

# SBPM SOLAR PV FACILITY AND ASSOCIATED INFRASTRUCTURE, LIMPOPO PROVINCE & NORTH WEST PROVINCE

Environmental Impact Assessment Report

DFFE Reference: 14/12/16/3/3/2/2165

November 2022

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## PROJECT DETAILS

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<b>DFFE Reference</b>	:	14/12/16/3/3/2/2165
<b>Title</b>	:	Environmental Impact Assessment Report for the SBPM Solar PV Facility and Associated Infrastructure, Limpopo Province & North West Province
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<b>Applicant</b>	:	Main Street 1886 Proprietary Limited
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**When used as a reference this report should be cited as:** Savannah Environmental (2022) Environmental Impact Assessment Report for the SBPM Solar PV Facility and Associated Infrastructure, Limpopo Province & North West Province

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## PURPOSE OF THE EIA REPORT AND INVITATION TO COMMENT

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Main Street 1886 Proprietary Limited has appointed Savannah Environmental as the independent environmental consultant to undertake the Scoping and Environmental Impact Assessment Process for the SBPM Solar PV Facility and Associated Infrastructure, Limpopo Province & North West Province. The EIA process is being undertaken in accordance with the requirements of the 2014 EIA Regulations promulgated in terms of the National Environmental Management Act (NEMA; Act No. 107 of 1998). This Environmental Impact Assessment report has been compiled in accordance with Appendix 3 of the EIA Regulations, 2014 (as amended) and consists of the following sections:

This EIA Report consists of ten chapters, which include:

- » **Chapter 1** provides background to the Project and the EIA process.
- » **Chapter 2** provides a description of the Project and alternatives considered for the project.
- » **Chapter 3** outlines strategic regulatory and legal context for energy planning in South Africa and specifically relating to the project.
- » **Chapter 4** describes the need for and site selection for the project.
- » **Chapter 5** outlines the approach to undertaking the EIA process.
- » **Chapter 6** describes the existing biophysical and social environment within and surrounding the study area and development area.
- » **Chapter 7** provides an assessment of the direct, indirect and cumulative impacts associated with the proposed Project.
- » **Chapter 8** presents the conclusions and recommendations for the Project.
- » **Chapter 9** provides references used to compile the EIA Report.
- » **Chapter 10** provides references used to compile the EIA report.

The EIA Report is available for review from **Friday, 10 November 2022** to **Monday, 12 December 2022** at (<https://savannahsa.com/public-documents/energy-generation/>). All comments received and recorded during the 30-day review and comment period will be included, considered and addressed within the final EIA report for the consideration of the Department of Forestry and Fisheries (DFFE).

Please submit your comments by **Monday, 12 December 2022** to:

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Comments can be made as written submission via fax, post or email.

## EXECUTIVE SUMMARY

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The Applicant, Main Street 1886 Proprietary Limited, is proposing the development of the SBPM solar photovoltaic (PV) facility and associated infrastructure on a site located approximately 6.5km west of the town of Northam within the Thabazimbi Local Municipality and the Waterberg District Municipality in the Limpopo Province (refer to **Figure 1**). The proposed grid connection route for the SBPM PV facility extends into the North West Province within the Moses Kotane Local Municipality and the Bojanala Platinum District Municipality. The purpose of the proposed project is to generate electricity for exclusive use by the Siyanda Bakgatla Platinum Mine. The construction of the PV facility aims to reduce the Siyanda Bakgatla Platinum Mine's dependency on direct supply from Eskom's national grid for operation activities, while simultaneously decreasing the mine's carbon footprint.

The solar PV facility will comprise several arrays of PV panels and associated infrastructure and will have a contracted capacity of up to 100MW. A project site consisting of Portion 4 of the Farm Grootkuil 409 KQ (~1138ha in extent) is being considered for the SBPM solar PV facility (refer to **Figure 1**). The full extent of the project site has been evaluated in the Scoping Phase to identify sensitivities and a facility layout has been provided and assessed within this EIA process. A dedicated development area for the solar PV facility (~574ha in extent) has been demarcated to avoid the identified environmental sensitivities. The grid connection for the facility will consist of a facility substation and 33kV powerlines into the existing mine substations (Mortimer, Fridge and Ivan). The grid connection infrastructure is located within an assessment corridor of 200m wide located in a band along the south-west boundary of the project site and traverses Portion 4, , Portion 5 of the Farm Grootkuil 409, Portion 1, Portion 2 of Farm Zwartklip 405, Portion 0 of Farm Spitskop 410 and Portion 0 of Farm Turfbult 404.

An additional 100MW PV facility to be known as SCSC PV is being considered adjacent to the project site within Portion 4 of the Farm Grootkuil 409 and is being assessed through a separate Environmental Impact Assessment (EIA) process.

The potential environmental impacts associated with SBPM Solar PV Facility identified and assessed through the EIA process include:

- » Impacts on ecology, flora and fauna.
- » Impacts on avifauna.
- » Impacts to soils and agricultural potential.
- » Impacts on heritage resources, including archaeology and palaeontology.
- » Visual impacts on the area imposed by the components of the facility.
- » Social impacts.

### Impacts on Ecology (including flora and fauna)

The Terrestrial Ecology Assessment determined that the project area has been altered both currently and historically. The present land use had a direct impact on both the fauna and the flora in the area, which is evident in the disturbed and transformed habitats. Historically, cultivation, overgrazing and mismanagement has led to the deterioration of most of the area to a disturbed Bushveld that is either encroached upon or invaded by exotic plant species.

However, the degraded Bushveld habitat and wetlands/watercourses in the wider project area can be regarded as important, not only within the local landscape, but also regionally; as they are used for habitat, foraging and movement corridors for fauna within a landscape fragmented by development.

The degraded Bushveld habitat and wetlands/watercourses in the project area have a High ecological theme sensitivity. The habitat sensitivity of the degraded Bushveld and wetland/water resources is regarded as high, due to the species recorded and the role of this intact unique habitat to biodiversity within a very fragmented local landscape, not to mention the sensitivity according to various ecological datasets. The high sensitivity terrestrial areas still:

- » Support nearby CBA/ESAs as per the LCP; and
- » Support various organisms (including SCC) and may play an important role in the ecosystem, if left to recover from the superficial impacts.

The ecological integrity, importance and functioning of these terrestrial biodiversity areas provide a variety of ecological services considered beneficial, with one key service being the maintenance of biodiversity. The preservation of these systems is the most important aspect to consider for the proposed project.

Development in high sensitivity areas must be avoided, which will occur with the selection of the Project Site. Development within the high sensitivity areas within the Project Site will lead the direct destruction and loss of functional habitats; and the faunal species that are expected to utilise this habitat. Thus, if these areas are not maintained in a natural or near natural state, destroyed or fragmented, then meeting targets for biodiversity features will not be achieved. The mitigation measures, management and associated monitoring regarding the expected impacts will be the most important factor of this Project.

The main expected impacts of the proposed Project will include:

- » Habitat loss and fragmentation;
- » Degradation of surrounding habitat;
- » Disturbance and displacement caused during the construction and maintenance phases; and
- » Direct mortality during the construction phase.

Mitigation measures as described in the terrestrial biodiversity assessment (refer to **Appendix D**) can be implemented to reduce the significance of the risk. Considering that this area that has been identified as being of significance for biodiversity maintenance and ecological processes, development may proceed but with caution and only with the implementation of mitigation measures.

Considering the above-mentioned information, no fatal flaws are evident for the proposed Project. It is the opinion of the specialist that the proposed Project, may be favourably considered, on condition that all prescribed mitigation measures and supporting recommendations are implemented.

### **Impacts on Aquatic Ecology**

Based on the results and conclusions presented in Wetland Baseline and Risk Assessment (**Appendix E**) it is expected that the proposed activities will have low residual impacts on the wetlands and thus no fatal flaws were identified for the Project.

## Impacts on Avifauna

From a desktop perspective the project area overlaps CBA2 and ESA1 classified areas and falls within the Northern Turf Thornveld IBA. This IBA is important as it is home to the Yellow-throated Sandgrouse and is regarded as the core range of the resident South African population. Other important birds in the IBA include the Secretarybird *Sagittarius serpentarius*, Kori Bustard, Lanner Falcon *Falco* and Black-winged Pratincole. Common biome-restricted species found within this IBA include Thrush *Turdus*, White-throated Robin-Chat, Burchell's Starling, White-bellied Sunbird and the fairly common Kalahari Scrub Robin (Birdlife South Africa, 2015B).

During the first field assessment 134 bird species were recorded of which three are SCCs on a national or international scale. The Lanner Falcon *Falco* (VU- regionally), were observed on four occasions, while the Yellow-throated Sandgrouse (NT- regionally) were observed twice and the Cape Vulture (EN-regionally and internationally) once. The Yellow-throated regarded as one of the core residents of the Northern Turf Thornveld IBA area. Of the 134 species, 18 species (13%) were identified as 'high risk' species. High risk species are those that would be at greater risk to powerline collisions, electrocutions or habitat loss due to the development. In the second survey 108 species were recorded, of which two were SCC, i.e. Yellow-throated Sandgrouse and Cape Vulture (EN-regionally and internationally).

Any development in the medium-high sensitivity areas will lead to the direct destruction and loss of portions of functional ESA and CBA areas, and therefore, will also negatively impact the avifaunal species that utilise this habitat. Thus, if these areas are not maintained in a natural or near natural state, destroyed or fragmented, then meeting targets for biodiversity features will not be achieved. The mitigations, management and associated monitoring regarding these operational impacts will be the most important factor of this project and must be considered by the issuing authority. Mitigation measures as described in this report can be implemented to reduce the significance of the risk to an acceptable residual risk level. Considering the above-mentioned information and that the facility and associated grid connection is required for power supply to an existing mine, it is the opinion of the specialist that the project may be favourably considered, on condition that all the mitigation and recommendations are followed.

## Impacts on Soil and Agricultural Potential

During the baseline assessment two soil forms were identified throughout the 50 m regulated area namely Glenrosa and Arcadia. The Glenrosa soil form is of most importance in the study area as it demonstrates the most sensitive land capability.

The Glenrosa's land capability has been determined to be class "II" and a climate capability level 8 has been assigned to the area given the low Mean Annual Precipitation (MAP) and the high Mean Annual Potential Evapotranspiration (MAPE) rates. The combination between the most sensitive determined land capability and climate capability resulted in a land potential level "L5". According to Smith (2006), the "L5" land potential level is characterised by restricted potential. Regular and/or moderate to severe limitations are expected due to soil, slope, temperatures or rainfall.

The land potential level, mentioned above, was used to determine the sensitivities of soil resources. "Moderately Low" sensitivities were determined throughout the project area by means of baseline findings. These baseline findings concur well with the Department of Agriculture, Forestry and Fisheries (DAFF, 2017) which also indicated "Very Low" sensitivities as well as "Moderate" sensitivities.

Considering the low sensitivities associated with land potential resources, it is the specialist's opinion that the proposed activities will have an acceptable impact on soil resources and that the proposed activities may proceed as have been planned as no loss of land capability is evident. It is also expected that no segregation of high production agricultural resources will occur.

### **Impacts on Heritage Resources (archaeological and paleontological)**

Overall, the archaeological field assessment (refer to **Appendix H**) has determined that the overall archaeological sensitivity of the development area is low with few ex situ surface scatters identified. These resources are not conservation-worthy and have been sufficiently recorded in this report.

A cluster of possible graves was also identified within the SBPM Solar PV Facility development area. It is possible to establish whether or not these are graves through the implementation of various technologies such as ground-truthing with sub-surface survey or prospecting technology. Additionally, such intervention could determine whether unmarked graves are also present in the area, and the extent of the possible burial ground. This could take place at the discretion of the developer. In the absence of subsurface survey data, it is recommended that a NO-GO ZONE of at least a 50m radius is implemented around the graves to ensure that the graves and their sense of place is not impacted by the proposed development.

The farmers and landowners were consulted, but they were not aware of any significant in-situ archaeological sites or graves on the property. While the field assessment was as thorough as possible, there remains the possibility that archaeological resources that were not recorded are present but are obscured by top soil or vegetation. Recommendations in this regard are included below.

No impacts to palaeontological heritage resources are considered likely due to the Pyramid Gabbro-Norite which has zero palaeontological sensitivity underlying the development area.

There is no objection to the proposed development of the SCSC PV facility and its associated grid infrastructure on condition that:

- » A 50m no-go development buffer is implemented around sites WP007, WP008 and WP009.
- » Should any previously unrecorded archaeological or palaeontological resources or possible burials be identified during the course of construction activities, work must cease in the immediate vicinity of the find, and SAHRA must be contacted regarding an appropriate way forward.

### **Social Impacts**

The proposed Project will create a number of potential socio-economic opportunities and benefits and is unlikely to result in permanent damaging social impacts. From a social perspective it is concluded that the Project is acceptable subject to the implementation of the recommended mitigation and enhancement measures and management actions identified for the Project as detailed in **Appendix I**.

### **Assessment of Cumulative Impacts**

Cumulative impacts and benefits on various environmental and social receptors will occur to varying degrees with the development of several renewable energy facilities in South Africa. The degree of significance of these cumulative impacts is difficult to predict without detailed studies based on more comprehensive data/information on each of the receptors and the site-specific developments. The



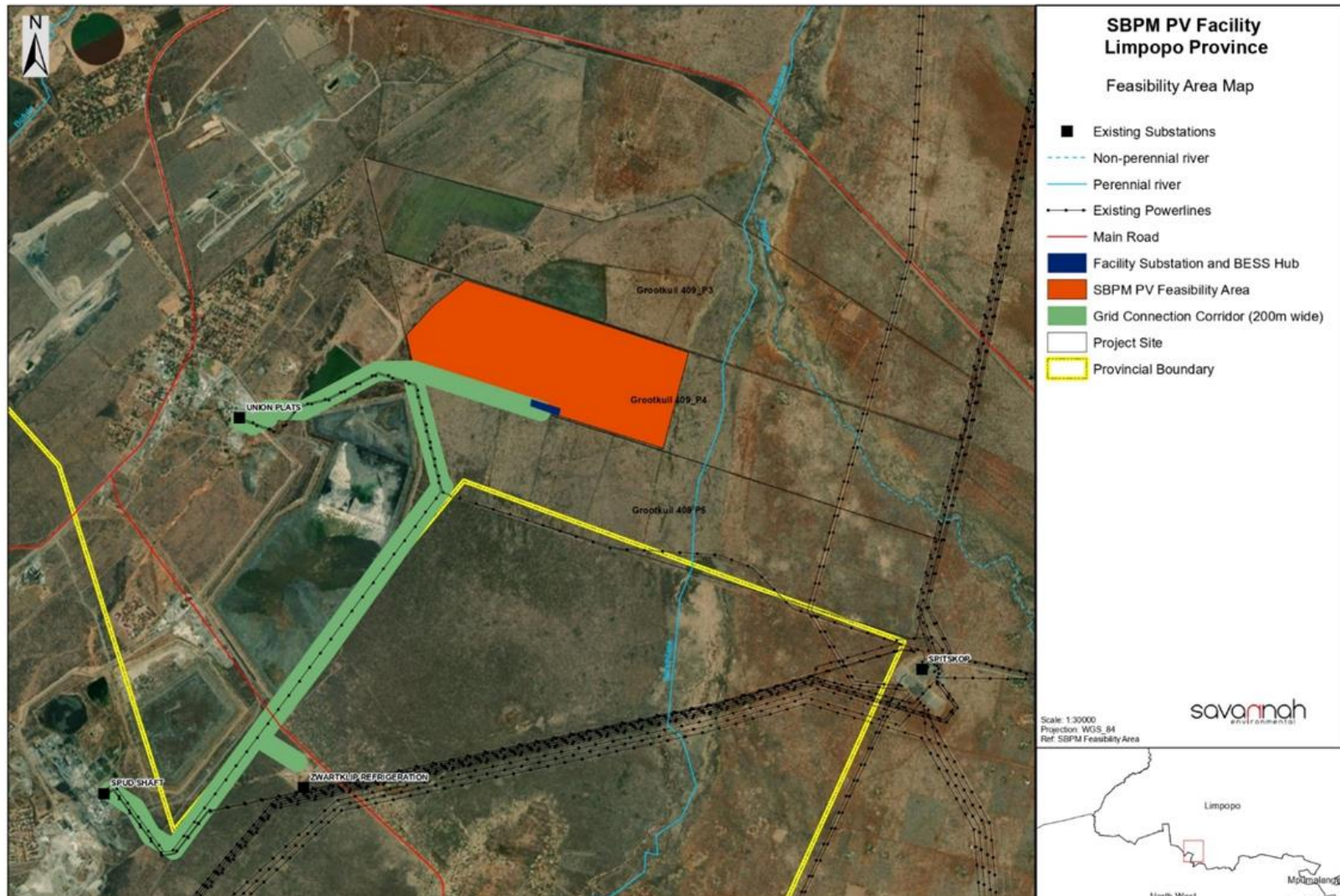
alignment of renewable energy developments with South Africa's National Energy Response Plan and the global drive to move away from the use of non-renewable energy resources and to reduce greenhouse gas emissions is undoubtedly positive. The economic benefits of renewable energy developments at a local, regional and national level have the potential to be significant.

All cumulative impacts associated with the Project are expected to be of a medium or low significance, with impacts of a high significance associated with the visual impacts.

