlikely to provide significant screening.
- Landcover: The Project Area is located within an area of relatively natural landcover types including woodland, natural grassland and fallow land which is largely comprised of regenerating thornveld. Within the matrix, there are large areas that have been cleared for commercial cultivation. Several private nature reserves are located in close proximity and there are also numerous homesteads scattered throughout the broader area. These are generally associated with agricultural operations, however there are also homesteads that may possibly be associated with game farming and/ or tourist accommodation and lodges. The visual implication of the landcover is that the woodland, grassland and fallow lands in the vicinity of the Project Area provides a relatively natural setting, with the woodland areas (thornveld) in particular, likely to be the main landscape element that could help to screen the Proposed Development.
- Vegetation Patterns: The Project Area comprises of the Dwaalboom Thornveld which is characterised by plains with scattered deciduous *microphyllous* trees and shrubs with a low to medium height, and an almost continuous herbaceous layer dominated by grass species. Vegetation at homesteads were largely a mix of alien and indigenous tree species with a mix of ornamental shrub vegetation. It also included vegetable production. Arable cropping occurs in small areas in the vicinity of the Project Area. The main commercial crops include maize and vegetables. The visual implications are that the natural areas in the vicinity of the

[7] Environmental Planning and Design, Landscape and Visual Impact Baseline Report, 2023.

Project Area help to create an over-riding natural landscape character and where the Thornveld occurs, the small trees in the vegetation matrix could provide significant screening.

In addition, the landscape of the Project Area can be broadly divided into the following Landscape Character Areas (*LCAs*) and which are largely defined by land use[7]:

- A natural LCA which comprised of flat topography and thornveld vegetation and includes PA's. The low tree cover is likely to provide significant screening.
- Cleared and cultivated LCA's which comprised of areas of arable agriculture. Crops are generally low thereby providing little to no enclosure or screening.

Figure 10 below depicts the landcover within and surrounding the Project Area, up to an 8.7 km buffer.

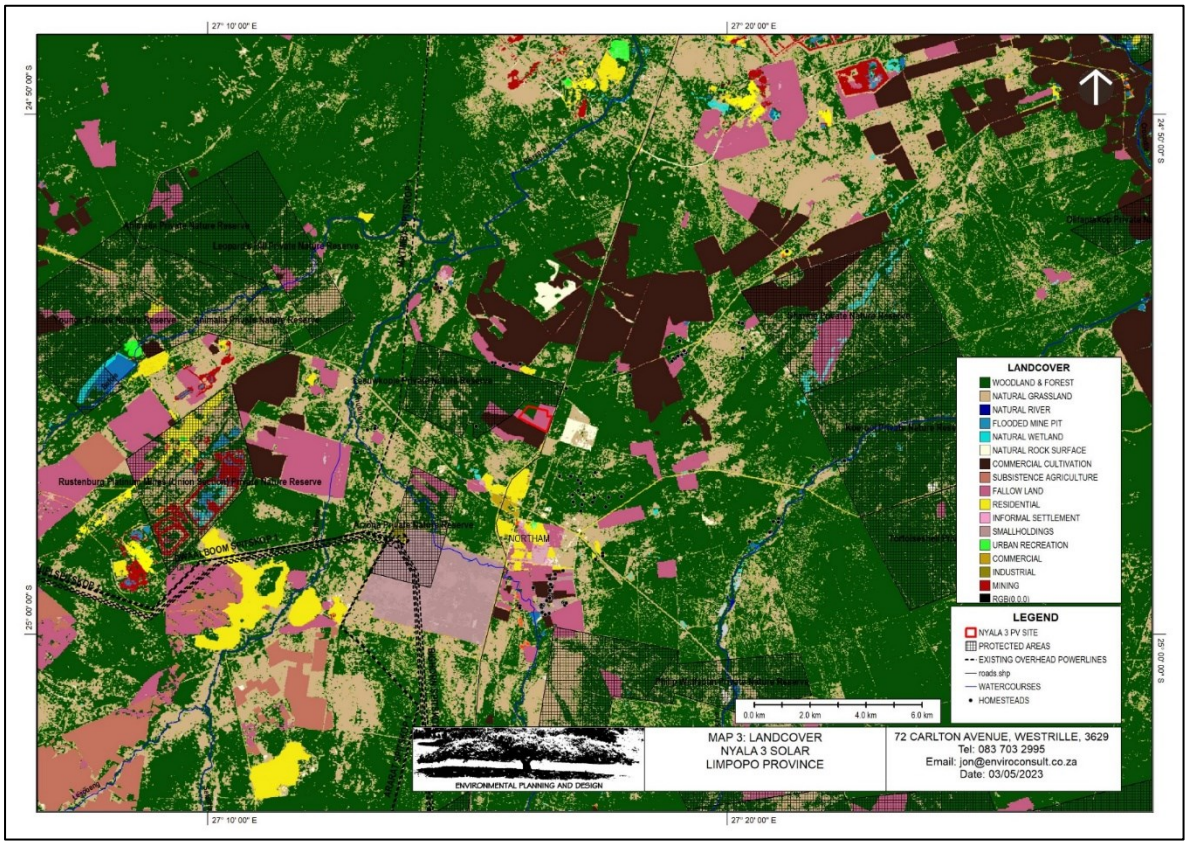

Figure 10: Landcover of the Project Area and Surrounds (Source: Landscape and Visual Baseline Assessment, 2023)

During the SSV, the Specialist also noted the following Visual Receptors[7]:

a) Area Receptors:

Area receptors are places that cannot be defined by a point or a line. They might include settlements or protected areas. From the SSV undertaken, the Specialist noted the following possible area receptors:

- The Leeuwkopje Private Nature Reserve, Sharme Private Nature Reserve, Koerooi Private Nature Reserve, and Arzona Private Nature Reserve.

b) Linear Receptors:

Linear receptors generally include routes through the area. The following linear receptors were noted:

- The R510 which is located immediately adjacent to the Project Area and creates a link to the nearby town of Northam. It is also a regional distributor route that links Rustenburg in the south to Lephalale in the north.
- Local roads that are generally un-surfaced roads that link the Project Area to the R510 towards the east.

c) Point Receptors:

Point receptors include isolated, homesteads most of which are likely to be associated with agriculture, however a number are likely to have a tourism use (lodges) particularly those within more natural areas.

The Specialist noted that the Project Area is neither protected nor does it form part of a rare landscape perspective. Furthermore, there were no highly sensitive areas recorded. Notably, there was no need for the prescribing of 'no-go' areas. The Specialist does however advise on guiding the development away from areas that would make it most obvious to surrounding sensitive receptors mentioned above[7].

Since the Project Area borders the Leeuwkopje Private Nature Reserve on two sides i.e., the north and west, and the R510 on one side (east), these edges have medium sensitivity, with the remaining areas within the Project Area being of 'low' sensitivity. The Specialist noted that regenerating thornveld exists both within the Project Area and immediately outside it between the reserve and the Project Area. It is recommended that a buffer of thornveld which is 50 m wide be retained on the outer edges and that taller elements including the electrical compound are not to be developed in the area of medium sensitivity.

Consequently, the results of the Landscape and Visual SSV indicate a combined sensitivity level of 'medium' and 'low' for the Project Area. This finding refutes the "very high" sensitivity assigned by the DFFE Screening Tool for the landscape (solar) theme[7].

A detailed Visual Impact Assessment (which will also investigate any glint and glare issues) will be conducted and detailed during the EIR phase. Please refer to **Appendix F6** of this report for the Landscape and Visual Baseline Assessment Report.

6.2.8 CULTURE, HERITAGE, AND PALAEONTOLOGY

The Heritage Specialist conducted a desktop analysis followed by a site verification survey of the Project Area and surrounds to ascertain whether any cultural heritage remains consisting of both tangible and intangible archaeological and historical artefacts, structures (including graves), settlements and oral traditions of cultural significance, occur within or in close proximity to the Project Area[8].

The Specialist noted that preliminary indications were that the region around the survey footprint (broader area) is fairly saturated with historical and archaeological remains. The following was noted[8]:

- Possible graves and historical livestock kraals on the farm Kaalvlakte 416KQ located towards the north of the Project Area and Leeuwkopje 415KQ which the Project Area forms part of.
- Possible historical livestock kraals on the farm Gouvernements Plaats 417KQ located towards the north-east of the Project Area.

[8] Francois Coetzee, Cultural Heritage Site Verification Report, 2023.

- Extensive Late Iron Age stone-walled sites on the southern portion of the Farms Elandsfontein 386KQ and Gouvernements Plaats 417KQ located towards the north of the Project Area.

However, no historical or archaeological (both Stone Age and Iron Age) features, structures, assemblages or declared heritage sites (provincial and national) were recorded within the Project Area. However, archaeological deposits usually occur below ground level. In accordance with the NHRA, should archaeological artefacts or skeletal material be revealed in the Project Area during construction, such activities should be halted, and a university or museum notified in order for an investigation and evaluation of the find(s) to take place[8].

According to the DFFE Screening Tool, the Project Area was categorised as having 'low' heritage sensitivity. The subsequent field investigations conducted by the Specialist confirmed that the sensitivity of the Project Area aligned with that of the DFFE Screening Tool[8]. A Phase 1 Heritage Impact Assessment of the Proposed Development has been recommended in to comply with Section 38 of the NHRA and will be undertaken during the EIR phase. Please refer to **Appendix F4** of this report for the Cultural Heritage SSV report.

The Palaeontologist undertook a desktop assessment of the Project Area which indicated that the area is underlain by granites and gabbros of the Bushveld Igneous Complex and is considered to be non-fossiliferous which is of no palaeontological concern.

As per the SAHRIS database, the Project Area lies within an area of insignificant to zero sensitivity as represented by the black marking in **Figure 11** below. Therefore, the 'medium' sensitivity as indicated in the DFFE Screening Tool is refuted. The Proposed Development is not envisaged to have an impact on the Palaeontological component thus no further assessment will be undertaken for the Proposed Development[8]. Please refer to **Appendix F4** of this report for the Cultural Heritage SSV report which includes Palaeontological sensitivity.

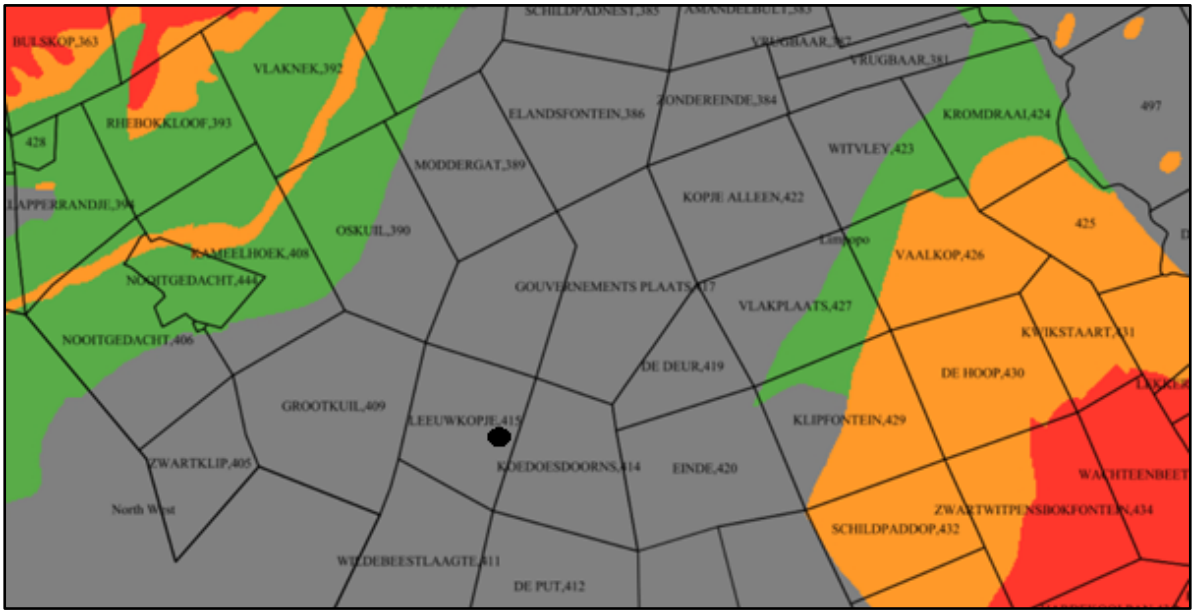

Figure 11: Palaeontological Sensitivity of the Region (SAHRIS, 2022)

6.2.9 AIR QUALITY

The Minister declared the WBPA in terms of air quality in June 2012, which includes the area of the TLM and consequently the Project Area. This was due to several energy-based development initiatives in South Africa and Botswana which would pose a threat to the current state of ambient air quality in the WDM. As such,

government had recognised the need for management planning in the WBPA to consider the current and future threats to air quality[9].

Air pollution sources of concern in the WDM are[10]:

- Dust from mines, quarries, brickworks, spoil/overburden heaps and heavy vehicles using gravel roads.
- The burning of solid waste at waste disposal sites, informal waste dumps and especially on farms and at tourism facilities in natural areas.
- Smoke from vehicles especially heavy vehicles that drive through towns.
- Power generation from coal-fired power stations that emit Particulate Matter (*PM*), Sulphur dioxide (SO_2), and Nitrogen oxides (NO_x).

In the WDM, mining sources are likely to be the main contributor to PM_{10} emissions. Power generation is the primary source responsible for emitting Sulphur dioxide (SO_2) and Nitrogen dioxide (NO_2), accounting for 95 % and 93 % of the emissions, respectively.

In the TLM, the main industrial sources of pollution were identified to be[10]:

- Amandebult Platinum Mine.
- Northam Platinum.
- Pretoria Portland Cement.
- Thabazimbi Mine (Iron Ore Mining).
- WES Enterprises (animal feeds manufacturing).

Furthermore, the TLM was identified as one of the two primary contributors to vehicle emissions, accounting for 28 % of the total emissions in the WDM[10].

Data on ambient air quality was collected from the South African Air Quality Information System (SAAQIS) during the period of 18 May to 18 June 2023. The data was obtained from two monitoring stations in close proximity to the Project Area, namely Bierspruit and 4B Decline stations, situated 13 km and 15 km west of the Project Area, respectively. Ambient air quality was only available for pollutants such as SO_2 and PM_{10} and are represented in **Figure 12** below. At the 4B Decline Station, higher levels of SO_2 emissions were recorded, whereas PM_{10} emissions were relatively similar at both stations. The Bierspruit station, however, recorded a peak in PM_{10} emissions around the period of 14-15 June 2023. Data for SO_2 at the Bierspruit station was not available from 05-17 June 2023, possibly due to an error or station malfunction.

[9] Department of Environmental Affairs, Waterberg-Bonjanala Priority Area Air Quality Management Plan and Threat Assessment, 2015.
[10] Department of Environmental Affairs, Waterberg District Environmental Management Framework Report, 2010.

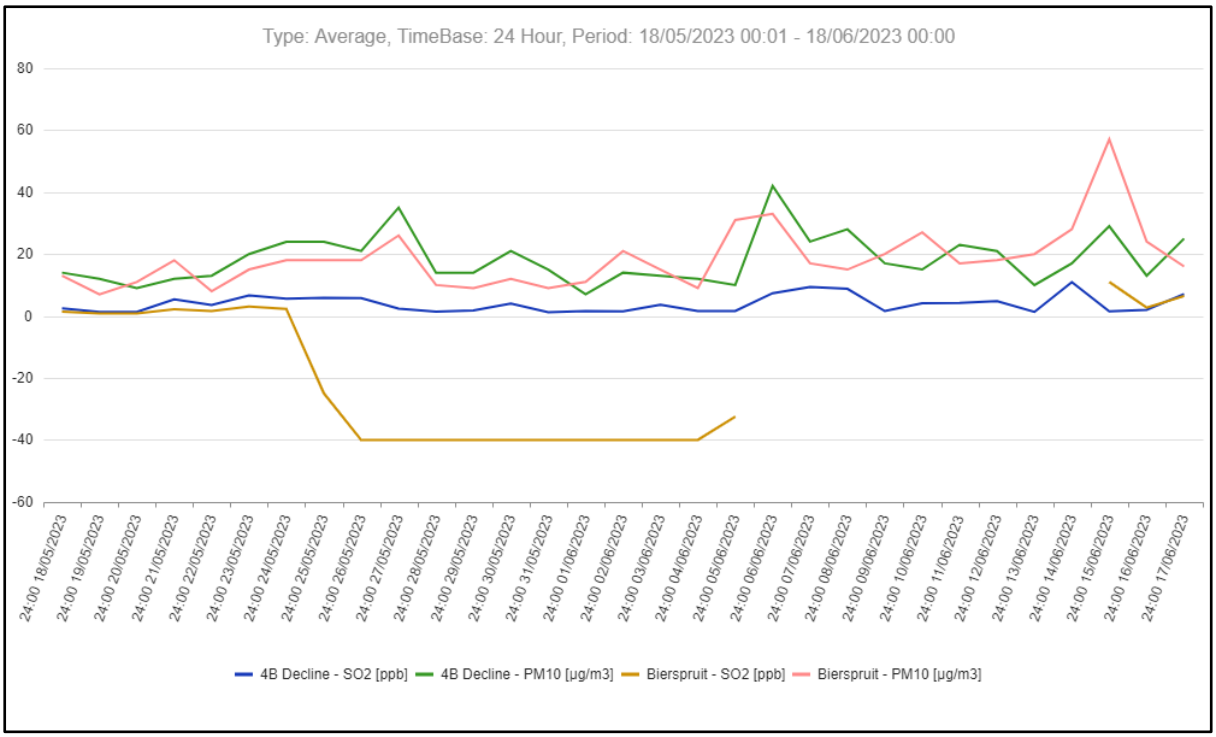

Figure 12: Ambient Air Quality (Source: SAAQIS, 2023)

6.3 SOCIO-ECONOMIC ENVIRONMENT

A site visit was undertaken in May 2023 by the Socio-Economic Specialist to collect primary data by obtaining an understanding of the locational factors of the Proposed Development. Secondary data sources were also consulted such as previous studies, the Census 2011 and Quantec databases, and policies and plans from national to local level.

6.3.1 STUDY AREA'S COMPOSITION AND LOCATIONAL FACTORS

The Project Area is situated in the TLM which is categorized as a Category B municipality within the Limpopo province. I t is part of the larger administrative region known as the WDM which consists of 5 local municipalities i.e., Thabazimbi, Bela-Bela, Lephalale, Mogalakwena, and Modimolle-Mookgophong[11].

The TLM extends to the Botswana border and is the second largest in WDM having a total area of approximately 10 882 km^2. It encompasses a mix of rural and semi-urban areas, with a population primarily engaged in agriculture, mining, and tourism[11].

The TLM is served by two established Central Business Districts (*CBD*) i.e., the Thabazimbi town CBD and the Northam CBD. The Thabazimbi town is the largest conglomeration of business and residential development in the municipal area. The large business centres, public transport infrastructure and administrative offices are located in this vicinity and has thus been identified as a Provincial Growth Point within Limpopo. This area must therefore become a focal area for development[11].

[11] Urban-Econ, Socio-Economic Assessment, 2023.

6.3.2 SENSE OF PLACE, HISTORY, AND CULTURAL ASPECTS

The TLM was established as a local municipality in 2000 in accordance with Section 12 of the Local Government: Municipal Structures Act (No. 117 of 1998). The majority of its residents can be classified as African, while the minority population densities are among Indian, coloured, and white residents[11].

The history of the TLM is intertwined with the discovery of iron ore deposits in the area, which played a pivotal role in shaping the development and growth of the municipality. The extraction and mining of iron ore have left a lasting imprint on the landscape and economy of the region. The presence of mining activities has not only provided employment opportunities but has also influenced the cultural fabric of the local communities[11].

The TLM offers a diverse and captivating tourism landscape that showcases the region's natural beauty and cultural heritage. The municipality's tourism assets primarily revolve around its rich wildlife and outdoor experiences. Additionally, TLM boasts unique cultural attractions such as historical sites, traditional villages, and cultural events that allow visitors to immerse themselves in the local customs and traditions. The two main tourist destinations in the surrounding area are Miltons Guesthouse and Angasii Game Lodge. Additionally, the Leeuwkopje Private Nature Reserve directly borders the Project Area. [11].

There are several schools situated within the Northam area. The nearest school is approximately 6 km away from the Project Area[11].

6.3.3 DEMOGRAPHICS, HEALTH, AND CRIME PROFILES

The TLM recorded an average population growth rate of 1.6 % per annum between 2016 and 2021. This was higher than the average national population growth rate of 1.4 % and the average district population growth rate of 0.9 % for this period. Males make up a greater proportion of the population in than females accounting for 61 %[11].

The population of TLM in 2021 was approximately 104 139 individuals, residing in 31 613 households. This population size represents about 14 % of the total population of the WDM and around 2 % of the total population of the Limpopo province. In the TLM, the average household size is 3.3 people per household, which is lower than both the provincial average of 3.9 people and the national average of 3.6 people per household[11].

Crime is an important indicator of a community's socio-economic status. Serious crimes in the TLM comprised of contact crimes, sexual offences, robberies with aggravating circumstances, crimes involving property, and crimes discovered as a result of police action. The TLM had made community safety one of the important municipal priorities to lower crime rates which was evident by an annual average decline of 5.5 % in serious crimes from 2018 to 2021. However, from 2021 to 2022, the TLM experienced a 4.9 % increase in crime. The exact reasons for this increase during the specified period are unknown[11].

6.3.4 INCOME AND EDUCATION LEVELS

The average income of an economy serves as a measure to evaluate both the standard of living and the level of development within the associated community. Furthermore, education levels play a crucial role as an indicator of social welfare and access to education within the community.

According to the 2011 Census data, a significant portion of the TLM population falls within the category of low-income households. These households typically have an annual income of less than R307 600. Specifically, the majority of households (20%) fall within the income range of R38 201 to R76 400, which translates to approximately R3 183 to R6 367 per month. On the other hand, about 7 % of the TLM's total households earn

above R307 601 annually or approximately R25 633 per month. The prevalence of low-income households suggests that many residents face economic challenges and may experience limited financial resources[11].

Low average income levels are often related to the difficulty of getting access to adequate education. According to the available data, it is observed that a significant portion of TLM's adult population has limited formal education. Approximately 17.7 % of the total adult population has not received any form of formal education, while roughly 28 % have completed secondary education. In contrast, less than 10 % of the adult population in TLM holds higher education degrees[11].

The educational landscape in the TLM plays a significant role in shaping the labour market dynamics. The low levels of education among residents tend to be associated with a predominance of low-skilled labour. This correlation between educational attainment and skill level suggests that the general population faces challenges in accessing higher-paying job opportunities[11].

Furthermore, the observed low educational levels in the TLM can be linked to the higher proportion of residents belonging to lower-income brackets. The limited educational opportunities and qualifications contribute to the prevalence of lower-income households within the municipality. This connection between educational attainment and income further underscores the socio-economic challenges faced by the general population[11].

6.3.5 LABOUR FORCE AND EMPLOYMENT STRUCTURE

Employment is the most common way for people of working age to generate money that will allow them to meet their basic necessities and enhance their standard of living. As a result, employment and unemployment rates are important measures of socio-economic status[11].
In 2021, the TLM accounted for approximately 51 % of the total employed population in the WDM. The working-age population constituted a significant portion of TLM's total population, representing about 79 %, which translates to approximately 82 743 individuals. Only 75% of the working-age population is economically active. Within the economically active population, approximately 17 % are unemployed, which amounts to about 9 794 individuals[11].

Regarding employment sectors, the TLM's workforce comprises both formal and informal sectors. Around 12 % of the employed population (approximately 5 444 individuals) are engaged in the informal sector, while the remaining 88 % (approximately 41,096 individuals) are employed in the formal sector. Within the formal sector, the workforce is divided as follows: 10 % skilled workers, 63 % semi-skilled workers, and 27 % low-skilled workers. This might be due to the lack of individuals with higher education in the TLM as well as the majority of the high number of jobs in the mining industry, where the level of employment is semi-skilled in nature[11].

6.3.6 ECONOMIC PROFILE

The fundamental operations of an economy revolve around the creation, distribution, and consumption of products and services. The Gross Value Added (*GVA*) metric is employed to quantify the value of goods and services produced within a specific location, industry, or sector of the economy.

The GVA of the TLM was valued at R160 382 million in 2021. This constituted approximately 30 % of the total GVA for the WDM in that year, making TLM the largest contributor to the WDM. The economic profile of TLM is dominated by the primary sector, with the highest contributing sector being the mining and quarrying sector contributing 91.9 % of the TLM's economic activity. This is followed by the finance, insurance, real estate, and business services, which contributes approximately 1.6 % of the TLM's GVA[11].

6.3.7 ACCESS TO BASIC SERVICES

Several factors contribute to the determination of people's standard of living, including shelter, water, power, sanitation, and other essential services. Additionally, the state of infrastructure, particularly municipal infrastructure, is crucial in assessing living standards. The presence of social and economic infrastructure, such as roads, educational institutions, and health facilities, further characterises a region and plays a vital role in comprehensively understanding the living conditions of communities.

The households in the TLM have piped water within their yards and about 30.9 % of households have piped water inside their dwellings. Approximately 10.1 % of the households in TLM access water through a borehole, while the rest of the households get their water through water tankers, community stands, and even other sources such as rainwater tanks, rivers/streams, and water vendors[11].

In terms of access to energy, approximately 94.3 % of TLM's households have access to electricity, which is provided by Eskom, while about 5.3 % use candles for energy. Approximately 0.1 % of the households use solar energy while a minor share of the households uses other sources such as gas. Regarding sanitation, only roughly 75.1 % of the TLM's households have access to flushing toilets with sewage systems, while 24.3 % of the households use pit toilets. The majority (54.1%) of TLM households have their refuse removed weekly[11].

This suggests that besides the provision of electricity, the TLM is likely to be underdeveloped and that the standards of living are fairly low[11].

A Socio-Economic Impact Assessment will be undertaken during the EIR phase which will include impact assessments and mitigation measures. Please refer to **Appendix F7** of this report for the Socio-Economic Preliminary Assessment Report conducted for the Scoping phase.

6.4 CIVIL AVIATION, DEFENCE, AND RADIO FREQUENCY INTERFERENCE

According to the DFFE Screening Tool, the Project Area was identified as being within 8 km of a civil aviation aerodrome and located between 14 km and 32 km from a Square Kilometre Array (SKA) receptor. No defence sites were recorded in or near the Project Area, as per the findings of the DFFE Screening Tool.

Based on the EAP's site visit and desktop screening, there were no military bases/ facilities, recorded within or in close proximity to the Proposed Development. It is therefore the EAP's opinion that this project will not have any significant impact on the national defence infrastructure. The EAP therefore agrees with the low rating for Defence as per the DFFE screening tool.

Regarding civil aviation, no aerodromes were noted within or in close proximity to the Project Area. In terms of the DFFE Screening Tool, the civil aviation theme for the Proposed Development was a medium sensitivity. However, from the SSV undertaken, it is the EAP's opinion that the Proposed Development will have a low sensitivity rating in terms of Civil Aviation.