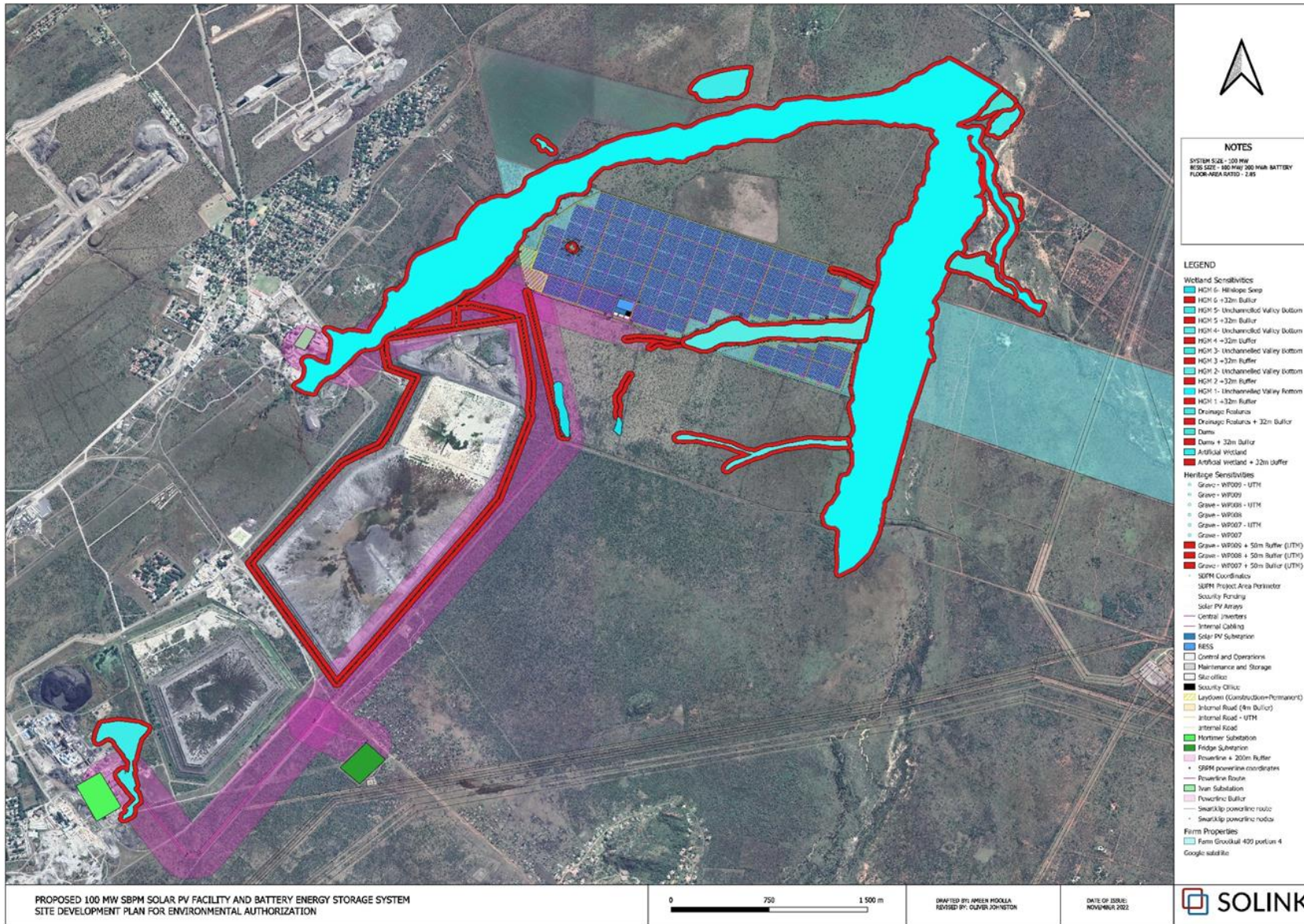
Based on the specialist cumulative assessment and findings, the development of the Project and its contribution to the overall impact of all renewable energy projects to be developed within a 30km radius, it can be concluded that the contribution of the project to cumulative impacts will be of a medium to low significance. Therefore, it was concluded that the development of the Project will not result in unacceptable, high cumulative impacts and will not result in a whole-scale change of the environment.

### **Overall Conclusion & Recommendations**

Considering the findings of the independent specialist studies, the impacts identified, the development footprint proposed by the developer within the development site, the avoidance of the sensitive environmental features within the project site, as well as the potential to further minimise the impacts to acceptable levels through mitigation, it is the reasoned opinion of the EAP that the SBPM Solar PV Facility and Associated Infrastructure is acceptable within the landscape and can reasonably be authorised. The proposed layout as provided by the Applicant (**Figure 2**) is considered to be the most appropriate from an environmental perspective as it avoids identified sensitivities and recommended buffer areas.



**Figure 1.:** Locality map illustrating the location of the SBPM Solar PV Facility development area and the grid connection corridor (refer to **Appendix N** for map).



**Figure 2:** Layout and sensitivity map of the preferred development footprint and grid connection corridor for the SBPM Solar Energy Facility, as was assessed as part of the EIA process (**A3 map is included in Appendix N**)

## DEFINITIONS AND TERMINOLOGY

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**Alternatives:** Alternatives are different means of meeting the general purpose and need of a proposed activity. Alternatives may include location or site alternatives, activity alternatives, process or technology alternatives, temporal alternatives or the 'do nothing' alternative.

**Commence:** The start of any physical activity, including site preparation and any other activity on site furtherance of a listed activity or specified activity, but does not include any activity required for the purposes of an investigation or feasibility study as long as such investigation or feasibility study does not constitute a listed activity or specified activity.

**Commercial Operation date:** The date after which all testing and commissioning has been completed and is the initiation date to which the seller can start producing electricity for sale (i.e. when the project has been substantially completed).

**Commissioning:** Commissioning commences once construction is completed. Commissioning covers all activities including testing after all components of the wind turbine are installed.

**Construction:** Construction means the building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity. Construction begins with any activity which requires Environmental Authorisation.

**Cumulative impacts:** Impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities (e.g. discharges of nutrients and heated water to a river that combine to cause algal bloom and subsequent loss of dissolved oxygen that is greater than the additive impacts of each pollutant). Cumulative impacts can occur from the collective impacts of individual minor actions over a period and can include both direct and indirect impacts.

**Decommissioning:** To take out of active service permanently or dismantle partly or wholly, or closure of a facility to the extent that it cannot be readily re-commissioned. This usually occurs at the end of the life of a facility.

**Direct impacts:** Impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity (e.g. noise generated by blasting operations on the site of the activity). These impacts are usually associated with the construction, operation, or maintenance of an activity and are generally obvious and quantifiable.

**Disturbing noise:** A noise level that exceeds the ambient sound level measured continuously at the same measuring point by 7 dB or more.

**'Do nothing' alternative:** The 'do nothing' alternative is the option of not undertaking the proposed activity or any of its alternatives. The 'do nothing' alternative also provides the baseline against which the impacts of other alternatives should be compared.

**Endangered species:** Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating. Included here are taxa whose numbers of individuals have been reduced to a critical level or

whose habitats have been so drastically reduced that they are deemed to be in immediate danger of extinction.

**Emergency:** An undesired/ unplanned event that results in a significant environmental impact and requires the notification of the relevant statutory body, such as a local authority.

**Endemic:** An "endemic" is a species that grows in a particular area (is endemic to that region) and has a restricted distribution. It is only found in a particular place. Whether something is endemic or not depends on the geographical boundaries of the area in question and the area can be defined at different scales.

**Environment:** the surroundings within which humans exist and that are made up of:

- i. The land, water and atmosphere of the earth;
- ii. Micro-organisms, plant and animal life;
- iii. Any part or combination of (i) and (ii) and the interrelationships among and between them; and
- iv. The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

**Environmental impact:** An action or series of actions that have an effect on the environment.

**Environmental impact assessment:** Environmental Impact Assessment, as defined in the NEMA EIA Regulations and in relation to an application to which scoping must be applied, means the process of collecting, organising, analysing, interpreting and communicating information that is relevant to the consideration of that application.

**Environmental management:** Ensuring that environmental concerns are included in all stages of development, so that development is sustainable and does not exceed the carrying capacity of the environment.

**Environmental management programme:** An operational plan that organises and co-ordinates mitigation, rehabilitation and monitoring measures in order to guide the implementation of a proposal and its ongoing maintenance after implementation.

**Heritage:** That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act of 2000).

**Indigenous:** All biological organisms that occurred naturally within the study area prior to 1800.

**Indirect impacts:** Indirect or induced changes that may occur because of the activity (e.g. the reduction of water in a stream that supply water to a reservoir that supply water to the activity). These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place because of the activity.

**Interested and affected party:** Individuals or groups concerned with or affected by an activity and its consequences. These include the authorities, local communities, investors, work force, consumers, environmental interest groups, and the public.

**Method statement:** A written submission to the ECO and the site manager (or engineer) by the EPC Contractor in collaboration with his/her EO.

**Mitigation hierarchy:** The mitigation hierarchy is a framework for managing risks and potential impacts related to biodiversity and ecosystem services. The mitigation hierarchy is used when planning and implementing development projects, to provide a logical and effective approach to protecting and conserving biodiversity and maintaining important ecosystem services. It is a tool to aid in the sustainable management of living, natural resources, which provides a mechanism for making explicit decisions that balance conservation needs with development priorities

**No-go areas:** Areas of environmental sensitivity that should not be impacted on or utilised during the development of a project as identified in any environmental reports.

**Pre-construction:** The period prior to the commencement of construction, this may include activities which do not require Environmental Authorisation (e.g. geotechnical surveys).

**Pollution:** A change in the environment caused by substances (radio-active or other waves, noise, odours, dust or heat emitted from any activity, including the storage or treatment or waste or substances.

**Rare species:** Taxa with small world populations that are not at present Endangered or Vulnerable, but are at risk as some unexpected threat could easily cause a critical decline. These taxa are usually localised within restricted geographical areas or habitats or are thinly scattered over a more extensive range. This category was termed Critically Rare by Hall and Veldhuis (1985) to distinguish it from the more generally used word "rare."

**Red data species:** Species listed in terms of the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species, and/or in terms of the South African Red Data list. In terms of the South African Red Data list, species are classified as being extinct, endangered, vulnerable, rare, indeterminate, insufficiently known or not threatened (see other definitions within this glossary).

**Rotor:** The portion of the wind turbine that collects energy from the wind is called the rotor. The rotor converts the energy in the wind into rotational energy to turn the generator. The rotor has three blades that rotate at a constant speed of about 15 to 28 revolutions per minute (rpm).

**Significant impact:** An impact that by its magnitude, duration, intensity, or probability of occurrence may have a notable effect on one or more aspects of the environment.

## ACRONYMS

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BGIS	Biodiversity Geographic Information System
CBA	Critical Biodiversity Area
DFFE	Department of Forestry, Fisheries, and the Environment (National)
DWS	Department of Water and Sanitation
CBA	Critical Biodiversity Area
CR	Critically Endangered
CSIR	Council for Scientific and Industrial Research
DM	District Municipality
DMRE	Department of Mineral Resources Energy
EAP	Environmental Assessment Practitioner
EGIS	Environmental Geographic Information System
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EMP	Environmental Management Plan
EMPr	Environmental Management Programme
EN	Endangered
EP	Equator Principles
ESA	Ecological Support Area
GA	General Authorisation
GHG	Greenhouse Gas
HGM	Hydrogeomorphic
IBA	Important Bird Area
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
IEP	Integrated Energy Plan
IFC	International Finance Corporation
IPP	Independent Power Producer
IRP	Integrated Resource Plan
IUCN	International Union for Conservation of Nature
I&AP	Interested and Affected Party
km	Kilometre
kWh	Kilowatt hour
LC	Least Concern
LEDET	Limpopo Department of Economic Development, Environment and Tourism
LM	Local Municipality
m	Metre
m <sup>2</sup>	Square meters
m <sup>3</sup>	Cubic meters
m amsl	Metres Above Mean Sea Level
MW	Megawatts
NDP	National Development Plan
NEMA	National Environmental Management Act (No. 107 of 1998)
NEM:AQA	National Environmental Management: Air Quality Act (No. 39 of 2004)
NEM:BA	National Environmental Management: Biodiversity Act (No. 10 of 2004)
NEM:WA	National Environmental Management: Waste Act (No. 59 of 2008)
NFA	National Forests Act (No. 84 of 1998)

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NFEPA	National Freshwater Ecosystem Priority Area
NHRA	National Heritage Resources Act (No. 25 of 1999)
NT	Near Threatened
NWA	National Water Act (No. 36 of 1998)
NWDEDECT	North West Department of Economic Development, Environment, Conservation and Tourism
ONA	Other Natural Area
PA	Protected Area
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SAIAB	South African Institute for Aquatic Biodiversity
SANBI	South African National Biodiversity Institute
SDF	Spatial Development Framework
TOPS	Threatened or Protected Species
VU	Vulnerable



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## CHAPTER 1 CHAPTER 1: INTRODUCTION

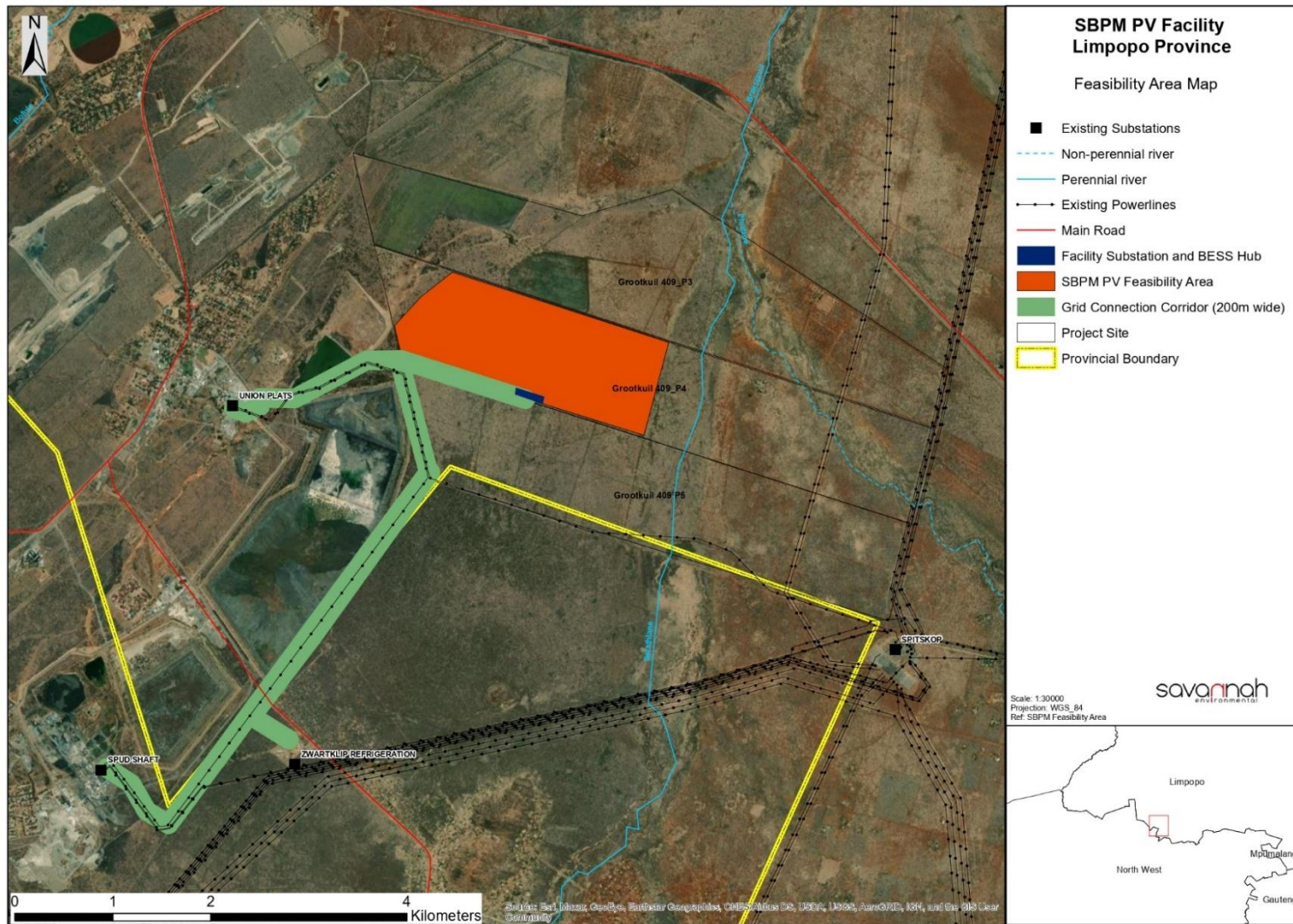
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The Applicant, Main Street 1886 Proprietary Limited, is proposing the development of the SBPM solar photovoltaic (PV) facility and associated infrastructure on a site located approximately 6.5km west of the town of Northam within the Thabazimbi Local Municipality and the Waterberg District Municipality in the Limpopo Province (refer to **Figure 1.1**). The proposed grid connection route for the SBPM PV facility extends into the North West Province within the Moses Kotane Local Municipality and the Bojanala Platinum District Municipality. The purpose of the proposed project is to generate electricity for exclusive use by the Siyanda Bakgatla Platinum Mine. The construction of the PV facility aims to reduce the Siyanda Bakgatla Platinum Mine's dependency on direct supply from Eskom's national grid for operation activities, while simultaneously decreasing the mine's carbon footprint.

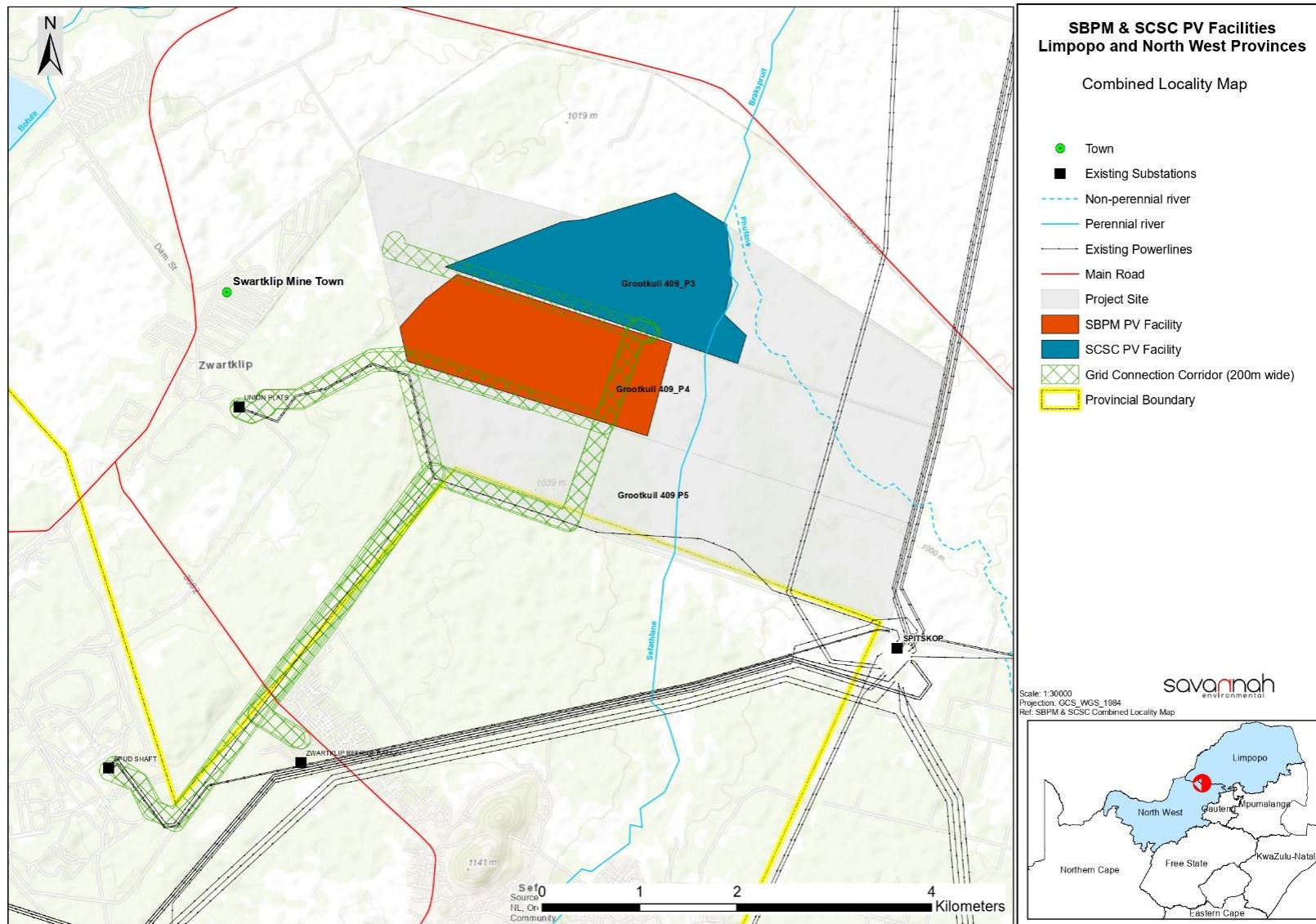
The solar PV facility will comprise several arrays of PV panels and associated infrastructure and will have a contracted capacity of up to 100MW. A project site consisting of Portion 4 of the Farm Grootkuil 409 KQ (~1138ha in extent) is being considered for the SBPM solar PV facility (refer to **Figure 1.1**). The full extent of the project site has been evaluated in the Scoping Phase to identify sensitivities and a facility layout has been provided and assessed within this EIA process. A dedicated development area for the solar PV facility (~574ha in extent) has been demarcated to avoid the identified environmental sensitivities. The grid connection for the facility will consist of a facility substation and transmission lines into the existing mine substations (Mortimer, Fridge and Ivan). The grid connection infrastructure is located within an assessment corridor of 200m wide located in a band along the south-west boundary of the project site and traverses Portion 4, Portion 5 of the Farm Grootkuil 409, Portion 1, Portion 2 of Farm Zwartklip 405, Portion 0 of Farm Spitskop 410 and Portion 0 of Farm Turfbult 404.