As such, no further assessment is deemed necessary for civil aviation or defence. Please refer to **Appendix F9** for the EAP SSV Report.

6.5 RADIO FREQUENCY INTERFERENCE

In terms of Radio Frequency Interference (RFI), the South African Radio Astronomy Observatory (*SARAO*) had undertaken an assessment of the potential impact of the Proposed Development on the nearest SKA radio telescope. It was determined that the Proposed Development represents a low risk of interference with a

compliance surplus of 387.75 dBm/ Hz. In terms of the DFFE Screening Tool, the RFI theme for the Proposed Development was a medium sensitivity. However, based on the communication received from SARAO, it is the EAP's opinion that the Proposed Development will have a low sensitivity rating in terms of RFI.

As such, no further assessment is deemed necessary for RFI. Please refer to **Appendix F9** for the EAP SSV Report.

7. POTENTIAL IMPACTS ON THE ENVIRONMENT

The primary objective of the Scoping phase in an EIA is to identify potential environmental and social consequences of a Proposed Development, such as impacts on air and water quality, biodiversity, cultural heritage, and human health and safety. Additionally, the Scoping phase seeks to establish the extent of the EIA study required to comprehensively evaluate and manage these impacts, including what Specialist input is required, the types of data that will need to be collected and the analysis techniques that will be utilized. Through recognizing and recording potential environmental issues, the Specialists can focus on the significant aspects, giving an outline for assessing the Proposed Development's effects on the environment and vice versa. The inputs of the project team, stakeholders, I&APs, and Specialists are used to perform this analysis. The scoping phase's initial identification of potential environmental (biophysical, social, and cultural) impacts is investigated in greater detail during the EIR phase of the process.

7.1 PRELIMINARY ENVIRONMENTAL IMPACTS

Potential impacts associated with the Proposed Development, according to the respective phases (construction, operational, and decommissioning) during which they will occur, have been identified. All impacts have been split into 'general impacts' and 'Specialist impacts'. For the purposes of the S&EIR process for the Proposed Development, the following distinction can be made between the impacts:

1. **GENERAL IMPACTS:** Impacts which have been identified by the EAP. Examples of key issues identified by the EAP, which will be unpacked as general impacts include:

    - Waste management.
    - Noise management.
    - Air quality management.

2. **SPECIALIST IMPACTS:** Impacts which have been identified by the Specialists or impacts which have been identified by the EAP which require input from Specialists. Examples of key issues identified as requiring Specialist input, which will be unpacked as Specialist impacts include:

    - Ecological impacts on fauna, flora, and avifauna.
    - Agricultural soil potential.
    - Socio-economic impacts associated with the development.
    - Aquatic impacts.
    - Groundwater impacts.
    - Landscape and visual impacts including glint and glare.
    - Culture and heritage.

The impacts identified below will require further investigation either by the EAP or by a qualified Specialist. It is likely that additional impacts will be added or that some may become redundant, based on the results of the site assessments of the EAP and of each Specialist during the EIR phase. Mitigation measures at a high level have been considered below, however specific recommendations and mitigation measures will also be stipulated once full Specialist Studies and impact assessments have been completed. The proposed method of investigation to be employed during the EIR phase has been provided.

Table 18: Preliminary Impacts and Mitigation Measures

Environmental Aspect	Preliminary Impacts	Project Phase	Mitigation Measures	Proposed Method of Investigation
Biodiversity (Fauna and Flora)	A Terrestrial Biodiversity SSV has been undertaken during the Scoping phase. Preliminary impacts as identified by the EAP have been listed below: • Flora and faunal habitat loss and fragmentation due to the Proposed Development requiring large areas of land. Potential loss of the natural thornveld vegetation. • Impacts on broadscale ecological processes. • Soil erosion, compaction, and disturbance to vegetation, particularly if heavy machinery is used. • Proliferation of alien plant invasion though soil disturbance. • Impacts on wildlife, particularly in sensitive habitats and/ or breeding areas such as noise, and vibration. • Shading of areas from placement of solar panels which may affect the growth of vegetation underneath. • Injury and/ or death to fauna due to collisions and/ or vegetation clearance and excavations.	Construction, operational, and decommissioning phases.	• Search and rescue of any recorded plant SCC and/ or RDL prior to any topsoil or vegetation removal. • On-going alien vegetation management throughout the Project Area. • Implementation of dust suppression measures. • Construction camps, roads, buildings and infrastructure, and stockpiles etc. must avoid sensitive areas. • Waste management practices are to be adhered and monitored on site. • Strict speed limits must be adhered to by the construction personal/ visitors on site. • Areas outside the development footprint should be regarded 'no-go' areas to minimise vegetation removal and habitat destruction. • Vehicle movement must be restricted to existing roads and tracks within the development area.	A Terrestrial Ecological Assessment which includes faunal and floral components will be undertaken by a qualified Specialist during the EIR phase to investigate the identified preliminary impacts and define specific mitigation measures.

Environmental Aspect	Preliminary Impacts	Project Phase	Mitigation Measures	Proposed Method of Investigation
	• Highly reflective panels creating glare, thereby visually distracting or causing harm to nearby wildlife. • General increase in anthropogenic impacts due to an increase in people into the area.			
Biodiversity (Avifauna)	A Preliminary Avifaunal SSV (Phase 1) has been undertaken during the Scoping phase. This provided an overview of the ecological context, potential impacts and red flags to development, identified alternatives, and determined the appropriate assessment regime. Preliminary impacts as identified by the Specialist have been listed below: • Loss of vegetation and avifaunal habitat through the clearing of vegetation for installation of solar panels, roads, and buildings that will have an effect on the disturbed thornveld, terrestrial savanna species, large-bodied, ground-dwelling gamebirds, and raptors. • Collision of avifauna such as gamebirds, waterfowl and raptors with reflective surfaces of solar panels leading to injury or death as birds perceive large panel arrays for waterbodies, otherwise known as the 'lake effect'.	Construction, operational, and decommissioning phases.	The Specialist provided the recommendations below to inform the placement and design of the proposed infrastructure. These recommendations have already been considered in the current buildable area layout where infrastructure will be placed beyond the areas of very high sensitivity and buffers identified. • A suitable buffer for the Leeuwkopje Private Nature Reserve should be applied with no infrastructure being placed within a certain distance of the border of the Project Area. As no information regarding a buffer zone or a management plan for the reserve is available, this will need to be discussed with the Conservation Authorities. The Species Environmental Assessment Guidelines (SANBI, 2020) recommend that for developments that produce low intensity disturbance, such as renewable energy projects (other than wind turbines and concentrated solar	A detailed Avifaunal Impact Assessment will be undertaken during the EIR phase by a qualified Specialist which will include sampling conducted over two seasons (phase 1 and 2) with one undertaken during the peak (summer) season. This will also provide a baseline against which post-construction monitoring can be compared.

Environmental Aspect	Preliminary Impacts	Project Phase	Mitigation Measures	Proposed Method of Investigation
	• Contamination of the environment through the use of hazardous materials from cleaning of solar panels. • Disturbance and displacement of resident bird species, specifically small terrestrial species, through the clearing of the Project Area and construction activities. • Habitat destruction and fragmentation as infrastructure may create barriers to bird movement and disrupt migration patterns. • Noise during construction and utilising associated infrastructural equipment during operation. • Attraction of novel species through the creation of artificial nest sites and shade.		towers), a minimum buffer of 200 m should be applied for species such as breeding raptors within formally proclaimed conservation areas. • All natural and intact thornveld, as well as drainage lines, wetlands, and dams must be avoided, including the buffer recommended by the aquatic and/or wetland specialist i.e. 10 m • A preliminary buffer of 1 km has been recommended for the active Wahlberg's Eagle nest. This buffer needs to be discussed with BirdLife SA and may be revised. • Cultivated fields and surrounding fallow areas in the greater study area are situated on a non-perennial drainage or seep that is a tributary of the Brakspruit River further to the west of the Project Area, and therefore have dark clay-rich soils and provide suitable foraging and potential nesting habitat for Yellow-throated Sandgrouse, which is the trigger species for the Northern Turf Thornveld IBA. These fields fall within the landowner's exclusion zone and will therefore be avoided by the Proposed Development. However, the fields and surrounding fallow areas will	

Environmental Aspect	Preliminary Impacts	Project Phase	Mitigation Measures	Proposed Method of Investigation
			need further monitoring to assess usage of the area by the species. • The more disturbed areas such as cultivated and fallow fields, and disturbed thornveld appear to be the most suitable areas for placement of the Proposed Development.	
Aquatic	An Aquatic SSV has been undertaken during the Scoping phase. Preliminary impacts as identified by the Specialist have been listed below: • Disturbance and possibly loss of aquatic habitat within the wetland with the associated impact on sensitive aquatic biota. • Disturbance and possibly loss of aquatic habitat within the wetland with the associated impact on sensitive aquatic biota. • Demand for water for construction could place stress on the existing available water resources. • Road crossing structures, if not adequately designed, could impede flow in the wetland. • Alien vegetation infestation within the aquatic feature due to disturbance. • Increased sedimentation due to erosion and risks of contamination of surface	Construction, operational, and decommissioning phases.	The Specialist has noted that by implementing suitable buffers (10m) adjacent to the wetland and minimising the disturbance within the wetland, the impact of the Proposed Development would be low and unlikely to impact the integrity of the aquatic ecosystems. The recommended buffers are deemed adequate, irrespective of the proposed infrastructure. It is therefore unlikely that any potential aquatic ecosystem impacts associated with the Proposed Development will occur. The following measures are recommended: • Site management measures such as fire breaks and access roads could potentially be placed within the buffer area but not in any of the proposed facilities. • The wetland should be allowed to return to a more natural state as part of the proposed development of the site, rather than the regular cultivation of this area.	An Aquatic Compliance Statement which will include wetland delineation will be undertaken during the EIR phase by a qualified Specialist.

Environmental Aspect	Preliminary Impacts	Project Phase	Mitigation Measures	Proposed Method of Investigation
	water runoff due to usage/ presence of hazardous substances. • Ongoing disturbance of aquatic features and associated vegetation along access roads or adjacent to the infrastructure that needs to be maintained. • Modified runoff characteristics from hardened surfaces that have the potential to result in erosion or sedimentation of the wetland • Possible increase in water consumption and potential for water quality impacts such as contamination from sewage generated on-site. • Modified runoff characteristics from hardened surfaces that have the potential to result in erosion or sedimentation of the wetland.		• Implementation of a 10 m adjacent to the wetland area. The proposed layout and technology alternatives are all within low sensitivity areas and thus will have very similar impacts such that there is no preferred alternative from an aquatic ecosystem point of view.	
Groundwater	A Geohydrological investigation from a desktop level has been undertaken during the Scoping phase. Preliminary impacts as identified by the EAP have been listed below: • Accidental spillage or leaks of hazardous substances contained in solar PV panels such as cadmium, lead, and mercury during installation or maintenance, or spillage of hydrocarbons utilised on site during construction that may lead to	Construction, operational, and decommissioning phases.	• The construction and the operation of the Proposed Development must be undertaken following the best practice to avoid pollution of the aquifer of the area. • Oil and hydrocarbon spillages need to be actively managed on site, by undertaking routine inspections and service of the construction vehicles, placing eco mats underneath leaking vehicles to absorb any spillages and by removing soil containing spillages for disposal as a hazardous	A Geohydrological Impact Assessment will be undertaken during the EIR phase by a qualified Specialist to investigate in detail the identified preliminary impacts and define specific mitigation measures.

Environmental Aspect	Preliminary Impacts	Project Phase	Mitigation Measures	Proposed Method of Investigation
	contamination of productive aquifers and subsequently pose a threat to human health. • Excavation and soil disturbance during construction could affect groundwater quality by increasing the risk of pollutants such as sediment, nutrients, and salts leaching into the water table. • Alteration of the hydrological regime and reduction in groundwater recharge impacting on the sustainability of groundwater resources.		waste. Drip trays must be put underneath stationary vehicles to avoid soil contamination. The Specialist has noted that the Proposed Development may not have a considerable impact of the geohydrological conditions of the area. If the contaminant release in the Project Area during construction and operation of the project is controlled to a minimum, the sensitivity of the site from a geohydrological perspective to the Proposed Development is limited.	
Landscape and Visual	A baseline landscape and visual investigation has been undertaken during the Scoping phase. Preliminary impacts as identified by the Specialist have been listed below: • Potential change to landscape – ○ General degradation of the local landscape through increase in industry and loss of natural landscape. • Potential visual impacts as experienced by travellers on main roads in close proximity to the Project Area – ○ Degradation of views from the R510 in proximity to the Project Area. ○ Loss of views of the natural landscape.	Construction and operational phases.	• Locate access routes and construction camps so as to limit modification to the topography and to avoid the removal of established vegetation. • Utilise existing screening features such as dense vegetation stands or topographical features to place the construction camps and lay-down yards out of the view of sensitive visual receptors. • Screen the construction camp and lay-down yards by enclosing the area with a dark green or black shade cloth of no less than 2 m in height. • Risk may be reduced further through ensuring that development is kept off the ridgeline.	A detailed Landscape and Visual Impact Assessment which will include glint and glare will be undertaken during the EIR phase by a qualified Specialist and preliminary impacts will be further investigated.

Environmental Aspect	Preliminary Impacts	Project Phase	Mitigation Measures	Proposed Method of Investigation

	• Potential visual impacts as experienced by travellers on local roads in close proximity to the Project Area –
	  ○ Degradation of the local landscape as viewed from adjacent local roads.
	  ○ Industrialisation of views from local roads.
	• Potential visual impacts as experienced by residents and visitors to homesteads and lodges –
	  ○ Degradation of the local landscape as viewed from homesteads.
	  ○ Industrialisation of views from homesteads.
	• Potential visual impacts as experienced by residents and visitors to PA's –
	  ○ Degradation of views from the Private Nature Reserves in the area;
	  ○ Possible reflection from solar panels.
	• Glare affecting drivers south bound on the R510 during late afternoons causing a nuisance and is a potential road safety issue.
	• Lighting required for security, maintenance and safety/ convenience of workers resulting in light pollution thereby affecting adjacent roads and homesteads.
			• Risk of reflection may be reduced through the use of a tracking system and an anti-glare coating on panel faces.
			• Maintaining a buffer of natural vegetation along the eastern boundary of the Project Area to provide possible screening.
			• The Leeuwkopje Private Nature Reserve has a substantial amount of natural vegetation which should provide substantial screening from within the reserve. There is also a substantial amount of regenerating thornveld between the reserve and the Project Area. It is recommended that a buffer of this vegetation, a minimum 50m wide, is retained and taller elements associated with the Proposed Development are set back a minimum 50 m from the Project Area edge.
			• It is possible to mitigate lighting impacts to a large degree through design, the use of motion sensors for security lighting and ensuring that lighting is only used in areas where workers are located/ working.
			• Most homesteads and roads are in excess of 500 m from the Proposed Development. With careful design to minimise light spill, this should be a sufficient distance to ensure that nuisance impacts are minimal.	

Environmental Aspect	Preliminary Impacts	Project Phase	Mitigation Measures	Proposed Method of Investigation
			• The closest homestead is approximately 670 m to the south of the proposed site. It does not appear that this homestead is used for tourist accommodation. The area between the homestead and the Project Area has isolated mature trees. Over the distance involved, these trees will provide a significant cumulative screening effect.	
Noise	The Proposed Development may generate noise, which can impact the surrounding environment and nearby communities. Preliminary impacts as identified by the EAP have been listed below: • Installation of the facility involves heavy machinery and construction vehicles thus generating high levels of noise and subsequently disrupting nearby communities and/ or wildlife habitats. • Inverters and transformers producing low-frequency noise can potentially affect the quality of life of nearby residents and wildlife.	Construction, operational, and decommissioning phases.	• Stationary noisy equipment should be encapsulated in acoustic covers, screens or sheds. • Noise levels should be in accordance with relevant legislation. • Vehicles should not be allowed to idle for long periods when not in use. • Rigorous speed control to reduce the noise from vehicle traffic onsite must be implemented. It is recommended maximum speed of 30 km/h to be set on all construction roads.	No significant noise impacts are envisaged. As such, no Specialist Study will be undertaken. A general assessment of impacts based on available information through other studies conducted in the area will be undertaken by the EAP.
Air Quality	Preliminary impacts as identified by the EAP have been listed below: • Generation of dust, particulate matter, and other air pollutants resulting from excavation, earthworks, and	Construction, operational, and decommissioning phases.	• Rigorous speed control to reduce the dust emission from vehicle traffic onsite must be implemented. It is recommended maximum speed of 30 km/h to be set on all construction roads.	No significant impacts are anticipated with regards to air emissions from the Proposed Development. As

Environmental Aspect	Preliminary Impacts	Project Phase	Mitigation Measures	Proposed Method of Investigation
	transportation of materials and equipment to and from the Project Area. • Emissions generated from the operation of the facilities through the use of backup generators, inverters, and other equipment. • Conversion of agricultural land into industrial use leading to reduced air quality by altering the natural balance of ecosystems and increasing the risk of soil erosion.		• Dust suppression measures should be employed.	such, no Specialist Study will be undertaken. A general assessment of impacts based on available information through other studies conducted in the area will be undertaken by the EAP.
Traffic	Preliminary impacts as identified by the EAP have been listed below: • Increased traffic volume on local and main roads due to the transportation of staff, materials and equipment to the Project Area leading to congestion and delays for commuters and residents in the area. • Noise and dust pollution associated with potential traffic. • Increased presence of construction vehicles and heavy equipment on local and main roads can pose safety concerns for motorists, pedestrians, and cyclists. The movement of oversized loads and construction equipment may require temporary road closures or traffic diversions.	Construction, operational, and decommissioning phases.	• The delivery of components to the site can be staggered and trips can be scheduled to occur outside of peak traffic periods. • Dust suppression of gravel roads located within and in close proximity to the Project Area during the construction phase. • Regular maintenance of gravel roads located within the Project Area boundary, including access roads. • The use of mobile batch plants and quarries near the Proposed Development would decrease the traffic impact on the surrounding road network, if available and feasible. • Staff and general trips should occur outside of peak traffic periods as far as possible.	A detailed Transport Impact Assessment will be undertaken during the EIR phase by a qualified Specialist to investigate the identified preliminary impacts and will provide more details regarding the capacity of the existing road network to accommodate increased traffic.

Environmental Aspect	Preliminary Impacts	Project Phase	Mitigation Measures	Proposed Method of Investigation
	• Damage to local roads and highways due to transportation of heavy equipment.		• The contractor is to ensure that all drivers entering the Project Area adhere to the traffic laws. • Vehicular movements within the Project Area is the responsibility of the respective contractor and the contractor must ensure that all construction road traffic signs and road markings (where applicable) are in place. • If required, low hanging overhead lines (lower than 5.1m) e.g., Eskom and Telkom lines, along the proposed routes will have to be moved to accommodate the abnormal load vehicles, if any. • The haulage company is to provide evidence to the contractor and the developer that any affected overhead lines have been moved or raised. • The preferred route should be surveyed by the developer to identify problem areas (e.g., intersections with limited turning radii and sections of the road with sharp horizontal curves or steep gradients, which may require modification). After the road modifications have been implemented, it is recommended to undertake a 'dry-run' with the largest abnormal load vehicle, prior to the transportation of any components, to	

Environmental Aspect	Preliminary Impacts	Project Phase	Mitigation Measures	Proposed Method of Investigation
			ensure that delivery will occur without disruptions. • The contractor needs to ensure that the gravel sections of the haulage routes remain in good condition and will need to be maintained during the additional loading of the construction phase and reinstated after construction is completed. • The internal gravel roads will require grading with a grader to obtain a camber of between 3% and 4% (to facilitate drainage) and regular maintenance blading will also be required. The geometric design of these gravel roads needs to be confirmed at detailed design stage.	
Cultural and Heritage	A heritage investigation from a desktop level has been undertaken during the Scoping phase. Preliminary impacts as identified by the EAP have been listed below: • Disturbance or destruction to traditional cultural landscapes resulting in the loss of cultural heritage and historical information. • Impact the landscape and scenic values of the area affecting the aesthetic and cultural values of an area, including the	Construction, operational, and decommissioning phases.	• Archaeological deposits usually occur below ground level. Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and a university or museum notified in order for an investigation and evaluation of the find(s) to take place. • Under no circumstances may any archaeological, historical or any physical cultural property heritage material be destroyed or removed form site.	A Phase 1 Heritage Impact Assessment will be undertaken during the EIR phase by a suitable Specialist to investigate the identified preliminary impacts and define specific mitigation measures.

Environmental Aspect	Preliminary Impacts	Project Phase	Mitigation Measures	Proposed Method of Investigation
	enjoyment of the natural environment by local communities and tourists.		• A Chance Finds Procedure is to be defined and implemented should heritage artefacts be encountered.	
Waste Generation	Preliminary impacts as identified by the EAP have been listed below: • Inadequate handling and disposal of waste (general and hazardous) such as contaminated soil, oil cans, oily rags concrete, and packaging materials generated during construction may affect local biodiversity. • At the end of life, solar PV panels and BESS will need to be disposed of or recycled, which can potentially generate waste and require appropriate management.	Construction, operational, and decommissioning phases.	• Waste management practices are to be implemented on site and the waste management hierarchy followed as far as practically possible. • All waste generated is to be disposed at registered waste facilities.	Investigation of waste impacts will involve a general assessment based on available information provided in various Specialist Studies as well as through the knowledge of the EAP. Requirements will be aligned to the relevant legislation.
Socio-Economic	There is a potential for socio-economic impacts to affect surrounding communities, both positively and negatively. Preliminary impacts as identified by the Specialist have been listed below: • Temporary stimulation of the provincial economy and growth in the regional Gross Value Added. • Job creation in areas such as engineering, installation, maintenance, and	Construction, operational, and decommissioning phases.	• The construction process may involve the procurement of various goods and services, such as construction materials, equipment, and supplies. Local businesses and suppliers could benefit from these procurement needs, stimulating economic activity and fostering local entrepreneurship. • Employment opportunities and criteria should be communicated to the community before being advertised outside the municipal area.	A detailed Socio-Economic Impact Assessment will be undertaken during the EIR phase by a qualified Specialist to investigate the identified preliminary impacts and define specific mitigation measures.

Environmental Aspect	Preliminary Impacts	Project Phase	Mitigation Measures	Proposed Method of Investigation
	management, which can contribute to local economic development. • The Proposed Development can bring economic benefits to the local community, such as increased tax revenue and business opportunities for local suppliers and contractors. • Negative temporary change to the sense of place during construction. This can be attributed to the increased presence of people and the general construction activities taking place. • Temporary increase in crime and social conflicts associated with influx (or removal) of people. • Potential impact on the environment during construction. The construction phase poses potential risks such as clearance of vegetation which may disrupt ecosystems and wildlife habitats, and loss of grazing and cultivated lands. • Disruption to communities through noise, traffic, and visual impacts, which can affect quality of life.		• Individuals who reside within the borders of the municipality must be prioritised where possible with regards to being employed during both the construction and operation phases. • Complaints and concerns raised by surrounding communities must be addressed promptly, and feedback must be given to complainants. • Environmental impacts are expected to be confined to the Project Area, highlighting the need to minimise their potential consequences.	

7.2 CUMULATIVE IMPACTS

Cumulative impacts are regarded as the incremental and combined effects of human activity which pose a significant threat to the environment. Cumulative impacts can emanate from one or more activities or stressors on a particular environment over time. Assessing cumulative impacts requires considering both the direct and indirect effects, as well as the interactions and interdependencies between different factors. These effects/impacts result from the interaction and accumulation of various individual impacts, which can have additive, antagonistic, compounding, or synergistic effects.

A cumulative impact may result in an additive impact (i.e., where the effects of certain actions sum up to the overall impact/consequence which is caused by other alike impacts over time). Simply put, an additive impact is whereby the total cumulative impact is equal to the sum of the individual impacts. On the other hand, an interactive impact is where a cumulative impact is produced by the combined effects of different impacts that form a new type of impact. Interactive impacts may have an antagonistic effect (i.e., the overall negative cumulative impact is less than the sum of the individual impacts) or a compounding/synergistic effect (i.e., the overall negative cumulative impact is greater than the sum of the individual impacts). Whilst both compounding impacts and synergistic effects incorporate combining multiple factors or actions to produce a greater effect, they are different. For instance, compounding impacts emphasise on the cumulative amplification of the overall impact considering the combined effect of several factors/action, while synergistic effects focus on the enhanced outcome resulting from the interaction of two or more elements.

Assessing and mitigating interactive cumulative impacts typically involves comprehensive planning, impact assessments, stakeholder engagement, and adaptive management strategies. The goal is to identify and minimise negative cumulative impacts while maximising positive ones, promoting sustainable development and long-term well-being. By considering cumulative impacts, policymakers, planners, and stakeholders can make more informed decisions and take proactive measures to mitigate or manage the combined effects of various activities or changes.

Assessing cumulative impacts on a study area is complex considering the interactions and interdependencies between different factors, in addition to the consideration of multiple impacts that occur on a much larger and extensive scale than the Project Area being assessed and evaluated. Often it is challenging to ascertain the precise point whereby the combined effect of several small individual impacts become an unfavourable or unexpected cumulative impact that should be avoided or mitigated. On numerous occasions, there are individual factors that are unpredictable when potential cumulative impacts are identified.

Potential cumulative impacts will also be identified and assessed by considering the combined effects of gradual changes or impacts caused by other activities from other neighbouring developments in conjunction with the Proposed Development (as illustrated in **Figure 13** below). More specifically, when observed as a whole, multiple developments with insignificant/low individual impacts may create a greater cumulative negative impact on the environment.

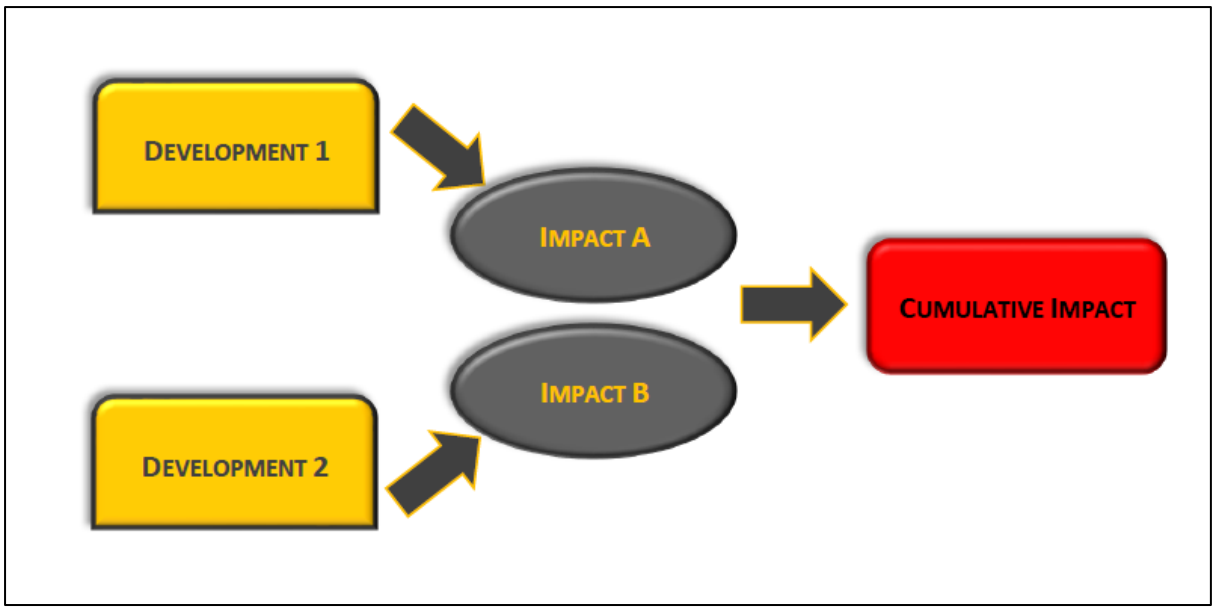

Figure 13: Illustration of Cumulative Impacts

The indicated degree of confidence (i.e., low, medium, or high) in the predictions made for each impact, is determined and reported according to the available information, as well as the Specialists' or EAP's level of knowledge and expertise. It should be noted that the degree of confidence will not be taken into consideration whilst determining the consequence or probability.