An additional 100MW PV facility to be known as SCSC PV is being considered adjacent to the project site within Portion 4 of the Farm Grootkuil 409 and is being assessed through a separate Environmental Impact Assessment (EIA) process. The relative location of the two development areas is indicated in **Figure 1.2**.

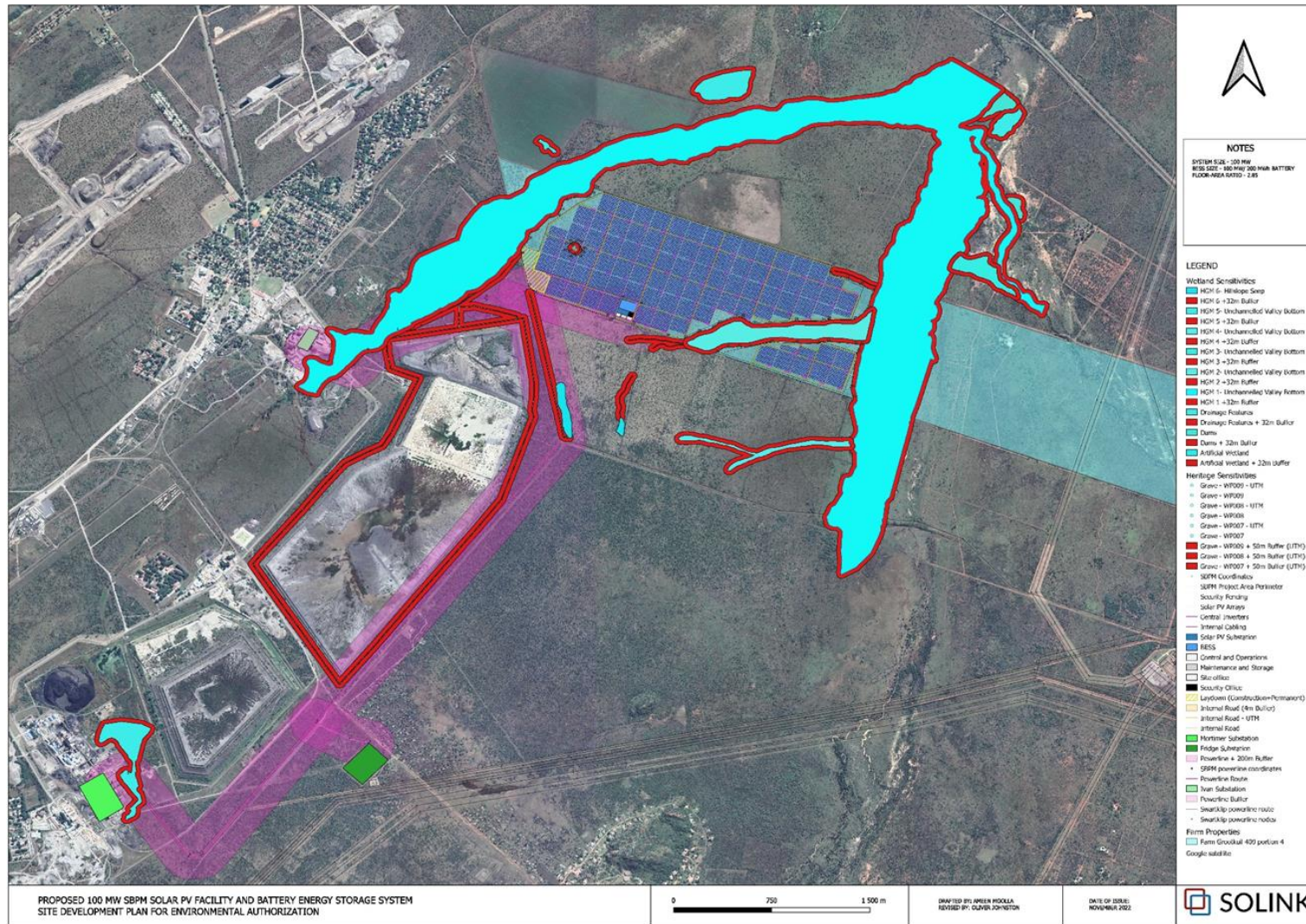
From a regional perspective, the Limpopo Province, and particularly the area under investigation, is considered favourable for the development of a commercial solar facility by virtue of prevailing climatic conditions, relief, the extent of the affected properties, the availability of a grid connection and the availability of land on which the development can take place.



**Figure 1.1:** Locality map illustrating the location of the SBPM solar PV facility project site on Portion 4 Farm Grootkui 409 (also refer to **Appendix O** for maps).



**Figure 1.2:** Locality map illustrating the SBPM and the SCSC solar PV facilities (also refer to **Appendix N** for maps).



**Figure 1.3:** Layout and sensitivity map of the preferred development footprint and grid connection corridor for the SBPM Solar Energy Facility, as was assessed as part of the EIA process (**A3 map is included in Appendix N**)



## 1.1 Legal Requirements as per the EIA Regulations, 2014 (as amended) for the undertaking of an EIA Report

This EIA Report has been prepared in accordance with the requirements of the EIA Regulations published on 08 December 2014 (and amended on 07 April 2017) promulgated in terms of Chapter 5 of the National Environmental Management Act (Act No 107 of 1998). This chapter of the EIA Report includes the following information required in terms of Appendix 3: Scope of Assessment and Content of Environmental Impact Assessment Report:

Requirement	Relevant Section
3(1)(a)(i) the details of the EAP who prepared the report and (ii) the expertise of the EAP to carry out scoping procedures; including a curriculum vitae	The details of the EAP and the expertise of the EAP have been included in <b>Section 1.4</b> . The Curriculum vitae of the Savannah Environmental team have been included as <b>Appendix A</b> .
3(1)(b) the location of the activity, including (i) the 21-digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name and (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties	Details of the location of the Project, the affected properties, including the property names and numbers, as well as the SG-codes are included in <b>Table 1.1</b> .
3(1)(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 (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken	A locality map illustrating the location of the Project has been included in <b>Figure 1.1</b> . The centre point coordinates of the project site are included in <b>Table 1.1</b> .

This EIA Report consists of ten chapters, which include:

- » **Chapter 1** provides background to the SBPM solar PV facility project and the environmental impact assessment process.
- » **Chapter 2** provides a description of the SBPM solar PV facility project.
- » **Chapter 3** provides the site selection information and identified project alternatives.
- » **Chapter 4** outlines strategic regulatory and legal context for energy planning in South Africa and the need and desirability of the SBPM solar PV facility.
- » **Chapter 5** outlines the approach to undertaking the EIA process.
- » **Chapter 6** describes the existing biophysical and social environment within and surrounding the study and development area.
- » **Chapter 7** provides an description and assessment of the potential impacts associated with the proposed solar PV facility and associated infrastructure.
- » **Chapter 8** provides a description and assessment of the potential cumulative impacts associated with the proposed solar PV facility and associated infrastructure.
- » **Chapter 9** presents the conclusions presents the conclusions and recommendations based on the findings of the EIA for the project.
- » **Chapter 10** provides references used to compile the Scoping Report.

## 1.2 Project Overview

The project site has been identified by the applicant as a technically feasible site which has the potential for the development of the SBPM solar PV facility, including a Battery Energy Storage System (BESS).

**Table 1.1:** Detailed description of the project site.

<b>Province</b>	Limpopo Province and North West Province	
<b>District Municipality</b>	Waterberg District Municipality Bojanala Platinum District Municipality	
<b>Local Municipality</b>	Thabazimbi Local Municipality Moses Kotane Local Municipality	
<b>Ward Number(s)</b>	Ward 05 Ward 07	
<b>Nearest Town(s)</b>	Northam (~6.5km west)	
<b>Farm Portion(s), Name(s) and Number(s) associated with the Solar PV Facility</b>	Solar PV: » Portion 4 of Farm Grootkuil 409	
<b>Farm Portion(s), Name(s) and Number(s) of properties affected by the grid connection</b>	Grid Connection: » Portion 3 of Farm Grootkuil 409 » Portion 4 of Farm Grootkuil 409 » Portion 5 of Farm Grootkuil 409 » Portion 0 of Farm Spitskop 410 » Portion 0 of Farm Turfbult 404 » Portion 1 of Farm Zwartklip 405 » Portion 2 of Farm Zwartklip 405	
<b>SG 21 Digit Code (s)</b>	<u>Solar PV:</u> » Portion 4 of Farm Grootkuil 409 - TOKQ0000000040900000 <u>Grid connection:</u> » Portion 3 of Farm Grootkuil 409 - TOKQ0000000040900000 » Portion 4 of Farm Grootkuil 409 - TOKQ0000000040900000 » Portion 5 of Farm Grootkuil 409 - TOKQ0000000040900000 » Portion 0 of Farm Spitskop 410 - TOKQ0000000041000000 » Portion 0 of Farm Turfbult 404 - TOKQ0000000040400000 » Portion 1 of Farm Zwartklip 405 - TOKQ0000000040500000 » Portion 2 of Farm Zwartklip 405 - TOKQ0000000040500000	
<b>Current Zoning</b>	Agriculture	
<b>Site Extent (project site)</b>	~1138ha	
<b>PV Development area</b>	~574ha	
<b>PV Development footprint</b>	~240ha	
<b>Site Co-ordinates (project site)</b>	<b>Latitude:</b>	<b>Longitude:</b>
	24°55'52.35"S	27°11'03.66"E
	24°56'17.35"S	27°12'21.54"E
	24°56'46.76"S	27°12'10.76"E
	24°56'19.63"S	27°10'43.96"E
	24°56'08.35"S	27°10'42.43"E
	24°55'52.11"S	27°11'03.27"E

Infrastructure associated with the solar PV facility will include:

- » 100MW Solar PV array comprising PV modules and mounting structures.
- » Inverters and transformers.
- » Cabling between the project components.
- » Battery Energy Storage System (BESS).
- » On-site facility substation and power lines between the solar PV facility and the Mine and Eskom substation.
- » Site offices, Security office, operations and control, and maintenance and storage laydown areas.
- » Access roads, internal distribution roads
- » Grid connection solution within a 200m wide corridor to consist of the following:
  - The power generated by the solar PV facility will be transferred to the three step up transformers at the on-site/plant substation. Power will then be delivered from each step-up transformer as follows:
    - \* two 6.6 km, 33 kV transmission lines to the Mortimer substation with four step down transformers (33/ 6.6kV; 10 MVA),
    - \* two 4.7 km, 33 kV transmission lines to the Fridge substation with two step down transformers (33/ 6.6kV; 10 MVA),
    - \* two 2.9 km, 33 kV transmission lines to the Ivan substation with three step down transformers (33/ 11kV; 10 MVA)

The key infrastructure components proposed as part of the SBPM solar PV facility are described in greater detail in Chapter 2 of this EIA Report.

The overarching objective for the SBPM solar PV facility is to maximise electricity production through exposure to the available solar resource, while minimising infrastructure, operational and maintenance costs, as well as potential social and environmental impacts in accordance with the principles of sustainable development. In order to evaluate the project, the following is considered through this Scoping/EIA process:

<b>Project site</b>	Portion 4 of the Farm Grootkuil 409 (~574ha in extent).
<b>Development area</b>	the identified area (to be located within the project site) where the SBPM solar PV facility is planned to be positioned. This area will be selected as a practicable location option for the facility, considering technical preference and environmental constraints. The development area is ~574ha in extent and has been demarcated as a result of the findings of the Scoping phase.
<b>Development footprint (facility layout)</b>	the defined area (located within the development area) where the PV panel array and other associated infrastructure for the SBPM solar PV facility is planned to be constructed. This is the facility footprint, and the area which would be disturbed by project-related infrastructure. The development footprint will be ~240ha in extent

The development area is larger than the area needed for the development footprint of a 100MW PV facility, and therefore provides the opportunity for the optimal placement of the infrastructure, ensuring avoidance of environmental sensitivities or constraints identified through this Scoping and EIA process.

### 1.3 Overview of this Environmental Impact Assessment (EIA) Process

Section 24 of South Africa's National Environmental Management Act (No. 107 of 1998) (NEMA) pertains to Environmental Authorisations (EA), and requires that the potential consequences for, or impacts of, listed or specified activities on the environment be considered, investigated, assessed, and reported on to the Competent Authority (CA). The 2014 Environmental Impact Assessment (EIA) Regulations, as amended (GNR 326) published under NEMA prescribe the process to be followed when applying for Environmental

Authorisation (EA), while the Listing Notices (Listing Notice 1 (GNR 327), Listing Notice 2 (GNR 325), and Listing Notice 3 (GNR 324)) contain those activities which may not commence without EA from the CA.

As the project has the potential to impact on the environment, an Environmental Authorisation (EA) is required from the Department of Forestry, Fisheries and the Environment (DFFE), subject to the completion of a full Scoping and Environmental Impact Assessment (S&EIA), as prescribed in Regulations 21 to 24 of the 2014 EIA Regulations, as amended (GNR 326).

The need for EA subject to the completion of a full S&EIA is triggered by the inclusion of, amongst others, Activity 1 of Listing Notice 2 (GNR 325)<sup>8</sup>, namely:

*"The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20MW or more."*

An EIA is an effective planning and decision-making tool for the project developer as it allows for the identification and management of potential environmental impacts. It provides the opportunity for the developer to be forewarned of potential environmental issues and allows for the resolution of the issues reported on in the Scoping and EIA reports as well as dialogue with interested and affected parties (I&APs).

The EIA process comprises of two (2) phases (i.e. Scoping and Impact Assessment) and involves the identification and assessment of potential environmental impacts through the undertaking of independent specialist studies, as well as public participation. The processes followed in these two phases is as follows:

- » The **Scoping Phase** includes the identification of potential issues associated with the project through a desktop study (considering existing information), limited field work, and consultation with interested and affected parties and key stakeholders. This phase considers the broader project site in order to identify and delineate any environmental fatal flaws, no-go and / or sensitive areas. Following a public review period of the Scoping report, this phase culminates in the submission of a final Scoping Report and Plan of Study for the EIA to the CA for consideration and acceptance.
- » The **EIA Phase** involves a detailed assessment of the potentially significant positive and negative impacts (direct, indirect, and cumulative) identified in the Scoping Phase. This phase considers a proposed development footprint within the project site and includes detailed specialist investigations as well as public consultation. Following a public review period of the EIA Report, this phase culminates in the submission of a final EIA Report and an Environmental Management Programme (EMPr), including recommendations of practical and achievable mitigation and management measures, to the CA for final review and decision-making.

#### **1.4 Details of Environmental Assessment Practitioner and Expertise to conduct the S&EIA Process**

In accordance with Regulation 12 of the 2014 EIA Regulations (GNR 326), the applicant has appointed Savannah Environmental (Pty) Ltd as the independent environmental consultant responsible for managing the Application for EA and supporting Scoping and Environmental Impact Assessment (S&EIA) process; inclusive of comprehensive, independent specialist studies. The application for EA and S&EIA process will be managed in accordance with the requirements of NEMA, the 2014 EIA Regulations (GNR 326), and all other relevant applicable legislation.

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<sup>8</sup> Refer to Chapter 5 for a full list of applicable activities

Neither Savannah Environmental nor any of its specialists are subsidiaries or are affiliated to the applicant. Furthermore, Savannah Environmental does not have any interests in secondary developments that may arise out of the authorisation of the proposed facility.

Savannah Environmental is a specialist environmental consulting company providing a holistic environmental management service, including environmental assessment, and planning to ensure compliance and evaluate the risk of development, and the development and implementation of environmental management tools. Savannah Environmental benefits from the pooled resources, diverse skills and experience in the environmental field held by its team. The Savannah Environmental team for this project includes (refer to **Appendix A**)

- » **Carina de Ornelas** is a Junior Environmental Consultant that has recently started her environmental career at Savannah Environmental. She holds a Bachelor of Arts in Environmental Management and intends to further her studies in the near future. She previously worked in retail as a supervisor for over 4 years and now has over 2 months of experience as a Junior Environmental Consultant whereby she has helped in drafting of scoping reports, basic assessment reports and EIAs, she also does mapping on GIS for reports.
- » **Nkhensani Masondo**, the principle author of this report and EAP on this project is registered with the Environmental Assessment Practitioners Association of South Africa (EAPASA (2020/1385) and holds a BSocSci in Environmental Analysis and Management and is currently completing her MSc in Environmental Management. She has six (6) years of working experience in the environmental field and has gained extensive experience in conducting Environmental Impact Assessments, Stakeholder Engagements, Environmental Auditing and Environmental Management Plans Programmes for a wide range of projects. She is responsible for overall compilation of the report, this includes reviewing specialists reports and incorporating specialist studies into the Basic Assessment report and its associated Environmental Management.
- » **Jo-Anne Thomas**, is a registered EAP with the Environmental Assessment Practitioners Association of South Africa (EAPASA - 2019/726). She provides technical input for projects in the environmental management field, specialising in Strategic Environmental Advice, Environmental Impact Assessment studies, environmental auditing and monitoring, environmental permitting, public participation, Environmental Management Plans and Programmes, environmental policy, strategy and guideline formulation, and integrated environmental management. Her key focus is on integration of the specialist environmental studies and findings into larger engineering-based projects, strategic assessment, and providing practical and achievable environmental management solutions and mitigation measures. Responsibilities for environmental studies include project management (including client and authority liaison and management of specialist teams); review and manipulation of data; identification and assessment of potential negative environmental impacts and benefits; review of specialist studies; and the identification of mitigation measures.
- » **Bregardia Rabbie** is a Public Participation Consultant at Savannah Environmental. She has 6 years working experience in project management and coordinating public participation processes in the Telecommunication industry. She has good communication skills and utilizes this skill to manage interaction between National, Provincial, and local authorities and the community. Bregardia is skilled

at organising, managing, and coordinating public participation and engagement projects effectively and timeously.