Therefore, the assessment for the Proposed Development will originally be undertaken for the circumstance where no mitigation measures are implemented. Appropriate mitigation measures will then be identified and considered for each impact and the assessment repeated in order to determine the significance of the residual impacts (i.e., the impact remaining after the mitigation measure has been implemented). The outcome of the assessment of the significance of the identified residual impacts will then supplement decision-making by authorities.

It is important to note that there are five (5) additional developers within 30 km of the Project Area who are proposing similar facilities. As a result, the cumulative impact of all facilities on the receiving environment would be a key part of the EIR investigations. Please refer to **Table 19** below and to the map in **Figure 14.**

Table 19: Solar Developments with an Approved Environmental Authorisation within 30 km of the Proposed Development

No	EIA Reference No	Classification	Status of application	Capacity (MW)	Distance from proposed area (km)
1	12/12/20/2526/AM2	Solar PV	Approved	30	6.4
2	12/12/20/2129	Solar PV	Approved	40	6.7
3	14/12/16/3/1/969	Solar PV	Approved	10	19.6
4	14/12/16/3/3/1/969	Solar PV	Approved	10	19.6
5	12/12/20/2129/AM4	Solar PV	Approved	Not available	6.7

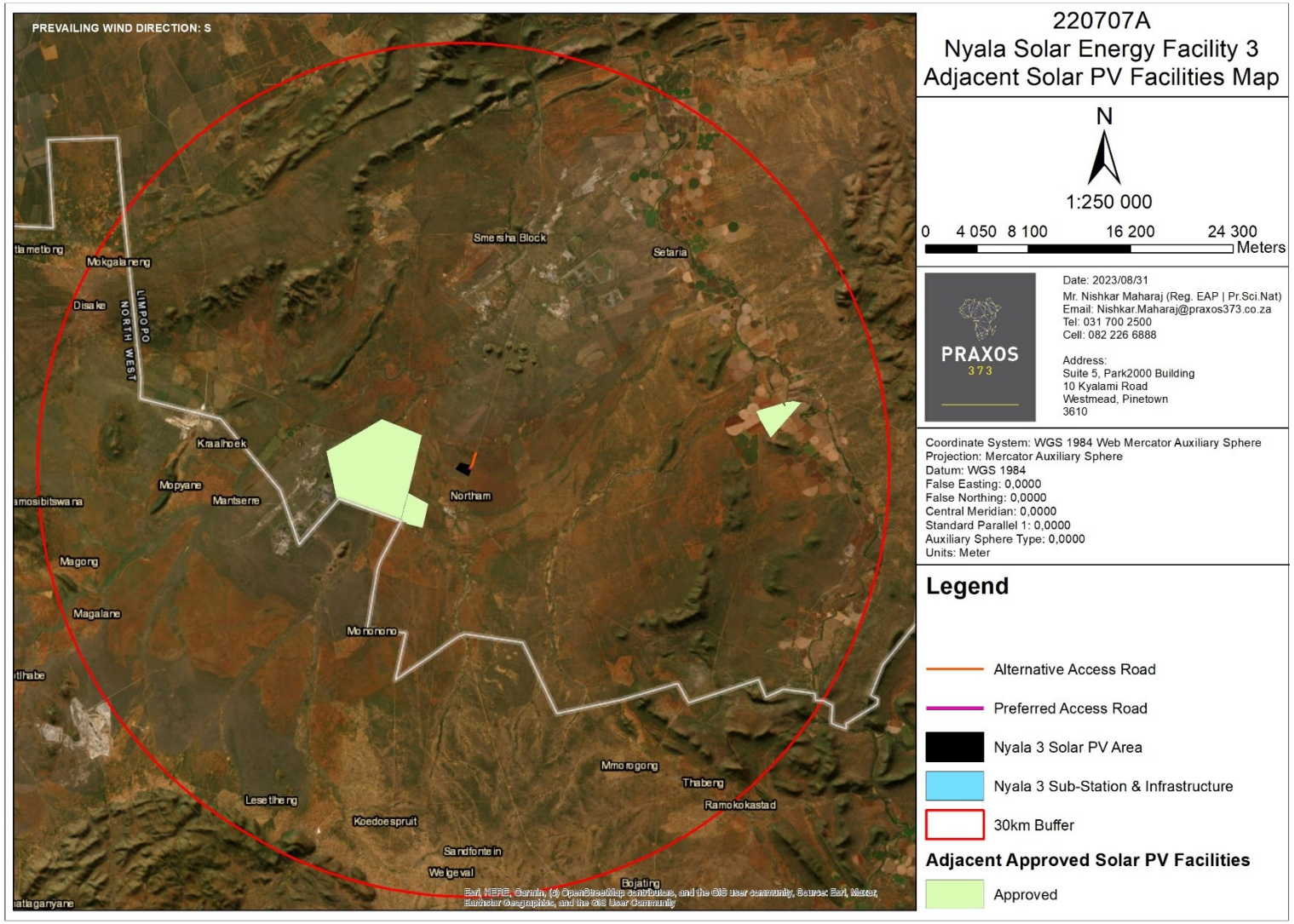

Figure 14: Approved Solar Facilities within 30 km of the Project Area (Source: Praxos 373, 2023)

7.2.1 KEY IMPACTS IDENTIFIED THAT COULD RESULT IN CUMULATIVE IMPACTS

The following cumulative impacts have been identified by the EAP during the Scoping phase which will require further investigation during the EIR phase by the relevant Specialists.

Table 20: Potential Cumulative Impacts

Environmental Aspect	Potential Cumulative Impact	Detailed Description
Terrestrial Biodiversity (Fauna and Flora)	Loss and fragmentation of faunal and floral habitats leading to ecological imbalances and impacts on ecosystem services.	The construction of three known solar PV projects in addition to the Nyala cluster within 30 km of each other and associated infrastructure, such as access roads, transmission lines, and substations, can fragment habitats and disrupt wildlife corridors. This can limit the ability of wildlife to move between different areas, which can have negative impacts on breeding, feeding, and other important life functions.
Terrestrial Biodiversity (Avifauna)	- Increased human disturbance and gradual environmental degradation adding to cumulative pressures in the landscape caused by other approved or proposed renewable energy projects. - Solar panels can reflect light, creating a glare that can disorient birds and other animals during migration.	This impact is exacerbated with several farms within a 30 km radius of each other.
Aquatic Ecosystems	- Loss of open space and hardening of catchment areas for the construction of buildings, PV arrays and roads. - The development of road crossings can cause fragmentation of inland aquatic ecosystems by impeding or obstructing the natural flow of water down to rivers and wetlands, which alters the hydrology and can lead to changes in these ecosystems. - Increase in demand for water in areas where water may be limited.	Solar PV projects require water for their operation, primarily for cleaning and maintenance of solar panels. The water use can be significant, particularly for larger solar PV projects. In areas where water is already limited, the water use of solar PV projects can further strain water resources and impact local water availability. Additionally, the conversion of agricultural or natural land to industrial land use for solar PV projects can affect the natural water cycle in the region. This is because the vegetation and soil in natural and agricultural land act as natural water filters and regulators, which can help retain water in the ground and replenish aquifers. The conversion of land to industrial use for solar PV projects can alter the natural water cycle and reduce

Environmental Aspect	Potential Cumulative Impact	Detailed Description
		water infiltration and recharge, which can impact local water availability. Multiple solar projects in a 30 km radius exacerbates these impacts.
Visual	- Visual impacts on the landscape and scenic views, affecting the aesthetic and cultural values of the surrounding area.	The construction of multiple solar PV projects within a 30 km radius can result in significant land use changes, including the conversion of agricultural or natural land to industrial land use. This can impact the availability of land for other uses such as conservation. Multiple solar PV projects in close proximity can have a cumulative visual impact on the landscape, altering the natural aesthetics of the area. This can impact the scenic value of the area and potentially reduce property values.
Dust	- Dust generated from construction activities.	During the construction of a solar PV facility, dust can be generated from grading, excavation, digging foundations, and transporting materials. If multiple solar PV facilities are simultaneously under construction within a 30 km radius, the cumulative impact of dust generated from construction activities can potentially become a concern.
Traffic	- Increased traffic on local roads during the construction phase potentially leading to congestion, road safety issues, and road degradation.	There may be an increase in traffic due to the transportation of materials, equipment, and workers to and from the construction site. This impact is exacerbated with the development of several solar farms within a 30 km radius.

In addition to the above, the EAP has also identified all the solar developments with an approved EA within 30 km of the proposed Project Area. Please refer to **Table 19** above. The cumulative impacts of these facilities and their associated electrical infrastructure such as overhead lines will be assessed with the Proposed Development to determine the cumulative environmental Impact.

7.3 No-Go Impacts

If the Proposed Development is not approved, all of the preliminary impacts (positive or negative) identified in the preceding section during the construction, operational and decommissioning phases will not occur. It is worth noting that this includes the socio-economic benefits associated with the Proposed Development, which are the main positive impacts, and which will not be realised if the project is not approved.

These include the following:

- Since solar energy is a clean and renewable source of energy, it can help to reduce South Africa's dependence on fossil fuels and decrease GHG emissions, thus contributing to the country's efforts to mitigate climate change.
- Solar PV facilities can provide electricity to areas that are not connected to the national grid, thereby increasing access to electricity and improving the quality of life for people living in those areas especially with recurrent loadshedding taking place.
- Development results in employment opportunities during the construction, operation and maintenance of the facility thereby having a positive impact on local economies and communities.
- Attraction of investment and stimulation of economic growth in the renewable energy sector, which can contribute to the country's overall economic development.

The impacts associated with the no-go alternative will be assessed in more detail during the EIR phase and its feasibility compared to the development alternatives.

8. SCOPING PHASE: PUBLIC PARTICIPATION PROCESS

Public consultation is a legal requirement conducted throughout the S&EIR process. The DSR documents the PPP tasks that will be undertaken as part of the Scoping Phase. The DSR and associated documents were made available for public review and comment. The method of public consultation to be used depends largely on the location of the development and the level of education of those being impacted on by the project. Additionally, the PPP for the Proposed Development will continue to be undertaken in accordance with the requirements stipulated in Chapter 6 of the EIA Regulations and Appendix 2 for Scoping Reports.

Required means of public consultation included:

- Site notices were erected at strategic locations around the Project Area.
- Public Notification Advertisements published in English and Setswana in the local newspaper (Platinum Bushvelder).
- Emails providing notification and background information will be sent to affected landowner(s), stakeholders and registered I&APs.
- On-going authority and stakeholder engagement (DFFE, DWS, SAHRA, etc.) throughout the Scoping process.

The PPP undertaken thus far as part of the Scoping Phase are outlined in the following sub-sections.

8.1 NEWSPAPER ADVERTISEMENT

Newspaper adverts in English and Setswana were published in the Platinum Bushvelder on **Friday, 15 September 2023.** Please see **Appendix C2**.

8.2 ONSITE NOTICES

A total of eight (8) onsite notice boards (4 x in English and 4 x in Setswana) were erected at the Site Entrance and at key intersections near the Project Area on **Tuesday, 12 September 2023**. Please see **Appendix C4**.

8.3 INTERESTED AND AFFECTED PARTIES (I&APS) IDENTIFICATION AND NOTIFICATION

An initial I&AP database has been compiled by the EAP. Stakeholders which are likely to be affected by the Proposed Development have been included in the initial I&AP Database. I&APs include relevant organisations and State Departments, landowners, and adjacent landowners/occupiers (as required by the EIA Regulations) as well as parties identified based on their potential interest in the project. In addition, individuals who contact Praxos for information on the Proposed Development, due to notification by means of the onsite signage, the advertisement or word-of-mouth, etc. will be registered on the I&AP Database. The I&AP database is considered a live document and names will be added and/removed based on the consultation process (please see **Appendix C1**).

The potential and legislated I&APs were provided with a notification letter of introduction to the project via email on **Tuesday, 12 September 2023**. These documents included the contact details of the EAP and a summary of background information on the Proposed Development.

All I&APs have been invited to comment on the DSR through written notification via e-mail . Notification letters have been added to **Appendix C3** of the DSR.

Please note that due to the Protection of Personal Information Act (Act No. 4 of 2013), only farm names and stakeholder names are visible on the I&AP database presented in **Appendix C1**. No personal information will be shared but the complete database inclusive of contact information will be submitted to the DFFE along with the DSR.

8.4 Public Review and Submission of Reports

8.4.1 Release of the Draft Scoping Report for Authority, Stakeholder and Public review.

All I&APs included in the Register of I&APs, have been notified in writing of the availability of the DSR for public review. The notification letter provides details of the 30-day public comment period (currently underway), the venues and websites where the report could be viewed, the contact details of the PPP consultant (Praxos) and how written comments on the DSR should be submitted (as outlined below).

The DSR is available for public review from **Wednesday, 13 September 2023** to **Monday, 16 October 2023** (30 days, inclusive of public holidays).

- Hard copies of the DSR made available at:
  (a) South African Police Station (*SAPS*), 6 Venter, Northam, Limpopo, 0360.
- Soft copies are available on the following dropbox link below:
- https://www.dropbox.com/sh/6ewammrfvjbcv4s/AAAXRkoEDyKDsOC1bumzhV-Fa?dl=0
- Options for a USB copy are available upon request through contacting Richard Myburgh at the Public Participation Office at publicparticipation@praxos373.co.za or 011 453 8727.

8.4.2 Submission of the Final Scoping Report

The FSR will be compiled in accordance with the comments received during the public review of the DSR and will include a CRR. The CRR will be a live and continuously updated report which details all comments received and the responses there to.

9. PLAN OF STUDY: ENVIRONMENTAL IMPACT ASSESSMENT PHASE

The EIR phase is the second phase of the environmental process, which is aimed at assessing the significance of the environmental impacts of the Proposed Development. The Scoping phase of the environmental process determined that more information on certain aspects of the development is required. As a follow up to the Scoping phase, a comprehensive EIR will be undertaken.

In accordance with the application procedure of the NEMA and the EIA Regulations, a number of potential environmental impacts (biophysical and social) were identified during the Scoping phase (as outlined in **Section 7** of this DSR). All potentially significant and cumulative impacts will be investigated and assessed within the EIR phase of the project by the EAP and through Specialist Studies. This PoS for the EIR outlines the procedure to be followed and methods to be employed in investigating and assessing all the issues identified in the Scoping phase.

The PoS for EIR is based on the findings and recommendations of the Scoping Report and the related process. Mitigation measures recommended in the EIR phase will also be included in the EMPr, which will form part of the EIR. The PoS is set out below describing the manner in which Praxos, as the appointed EAP, will undertake the EIR phase of the S&EIR process.

9.1 PURPOSE OF THE PLAN OF STUDY FOR THE EIR

The PoS for the EIR phase sets out the proposed approach. The following requirements of GNR No. 982 promulgated in terms of Section 24 of NEMA have been considered in compiling this PoS:

i) A description of the tasks that will be undertaken as part of the EIR phase, including any Specialist reports or specialised processes, and the manner in which such tasks will be undertaken.
ii) An indication of the stages at which the CA will be consulted.
iii) A description of the proposed method of assessing the environmental issues and alternatives, including the option of not proceeding with the activity.
iv) How comments and issues raised by the I&APs and key stakeholders during the Public Participation Process will be collected, processed and addressed in the Comments and Responses Report, which will form part of the Scoping report and EIR.
v) Particulars of the Public Participation Process that will be conducted during the EIR process.

The PoS for EIR thus aims to:

- Describe how the EIR phase of the project will be conducted.
- Describe alternatives to be considered.
- Describe aspects to be assessed as part of the EIR process.
- Provide an indication of the stages at which the CA will be consulted. Provide particulars of the Public Participation Process that will be conducted during the EIA process.
- Provide the Terms of Reference for Specialists Studies.
- Provide the impact assessment methodology to be used to rate impacts.
- Indicate deliverables of the EIR phase and the proposed timeframe.

9.2 DETAILED IMPACT ASSESSMENT PHASE

9.2.1 INTRODUCTION

The EIR phase will aim to adequately assess all potentially significant environmental impacts in order to provide the CA with sufficient information to make an informed decision regarding the Proposed Development.

Following the acceptance of the Scoping report by the CA, the detailed EIR phase of the S&EIR process will commence. This phase considers the potential impacts identified in terms of the Proposed Development, assesses them in terms of their significance and recommends mitigation measures where necessary.

The following aspects will be considered:

i) Potential impacts during the planning and design phase.
ii) Potential impacts during the construction phase.
iii) Potential impacts during the operational phase.
iv) Potential impacts during the decommissioning phase.
v) The potential cumulative impacts of the Proposed Development.

The purpose of the Impact Assessment phase of the S&EIR process is thus to:

i) Address issues that have been raised during the Scoping phase.
ii) Assess alternatives to the Proposed Development in a comprehensive and comparative manner.
iii) Assess all identified impacts and determine the significance of each impact.
iv) Formulate mitigation measures in order to minimise negative impacts and optimise the effects of positive impacts.

Numerous acceptable approaches and methodologies exist by which the above purpose can be achieved. The legislation in South Africa, including the guideline documents published in support thereof; do not provide a specific methodology for the assessment of impacts. Rather, an assessment framework is provided within which EAPs are expected to structure a project-specific assessment methodology. This assessment framework recognises that there are different methodologies available for assessing the impact of a development but that the specific methodology selected must provide for the following:

i) A clear process for impact identification, prediction and evaluation.
ii) The specification of impact identification techniques.
iii) Criteria for evaluating the significance of impacts.
iv) The design of mitigation measures to address impacts.
v) Defining types of impacts (direct, indirect or cumulative).
vi) Specification of uncertainties.

9.2.2 IMPACT ASSESSMENT METHODOLOGY

The objective of the assessment of impacts is to identify and assess all the significant impacts that may arise from the Proposed Development. The process of assessing the potential impacts of the project encompasses the following four activities:

i) Identification and assessment of potential impacts.
ii) Prediction of the nature, magnitude, extent and duration of potentially significant impacts.

iii) Identification of mitigation measures that could be implemented to reduce the severity or significance of the impacts of the activity.
iv) Evaluation of the significance of the impact after the mitigation measures have been implemented i.e. the significance of the residual impact.

The potential impacts associated with the Proposed Development are identified in the Scoping phase through stakeholder consultation, as well as through input from the authorities and the Specialist team. These impacts are derived from the concerns that are identified in relation to all phases of the development. During the detailed EIR phase of the S&EIR process, additional impacts will be identified through the various Specialist Studies to be undertaken and through the on-going consultation process with I&APs.

In accordance with GNR 982 of the EIA Regulations, Specialists will be required to assess the significance of potential impacts in terms of the following criteria:

i) Cumulative impacts.
ii) Nature of the impact.
iii) Extent of the impact.
iv) Probability of the impact occurring.
v) The degree to which the impact can be reversed.
vi) The degree to which the impact may cause irreplaceable loss of resources.
vii) The degree to which the impact can be mitigated.

Table 21 - **Table 23** provides a summary of the criteria which Praxos proposes to use, to assess the significance of the potential impacts identified. An explanation of these impact criteria is provided below.

Table 21: Proposed Criteria and Rating Scales to be used in the Assessment of the Potential Impacts

Criteria	Rating Scales	Notes
Nature	Positive	An evaluation of the effect of the impact related to the Proposed Development.
	Negative	
Duration	Temporary	The duration of the activity associated with the impact will last 0-6 months and as such is rated as Temporary.
	Short term	The duration of the activity associated with the impact will last 6-18 months and as such is rated as short term.
	Medium term	The duration of the activity associated with the impact will last 18 months-5 years and as such is rated as medium term.
	Long term	The duration of the activity associated with the impact will last more than 5 years and as such is rated as Long Term.
Extent	Footprint	The extent of the impact is rated as footprint as it only affects the area in which the Proposed Development will occur.
	Site	The extent of the impact is rated as site as it will affect only the development area.
	Local	The extent of the impact is rated as Local as it affects the development area and adjacent properties.

Criteria	Rating Scales	Notes
	Regional	The extent of the impact is rated as Regional as the effects of the impact extends beyond municipal boundaries.
	National	The extent of the impact is rated as National as the effects of the impact extends beyond more than 2 regional/ provincial boundaries.
	International	The extent of the impact is rated as International as the effect of the impact extends beyond country borders.
Potential for impact on irreplaceable resources	No	No irreplaceable resources will be impacted.
	Yes	Irreplaceable resources will be impacted.
Severity	High negative	The severity of the impact is rated as High negative when the natural, cultural or social functions and processes are altered to the extent that the natural process will temporarily or permanently cease; and valued, important, sensitive or vulnerable systems or communities are substantially affected.
	Moderate negative	The severity of the impact is rated as Moderate negative when the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way; and valued, important, sensitive or vulnerable systems or communities are negatively affected.
	Low negative	The severity of the impact is rated as Low negative when the impact affects the environment in such a way that natural, cultural and social functions and processes are minimally affected.
	Low positive	The severity of the impact is rated as Low positive when the impact affects the environment in such a way that natural, cultural and social functions and processes are minimally improved.
	Moderate positive	The severity of the impact is rated as Moderate positive when the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way; and valued, important, sensitive or vulnerable systems or communities are positively affected.
	High positive	The severity of the impact is rated as High positive when the natural, cultural or social functions and processes are altered to the extent that valued, important, sensitive or vulnerable systems or communities are substantially positively affected.
Consequence	Extremely detrimental	A combination of duration, extent and the potential for impact on irreplaceable resources multiplied by the likelihood.
	Highly detrimental	
	Moderately detrimental	
	Slightly detrimental	

Criteria	Rating Scales	Notes
	Negligible	
	Slightly beneficial	
	Moderately beneficial	
	Highly beneficial	
	Extremely beneficial	
Likelihood of the impact occurring	Unlikely	It is highly unlikely or less than 50% likely that an impact will occur.
	Likely	It is between 50% and 75% certain that the impact will occur.
	Definite	It is more than 75 % certain that the impact will occur or it is definite that the impact will occur.
Significance	Very high – negative	A function of Consequence and Likelihood.
	High – negative	
	Moderate – negative	
	Low – negative	
	Very low	
	Low – positive	
	Moderate – positive	
	High – positive	
	Very high – positive	

Table 22: Explanation of Assessment Criteria

Criteria	Explanation
Nature	This is an evaluation of the type of effect the construction, operation and management of the Proposed Development would have on the affected environment. This will determine if the impact change in the environment will be positive, negative or neutral.
Extent or Scale	This refers to the spatial scale at which the impact will occur. Extent of the impact is described as: footprint (affecting only the footprint of the development), site (limited to the site) and regional (limited to the immediate surroundings and closest towns to the site). Extent or scale refers to the actual physical footprint of the impact, not to the spatial significance. It is acknowledged that some impacts, even though they may be of small extent, are of very high importance, e.g., impacts on species of very restricted range. In order to avoid "double counting, Specialists have been requested to indicate spatial significance under "intensity" or "impact on irreplaceable resources" but not under "extent" as well.
Duration	The lifespan of the impact is indicated as temporary, short, medium and long term.

Criteria	Explanation
Severity	This is a relative evaluation within the context of all the activities and the other impacts within the framework of the project. Does the activity destroy the impacted environment, alter its functioning, or render it slightly altered.
Impact on irreplaceable resources	This refers to the potential for an environmental resource to be replaced, should it be impacted. A resource could possibly be replaced by natural processes (e.g., by natural colonisation from surrounding areas), through artificial means (e.g., by reseeding disturbed areas or replanting rescued species) or by providing a substitute resource, in certain cases. In natural systems, providing substitute resources is usually not possible, but in social systems substitutes are often possible (e.g., by constructing new social facilities for those that are lost). Should it not be possible to replace a resource, the resource is essentially irreplaceable e.g., red data species that are restricted to a particular site or habitat of very limited extent.
Consequence	The consequence of the potential impacts is a summation of above criteria, namely the extent, duration, intensity and impact on irreplaceable resources.
Probability of occurrence	The probability of the impact actually occurring based on professional experience of the Specialist with environments of a similar nature to the site and/or with similar projects. It is important to distinguish between probability of the impact occurring and probability that the activity causing a potential impact will occur. Probability is defined as the probability of the impact occurring, not as the probability of the activities that may result in the impact.
Significance	Impact significance is defined to be a combination of the consequence (as described below) and probability of the impact occurring. The relationship between consequence and probability highlights that the risk (or impact significance) must be evaluated in terms of the seriousness (consequence) of the impact, weighted by the probability of the impact actually occurring. In simple terms, if the consequence and probability of an impact is high, then the impact will have a high significance. The significance defines the level to which the impact will influence the Proposed Development and/or environment. It determines whether mitigation measures need to be identified and implemented and whether the impact is important for decision-making.
Degree of confidence in predictions	Specialists and the EIR team were required to provide an indication of the degree of confidence (low, medium or high) that there is in the predictions made for each impact, based on the available information and their level of knowledge and expertise. Degree of confidence is not taken into account in the determination of consequence or probability.
Mitigation measures	Mitigation measures are designed to reduce the consequence or probability of an impact, or to reduce both consequence and probability. The significance of impacts has been assessed both with mitigation and without mitigation.