In order to adequately identify and assess potential environmental impacts associated with the proposed SBPM Solar PV facility, the following specialist sub-consultants have provided input into this scoping report:

<b>Specialist</b>	<b>Area of Expertise</b>
Lindi Steyn of The Biodiversity Company (Pty) Ltd and reviewed by Andrew Husted.	Ecology and Avifauna
Michael Douglas of The Biodiversity Company (Pty) Ltd and reviewed by Andrew Husted.	Agricultural Potential Assessment
Rian Pienaar of The Biodiversity Company (Pty) Ltd and reviewed by Andrew Husted.	Aquatic Ecology
Nondumiso Bulunga of Savannah Environmental and peer reviewed by Dr Neville Bews of Dr Neville Bews & Associates.	Social
Jenna Lavin of CTS Heritage	Heritage (including Archaeology Palaeontology and Cultural Landscape)

**Appendix A** includes the curricula vitae for the environmental assessment practitioners from Savannah Environmental and the specialist consultants.

## CHAPTER 2: PROJECT DESCRIPTION

This Chapter provides an overview of the SBPM solar PV facility and details the project scope which includes the planning/design, construction, operation, and decommissioning activities required for the development. It must be noted that the project description presented in this Chapter may change to some extent based on the outcomes and recommendations of detailed engineering and other technical studies, the findings and recommendations of the EIA and supporting specialist studies, and any licencing, permitting, and legislative requirements.

### 2.1 Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of an Environmental Impact Assessment Report

This chapter of the EIA Report includes the following information required in terms of Appendix 3: Scope of Assessment and Content of the Environmental Impact Assessment Report

3(i)(d) a description of the scope of the proposed activity including:  
(ii) a description of the activities to be undertaken including associated structures and infrastructure

A description of the project and all associated infrastructure is included in **Section 2.4**. Activities to be undertaken during the various development phases is included in **Section 2.6**.

### 2.2 Nature and Extent of the SBPM Solar PV facility

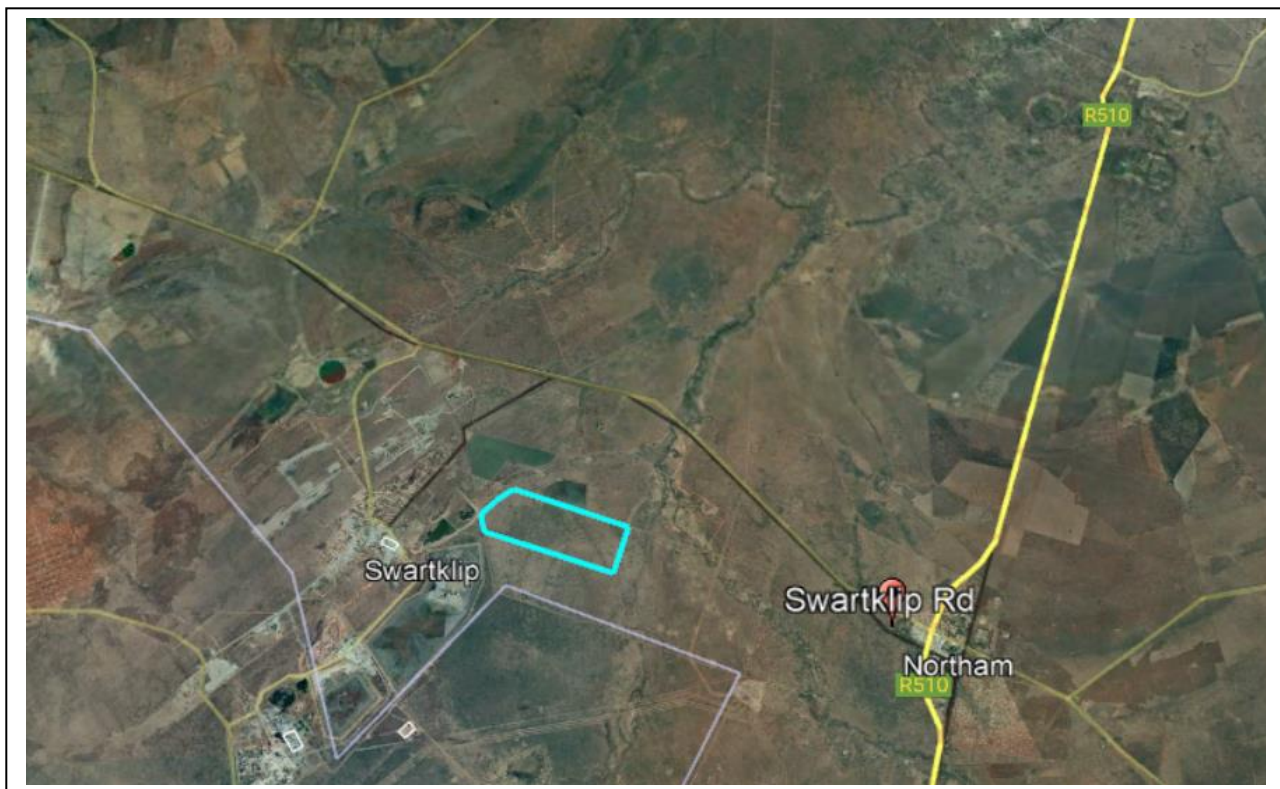
Main Street 1886 Proprietary Limited is proposing the development of a commercial solar facility and associated infrastructure to generate electricity for exclusive use by the Siyanda Bagatla Platinum Mine. The construction of the PV facility aims to reduce the Siyanda Bagatla Platinum Mine's dependency on direct supply from Eskom's national grid for operation activities, while simultaneously decreasing the mine's carbon footprint. The SBPM solar PV facility will be developed in a single phase and will have a contracted capacity of up to 100MW. The project will make use of fixed-tilt, single-axis tracking, and/or double-axis tracking PV technology. Monofacial or bifacial panels are both considered within this Scoping Report.

The SBPM solar PV facility will comprise solar panels which, once installed, will stand less than 6m above ground level. The solar panels will include centralised inverter stations, or string inverters mounted above ground. If centralised inverter stations are used, Mega Volt (MV) distribution transformers are located internally, whereas string inverters are containerised with switchgear. The main transformer capacity varies according to detailed design and project-specific requirements.

#### 2.2.1 Overview of the Project Site

The project is to be developed on a site located approximately 6.5km west of Northam. The project site falls within the Thabazimbi Local Municipality and within the Waterberg District Municipality in the Limpopo Province. The proposed grid connection route for the SBPM PV development extend to the North West Province within the Moses Kotane Local Municipality and the Bojanala Platinum District Municipality. The full extent of the project site (~1138ha) has been considered within this Scoping Phase of the EIA process, within which the SBPM solar PV facility will be appropriately located from a technical and environmental sensitivity perspective. The development area is located on Portion 4 of farm Grootkuil 409.

The project site within which the PV facility is proposed is situated ~6km south-east to the R510 provincial road. Access to the project site is via the Swartklip Road which branches off the R510 provincial road on the south-eastern side of the SBPM development area (refer to **Figure 2.1**).



**Figure 2.1:** Location of the R510 and the Swartklip Road in relation to the SBPM solar PV development area (development area in blue).

The grid connection for the facility will consist of a facility substation and transmission lines into the existing mine substations (Mortimer, Fridge and Ivan). The grid connection infrastructure is located within an assessment corridor of 200m wide located in a band along the south-west boundary of the project site and traverses Portion 3, Portion 4, Portion 5 of the Farm Grootkuil 409, Portion 1, Portion 2 of Farm Swartklip 405, Portion 0 of Farm Spitskop 410 and Portion 0 of Farm Turfbult 404. A portion of this grid connection route extends into the North West Province within the Moses Kotane Local Municipality and the Bojanala Platinum District Municipality.

### **2.2.2 Components of the SBPM Solar PV facility.**

The project site is proposed to accommodate both the PV panels, as well as most of the associated infrastructure, which is required for such a facility, and will include:

- » Solar PV array comprising PV modules and mounting structures.
- » Inverters and transformers.
- » Cabling between the project components.
- » Battery Energy Storage System (BESS).
- » On-site facility substation and power lines between the solar PV facility and the Mine and Eskom substation.
- » Site offices, Security office, operations and control, and maintenance and storage laydown areas.



- » Access roads, internal distribution roads
- » Grid connection solution within a 200m wide corridor to consist of the following:
  - The power generated by the solar PV facility will be transferred to the three step up transformers at the on-site/plant substation. Power will then be delivered from each step-up transformer as follows:
    - two 6.6 km, 33 kV power lines to the Mortimer substation with four step down transformers (33/ 6.6kV; 10 MVA),
    - two 4.7 km, 33 kV power lines to the Fridge substation with two step down transformers (33/ 6.6kV; 10 MVA),
    - two 2.9 km, 33 kV power lines to the Ivan substation with three step down transformers (33/11kV; 10 MVA)

A summary of the details and dimensions of the planned infrastructure associated with the project is provided in **Table 2.1**

**Table 2.1** Details of infrastructures proposed as part of SBPM Solar PV facility

Component	Description / Dimensions
Number of Panels	250 000 - 300 000
Panel Height	Up to 6m
Number of inverters and Height	1000 inverters, Height = 0.7 m
Technology	Use of fixed-tilt, single-axis tracking, and/or double-axis tracking PV technology. Monofacial or bifacial panels are both considered.
Battery Energy Storage System (BESS)	Lithium-Ion Battery technology Approximately 2ha
Other infrastructures	Site office = 20 x 20m, height = 2.5 m Security office = 20 x 20m, height = 2.5 m Operations and control = 50 x 50m, height = 5 m Maintenance and storage = 50 x 50m, height = 5 m
Area occupied by laydown area	To be determined in the EIA Phase
Contracted Capacity	Up to 100MW
Area occupied by the solar array	To be determined in the EIA phase
Area occupied by the on-site facility substation	~0.5ha
Capacity of on-site facility substation	100MVA
Access and internal roads	Wherever possible, existing access roads or jeep tracks will be utilised to access the project site and development area. It is unlikely that access roads will need to be upgraded as part of the proposed development. Internal access roads (gravel) of 8m in width exist and extend into the site area from the west, north and east side via the Swartklip Road.
Grid connection	The power generated by the solar PV facility will be transferred to the three step up transformers at the on-site/plant substation. Power will then be delivered from each step-up transformer as follows: <ul style="list-style-type: none"> <li>» two 6.6 km, 33 kV power lines to the Mortimer substation with four step down transformers (33/6.6kV; 10 MVA),</li> <li>» two 4.7 km, 33 kV power lines to the Fridge substation with two step down transformers (33/6.6kV; 10 MVA),</li> </ul>

Component	Description / Dimensions
	» two 2.9 km, 33 kV power lines to the Ivan substation with three step down transformers (33/11kV; 10 MVA)
Temporary infrastructure	Temporary infrastructure, including laydown areas, hardstand areas and a concrete batching plant, will be required during the construction phase. All areas affected by temporary infrastructure will be rehabilitated following the completion of the construction phase, where it is not required for the operation phase.

**Table 2.2** overleaf provides details regarding the requirements and the activities to be undertaken during the SBPM solar PV facility development phases (i.e., construction phase, operation phase and decommissioning phase). **Section 2.3** provides details of technology considered for the solar energy facility and the generation of electricity.

### 2.2.3 Project Development Phases Associated with the SBPM Solar PV facility

**Table 2.2:** Details of the SBPM Solar PV facility project development phases (i.e., construction, operation, and decommissioning)

<b>Construction Phase</b>	
<b>Requirements</b>	<ul style="list-style-type: none"> <li>» Project receives Environmental Authorisation from the DFFE.</li> <li>» Construction period is expected to be 15-18 months for SBPM solar PV facility.</li> <li>» Create direct construction employment opportunities. Approximately 55 employment opportunities will be created.</li> <li>» No on-site labour camps. Employees to be accommodated in the nearby towns such as Northam and transported to and from site on a daily basis.</li> <li>» Overnight on-site worker presence would be limited to security staff.</li> <li>» Waste removal and sanitation will be undertaken by a suitably qualified sub-contractor. Waste containers, including containers for hazardous waste, will be located at easily accessible locations on site when construction activities are undertaken.</li> <li>» Electricity required for construction activities will be generated by a generator. Where low voltage connections are possible, these will be considered.</li> <li>» Water required for the construction phase will be supplied by the municipality. In addition, where possible. Should water availability at the time of construction be limited, water will be transported to site via water tanks. Water will be used for sanitation and potable water on site as well as construction works.</li> </ul>
<b>Activities to be undertaken</b>	
Conduct surveys prior to construction	<ul style="list-style-type: none"> <li>» Including, but not limited to: a geotechnical survey, site survey and confirmation of the panel micro-siting footprint, and survey of the on-site collector substation site to determine and confirm the locations of all associated infrastructure.</li> </ul>
Establishment of access roads to the Site	<ul style="list-style-type: none"> <li>» Internal access roads within the site will be established at the commencement of construction.</li> <li>» Existing access roads will be utilised, where possible, to minimise impact. It is unlikely that access roads will need to be upgraded as part of the proposed development.</li> <li>» Access roads to be established for construction and/or maintenance activities within the development footprint.</li> <li>» Internal service road alignment will be approximately 8m wide. Location is to be determined by the final micro-siting or positioning of the PV panels.</li> </ul>
Undertake site preparation	<ul style="list-style-type: none"> <li>» Including the clearance of vegetation at the footprint of PV panel supports, establishment of the laydown areas, the establishment of internal access roads and excavations for foundations.</li> <li>» Stripping of topsoil to be stockpiled, for use during rehabilitation.</li> <li>» Vegetation clearance to be undertaken in a systematic manner to reduce the risk of exposed ground being subjected erosion.</li> <li>» Include search and rescue of floral species of concern (where required) and the identification and excavation of any sites of cultural/heritage value (where required).</li> </ul>

Establishment of laydown areas and batching plant on site	<ul style="list-style-type: none"> <li>» A laydown area for the storage of PV panels components and civil engineering construction equipment.</li> <li>» The laydown will also accommodate building materials and equipment associated with the construction of buildings.</li> <li>» No borrow pits will be required. Infilling or depositing materials will be sourced from licenced borrow pits within the surrounding areas.</li> <li>» A temporary concrete batching plant of 50m x 50m in extent to facilitate the concrete requirements for foundations, if required.</li> </ul>
Construct foundation	<ul style="list-style-type: none"> <li>» Excavations to be undertaken mechanically.</li> <li>» For PV array installation vertical support posts will be driven into the ground.</li> <li>» Depending on geological conditions, the use of alternative foundations may be considered (e.g., screw pile, helical pile, micropile or drilled post/piles ).</li> </ul>
Transport of components and equipment to and within the site	<ul style="list-style-type: none"> <li>» The components for the solar PV facility and onsite substation will be transported to site by road. Transportation will take place via appropriate National and Provincial roads, and the dedicated access/haul road to the site.</li> <li>» Some of the components (i.e. substation transformer) may be defined as abnormal loads in terms of the Road Traffic Act (Act No. 29 of 1989) by virtue of the dimensional limitations.</li> <li>» Typical civil engineering construction equipment will need to be brought to the site (e.g. excavators, trucks, graders, compaction equipment, cement trucks, etc.) as well as components required for the mounting of the PV support structures, construction of the substation and site preparation.</li> </ul>
Erect PV Panels and Construct Substation, Invertors and BESS	<ul style="list-style-type: none"> <li>» The construction phase involves installation of the solar PV panels and the structural and electrical infrastructure to make the plant operational. In addition, preparation of the soil and improvement of the access roads would continue for most of the construction phase.</li> <li>» For array installation, typically vertical support posts are driven into the ground. Depending on the results of the geotechnical study a different foundation method, such as screw pile, helical pile, micro-pile or drilled post/pile could be used. The posts will hold the support structures (tables) on which PV arrays would be mounted. Brackets attach the PV modules to the tables.</li> <li>» Trenches are dug for the underground AC and DC cabling and the foundations of the inverter enclosures and transformers are prepared. While cables are being laid and combiner boxes are being installed, the PV tables are erected.</li> <li>» Wire harnesses connect the PV modules to the electrical collection systems.</li> <li>» Underground cables and overhead circuits connect the Power Conversion Stations (PCS) to the on-site AC electrical infrastructure and ultimately the project's on-site substation. This process also involves the installation of the BESS facility.</li> </ul>
Connection of PV panels to the substation	<ul style="list-style-type: none"> <li>» PV arrays to be connected to the on-site substation via underground electrical cables.</li> <li>» Excavation of trenches is required for the installation of the cables. Trenches will be approximately 1.5m deep.</li> <li>» Underground cables are planned to follow the internal access roads, as far as possible.</li> <li>» Onsite substation to be connected to the collector substation via underground cables.</li> </ul>
Establishment of ancillary infrastructure	<ul style="list-style-type: none"> <li>» Site offices and maintenance buildings, including workshop areas for maintenance and storage will be required.</li> <li>» Establishment will require the clearing of vegetation, levelling, and the excavation of foundations prior to construction.</li> </ul>

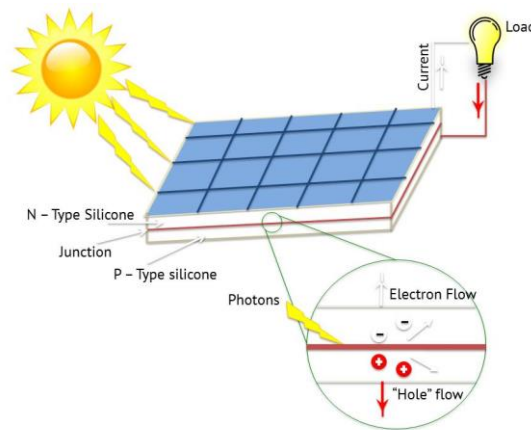
Connect substation to the power grid	<ul style="list-style-type: none"> <li>» Two 6.6 km, 33 kV power lines will run from the on-site substation and tie into the existing Mortimer substation with four step down transformers (33/6.6 kV; 10 MVA).</li> <li>» Two 6.6 km, 33 kV power lines will run from the on-site substation and tie into the existing Fridge substation with two step down transformers (33/6.6 kV; 10 MVA).</li> <li>» Two 6.6 km, 33 kV power lines will run from the on-site substation and tie into the existing Ivan substation with two step down transformers (33/6.6 kV; 10 MVA).</li> </ul>
Undertake site rehabilitation	<ul style="list-style-type: none"> <li>» Commence with rehabilitation efforts once construction completed in an area, and all construction equipment is removed.</li> <li>» On commissioning, access points to the site not required during the operation phase will be closed and prepared for rehabilitation.</li> </ul>
<b><u>Operation Phase</u></b>	
<b>Requirements</b>	<ul style="list-style-type: none"> <li>» Duration will be 20-30 years.</li> <li>» Requirements for security and maintenance of the project.</li> <li>» Employment opportunities relating mainly to operation activities and maintenance. Approximately 15 - 20 full-time employment opportunities will be available during the operation of the solar facility.</li> </ul>
<b>Activities to be undertaken</b>	
Operation and Maintenance	<ul style="list-style-type: none"> <li>» Full time security, maintenance, and control room staff.</li> <li>» All PV panels will be operational except under circumstances of mechanical breakdown, inclement weather conditions, or maintenance activities.</li> <li>» Solar PV to be subject to periodic maintenance and inspection.</li> <li>» It is anticipated that the PV panels will be washed twice a year during operation using clean water with no cleaning products, or non-hazardous biodegradable cleaning products.</li> <li>» Disposal of waste products (e.g., oil) in accordance with relevant waste management legislation.</li> <li>» Areas which were disturbed during the construction phase to be utilised, should a laydown area be required during operation.</li> </ul>
<b><u>Decommissioning Phase</u></b>	
<b>Requirements</b>	<ul style="list-style-type: none"> <li>» Decommissioning of the SBPM solar PV facility infrastructure at the end of its economic life.</li> <li>» Potential for repowering of the facility, depending on the condition of the facility at the time.</li> <li>» Expected lifespan of approximately 20 - 30 years (with maintenance) before decommissioning is required.</li> <li>» Decommissioning activities to comply with the legislation relevant at the time.</li> </ul>
<b>Activities to be undertaken</b>	
Site preparation	<ul style="list-style-type: none"> <li>» Confirming the integrity of site access to the site to accommodate the required decommissioning equipment.</li> <li>» Preparation of the site (e.g., laydown areas and construction platform).</li> <li>» Mobilisation of construction equipment.</li> </ul>

Disassemble and remove PV panels	<ul style="list-style-type: none"><li>» Components to be reused, recycled, or disposed of in accordance with regulatory requirements.</li><li>» Much of the above ground wire, steel, and PV panels of which the system is comprised are recyclable materials and would be recycled to the extent feasible.</li><li>» Concrete will be removed to a depth as defined by an agricultural specialist and the area rehabilitated. Cables will be excavated and removed, as may be required</li></ul>
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It is expected that the areas of the project site affected by the solar facility infrastructure (development footprint) will revert back to its original land-use once the SBPM solar PV facility has reached the end of its economic life and all infrastructure has been decommissioned.

### 2.3 Technology considered for the Solar Energy Facility and the Generation of Electricity

SBPM solar PV facility will have a contracted capacity of 100MW and will make use of PV technology. Solar energy facilities, which utilise PV technology, use the energy from the sun to generate electricity through a process known as the Photovoltaic Effect. This effect refers to photons of light colliding with electrons, and therefore placing the electrons into a higher state of energy to create electricity (refer to **Figure 2.3**).



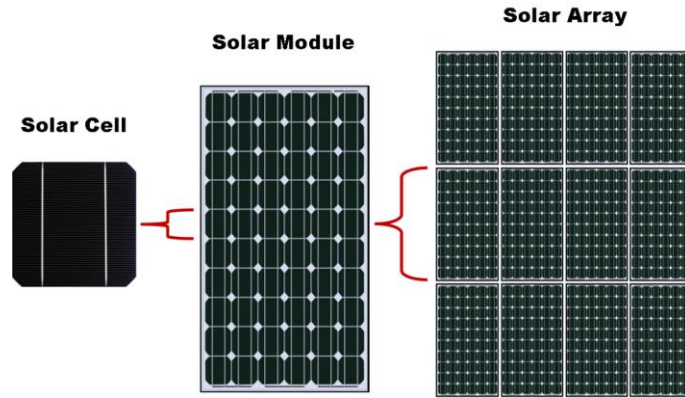
**Figure** Error! No text of specified style in document..3: Diagram illustrating the Photovoltaic Effect (Source: Centre for Sustainable Energy)

The Photovoltaic Effect is achieved through the use of the following components:

#### **Photovoltaic Cells**

A PV cell is made of silicone that acts as a semi-conductor used to produce the Photovoltaic Effect. PV cells are arranged in multiples / arrays and placed behind a protective glass sheet to form a PV panel (refer to **Figure 2.4**). Each PV cell is positively charged on one side and negatively charged on the opposite side, with electrical conductors attached to either side to form a circuit. This circuit captures the released electrons in the form of an electric current (i.e. Direct Current (DC<sup>9</sup>)).

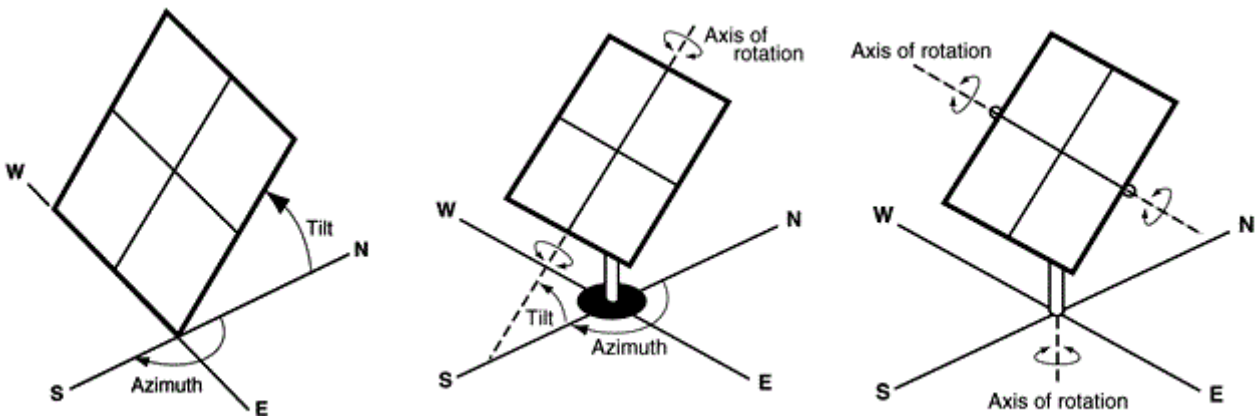
<sup>9</sup> DC (direct current) is the unidirectional flow or movement of electric charge carriers (which are usually electrons). The intensity of the current can vary with time, but the general direction of movement stays the same at all times. As an adjective, the term DC is used in reference to voltage whose polarity never reverses. In a DC circuit, electrons emerge from the negative, or minus, pole and move towards the positive, or plus, pole. Nevertheless, physicists define DC as traveling from plus to minus. (sourced from <https://whatis.techtarget.com/definition/DC-direct-current>).



**Figure Error! No text of specified style in document..4:** Overview of a PV cell, module and array / panel (Source: pveducation.com)

**Support Structures**

PV panels will be fixed to a support structure. PV panels can either utilise fixed/static support structures, or single or double axis tracking support structures (refer to **Figure 2.5**). PV panels which utilise fixed/static support structures are set at an angle (fixed-tilt PV system) so as to optimise the amount of solar irradiation. With fixed/static support structures the angle of the PV panel is dependent on the latitude of the proposed development and may be adjusted to optimise for summer and winter solar radiation characteristics. PV panels which utilise tracking support structures track the movement of the sun throughout the day so as to receive the maximum amount of solar irradiation.



**Figure Error! No text of specified style in document..5:** Overview of different PV tracking systems (from left to right: fixed-tilt, single-axis tracking, and double-axis tracking (Source: pveducation.com)).

PV panels are designed to operate continuously for more than 25 years, mostly unattended and with low maintenance.

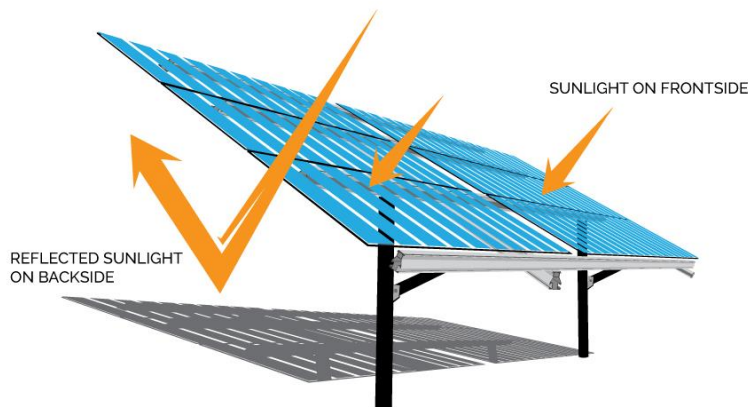
**Bifacial Solar Panel Technology**

Main Street 1886 Proprietary Limited is considering the use of bifacial tracking technology. Bifacial ("two-faced") modules produce solar power from both sides of the panel. Traditional solar panels capture sunlight



on one light-absorbing side. The light energy that cannot be captured is simply reflected away. Bifacial solar panels have solar cells on both sides, which enables the panels to absorb light from the back and the front (refer to Figure 2.6). Practically speaking, this means that a bifacial solar panel can absorb light reflected off the ground or another material. In general, more power can be generated from bifacial modules for the same area, without having to increase the development footprint.

The optimum tilt for a bifacial module has to be designed so as to capture a big fraction of the reflected irradiation. Use of trackers is recommended so the modules can track the sun's movement across the sky, enabling them to stay directed to receive the maximum possible sunlight to generate power.



**Figure 2.6:** Diagram showing how bifacial Solar PV panels work (Source: <https://sinovoltaics.com/learning-center/solar-cells/bifacial-solar-modules/>)

### Battery Energy Storage System (BESS)

The need for a BESS stem from the fact that electricity is only produced by the Renewable Energy Facility while the sun is shining, while the peak demand may not necessarily occur during the daytime. Therefore, the storage of electricity and supply thereof during peak-demand will mean that the facility is more efficient, reliable and electricity supply more constant.

The BESS will:

- » Store and integrate a greater amount of renewable energy from the Solar PV Facilities into the electricity grid;
- » This will assist with the objective to generate electricity by means of renewable energy to supply SBPM mine with power, or potential wheel power back to grid for an alternative private offtaker.
- » Proposed footprint of battery storage area: Up to ~5ha
- » Proposed preferred technology to be used: Three main technologies to be considered, either separately or in combination:
  - \* Lithium-ion batteries (LFP/NMC or others) (Li-Ion)
  - \* Lithium capacitors/Electrochemical capacitors (LiC)
  - \* Redox-flow batteries (RFB)

Photographs of the construction phase of a solar facility similar to those proposed



## CHAPTER 3: CONSIDERATION OF ALTERNATIVES

This Chapter provides an overview of the various alternatives considered for SBPM Solar PV Facility as part of the Scoping & EIA Process.

### 3.1 Legal Requirements as per the EIA Regulations, 2014 (as amended) for the undertaking of an Impact Assessment Report.

This chapter of the EIA Report includes the following information required in terms of Appendix 3: Scope of Assessment and Content of the Environmental Impact Assessment Report.

Requirement	Relevant Section
3(1)(h)(i) details of the development footprint alternatives considered	The details of the alternatives considered as part of SBPM Solar PV Facility and as part of the Scoping & EIA Process have been included in <b>Section 3.2</b> .
3(1)(h)(ix) if no alternative development footprints for the activity were investigated, the motivation for not considering such.	The details of the alternatives considered as part of SBPM Solar PV Facility and as part of the Scoping & EIA Phase have been included in <b>Section 3.3</b> . Where no alternatives are being considered a motivation has been included.
3(1)(h)(x) a concluding statement indicating the location of the preferred alternative development footprint within the approved site as contemplated in the accepted scoping report.	A concluding statement indicating the location of the preferred alternative development footprint has been included in <b>Section 3.3</b> .

### 3.2 Alternatives Considered during the EIA Process

In accordance with the requirements of Appendix 3 of the 2014 Environmental Impact Assessment (EIA) Regulations (GNR 326), reasonable and feasible alternatives including but not limited to site and technology alternatives, as well as the “do-nothing” alternative should be considered.

The DFFE Guideline for determining alternatives states that the key criteria for consideration when identifying alternatives are that they should be “practicable”, “feasible”, “relevant”, “reasonable” and “viable”. Essentially there are two types of alternatives:

- » Incrementally different (modifications) alternatives to the project.
- » Fundamentally (totally) different alternatives to the project.

In this instance, 'the project' refers to SBPM Solar PV facility, a solar energy facility with capacity of up to 100MW and associated infrastructure proposed to be developed in order to generate electricity for exclusive use by the Siyanda Mine. The construction of the PV facility aims to reduce the Siyanda Mine's dependency on direct supply from Eskom's national grid for operation activities, while simultaneously decreasing the mine's carbon footprint.

### **3.2.1 Consideration of Fundamentally Different Alternatives**

Fundamentally different alternatives are usually assessed at a strategic level and, as a result, project specific EIAs are therefore limited in scope and ability to address fundamentally different alternatives. At a strategic level, electricity generating alternatives have been addressed as part of the DMRE's current Integrated Resource Plan for Electricity 2010 – 2030 (IRP)<sup>10</sup>, and will continue to be addressed as part of future revisions. In this regard, the need for renewable energy power generation from solar PV facilities has been identified as part of the technology mix for power generation in the country for the next 20 years. The IRP includes provision for distributed generation capacity for own use. The threshold for distributed generation was raised to 100 MW in August 2021. Project developers are exempted from applying for a license but are required to register with the National Energy Regulator of South Africa (NERSA) and comply with the relevant grid code(s).

The fundamental energy generation alternatives were assessed and considered within the development of the IRP and the need for the development of renewable energy projects has been defined. Therefore, fundamentally different alternatives to the proposed project are not considered within this EIA process.

### **3.2.2 Consideration of Incrementally Different Alternatives**

Incrementally different alternatives relate specifically to the project under investigation. "Alternatives", in relation to a proposed activity, means different ways of meeting the general purposes and requirements of the activity, which may include alternatives for:

- » The property on which, or location where the activity is proposed to be undertaken.
- » The type of activity to be undertaken.
- » The design or layout of the activity.
- » The technology to be used in the activity.

In addition, the option of not implementing the activity (i.e. the "do-nothing" alternative) must also be considered.

The sections below describe the incrementally different alternatives being considered as part of the SBPM Solar PV facility. Where no alternative is being considered, a motivation has been provided as required by the EIA Regulations, 2014.

## **3.3 Project Alternatives under Consideration for the SPBM Solar PV facility**

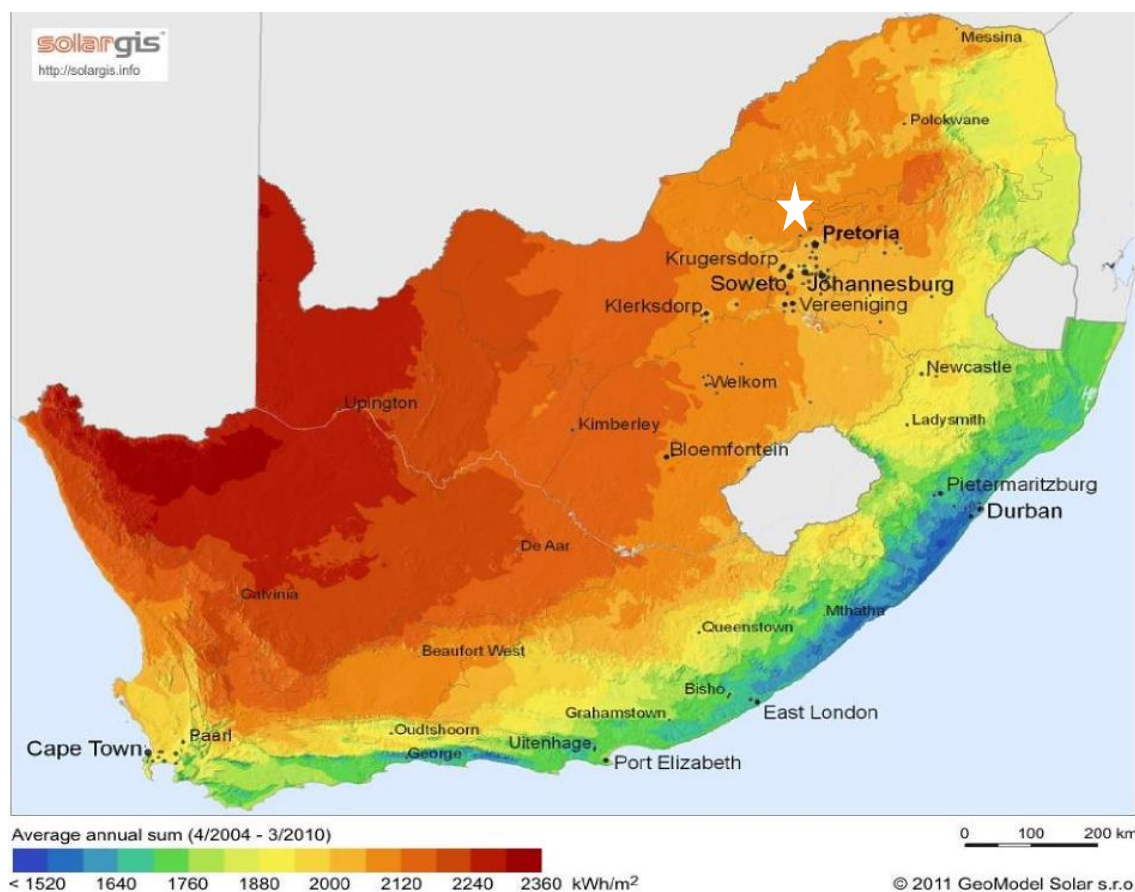
### **3.3.1 Property or Location Alternatives**

The proposed development site for the SBPM Solar PV facility is located ~6.5km west of the town of Northam. The preferred project site for the development of the project was identified based on a number of factors, including:

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<sup>10</sup> The Integrated Resource Plan (IRP) is legislated policy which regulates power generation planning.

- » Solar resource characteristics (latitude, air temperature, occurrence of clouds, terrain elevation, atmospheric aerosol concentration and atmospheric moisture content and Global Horizontal Irradiation (GHI);
  - » Proximity to the Siyanda Mine;
  - » Land availability and suitability;
  - » Geographical and topographical considerations;
  - » Site accessibility; and
  - » Environmental and social aspects.
- » **Solar resource:** Solar resource is the first main driver of site selection and property viability when considering the development of Solar PV facilities. The economic viability of a solar PV facility is directly dependent on the annual direct solar irradiation values of the area within which it will operate. The Global Horizon Irradiation (GHI) for the study area is in the region of approximately 2120 kWh/m<sup>2</sup>/annum (refer to **Figure 3.1**). This is considered feasible for the development of a solar PV facility.



**Figure 3.1:** Solar irradiation map for South Africa; the proposed SBPM solar PV facility position is shown by the white star on the map (Source: adapted from GeoModel Solar, 2011).

- » **Proximity to the Siyanda Mine:** The development area is located in close proximity to the Siyanda Bakgatla Platinum Mine, the exclusive user of the generated power, and is therefore preferred for development of the proposed PV Facility. Furthermore, there are existing available substations that are considered as possible grid connection points in order to be able to evacuate the generated power from the PV facility to the Siyanda Bakgatla Platinum Mine. The existing Mortimer substation and Fridge substation are located south-west of the site and the Ivan substation is located on the north-west of the

project site. These substations were identified as the preferred grid connection points for the project. No other suitable location alternatives were identified for the development.

- » **Land availability and suitability:** In order to develop the SBPM solar PV facility with a contracted capacity of up to 100MW and the associated grid connection, sufficient space is required. The project site is currently owned by the Siyanda Bakgatla Platinum Mine and has an extent of ~1138ha, which was considered by the developer as sufficient for the development of the Solar PV facility. A preferred development area of ~574ha will be demarcated within this larger project site for the location of the SBPM Solar PV facility. An exact development footprint within the development area for the placement of infrastructure has been identified and assessed as part of the EIA Phase considering environmental constraints and sensitivities.