Table 23: Impact assessment criteria and rating scales

Duration	Extent	Irreplaceable Resources	Severity	Consequence = (Duration + Extent + Irr R) x Severity		Likelihood	Significance		Confidence
1 Temporary	1 Footprint	1 Yes	-3 High – negative	-25 to -33	Extremely detrimental	1 Unlikely	-73 to -99	Very high – negative	Low
2 Short term	2 Site	0 No	-2 Moderate – negative	-19 to -24	Highly detrimental	2 Likely	-55 to -72	High – negative	Medium
3 Medium term	3 Local		-1 Low -negative	-13 to -18	Moderately detrimental	3 Definite	-37 to -54	Moderate – negative	High
4 Long term	4 Regional			-7 to -12	Slightly detrimental		-19 to -36	Low – negative	
	5 National		1 Low -positive	0 to -6	Negligible		0 to -18	Very low – negative	
	6 International		2 Moderate – positive						
			3 High – positive	0 to 6	Negligible		0 to 18	Very Low – positive	
				7 to 12	Slightly beneficial		19 to 36	Low – positive	
				13 to 18	Moderately beneficial		37 to 54	Moderate – positive	
				19 to 24	Highly beneficial		55 to 72	High – positive	
				25 to 33	Extremely beneficial		73 to 99	Very high – positive	

9.2.3 ASCRIBING SIGNIFICANCE FOR DECISION-MAKING

The best way of expressing the environmental costs/impacts and the inherent benefit implications for decision-making is to present them as risks. Risk is defined as the consequence (implication) of an event multiplied by the probability (likelihood)[12] of that event. Many risks are accepted or tolerated daily because even if the consequence of the event is serious, the likelihood that the event will occur is low. A practical example is the consequence of a lightning strike, while potentially deathly, the likelihood of such an event happening is very low. The risk is low because the likelihood of the consequence is low even if the consequence is potentially severe.

It is also necessary to distinguish between the event itself (as the cause) and the consequence. Again, using a lightning strike as an example, the consequence of concern in the event that lightning strikes is serious injury or death, but it does not necessarily follow that if a person is struck by lightning that the person will die.

Various contingencies are provided to minimise the likelihood of the consequence (serious injury or death) in the event of a lightning strike, such as proper grounding or insulation. In risk terms this means distinguishing between the inherent risk (the risk that a person will die if lighting strikes) and the residual risk (the risk that the person will die if struck by lightning but with the contingency of being insulated) i.e., the risk before and after mitigation.

9.2.4 CONSEQUENCE

The ascription of significance for decision-making becomes then relatively simple. It requires the consequences to be ranked and likelihood to be defined of that consequence. In **Table 23**, a scoring system for consequence ranking is shown. Two important features should be noted in this table, namely that the scoring doubles as the risk increases and that there is no equivalent 'high' score in respect of benefits as there is for the costs. This high negative score serves to give expression to the potential for a fatal flaw where a fatal flaw would be defined as an impact that cannot be mitigated effectively and where the associated risk is accordingly untenable. Stated differently, the high score on the costs, which is not matched on the benefits side, highlights that such a fatal flaw cannot be 'traded off' by a benefit and would render the Proposed Development to be unacceptable. **Table** 24 below explains the ranking of consequence.

Table 24: Ranking of Consequence

Environmental Cost	Inherent Risk
Human health - morbidity / mortality, loss of species.	High
Material reductions in faunal populations, loss of livelihoods, individual economic loss.	Moderate - high
Material reductions in environmental quality - air, soil, water. Loss of habitat, loss of heritage, amenity.	Moderate
Nuisance.	Moderate - low
Negative change - with no other consequences.	Low
Environmental Benefits	**Inherent Benefit**
Net improvement in human welfare.	Moderate - high

[12] Because 'probability' has a specific mathematical/empirical connotation the term 'likelihood' is preferred in a qualitative application and is accordingly the term used in this document.

Environmental Benefits	Inherent Benefit
Improved environmental quality - air, soil, water. Improved individual livelihoods.	Moderate
Economic Development.	Moderate - Low
Positive change - with no other consequences.	Low

9.2.5 LIKELIHOOD

Although the principle is one of probability, the term 'likelihood' is used to give expression to a qualitative rather than quantitative assessment, because the term 'probability' tends to denote a mathematical/empirical expression. A set of likelihood descriptors that can be used to characterise the likelihood of the costs and benefits occurring, is presented in **Table 25** below.

Table 25: Likelihood Categories and Definitions

Likelihood Descriptors	Definitions
Highly unlikely	The possibility of the consequence occurring is negligible.
Unlikely but possible	The possibility of the consequence occurring is low but cannot be discounted entirely.
Likely	The consequence may not occur but a balance of probability suggests it will.
Highly likely	The consequence may still not occur but it is most likely that it will.
Definite	The consequence will definitely occur.

It is very important to recognise that the likelihood question is asked twice. The first time the question is asked is the likelihood of the cause and the second as to the likelihood of the consequence. In the tables that follow the likelihood is presented of the cause, and then the likelihood of the consequence is presented. A high likelihood of a cause does not necessarily translate into a high likelihood of the consequence. As such the likelihood of the consequence is not a mathematical or statistical 'average' of the causes but rather a qualitative estimate.

9.2.6 RESIDUAL RISK

The residual risk is then determined by the consequence and the likelihood of that consequence. The residual risk categories are shown in **Table 26** where consequence scoring is shown in the rows and likelihood in the columns. The implications for decision-making of the different residual risk categories are shown in **Table 27**.

Table 26: Residual Risk Categories

		Residual risk				
Consequence	**High**	Moderate	High	High	Fatally flawed	
	Moderate – high	Low	Moderate	High	High	High
	Moderate	Low	Moderate	Moderate	Moderate	Moderate
	Moderate – low	Low	Low	Low	Low	Moderate
	Low	Low	Low	Low	Low	Low
		Highly unlikely	Unlikely but possible	Likely	Highly likely	Definite
		Likelihood				

Table 27: Implication for Decision-Making of the Different Residual Risk Categories

Rating	Nature of implication for Decision – Making
Low	Project can be authorised with low risk of environmental degradation
Moderate	Project can be authorised but with conditions and routine inspections
High	Project can be authorised but with strict conditions and high levels of compliance and enforcement
Fatally Flawed	The project cannot be authorised

9.3 Consideration of Alternatives

Various types of alternatives have been identified at the Scoping phase (refer to **Section 3**). During the EIR phase, the alternatives will be further investigated and assessed. However, it should be noted that the current layouts for the Proposed Development have been considered on the outcome of the SSV's undertaken by the various Specialists and their recommended buffers. During the selection of the most suitable project alternatives, the following principles will be taken into consideration:

- The opinion of the public, ascertained through the PPP.
- Specialists' recommendations.
- Environmental constraints.
- Minimal environmental impacts.
- Optimisation of existing infrastructure, such as access roads, fuel pipelines.
- Economic cost-benefit analyses.

9.4 Terms of Reference for Specialist Studies

A team of Specialists will be involved in the detailed EIR phase of the process. The results of the Specialist Studies will be analysed and interpreted in order to assess the potential impacts of the Proposed Development, devise potential alternatives with respect to select activities (if required), and develop the necessary mitigation measures in order to minimise negative impacts and optimise positive impacts. The Specialist recommendations will be incorporated in the EMPr. The activities as described in the project description will be assessed on both an individual as well as a cumulative level. A summary of the Specialist Studies and the proposed Specialist responsible for that study is provided in **Table 28** below.

Table 28: Proposed Specialist Studies to be undertaken during the Environmental Impact Reporting Phase of the Project

Specialist Studies	Specialist
Study 1: Agricultural Assessment	Mzansi Agriculture: J S Phipson on behalf of EnviroSaint
Study 2: Aquatic Compliance Statement & Wetland Delineation Assessment	Antonia Belcher
Study 3: Archaeological & Cultural Heritage Impact Assessment	Francois P Coetzee on behalf of EnviroSaint
Study 4: Avifauna Impact Assessment	Cossypha Ecological: Robyn Phillips
Study 5: BESS Risk Assessment	iSHEcon: Debbie Mitchell
Study 6: Terrestrial Ecological Assessment (Fauna & Flora)	Flori Scientific Services: Johannes Maree on behalf of EnviroSaint
Study 7: Geotechnical Assessment	Bare Rock Consulting: Carel De Beer
Study 8: Geohydrological Impact Assessment	EnviroSaint: Marius van Biljon
Study 9: Socio-Economic Impact Assessment	Urban Econ: Louis Calitz and Nthabiseng Makhoali
Study 10: Transport Impact Assessment	iWink Consulting: Iris Wink
Study 11: Visual Impact Assessment (including Glint and Glare)	Environmental Planning and Design: Jon Marshall

9.4.1 TERMS OF REFERENCE FOR ALL SPECIALIST STUDIES

In April 2006, the erstwhile DEAT, now known as the DFFE issued guidelines for involving Specialists in S&EIR processes. In March and October 2020, the DFFE published GN 320 and GN 1150 respectively which prescribes the protocols in respect of specific environmental themes for the assessment of, as well as the minimum report content requirements on the environmental impacts for activities requiring an EA. When the requirements of the protocol apply, the requirements of Appendix 6 of the EIA regulations are replaced by these requirements. Each protocol applies exclusively to the environmental theme identified within its scope. Multiple themes may apply to a single application for EA and assessments for these themes must be undertaken in accordance with the relevant protocol or where no protocol has been prescribed, in accordance with the requirements of the EIA Regulations.

Specialists are expected to familiarise themselves with these guidelines and any subsequent updates, along with other relevant guidelines, codes, standards, or applicable laws related to their area of expertise. They will have to use this knowledge to accurately determine the methods and approaches for their Specialist Studies, and appropriately acknowledge compliance with these requirements. Additionally, Specialists are encouraged to consider best practices while conducting their studies.

The assessment of impacts should be broadly undertaken in accordance with the guidelines provided in the Guideline Document: EIA Regulations (DEA, 1998), NEMA principles, Section 24(4) of NEMA and the protocols for specific environmental themes.

The following General ToR apply to each of the Specialist Studies:

- Undertake site visit(s).

- Design and undertake the Specialist Study in accordance with the minimum assessment protocols for specialist themes.
- Describe the baseline conditions that exist in the study area and identify any sensitive areas that would need special consideration.
- Provide an outline of the approach used in the study.
- Outline the assumptions and limitations to the study.
- Assess all project alternatives including the no-go alternative.
- Identify, assess and evaluate the possible impacts (direct and indirect) of the Proposed Development during all development phases (planning, construction and operation).
- Identify and assess any cumulative impacts arising from the Proposed Development.
- Determine the significance of assessed impacts according to the methodology provided by the EAP and provide a revised significance rating of assessed impacts after the implementation of mitigation measures.
- Undertake field surveys, as appropriate to the requirements of the particular Specialist Study.
- Identify areas where integration of studies with other Specialists would ensure a better assessment and coordinate with other Specialists in this regard.
- Apply the precautionary principle in the assessment of impacts, in particular where there is major uncertainty, low levels of confidence in predictions and poor data or information.
- Recommend practicable mitigation measures to minimise or eliminate negative impacts and/or enhance potential project benefits.
- Recommend appropriate auditing, monitoring and review measures.
- Compile all information into a stand-alone report according to the format provided by Praxos.
- Take cognisance of and comply with the relevant guideline documents applicable to that particular Specialist Study.
- The Specialist report must comply with Appendix 6 of GNR 982 of the NEMA or as set out in the protocol defined for that specific environmental theme as per GN 320 and/ or GN 1150.

9.5 Environmental Impact Assessment (EIA) Report

The contents of the EIR (as per Appendix 3 of GNR 982 as amended) will include the following information:

- Details and expertise of the EAP to undertake a S&EIR process.
- Detailed description of the Proposed Development.
- Detailed description of the property on which the activity is to be undertaken and the location of the activity on the property.
- A description of the environment that may be affected by the activity and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the Proposed Development.
- Details of the PPP conducted during the detailed assessment phase of the S&EIR process.
- A description of the need and desirability of the Proposed Development.
- A description of identified potential alternatives to the Proposed Development, including advantages and disadvantages that the Proposed Development or alternatives may have on the environment and the community that may be affected by the activity.
- An indication of the methodology used in determining the significance of potential environmental impacts.
- A description and comparative assessment of all alternatives identified during the environmental impact reporting phase.
- A summary of the findings and recommendations of any Specialist report or report on specialised process.

- A description of all environmental issues that were identified during the environmental impact reporting phase, an assessment of the significance of each issue and an indication of the extent to which the issues could be addressed by the adoption of mitigation measures.
- An assessment of each identified potentially significant impact in terms of cumulative impacts, the nature of the impact, the extent and duration of the impact, the probability of the impact occurring, the degree to which the impact can be reversed, the degree to which the impact may cause irreplaceable loss of resources and the degree to which the impact can be mitigated.
- A description of any assumptions, uncertainties and gaps in knowledge.
- A reasoned opinion as to whether the activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation.
- An environmental impact statement which contains a summary of the key findings of the environmental impact assessment, a comparative assessment of the positive and negative implications of the Proposed Development and identified alternatives.
- A draft EMPr.
- Copies of any Specialist reports and reports on specialised processes.
- Any specific information that may be required by the CA and any other matters required in terms of sections 24(4) (a) and (b) of NEMA.

9.6 Draft Environmental Management Programme

During the compilation of the EIR, a Draft EMPr will be compiled in accordance with the EIA Regulations. The Draft EMPr will provide the actions for the management of identified environmental impacts emanating from the Proposed Development and a detailed outline of the implementation programme to minimise and/ or eliminate the anticipated negative environmental impacts. The Draft EMPr will provide strategies to be used to address the roles and responsibilities of environmental management personnel on site, and a framework for environmental compliance and monitoring. **The Draft EMPr will be included as part of the Draft EIR.**

The EMPr will include the following:

- Details and expertise of the person who prepared the EMPr.
- Information on any proposed management or mitigation measures that will be taken to address the environmental impacts that are identified in the EIR phase, including environmental impacts or objectives in respect of planning and design, pre-construction and construction activities, operation or undertaking of the activity, rehabilitation of the environment and closure where relevant.
- A detailed description of the aspects of the activity that are covered by the draft EMPr.
- An identification of the persons who will be responsible for the implementation of the mitigation measures.
- Timeframes for the implementation of the mitigation measures.
- Environmental design criteria.
- Site establishment.
- Construction camps, offices and associated activities.
- Construction and lay down areas.
- Civil works.
- Sourcing and management of construction materials.
- Concrete batching areas.
- Disruption of existing infrastructure and services.
- Proposed mechanisms for monitoring compliance with the EMPr and reporting thereon.
- Record of the Method Statements, Environmental Incident Log and Complaints Record Sheet.
- Proposed mechanisms for monitoring compliance with the EMPr and reporting thereof.