The broader project site is currently used for mining purposes. The areas identified for the PV facility although on mining land will not impact on the mining activities. The development of the solar PV facility on this property will ensure the continuation of an economically viable land use and provide a sustainable source of electricity to the mine. Sites that facilitate easy construction conditions (i.e., relatively flat topography, lack of major rock outcrops etc.) are favoured during the site selection process for a solar PV facility, and the proposed development area fits this criterion.

- » **Geographical and Topographical Considerations:** The topography in the wider area is characterised by a slope percentage between 0 and 10%, with some smaller patches within the project area characterised by a slope percentage in excess of 40%. This relatively uniform topography is feasible for the development of a PV facility such as that proposed.
- » **Site access:** The project site is situated ~6km south-east of the R510 provincial road. Main access to the project site is via the Swartklip Road which branches off the R510 provincial road on the south-eastern side of the SBPM development area. The site is therefore easily accessible for both construction and operation.
- » **Environmental Screening and consideration of sensitive environmental features:** Following the identification of the potential site based on the above-mentioned factors, the developer commenced with the environmental screening of the site, to evaluate the main constraints and opportunities and determine whether or not there were any potential fatal flaws or significant no-go areas within the site that might compromise or limit the development of the PV facility and the potential for generating 100MW. The screening exercise took place prior to the commencement of the EIA process and included specialist investigations of the broader project site. This included field investigations by specialist consultants, as well as desk-top consideration of environmental constraints. The purpose of this phase of the process was to identify sensitive and no-go areas, as well as determination of appropriate buffers to be considered within the development of the project layout. The outcomes of this screening study informed the location of the development area within the project site. This is a common approach in the development of renewable energy projects in order to inform the placement of infrastructure for further investigation in the EIA process.

Based on the above considerations, the SBPM solar PV project site was identified by the developer as being the most technically feasible and viable project site within the broader area for further investigation in support of an application for authorisation. As a result, no property/location alternatives are proposed as part of this Scoping and EIA process.

### **3.3.2. Design and Layout Alternatives**

A dedicated development area of approximately 574ha has been considered for the SBPM Solar Facility. Findings from specialist assessments and field surveys undertaken were considered through this Scoping & EIA process in order to provide site specific information regarding the project development areas considered for the Project.

Areas to be avoided that were identified during the scoping phase and present within the project site have been considered by developer to identify and locate the development area for the 100MW SBPM Solar Facility. This has been undertaken with the aim of avoiding possible sensitive areas within the project site so as to limit impacts associated with the development which would result in unacceptable loss, and thereby ensuring that the layout plan taken forward for assessment during the EIA Phase is considered to be the most optimal from an environmental perspective.

The layout optimisation process applied by the developer as detailed above demonstrates due consideration of the suitability of the project site for the project in line with a typical mitigation hierarchy:

1. First Mitigation: avoidance of adverse impacts as far as possible by use of preventative measures (in this instance an environmental screening and integration process assisted in the avoidance of identified sensitive areas).
2. Second Mitigation: minimisation or reduction of adverse impacts to 'as low as practicable' through implementation of mitigation and management measures (in this instance the development of technical mitigation solutions as well as recommendations from the various environmental specialists).
3. Third Mitigation: remedy or compensation for adverse residual impacts, which are unavoidable and cannot be reduced further.

As part of the process, as described above, the first tier of avoidance has already been applied. No feasible alternative layouts have been identified for investigation as part of the EIA process.

### **3.3.3. Activity Alternatives**

The purpose of the proposed project is to generate electricity for exclusive use by the Siyanda Bakgatla Platinum Mine. The construction of the PV facility aims to reduce the Siyanda Bakgatla Platinum Mine's dependency on direct supply from Eskom's national grid for operation activities, while simultaneously decreasing the mine's carbon footprint. The only activity considered for implementation on the identified site is therefore power generation from solar PV and storage of power in batteries.

### 3.3.4. Technology Alternatives

As the applicant is investigating the development of a renewable energy facility as the preferred power supply technology solution, no other technology alternatives are proposed. Solar has been determined as the preferred renewable energy technology based on availability of the solar resource.

Few technology options are available for solar PV facilities, and the use of those that are considered are usually differentiated by weather and temperature conditions that prevail in the area, so that optimality is obtained by the final site selection. Solar energy is considered to be the most suitable renewable energy technology for this area, based on the site location, ambient conditions and energy resource availability.

When considering PV as a technology choice, several types of panels are available, including *inter alia*:

- » Bifacial PV panels
- » Monofacial PV panels
- » Fixed mounted PV systems (static / fixed-tilt panels).
- » Single-axis tracking or double-axis tracking systems (with solar panels that rotate around a defined axis to follow the sun's movement).

The primary difference between PV technologies available relate to the extent of the facility, as well as the height of the facility, however the potential for environmental impacts remains similar in magnitude. Fixed mounted PV systems are able to occupy a smaller extent and have a lower height when compared to tracking PV systems, which require both a larger extent of land, and are taller in height. However, both options are considered to be acceptable for implementation from an environmental perspective. Bi-facial solar PV panels offer many advantages over mono-facial PV panels as power can be produced on both sides of the module, increasing total energy generation. Monocrystalline polycrystalline or thin film modules differ mainly in their cost and efficiency values, but do not represent a fundamentally different panel design type from an environmental perspective. The preference will, therefore, be determined on technical considerations and the site conditions during the final design phase of the project. The PV panels are designed to operate continuously for more than 20 years, mostly unattended and with low maintenance. The impacts associated with the construction, operation, and decommissioning of the facility are anticipated to be the same irrespective of the PV panel selected for implementation.

### 3.4 The 'Do-Nothing' Alternative

The 'Do-Nothing' alternative is the option of not constructing the SBPM Solar PV Facility on the proposed site and assumes the site remains in its current state. Should this alternative be selected, there would be no environmental impacts or benefits as a result of construction and operation activities associated with the solar PV facility. This alternative is assessed in detail in Chapter 7 of the EIA Report.



## CHAPTER 4: POLICY, LEGISLATIVE CONTEXT AND NEED AND DESIRABILITY

This Chapter provides an overview of the policy and legislative context within which the development of a solar energy facility such as the SBPM Solar PV Facility and its associated infrastructure is proposed. It identifies environmental 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 which may be applicable to or have bearing on the proposed project. It also provides information which supports the need and justification for the project, as discussed in **Section 4.7** and provides a description of the need and desirability of the SBPM Solar PV Facility at the project site considered to be reasonable and feasible by the project developer.

### 4.1 Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of an Environmental Impact Assessment Report

This chapter of the EIA Report includes the following information required in terms of Appendix 3: Scope of Assessment and Content of the Environmental Impact Assessment Report

Requirement	Relevant Section
3(1)(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.	A description of the policy and legislative context within which the SBPM Solar PV Facility is proposed is included and considered within this chapter.
3(d) a motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred location.	The need and desirability of the SBPM Solar PV Facility is included and discussed as a whole within this chapter. The need and desirability for the development of the facility has been considered from an international, national, regional, and site-specific perspective.

### 4.2 Strategic Electricity Planning in South Africa

The need to expand electricity generation capacity in South Africa is based on national policy and informed by on-going strategic planning undertaken by the Department of Mineral Resources and Energy (DMRE). The policies or plans that have relevance to the development of the SBPM Solar PV Facility are discussed in more detail in the following sections. Even though the facility is proposed for the use by the Siyanda Bakgatla Platinum Mine, it is still important to demonstrate how this proposed project fits within this policy framework.

The South African energy industry is evolving rapidly, with regular changes to legislation and industry role-players. The regulatory hierarchy for an energy generation project of this nature consists of three tiers of authority who exercise control through both statutory and non-statutory instruments – that is National, Provincial and Local levels. As the proposed solar energy development fall within two provinces various statutory bodies are likely to be involved in the approval process of a solar energy project and the related statutory environmental assessment process.

At **National Level**, the main regulatory agencies are:

- » **National Energy Regulator of South Africa (NERSA):** NERSA is responsible for regulating all aspects of the electricity sector and will ultimately issue licenses for projects to generate electricity. Schedule 2 of the Electricity Regulation Act provides for exemptions from the obligation in the Act to apply for (and hold) a licence from National Energy Regulator (NERSA). In terms of this schedule, the threshold for distributed generation was raised to 100MW in August 2021<sup>4</sup>. Project developers are exempted from applying for a license but are required to register with NERSA and comply with the relevant grid code(s).
- » **Department of Forestry, Fisheries and the Environment (DFFE):** This Department is responsible for environmental policy and is the controlling authority in terms of NEMA and the EIA Regulations, 2014 (GN R326) as amended. As the proposed project crosses provincial boundaries, the DFFE is the Competent Authority for this project. The DFFE is also responsible for issuing permits for impacts on protected trees and protected species under the National Environmental Management Biodiversity Act (NEM:BA).
- » **The South African Heritage Resources Agency (SAHRA):** SAHRA is a statutory organisation established under the National Heritage Resources Act (No. 25 of 1999) (NHRA), as the national administrative body responsible for the protection of South Africa's cultural heritage.
- » **South African National Roads Agency Limited (SANRAL):** This Agency is responsible for the regulation and maintenance of all national road routes.
- » **Department of Water and Sanitation (DWS):** This Department is responsible for effective and efficient water resources management to ensure sustainable economic and social development. This Department is also responsible for evaluating and issuing licenses pertaining to water use (i.e. Water Use Licenses (WUL) and General Authorisation).
- » **The Department of Agriculture, Rural Development and Land Reform (DARDLR):** This Department is the custodian of South Africa's agricultural resources and is primarily responsible for the formulation and implementation of policies governing the agriculture sector. Furthermore, the Department is also responsible for issuing permits for the disturbance or destruction of protected tree species listed under Section 15 (1) of the National Forest Act (No. 84 of 1998) (NFA).

At **Provincial Level**, the main regulatory agencies are:

- » **Provincial Government of Limpopo – Limpopo Department Economic Development, Environment and Tourism (LDEDET):** This Department is a commenting authority for the EIA process for the project in terms of NEMA and the EIA Regulations, 2014 (GN R326) as amended.
- » **Limpopo Department of Transport and Community Safety:** This Department provides effective co-ordination of crime prevention initiatives, provincial police oversight, traffic management and road safety towards a more secure environment.
- » **The Limpopo Provincial Heritage Resources Authority (LIHRA):** This Department identifies, conserves and manages heritage resources throughout the Limpopo Province.
  
- » **Provincial Government of the North West – North West Department of Economic Development, Environment, Conservation and Tourism (NW DEDECT):** This Department is a commenting authority for the EIA process for the project and is responsible for issuing of biodiversity and conservation-related

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<sup>4</sup> President Ramaphosa announced in July 2022 that government will remove the licensing threshold for embedded generation completely

permits. NW DEDECT's involvement relates specifically to sustainable resource management, conservation of protected species and land care.

- » **North West Department of Public Works and Roads (NW DPWR):** NW DPWR is responsible for roads and the granting of exemption permits for the conveyance of abnormal loads on public roads.
- » **North West Provincial Heritage Resources Agency (NW PHRA):** NW PHRA, the North West Provincial Heritage Resources Authority is responsible for the identification, conservation and management of heritage resources, as well as commenting on heritage related issues within the province.
- » **North West Department of Community Safety and Transport Management (NW DCSTM):** This Department provides effective co-ordination of crime prevention initiatives, provincial police oversight, traffic management and road safety towards a more secure environment.

At the **Local Level**, the local and district municipal authorities are the principal regulatory authorities responsible for planning, land use and the environment. Both the local and district municipalities play a role. The local municipality includes the **Thabazimbi Local Municipality** which forms part of the **Waterberg District Municipality** and the **Moses Kotane Local Municipality** which forms part of the **Bojanala Platinum District Municipality**. In terms of the Municipal Systems Act (No. 32 of 2000), it is compulsory for all municipalities to go through an Integrated Development Planning (IDP) process to prepare a five-year strategic development plan for the area under their control.

## 4.2 Policy Framework

### 4.3.1 International Policy and Planning Context

A brief review of the most international policies relevant to the establishment of the SBPM Solar PV Facility is provided below in **Table 4.1**. The SBPM Solar PV Facility is considered to be aligned with the aims of these policies, even if contributions to achieving the goals therein are only minor.

**Table 4.1:** International policies relevant to the SBPM Solar PV Facility

Relevant policy	Relevance to the SBPM Solar PV Facility
United Nations Framework Convention on Climate Change (UNFCCC) and Conference of the Party (COP)	<p>The Conference of the Parties (COP), established by Article 7 of the UNFCCC, is the supreme body and highest decision-making organ of the Convention. It reviews the implementation of the Convention and any related legal instruments and takes decisions to promote the effective implementation of the Convention.</p> <p>The Conference of the Parties (COP) 21 was held in Paris from 30 November to 12 December 2015. From this conference, an agreement to tackle global warming was reached between 195 countries.</p> <p>South Africa signed the Agreement in April 2016 and ratified the agreement on 01 November 2016. The Agreement was assented to by the National Council of Provinces on 27 October 2016, and the National Assembly on 1 November 2016.</p> <p>The Paris Agreement set out that every 5 years countries must set out increasingly ambitious climate action. This meant that, by 2020, countries needed to submit or update their plans for reducing emissions, known as nationally determined contributions (NDCs). The COP26 summit held on 2021 brought parties together to accelerate action towards the goals of the Paris Agreement and the UN Framework Convention on Climate Change. On 13 November 2021, COP26 concluded in Glasgow with all</p>

Relevant policy	Relevance to the SBPM Solar PV Facility
	<p>countries agreeing the Glasgow Climate Pact to keep 1.5°C alive and finalise the outstanding elements of the Paris Agreement.</p> <p>South Africa's National Climate Change Response Policy (NCCRP) establishes South Africa's approach to addressing climate change, including adaptation and mitigation responses. The NCCRP formalises Government's vision for a transition to a low carbon economy, through the adoption of the 'Peak, Plateau and Decline' (PPD) GHG emissions trajectory whereby South Africa's emissions should peak between 2020 and 2025, plateau for approximately a decade, and then decline in absolute terms thereafter, and based on this the country has pledged to reduce emissions by 34% and 42% below Business As Usual (BAU) emissions in 2020 and 2025, respectively.</p> <p>The policy provides support for the SBPM Solar PV Facility which will contribute to managing climate change impacts and assist in reducing GHG emissions in a sustainable manner.</p>
<p>The Equator Principles IV (October 2020)</p>	<p>The Equator Principles (EPs) IV constitute a financial industry benchmark used for determining, assessing, and managing a project's environmental and social risks. The EPs are primarily intended to provide a minimum standard for due diligence to support responsible risk decision-making. In addition, these principles are used to ensure that projects financed by the Equator Principles Financial Institutions (EPFI) are developed in a manner that is socially responsible and reflects sound environmental management practices. The EPs are applicable to infrastructure projects (such as the SBPM Solar PV Facility) and apply globally to all industry sectors.</p> <p>Such an assessment should propose measures to minimise, mitigate, and offset adverse impacts in a manner relevant and appropriate to the nature and scale of the SBPM Solar PV Facility. In terms of the EPs, South Africa is a non-designated country (as at 4 March 2020), and as such the assessment process for projects located in South Africa evaluates compliance with the applicable IFC Performance Standards on Environmental and Social Sustainability, and Environmental Health and Safety (EHS) Guidelines.</p> <p>The SBPM Solar PV Facility is currently being assessed in accordance with the requirements of the 2014 EIA Regulations, as amended, published in terms of Section 24(5) of the National Environmental Management Act (No. 107 of 1998) (NEMA), which is South Africa's national legislation providing for the authorisation of certain controlled activities. Through this assessment, all potential social and environmental risks are identified and assessed, and appropriate mitigation measures proposed.</p>
<p>International Finance Corporation (IFC) Performance Standards and Environmental and Social Sustainability (January 2012)</p>	<p>The International Finance Corporation's (IFC) Performance Standards (PSs) on Environmental and Social Sustainability were developed by the IFC and were last updated on 1 January 2012.</p> <p>Performance Standard 1 requires that a process of environmental and social assessment be conducted, and an Environmental and Social Management System (ESMS) appropriate to the nature and scale of the project, and commensurate with the level of its environmental and social risks and impacts be established and maintained. The above-mentioned standard is the overarching standard to which all the other standards relate. Performance Standards 2 through 8 establish specific requirements to avoid, reduce, mitigate or compensate for impacts on people and the environment, and to improve conditions where appropriate. While all relevant social and environmental risks and potential impacts should be considered as part of</p>

Relevant policy	Relevance to the SBPM Solar PV Facility
	<p>the assessment, the standards 2 and 8 describe potential social and environmental impacts that require particular attention specifically within emerging markets. Where social or environmental impacts are anticipated, the developer is required to manage them through its ESMS consistent with Performance Standard 1.</p> <p>Given the nature of the SBPM Solar PV Facility, it is anticipated (at this stage of the process) that Performance Standards 1, 2, 3, 4, 6, and 8 may be applicable to the project (see box 1 below).</p> <div style="border: 1px solid black; padding: 5px;"> <ul style="list-style-type: none"> <li>• Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts</li> <li>• Performance Standard 2: Labour and Working Conditions</li> <li>• Performance Standard 3: Resource Efficiency and Pollution Prevention</li> <li>• Performance Standard 4: Community Health, Safety and Security</li> <li>• Performance Standard 5: Land Acquisition and Involuntary Resettlement – N/A</li> <li>• Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources</li> <li>• Performance Standard 7: Indigenous Peoples – N/A</li> <li>• Performance Standard 8: Cultural Heritage</li> </ul> </div>

### 4.3.2 National Policy and Planning Context

A brief review of the most relevant national policies is provided below in **Table 4.2**. The development of the SBPM Solar PV Facility is considered to align with the aims of these policies, even where contributions to achieving the goals therein are only minor.