- As far as reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development, including, where appropriate, concurrent or progressive rehabilitation measures.

9.7 PUBLIC REVIEW OF THE EIR AND EMPR

The primary aims of the PPP includes the following:

- To disclose activities planned by the project proponent and the EIA team.
- Identify and respond to concerns, grievances and enquiries made by the I&APs.
- Harness local expertise, needs and knowledge from the I&APs.
- Identify additional or new stakeholders and people affected by, or interested in, the Proposed Development.
- Ensure that all issues and enquiries raised by I&APs have been adequately assessed and addressed.
- Share the findings of the EIA and Specialists' Studies, such as significant impacts, mitigation measures, management actions, and monitoring programmes.
- Address and include any new concerns or comments that arise.

The PPP commenced during the Scoping phase and will continue during the EIR phase, during which I&APs are afforded further opportunities to raise their issues, concerns and comments regarding the Proposed Development. It is possible that some of the project details may change in response to the preliminary findings presented in the DSR, and as a result of design changes made by the project proponent. I&APs and key stakeholders are given the opportunity to review the Draft EIR before it is submitted to the authorities for consideration. Comments on the Draft EIR received from I&APs will be included and addressed in the Final EIR.

9.7.1 PUBLIC REVIEW OF THE DRAFT ENVIRONMENTAL IMPACT REPORT (DEIR)

All I&APs on the Register of I&APs will be notified in writing of the availability of the DEIR for public review. The notification letter will provide details of the 30-day public comment period, the venues and websites where the report can be viewed, the contact details of the PPP consultant and how written comments on the DEIR should be submitted.

9.7.2 NOTIFICATION OF ENVIRONMENTAL AUTHORISATION (EA)

On receipt of the decision (*positive or negative*) from the CA, notifications via email announcing the decision will be sent to all registered I&APs. The notifications will also inform I&APs of where the decision can be accessed. Registered I&APs will be given 20 days upon receipt of the notification to lodge an appeal with the Minister, MEC, or delegated organ of state.

9.8 CONSULTATION WITH THE COMPETENT AUTHORITY

It is envisaged that consultation with the CA (DFFE) will coincide with the compilation and submission of the following key documents:

- DSR, FSR and PoS for EIR.
- Draft EIR and EMPr.
- Final EIR and EMPr.

9.9 PROPOSED DEVELOPMENT PROGRAMME FOR THE EIR PHASE

The proposed programme for the EIR process indicates the following timeframes with respect to the most important activities to be undertaken:

- Submission of the Draft EIR for public comment – **Date to be confirmed.**
- Submission of the Final EIR to the DFFE for consideration and decision-making – **Date to be confirmed.**

10. CONCLUSION

The Applicant proposes the construction of a solar PV development, located on the Remaining Extent of the Farm Leeuwkopje No. 415 and Portion 5 (Bralbin) of the Farm Leeuwkopje No. 415 (access road only), 1.5 km north of Northam within the Limpopo Province, South Africa.

The Project Area falls within the jurisdiction of the TLM, within the WDM. The Proposed Development is not located within any STC or REDZ nor is it classified as an EGI project. The Proposed Development is a large-scale solar PV facility to generate renewable electricity and is in response to the IRP and the REIPPPP as established by the Department of Energy.

A development area has been identified for the Proposed Development. Within this identified development area, a maximum development footprint has been defined in a manner which has considered the environmental sensitivities present on the affected property and which intentionally remains beyond highly sensitive areas. The affected property has been considered in this S&EIR process (which includes the independent Specialist Studies undertaken) and assessed in terms of its suitability from an environmental and social perspective.

The Proposed Development is located outside of an urban area and industrial complex with a current zoning that is agricultural in nature. A change in zoning will be required from agricultural to special use.

The proposed ABO Nyala Solar Energy Facility 3 would comprise the following to be located within the proposed maximum development footprint:

- Solar Field/Solar Arrays [Note that the mounting structures will be either fixed-tilt, single-axis tracking or double-axis tracking PV. Module types would be either mono-facial or bi-facial and would be 3.5 m in height
- One access road (noting that existing farm roads would be used as far as possible, and the road width would a maximum of 10 m). Two alternative access roads are under assessment.
- Internal service roads (noting that existing farm roads would be used as far as possible a, and that the maximum road width would be 8 m).
- An on-site substation hub and associated infrastructure (such as substation, transformation infrastructure, collector infrastructure, step-up infrastructure, BESS etc.) including auxiliary buildings (such as operation & maintenance buildings, admin buildings, workshops, gatehouse, security building, offices, visitor centre, warehouses, etc.) contained within up to approximately a 3-ha footprint.
- A communications tower as part of the 3-ha on-site substation hub with a maximum height of 32 m.

Associated infrastructure would include the following (to be located within the proposed maximum development footprint):

- Internal electrical reticulation (i.e., low and medium voltage cables) to be placed underground where feasible.
- Perimeter fencing.

A temporary laydown area would be established during the construction period but would be within the maximum development footprint to be assessed i.e., within the fenced area allocated for development and beyond any identified no-go areas. The laydown area would move as required while construction is underway.

One access road is proposed with two alternatives under assessment i.e., the preferred access road which is directly off the R510 and would allow access to the Project Area from the east, and the alternative access road that would start approximately 1 km north of the Project Area via an existing intersection with the R510 and

would run parallel to the R510. The alternative access road would allow access to the Project Area at the same access point as the preferred access. Existing roads will be utilised as far as reasonably possible and upgraded where necessary (as recommended by the TIA). Roads would be a maximum of 10 m wide.

In terms of connecting to the electricity grid, technical alternatives are available and application for grid connection will be made through a separate process and assessed accordingly.

The operations of the Proposed Development would require some servicing, noting that the operational electrical requirements would be nominal and would be supplied by the facility.

Water and sanitation requirements during the construction phase will be the primary responsibility of the appointed Contractor. Solid waste produced during construction would be managed in accordance with the specifications of the site-specific Environmental Management Programme (EMPr).

Water would be required for sanitation by operational staff, for washing of solar panels and for dust control on internal roads (where necessary). Water would preferably be sourced from the local municipality in terms of a Service Level Agreement established between the Local Municipality (*LM*) and the facility. A non-binding confirmation of capacity from the LM will be requested by the applicant in June 2023, with the view to have the confirmation in hand at draft EIR stage. If this is not possible, then other options for water supply will be investigated such as sourcing water commercially. Where required, a storage tank (i.e., Jo-Jo tank) of up to approximately 10,000L may be used on site for temporary water storage.

Sanitation requirements would be minimal, given that there would only be a small staff complement during the operations of the facility. Sanitation for auxiliary buildings would be connected to the existing municipal sewage system. If the Municipality does not approve, or not have capacity for such a connection, sewage would be stored in a conservancy tank and collected either by a honey-sucker truck or by a service provider for treatment at a licensed disposal site. Alternatively, a standalone system would be used (i.e., porta-loos) which would be regularly serviced by an independent contractor. Note that it is not intended to make use of soakaways or on-site treatment solutions.

No bulk service infrastructure is proposed and any required pipelines to connect to the municipal network will be located within roadway.

Refuse/solid waste (i.e., non-hazardous) produced on site would also be minimal (approximately two wheelie bins per week are anticipated) and would ideally be removed by the Municipality, however, if this is not possible, the facility would employ private contractors to remove the refuse and dispose of it appropriately.

There are no specific stormwater and/or landscaping initiatives proposed as part of the Proposed Development at this stage, but any interventions prescribed by the relevant specialist/s through the environmental impact assessment process would be implemented.

Alternatives:
The Proposed Development as described above will be assessed with the following alternatives:

1. Location: One access road is proposed with two alternatives under assessment i.e., the preferred access road which is directly off the R510 and would allow access to the Project Area from the east, and the alternative access road that would start approximately 1 km north of the Project Area via an existing intersection with the R510 and would run parallel to the R510. The alternative access road would allow

access to the Project Area at the same access point as the preferred access. Existing roads will be utilised as far as reasonably possible and upgraded where necessary (as recommended by the TIA). Roads would be a maximum of 10 m wide.

2. Technology: With regard to the proposed Battery Energy Storage System (BESS), the technology thereof is dynamic and so the specific type/technology to be developed would be selected based on market demands and technology availability at the time of construction. Therefore, both Lithium-ion and redox-flow will be assessed as technology alternatives, with Lithium-ion being the current preferred technology. The Lithium-Ion BESS will arrive to site pre-assembled.

The no-go alternative will also be assessed.

Several aspects associated with the establishment of the Proposed Development requires further investigation:

- Visual intrusion on the landscape.
- Ecological sensitivity (flora and fauna).
- Avifaunal sensitivity.
- Agricultural soil potential.
- Aquatic sensitivity.
- Heritage sites and resources.
- Increase in traffic.
- Socio-economic impacts and benefits.

These key sensitivities are to be comprehensively addressed and assessed according to the ToR developed for each Specialist during the EIR phase.

10.1 Concluding Statement & Way Forward

It is the opinion of the EAP that, at this stage, no fatal flaws have been identified and there is no reason why the Proposed Development should not proceed to the EIR phase for further assessment.

In terms of the location alternatives, the chosen location for the Proposed Development is considered to be suitable based on the outcomes of several factors explained in **Section 3**, therefore no location alternatives for PV facility will be further investigated.

In terms of the access road, one road is proposed with two alternatives under assessment i.e., the preferred access road which is directly off the R510 and an alternative access road that is approximately 1 km north of the Project Area via an existing intersection with the R510 to run parallel to the R510.

The Proposed Development will be for the construction of a solar PV facility for the generation of electricity. It is the type of activity chosen by the Applicant due to several factors including location, climate, economic viability, and the need and desirability. Therefore, no alternatives for land use will be investigated further during the EIR phase in respect to activity alternatives.

Presently, there are no layout alternatives that are being considered for the PV facility as, based on the information available at present, it is believed that the current layout represents a low-impact development which purposefully avoids highly sensitive areas.

Since BESS technology is dynamic, the Applicant will determine the specific technology to be developed based on market demands and technology availability at the time of construction. Accordingly, both lithium-ion and

redox-flow batteries will be assessed as technology alternatives during the EIR phase, **with lithium-ion currently being the preferred technology.**

There are no operational alternatives considered for the Proposed Development given the nature of the development which only allows for electricity generation during operations.

The no-go alternative will also be assessed.

It is however noted that PPP must be undertaken which may bring novel issues to light. All comments received on this DSR will be captured, responded to, and addressed in the FSR prior to submission to the DFFE for decision-making.

The commencement of the EIR phase is dependent on the acceptance of the FSR and PoS for the EIR by the CA. Once the acceptance is received, the EAP will be instructed to proceed with the activities outlined in the PoS for the EIR phase of the EA application process. The PoS for EIR is aimed at meeting the requirements of the EIA Regulations as a minimum.

The methodologies proposed for obtaining the information required to effectively identify and assess the potential environmental impacts of the Proposed Development are considered to be comprehensive and sufficient to allow for the compilation of an EIR which addresses I&AP concerns, and which will provide the CA with the appropriate information necessary to allow for informed decision-making on the application for authorisation.

Praxos as the EAP and the project team commits to do the following:

- Facilitate a fair and transparent process going forward.
- Capture and consider all comments received from stakeholders and I&APs.
- Remain independent of the Applicant.
- Present the CA with the necessary information to reach a decision.
- Fulfil any and all other obligations placed on the EAP in terms of the NEMA.

11. EAP DECLARATION

The EAP herewith declares:

Detail		Confirmation
11(a)	The correctness of the information provided in the reports.	☒
11(b)	The inclusion of comments and inputs from stakeholders and I&APs.	☒
11(c)	Any information provided by the EAP to I&APs and any responses by the EAP to comments or inputs made by I&APs.	☒
11(d)	The level of agreement between the EAP and I&APs on the PoS for undertaking the EIA.	☒

Signature of the EAP:	
Name of company:	Praxos 373 (Pty) Ltd
Date:	08 September 2023

Appendix A: CV's of the Project Team & EAP Declarations Under Oath

Appendix B: Authority Consultation

Appendix B1: Pre-Application Meeting Request Form

Appendix B2: Minutes of Pre-Application Meeting with DFFE and Attendance Register

Appendix B3: Application for Environmental Authorisation

Appendix C: Public Participation Process

Appendix C1: List of I&APs

Appendix C2: Newspaper Advertisements

Appendix C3: Notification Letter of Invitation to Comment on the DSR and Registration as an I&AP

Appendix C4: Site Notice

Appendix D: Site Photograph Plate

Appendix E: DFFE Screening Tool Report

Appendix F: Specialist Studies

Appendix F1: Agricultural Potential SSV Report

Appendix F2: Aquatic SSV Report

Appendix F3: Avifaunal SSV Report

Appendix F4: Cultural Heritage SSV Report

Appendix F5: Geohydrological Desktop Report

Appendix F6: Landscape and Visual Baseline Report

Appendix F7: Socio-Economic Preliminary Assessment Report

Appendix F8: Terrestrial Ecological SSV Report

Appendix F9: EAP SSV Report

Appendix G: Maps