**Table 4.2:** National policies relevant to the SBPM Solar PV Facility

Relevant legislation or policy	Relevance to the SBPM Solar PV Facility
<p>Constitution of the Republic of South Africa, 1996</p>	<p>Section 24 of the Constitution pertains specifically to the environment. It states that everyone has the right to an environment that is not harmful to their health or well-being, and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation, promote conservation and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.</p> <p>The Constitution outlines the need to promote social and economic development. Section 24 of the Constitution therefore requires that development be conducted in such a manner that it does not infringe on an individual's environmental rights, health, or well-being. This is especially significant for previously disadvantaged individuals who are most at risk to environmental impacts. The undertaking of an EIA process for the proposed project in terms of the requirements of the EIA Regulations, 2014 (as amended) aims to minimise any impacts on the natural and social environment.</p>
<p>National Environmental Management Act (No. 107 of 1998) (NEMA)</p>	<p>This piece of legislation is South Africa's key piece of environmental legislation and sets the framework for environmental management in South Africa. NEMA is founded on the principle that everyone has the right to an environment that is not harmful to their health or well-being as contained within the Bill of Rights.</p>

Relevant legislation or policy	Relevance to the SBPM Solar PV Facility
	<p>The national environmental management principles state that the social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.</p> <p>The need for responsible and informed decision-making by government on the acceptability of environmental impacts is therefore enshrined within NEMA. The Project is currently being assessed in accordance with the requirements of the 2014 EIA Regulations, as amended, published in terms of Section 24(5) of the National Environmental Management Act (no.107 of 1998). Through this assessment all potential social and environmental risks are identified and assessed, and appropriate mitigation measures proposed.</p>
<p>National Energy Act (No. 34 of 2008)</p>	<p>The purpose of the National Energy Act (No. 34 of 2008) is to ensure that diverse energy resources are available, in sustainable quantities and at affordable prices, to the South African economy in support of economic growth and poverty alleviation, while taking into account environmental management requirements and interactions amongst economic sectors, as well as matters relating to renewable energy. The National Energy Act also provides for energy planning, increased generation and consumption of renewable energies, contingency energy supply, holding of strategic energy feedstocks and carriers, adequate investment in, appropriate upkeep and access to energy infrastructure. The Act provides measures for the furnishing of certain data and information regarding energy demand, supply, and generation, and for establishing an institution to be responsible for promotion of efficient generation and consumption of energy and energy research.</p> <p>The Act provides the legal framework which supports the development of power generation facilities.</p>
<p>White Paper on the Energy Policy of the Republic of South Africa (1998)</p>	<p>The White Paper on Energy Policy places emphasis on the expansion of energy supply options to enhance South Africa's energy security. This can be achieved through increased use of renewable energy and encouraging new entries into the generation market.</p> <p>The policy states that the advantages of renewable energy include, minimal environmental impacts during operation in comparison with traditional supply technologies, generally lower running costs, and high labour intensities. Disadvantages include higher capital costs in some cases, lower energy densities, and lower levels of availability, depending on specific conditions, especially with sun and wind-based systems. Nonetheless, renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future.</p>
<p>White Paper on the Renewable Energy Policy of the Republic of South Africa (2003)</p>	<p>The White Paper on Renewable Energy Policy supplements Government's predominant policy on energy as set out in the White Paper on the Energy Policy of the Republic of South Africa (DME, 1998). The policy recognises the potential of renewable energy and aims to create the necessary conditions for the development and commercial implementation of renewable energy technologies.</p> <p>The White Paper on Renewable Energy sets out Government's vision, policy principles, strategic goals, and objectives for promoting and implementing renewable energy in South Africa. The country relies heavily on coal to meet its energy needs due to its abundant, and fairly accessible and affordable coal resources. However, massive renewable energy resources that can be sustainable alternatives to fossil fuels, have so</p>

Relevant legislation or policy	Relevance to the SBPM Solar PV Facility
	<p>far remained largely untapped. The development of additional renewable energy projects will promote the use of the abundant South African renewable energy resources and contribute to long-term energy security and diversification of the energy mix.</p>
<p>The Electricity Regulation Act (No. of 2006)</p>	<p>The Electricity Regulation Act of 2006, replaced the Electricity Act (No. 41 of 1987), as amended, except for Section 5B, which provides funds for the energy regulator for the purpose of regulating the electricity industry. The Act establishes a national regulatory framework for the electricity supply industry and introduces the National Energy Regulator (NERSA) as the custodian and enforcer of the National Electricity Regulatory Framework. The Act also provides for licences and registration as the manner in which the generation, transmission, distribution, trading, and import and export of electricity are regulated. Schedule 2 of the Electricity Regulation Act provides for exemptions from the obligation in the Act to apply for (and hold) a licence from National Energy Regulator (NERSA). In terms of this schedule, the threshold for distributed generation was raised to 100MW in August 2021<sup>5</sup>. Project developers are exempted from applying for a license but are required to register with NERSA and comply with the relevant grid code(s).</p>
<p>National Development Plan 2030</p>	<p>The National Development Plan (NDP) 2030 is a plan prepared by the National Planning Commission in consultation with the South African public which is aimed at eliminating poverty and reducing inequality by 2030.</p> <p>In terms of the Energy Sector's role in empowering South Africa, the NDP envisages that, by 2030, South Africa will have an energy sector that promotes:</p> <ul style="list-style-type: none"> <li>» Economic growth and development through adequate investment in energy infrastructure. The sector should provide reliable and efficient energy service at competitive rates, while supporting economic growth through job creation.</li> <li>» Social equity through expanded access to energy at affordable tariffs and through targeted, sustainable subsidies for needy households.</li> <li>» Environmental sustainability through efforts to reduce pollution and mitigate the effects of climate change.</li> </ul> <p>In formulating its vision for the energy sector, the NDP took the IRP 2010 as its point of departure. Therefore, although electricity generation from coal is still seen as part of the energy mix within the NDP, the plan sets out steps that aim to ensure that, by 2030, South Africa's energy system will look very different to the current situation: coal will contribute proportionately less to primary-energy needs, while gas and renewable energy resources – especially wind, solar, and imported hydroelectricity – will play a much larger role.</p> <p>The NDP aims to provide a supportive environment for growth and development, while promoting a more labour-absorbing economy. The development of SBPM Solar PV Facility supports the NDP through the development of energy-generating infrastructure which will not lead to the generation of GHGs and will result in economic development and growth of the area surrounding the development area.</p>
<p>Integrated Energy Plan (IEP), November 2016</p>	<p>The purpose and objectives of the Integrated Energy Plan (IEP) are derived from the National Energy Act (No. 34 of 2008). The IEP takes into consideration the crucial role that energy plays in the entire economy of the country and is informed by the output of</p>

<sup>5</sup> President Ramaphosa announced in July 2022 that government will remove the licensing threshold for embedded generation completely.

Relevant legislation or policy	Relevance to the SBPM Solar PV Facility
	<p>analyses founded on a solid fact base. It is a multi-faceted, long-term energy framework which has multiple aims, some of which include:</p> <ul style="list-style-type: none"> <li>» To guide the development of energy policies and, where relevant, set the framework for regulations in the energy sector.</li> <li>» To guide the selection of appropriate technologies to meet energy demand (i.e., the types and sizes of new power plants and refineries to be built and the prices that should be charged for fuels).</li> <li>» To guide investment in and the development of energy infrastructure in South Africa.</li> <li>» To propose alternative energy strategies which are informed by testing the potential impacts of various factors such as proposed policies, introduction of new technologies, and effects of exogenous macro-economic factors.</li> </ul> <p>A draft version of the IEP was released for comment on 25 November 2016. The purpose of the IEP is to provide a roadmap of the future energy landscape for South Africa which guides future energy infrastructure investments and policy development. The development of the IEP is an ongoing continuous process. It is reviewed periodically to take into account changes in the macroeconomic environment, developments in new technologies and changes in national priorities and imperatives, amongst others.</p> <p>The 8 key objectives of the integrated energy planning process are as follows:</p> <ul style="list-style-type: none"> <li>» Objective 1: Ensure security of supply.</li> <li>» Objective 2: Minimise the cost of energy.</li> <li>» Objective 3: Promote the creation of jobs and localisation.</li> <li>» Objective 4: Minimise negative environmental impacts from the energy sector.</li> <li>» Objective 5: Promote the conservation of water.</li> <li>» Objective 6: Diversify supply sources and primary sources of energy.</li> <li>» Objective 7: Promote energy efficiency in the economy.</li> <li>» Objective 8: Increase access to modern energy.</li> </ul>
<p>Integrated Resource Plan for Electricity (IRP) 2010-2030</p>	<p>The Integrated Resource Plan (IRP) for Electricity 2010 – 2030 is a subset of the IEP and constitutes South Africa's National electricity plan. The primary objective of the IRP is to determine the long-term electricity demand and detail how this demand should be met in terms of generating capacity, type, timing, and cost. The IRP also serves as input to other planning functions, including amongst others, economic development and funding, and environmental and social policy formulation.</p> <p>The promulgated IRP 2010–2030 identified the preferred generation technology required to meet expected demand growth up to 2030. It incorporated government objectives such as affordable electricity, reduced greenhouse gas (GHG) emissions, reduced water consumption, diversified electricity generation sources, localisation and regional development. The need for a Just Transition to a sustainable, low carbon and equitable energy system is also recognised.</p> <p>Following the promulgation of the IRP 2010–2030, implementation followed in line with Ministerial Determinations issued under Section 34 of the Electricity Regulation (Act No. 4) of 2006. The Ministerial Determinations give effect to planned infrastructure by facilitating the procurement of the required electricity capacity.</p>



Relevant legislation or policy	Relevance to the SBPM Solar PV Facility
	<p>Provision has been made for the following new capacity by 2030 in the current IRP:</p> <ul style="list-style-type: none"> <li>» 1 500MW of coal</li> <li>» 2 500MW of hydro</li> <li>» 6 000MW of solar PV</li> <li>» 14 400MW of wind</li> <li>» 1 860MW of nuclear</li> <li>» 2 088MW of storage</li> <li>» 3 000MW of gas/diesel</li> <li>» 4 000MW from other distributed generation, co-generation, biomass and landfill technologies</li> </ul> <p>Of relevance to the proposed project is the provision for distributed generation capacity for own use. Therefore, the development of the SBPM solar PV facility is supported by the IRP 2019.</p>
<p>New Growth Path (NGP) Framework, 23 November 2010</p>	<p>The purpose of the New Growth Path (NGP) Framework is to provide effective strategies towards accelerated job-creation through the development of an equitable economy and sustained growth. The target of the NGP is to create 5 million jobs by 2020; with economic growth and employment creation as the key indicators identified in the NGP. The framework seeks to identify key structural changes in the economy that can improve performance in terms of labour absorption and the composition and rate of growth.</p> <p>To achieve this, government will seek to, amongst other things, identify key areas for large-scale employment creation, as a result of changes in conditions in South Africa and globally, and to develop a policy package to facilitate employment creation in these areas.</p>
<p>National Climate Change Bill, 2018</p>	<p>On 08 June 2018, the Minister of Environmental Affairs published the National Climate Change Bill ("the Bill") for public comment. The Bill provides a framework for climate change regulation in South Africa aimed at governing South Africa's sustainable transition to a climate resilient, low carbon economy and society. The Bill provides a procedural outline that will be developed through the creation of frameworks and plans.</p> <p>The SBPM Solar PV Facility is a renewable energy generation facility and would not result in the generation or release of emissions during its operation.</p>
<p>National Climate Change Response Policy, 2011</p>	<p>South Africa's National Climate Change Response Policy (NCCRP) establishes South Africa's approach to addressing climate change, including adaptation and mitigation responses. The NCCRP formalises Government's vision for a transition to a low carbon economy, through the adoption of the 'Peak, Plateau and Decline' (PPD) GHG emissions trajectory whereby South Africa's emissions should peak between 2020 and 2025, plateau for approximately a decade, and then decline in absolute terms thereafter, and based on this, the country has pledged to reduce emissions by 34% and 42% below Business As Usual (BAU) emissions in 2020 and 2025, respectively.</p> <p>As an integral part of the policy, a set of near-term priority flagship programmes will be implemented to address the challenges of climate change, one of which includes the Renewable Energy Flagship Programme. This flagship programme includes a scaled-up renewable energy programme, based on the current programme specified in the IRP 2010, and using the evolving South African Renewables Initiative led by the Department of Public Enterprise and Department of Trade and Industry (DTI), as a driver for the deployment of renewable energy technologies. The programme will be informed by</p>

Relevant legislation or policy	Relevance to the SBPM Solar PV Facility
	<p>enhanced domestic manufacturing potential and the implementation of energy efficiency and renewable energy plans by local government.</p> <p>The development of the SBPM Solar PV Facility is aligned with the Renewable Energy Flagship Programme identified under South Africa's NCCRP and could therefore be argued to be aligned with the country's approach to addressing climate change.</p>
<p>National Climate Change Strategy for South Africa, 2004</p>	<p>The need for a national climate change policy for South Africa was identified as an urgent requirement during the preparations for the ratification of the UNFCCC in 1997. A process to develop such a policy was thus instituted under the auspices of the National Committee for Climate Change (NCCC), a non-statutory stakeholder body set up in 1994 to advise the Minister on climate change issues and chaired by the then Department of Environmental Affairs and Tourism (DEAT). It was determined that a national climate change response strategy will promote integration between the programmes of the various government departments involved to maximise the benefits to the country as a whole, while minimising negative impacts. Further, as climate change response actions can potentially act as a significant factor in boosting sustainable economic and social development, a national strategy specifically designed to bring this about is clearly in the national interest, supporting the major objectives of the government, including poverty alleviation and the creation of jobs.</p> <p>A number of principles and factors guided the conception of the strategy and are required to be implemented. These are:</p> <ul style="list-style-type: none"> <li>» Ensuring that the strategy is consistent with national priorities, including poverty alleviation, access to basic amenities including infrastructure development, job creation, rural development, foreign investment, human resource development and improved health, leading to sustainable economic growth.</li> <li>» Ensuring alignment with the need to consistently use locally available resources.</li> <li>» Ensuring compliance with international obligations.</li> <li>» Recognizing that climate change is a cross cutting issue that demands integration across the work programmes of other departments and stakeholders, and across many sectors of industry, business, and the community.</li> <li>» Focussing on those areas that promote sustainable development.</li> <li>» Promoting programmes that will build capacity, raise awareness, and improve education in climate change issues.</li> <li>» Encouraging programmes that will harness existing national technological competencies.</li> <li>» Reviewing the strategy constantly in the light of national priorities and international trends.</li> <li>» Recognizing that South Africa's emissions will continue to increase as development is realised.</li> </ul> <p>The strategy was devised through an integrated approach and considers policies and programmes of other government departments and the fact that South Africa is a developing country. This will ensure that the principles of sustainable development are adequately served and do not conflict with existing development policies.</p>
<p>National Biodiversity Economy Strategy (NBES) (March 2016)</p>	<p>The biodiversity economy of South Africa encompasses the businesses and economic activities that either directly depend on biodiversity for their core business or that contribute to conservation of biodiversity through their activities. The commercial wildlife</p>

Relevant legislation or policy	Relevance to the SBPM Solar PV Facility
	<p>and the bioprospecting industries of South Africa provide cornerstones for the biodiversity economy and are the focus of this strategy.</p> <p>Both the wildlife and bioprospecting sub-sectors of the biodiversity economy have already demonstrated the potential for significant future development and growth. In the study commissioned on the situational analysis of the biodiversity economy, the contribution of the biodiversity economy to the national economy can be measured in terms of Gross Domestic Product (GDP), with the wildlife and bioprospecting industries contributing approximately R3 billion to GDP in 2013. Growth in the wildlife and bioprospecting industries can make a significant impact on the national economy, while contributing to national imperatives such as job creation, rural development and conservation of our natural resources.</p> <p>The Wildlife Industry value chain is centred on game and wildlife farming/ranching activities that relate to the stocking, trading, breeding, and hunting of game, and all the services and goods required to support this value chain. The key drivers of this value chain include domestic hunters, international hunters and a growing retail market demand for wildlife products such as game meat and taxidermy products. This sector is therefore characterised by an interesting combination of agriculture, eco-tourism and conservation characteristics.</p> <p>Over the period 2008-2013, the total Wildlife Industry market grew by more than 14% per year. This growth comprised an average annual growth exceeding 6% in domestic hunting, a decrease in international hunting, and an exponential growth in live auction sales. It is considered likely that the consolidated Wildlife Industry has the potential to experience a weighted average annual growth rate of between 4 %-14 % per year up to 2030.</p> <p>In order for the wildlife and bioprospecting sub-sectors of the biodiversity economy to achieve its full potential, a strategic partnership between the state, private sector and communities is required. To this end, a National Biodiversity Economy Strategy (NBES) is required to guide the sustainable growth of the wildlife and bioprospecting industries and to provide a basis for addressing constraints to growth, ensuring sustainability, identifying clear stakeholder's responsibilities and monitoring progress of the Enabling Actions.</p> <p>The Vision of NBES is to optimise the total economic benefits of the wildlife and bioprospecting industries through its sustainable use, in line with the Vision of the Department of Environmental Affairs. The purpose of NBES is to provide a 14-year national coordination, leadership and guidance to the development and growth of the biodiversity economy.</p> <p>NBES has set an industry growth goal stating that by 2030, the South African biodiversity economy will achieve an average annualised GDP growth rate of 10% per annum. This envisioned growth curve extends into the year 2030 and is aligned to the efforts of the country's National Development Plan, Vision 2030. The NBES seeks to contribute to the transformation of the biodiversity economy in South Africa through inclusive economic opportunities, reflected by a sector which is equitable - equitable access to resources, equitable and fair processes and procedures and equitable in distribution of resources (i.e. business, human, financial, indigenous species, land, water) in the market.</p>

Relevant legislation or policy	Relevance to the SBPM Solar PV Facility
	<p>To address these transformation NBES imperatives, NBES has the principles of:</p> <ul style="list-style-type: none"> <li>» Conservation of biodiversity and ecological infrastructure</li> <li>» Sustainable use of indigenous resources</li> <li>» Fair and equitable beneficiation</li> <li>» Socio-economic sustainability</li> <li>» Incentive driven compliance to regulation</li> <li>» Ethical practices</li> <li>» Improving quality and standards of products.</li> </ul> <p>The NBES provides the opportunity to redistribute South Africa's indigenous biological/genetic resources in an equitable manner, across various income categories and settlement areas of the country. The NBES has prioritised nodes in the country for biodiversity economy transformation, referred to as BET nodes. NBES prioritises 18 BET nodes, 13 rural and 5 urban districts across the nine provinces of the country, with communities having been prioritised for development of small and medium size enterprises and community-based initiatives which sustainably use of indigenous biological and/or genetic resources. The municipalities within which the project is proposed is not identified as a priority area.</p> <div data-bbox="448 965 1433 1704" style="border: 1px solid black; padding: 10px;"> <p><b>Legend</b></p> <ul style="list-style-type: none"> <li><span style="color: green;">■</span> Urban Biodiversity Economy Transformation Nodes</li> <li><span style="color: blue;">■</span> Rural Biodiversity Economy Transformation Nodes</li> <li>□ District Municipalities</li> </ul> </div>

### 4.3.3 Provincial Policy and Planning Context

A brief review of the most relevant provincial policies is provided below in **Table 4.3**. The proposed development is considered to align with the aims of these policies, even if contributions to achieving the goals therein are only minor.

Relevant legislation or policy	Relevance to the SBPM Solar PV Facility
<p>Limpopo Spatial Development Framework (LSDF) 2015</p>	<p>The LSDF is used as a tool for forward planning to direct decisions within the domain of land development throughout the province. In broad terms, the LSDF:</p> <ul style="list-style-type: none"> <li>» Indicates the spatial implications of the core development objectives outlined in the PGDS;</li> <li>» Serves as a spatial plan that facilitates local economic development (LED);</li> <li>» Lays down strategies, proposals and guidelines as these relate to overall sustainable development.</li> <li>» Facilitates cross-boundary co-operation between municipalities and provinces;</li> <li>» Serves as a manual for integration and standardisation of the planning frameworks across all spheres of provincial government; and</li> <li>» Informs district municipalities within the province regarding the location and nature of the physical development.</li> </ul> <p>Some of the key development determinants (factors) for future development in the Limpopo as listed in the LSDF are as follows:</p> <ul style="list-style-type: none"> <li>» Land (e.g. availability of land, ownership of land and the use of land);</li> <li>» Population (e.g. distribution and concentration of population – settlement hierarchy, growth of the population, migration and the impact of illegal immigration, etc);</li> <li>» Social infrastructure and social factors (e.g. provision of social facilities such as education and health, welfare initiatives, the provision of housing, AIDS/HIV virus, and the perception and traditions of people with specific reference to tradition and customs, specifically in the tribal areas);</li> <li>» Physical infrastructure (e.g. roads, transportation, provision of water and sewerage, electricity, telecommunication, etc.); and</li> <li>» Institutional infrastructure (capacity of local government structures, legislation and policy formulation).</li> </ul>
<p>Limpopo Development Plan (2015-2019)</p>	<p>The Limpopo Development Plan (2015-1019) is based on lessons learnt from previous Limpopo Strategies and Plans, on the National Development Plan (NDP), the MTSF Outcomes, the State of the Nation and Province Addresses. The National Planning Commission believes that the following capital investment are relevant to Limpopo, and should be prioritised:</p> <ul style="list-style-type: none"> <li>» The upgrading of informal settlements;</li> <li>» Public transport infrastructure and systems;</li> <li>» The construction of a new coal line to unlock coal deposits in the Waterberg;</li> <li>» Development of a number of key new water schemes to supply urban and industrial centres; and</li> <li>» Procuring about 20 000 MW of renewable electricity by 2030.</li> </ul>

Relevant legislation or policy	Relevance to the SBPM Solar PV Facility
<p>North West Provincial Development Plan (PDP), 2013 (updated 2017/2022)</p>	<p>The North West Provincial Development Plan (PDP) 2013 (updated 2017/2022) states that the overarching objective, is to overcome certain obstacles relating to the current infrastructure by introducing renewable energy together with energy conservation and efficiency strategies. Furthermore, this will craft a better tomorrow and ensure that underdevelopment, poverty, and inequality is fully addressed in the North West Province.</p> <p>The overall energy objective for the province also includes promoting the development of renewable energy supply schemes which are considered to be strategically important for increasing the diversity of domestic energy supply and avoiding energy imports, while also minimising the detrimental environmental impacts. The implementation of sustainable renewable energy is also to be promoted within the province through appropriate financial and fiscal instruments.</p>
<p>North West Province Spatial Development Framework (SDF) (2016) – Published 2017</p>	<p>The Spatial Development Framework (SDF) addresses the need for spatial planning, socio-economic development, infrastructure and conservation of natural resources. Key socio-economic issues which would require strategic planning provision include: employment (including youth and women); poverty eradication; attracting investment; economic growth; HIV / AIDS and other diseases; food security; physical infrastructure (including availability of industrial land); illiteracy; tourism development; population growth, urbanization and migration. Natural resource issues include inadequate water resources for future development; bush encroachment and alien invasive species; land and soil degradation; and overgrazing. With regard to spatial planning, the legacies of Apartheid-era policy is identified as a key issue and residents of the North West are consequently extremely underdeveloped.</p> <p>As per the North West Provincial Spatial Development Framework (PSDF) (2017) electricity within the province is primarily provided by Eskom to re-distributors – mainly municipalities (10%), commercial (5%), agriculture (5%), mining (30%), industrial (30%) and Residential (20%).</p> <p>According to the North West PSDF the proposed project site is located within the Mahikeng Distribution Area, which is characterised by minor developments, including Commercial, Industrial, and Major Electrification; and has a projected growth of 125MW (Eskom, 2015).</p> <p>Eskom's Transmission Development Plan 2015 – 2024 represents the transmission network infrastructure investment requirements over the 10 year period between 2015 and 2024. Projects proposed for the North West Province for the next 10 years include the introduction of 400kV power lines and transformation to support or relieve the existing networks. Five</p>

Relevant legislation or policy	Relevance to the SBPM Solar PV Facility
	<p>transmission power corridors have been identified as critical to providing a flexible and robust network that could respond to meet the needs of future IPPs and IRP requirements.</p> <p>The development of the proposed PV facility and its associated grid connection infrastructure will contribute to economic growth and development, which will in turn help eradicate poverty through job creation and skills development in the region which will be in line with the North West SDF.</p>
<p>Renewable Energy Strategy for the North West Province (2012)</p>	<p>In 2012 the North West Province's then Department of Economic Development, Environment, Conservation and Tourism (DEDECT) developed the Renewable Energy Strategy for the North West Province. The strategy was developed in response to the need of the North West Province to participate meaningfully within South Africa's RE sector. The RE strategy aims to improve the North West Province's environment, reduce its contribution to climate change, and alleviate energy poverty, while promoting economic development and job creation whilst developing its green economy.</p> <p>According to the strategy the North West Province consumes approximately 12% of South Africa's available electricity, and is rated as the country's fourth largest electricity consuming province. This is mainly due to the high demand of the electrical energy-intensive mining and related industrial sector, with approximately 63% of the electricity supplied to the province being consumed in its mining sector.</p> <p>While the strategy recognises that South Africa has an abundance of RE resources available, it is cognisant of the fact that the applicability of these RE resources depend on a number of factors and as a result are not equally viable for the North West Province. The RE sources that were identified to hold the most potential and a competitive strength for the North West Province are Solar Energy (photovoltaic as well as solar water heaters), Municipal Solid Waste, hydrogen and fuel cell technologies, bio-mass, and energy efficiency.</p> <p>The advantages and benefits for the North West Province associated with the implementation and use of RE technologies include:</p> <ul style="list-style-type: none"> <li>» Provision of energy for rural communities, schools and clinics that are far from the national electricity grid.</li> <li>» Creation of an environment where access to electricity provides rural communities with the opportunity to create an economic base via agricultural and home-based industries and Small, Medium and Micro Enterprises (SMMEs) in order to grow their income-generating potential.</li> <li>» The supply of water within rural communities.</li> </ul>

Relevant legislation or policy	Relevance to the SBPM Solar PV Facility
	<ul style="list-style-type: none"> <li>» It would result in less time taken for the collection of wood and water, thus improving the quality of life within communities and specifically for women.</li> <li>» Improved health through the reduced use of fuelwood as energy source for cooking and heating that causes respiratory and other hazards.</li> <li>» Solar water heating for households in urban and rural settings, reducing the need for either electricity (in urban settings) and fuelwood (in rural settings) to heat water, thus lowering our National peak demand and conservation of woodlands in a sustainable manner.</li> <li>» Large-scale utilisation of renewable energy will also reduce the emissions of carbon dioxide, thus contributing to an improved environment.</li> <li>» The fact that RE go hand-in-hand with energy efficiency, it will result in additional financial benefit and the need for smaller RE systems.</li> <li>» The development of a strong localised RE industry within the NWP holds substantial potential for Black Economic Empowerment (BEE) and job creation within the Province.</li> <li>» The establishment of a strong RE base in the North West Province, especially in the manufacturing of fuel cells could stimulate the market for Platinum Group Metals (PGM), which would in turn help the local mining sector.</li> </ul> <p>This is due to RE sources having considerable potential for increasing security of supply by diversifying the energy supply portfolio and increasingly contributes towards a long-term sustainable energy future. In terms of environmental impacts, RE results in the emission of less GHGs than fossil fuels, as well as fewer airborne particulates, and other pollutants. Furthermore, RE generation technologies save on water consumption in comparison with coal-fired power plants.</p>

#### 4.3.4 Local Policy and Planning Context

The local tiers of government within which the SBPM Solar PV Facility is located within the Thabazimbi Local Municipality which falls within the jurisdiction of the Waterberg District Municipality and the Moses Kotane Local Municipality which falls within the jurisdiction of the Bojanala Platinum District Municipality. The development instruments or policies at both the district and local level contain objectives which are in line with the development of the SBPM Solar PV Facility. These include, economic growth, job creation, community upliftment and poverty alleviation.

Relevant legislation or policy	Relevance to the SBPM Solar PV Facility
Integrated Development Plan (IDP) of the Waterberg District Municipality 2020-2021	The Waterberg Municipality seeks to be the best energy hub and ecotourism destination in Southern Africa. The key economic sectors with the Waterberg District Municipality are mining, electricity/water, services, trade/catering and agriculture, with mining making the biggest contribution to the GDP. The land use pattern is fairly natural within the district, with most of the mining



Relevant legislation or policy	Relevance to the SBPM Solar PV Facility
	<p>operations concentrated on the periphery, whereas the central area is mostly characterised by the tourism and game industry.</p> <p>Waterberg District Municipality adopted a 2020/21 IDP Review Framework and Process Plan, which informed all 5 local municipality's process plans and it was adopted by the Municipal Council. The main purpose of the process plan is to integrate all the processes and activities, institutional arrangements and time frames of the various sector departments, NGOs, parastatal etc. The Framework/Process plan was adopted by Council in 2019. The process plan will guide the municipality in terms of Legislative requirements and the timeframes</p> <p>Process plans should:</p> <ul style="list-style-type: none"> <li>» Guide decision making in respect of service delivery and public sector investment</li> <li>» Inform budgets and service delivery programs of various government departments and service agencies</li> <li>» Coordinate the activities of various service delivery agencies within Waterberg District Municipality.</li> </ul>
<p>Integrated Development Plan (IDP) of the Thabazimbi Local Municipality 2019/2020</p>	<p>The IDP states the following as priority development issues for the municipal area:</p> <ul style="list-style-type: none"> <li>» Unemployment</li> <li>» Poverty alleviation</li> <li>» Services delivery</li> <li>» HIV/AIDS</li> <li>» Local Economic Development</li> <li>» Good governance</li> <li>» Institutional Development</li> <li>» Skills Development</li> <li>» Financial Viability</li> </ul> <p>Municipal has Local Economic Development project such as :</p> <ul style="list-style-type: none"> <li>» Support to small-scale mining</li> <li>» Poultry projects</li> <li>» Development of market stalls for informal traders at Northam and Thabazimbi</li> <li>» Establishment of a database of local SMMEs</li> </ul>
<p>Bojanala Platinum District IDP (2022-2027)</p>	<p>Despite the poor state of the municipality, Bojanala Platinum District Municipality has a massive potential of economic prosperity through its mines, tourism and agriculture. the challenge in the district has been how to tap into these economic activities as municipalities and communities in the area. There is existing mining, tourism and agricultural opportunities which include game reserves, some of which are owned and shared by communities including hotels and guest houses.</p> <p>The district still experiences high levels of unemployment, poverty and inequality mainly amongst the youth, women and people with disabilities. As per the IDP, Bojanala still remains focused on ensuring the following:</p>

Relevant legislation or policy	Relevance to the SBPM Solar PV Facility
	<ul style="list-style-type: none"> <li>» Promote democratic and accountable local government;</li> <li>» Ensure the provision of services to communities in a sustainable manner;</li> <li>» Promote social and economic development through job creations;</li> <li>» Promote a safe and healthy environment; and</li> <li>» We encourage the involvement of communities and community organizations in the matters of local government within our district</li> </ul> <p>The SBPM Solar PV Facility will, where possible, assist in enhancing economic development through job creation, skills development, as well as support the SMMEs Enterprises.</p>
<p>Moses Kotane local municipality IDP (2017/2018-2021-2022)</p>	<p>The IDP for the Moses Kotane Local Municipality identifies the following six Key Performance Areas:</p> <ul style="list-style-type: none"> <li>» Key Performance Area 1: Basic Service Delivery and Infrastructure Development Infrastructure and Technical Services <ul style="list-style-type: none"> <li>* To develop and maintain infrastructure to provide basic services</li> <li>* To develop and improve community infrastructure facilities, public safety, disaster emergencies and healthy environment</li> </ul> </li> <li>» Key Performance Area 2: Municipal Transformation and Organisational Development. <ul style="list-style-type: none"> <li>* To promote Accountability, efficiency and professionalism within the organization</li> </ul> </li> <li>» Key Performance Area 3: Local Economic Development <ul style="list-style-type: none"> <li>* To create an enabling environment for social development and economic growth.</li> </ul> </li> <li>» Key Performance Area 4: Spatial Rationale <ul style="list-style-type: none"> <li>* To establish economically, socially and environmentally integrated sustainable land use and human settlement</li> </ul> </li> <li>» Key Performance Area 5: Good Governance and Public Participation <ul style="list-style-type: none"> <li>* To ensure ethical and transparent governance that is responsive to community needs and encourage Public Participation</li> </ul> </li> <li>» Key Performance Area 6: Municipal Financial Viability and Management <ul style="list-style-type: none"> <li>* To provide an Anti-Corruption Strategy</li> <li>* To provide a effective and efficient financial systems and procedure</li> </ul> </li> </ul> <p>The SBPM Solar PV Facility supports the Moses Kotane Local Municipality IDP as it will contribute towards economic development by creating job creation.</p>

### 4.3.5 Conclusion

As is evident from the detail within this chapter, the proposed Project is supported by and aligned with national, provincial, and local policies and plans.

## 4.7 Need and Desirability of the Proposed Development

Appendix 3 of the 2014 EIA Regulations (GNR 326), as amended requires that a EIA Report include a motivation for the need and desirability of the proposed development, including the need and desirability of the activity in the context of the preferred location. The need and desirability of the development needs to consider whether it is the right time and the right place for locating the type of land-use/activity being proposed. The need and desirability of a proposed development is, therefore, associated with the wise use of land, and should be able to respond to questions such as, but not limited to, what the most sustainable use of the land may be.

### 4.7.1 Need and Desirability of the SBPM Solar PV Facility

The need and desirability from the perspective of the local community as reflected in the IDP and SDF for the area has been considered in the EIA process. In the South African context, developmental needs (community needs) are often determined through the above planning measures (IDP and SDF). Although the renewable energy sector is not explicitly identified as a sector or initiative in all current municipal policy and planning documents as outlined above, it could contribute positively to the needs of the local community, including development, social services, education, and employment opportunities in this area through sustainable provision of energy to the Siyanda Mine. The SBPM Solar PV Facility will create employment and business opportunities during the construction and operation phases, as well as the opportunity for skills development for the local community. In addition, indirect benefits and spend in the local area will benefit the local community.

The purpose of the proposed project is to generate electricity for exclusive use by the Siyanda Bakgatla Platinum Mine while decreasing the mine's carbon footprint. The SBPM PV facility will help to reduce the mine's dependency on direct supply of electricity from Eskom's national grid for mining activities. The mine is moving towards green energy supply due to growing concerns associated with climate change and the on-going exploitation of non-renewable resources.

### 4.7.2 Receptiveness of and desirability of the project site to develop the SBPM Solar PV Facility

The placement of a PV facility is strongly dependent on several factors including climatic conditions (solar resource), topography, the location of the site, land availability and suitability, and the extent of the site.. From a local level perspective, the project site and development area have specifically been identified by the proponent as being highly desirable from a technical perspective for the development of a PV facility due to the following site characteristics:

- » **Solar resource:** The economic viability of a solar PV facility is directly dependent on the annual direct solar irradiation values of the area within which it will operate. The Global Horizontal Irradiation (GHI) for the development area is approximately 2120 kWh/m<sup>2</sup>/annum. This is considered feasible for the

development of a solar PV facility. Based on the solar resource available, no alternative locations are considered.

- » **Proximity to the Siyanda Mine:** The development area is located in close proximity to the Siyanda Bakgatla Platinum Mine, the exclusive user of the generated power, and is therefore preferred for development of the proposed PV Facility. Furthermore, there are existing available substations that are considered as possible grid connection points in order to be able to evacuate the generated power from the PV facility to the Siyanda Bakgatla Platinum Mine. The existing Mortimer substation and Fridge substation are located south-west of the site and the Ivan substation is located on the north-west of the project site. These substations were identified as the preferred grid connection points for the project.
- » **Geographical and Topographical Consideration** – The topography in the wider area is characterised by a slope percentage between 0 and 10%, with some smaller patches within the project area characterised by a slope percentage in excess of 40%. This relatively uniform topography is feasible for the development of a PV facility such as that proposed.
- » **Land Availability and Suitability** – In order to develop the SBPM solar PV facility and the associated grid connection with a contracted capacity of up to 100MW, sufficient space is required. The properties included in the project site were identified considering the feasible solar resource and are deemed technically feasible by the project developer for such development to take place. The project site is currently owned by the Siyanda Bakgatla Platinum Mine and has an extent of ~1138ha, which was considered by the developer as sufficient for the development of the Solar PV facility. A preferred development area of ~574ha has been demarcated within this larger project site for the location of the SBPM solar PV facility. An exact development footprint within the development area for the placement of infrastructure will be identified and assessed as part of the EIA Phase considering environmental constraints and sensitivities defined through the Scoping Study.

The broader project site is currently used for mining purposes. The areas identified for the PV facility although on mining land will not impact on the mining activities. The development of the solar PV facility on this property will ensure the continuation of an economically viable land use and will support the long-term operation of the mine. Sites that facilitate easy construction conditions (i.e., relatively flat topography, lack of major rock outcrops etc.) are favoured during the site selection process for a solar PV facility, and the proposed development area fits this criterion.

- » **Proximity to Towns with a Need for Socio-Economic Upliftment:** The proposed project is located near the towns of Northam and Swartklip, within the Waterberg District Municipality and the Thabazimbi Local Municipality in the Limpopo Province; and the Bojanala Platinum District Municipality and the Moses Kotane Local Municipality. As per the Integrated Development Planning detailed in Section 4.6, these districts still experience high levels of unemployment, poverty and inequality mainly amongst the youth, women and people with disabilities. Main access to the project site is via the Swartklip Road which branches off the R510 provincial road on the south-eastern side of the SBPM development area. The site is therefore easily accessible for both construction and operation. With the development of the SBPM Solar PV Facility, secondary social benefits can be expected in terms of additional spend in the nearby towns due to the increased demand for goods and services. Considering the above, it is clear that a need for employment opportunities and skills development is present within the area.

Taking into consideration the solar resource, proximity to the mine, land availability and suitability, geographical and topographical location, access to road infrastructure and proximity to towns with a need for socio-economic upliftment, the development of the SBPM Solar PV Facility within the proposed project site is considered to be desirable. The development area (~574ha) within the facility footprint is proposed is sufficient in extent for the installation of a solar PV facility, while allowing for the avoidance of environmental site sensitivities. Similarly, the power line corridor identified is sufficient for the placement of the power line while allowing for the avoidance of environmental sensitivities. This consideration is in line with the mitigation strategy and enables the achievement of the objectives of the mitigation hierarchy (i.e., avoid, minimise, mitigate). This application of the mitigation strategy allows for the identification of the optimised placement of the PV facility within the development area. This approach will ensure that the final location of the PV facility and associated infrastructure is desirable from an environmental and social perspective.

#### **4.7.3 Benefits of Renewable Energy and the Need and Desirability in the South African Context**

The generation of electricity from renewable energy resources offers a range of potential socio-economic and environmental benefits for South Africa. These benefits include:

**Socio-economic upliftment of local communities:** The SBPM Solar PV Facility has the potential to create much needed employment for unskilled locals during the construction phase. Where possible, training opportunities will also be afforded to qualified local people who can be upskilled to undertake certain roles during the construction and operation phases. Some of the challenges facing the Local and District municipalities, as detailed in the IDPs include high rates of unemployment and high levels of poverty. The Local and District municipalities are therefore in need of economic development, sustainable employment opportunities and growth in personal income levels. A study undertaken by the DMRE, National Treasury and the Development Bank of Southern Africa (DBSA) in June 2017 found that employment opportunities created during the construction phase of renewable energy projects implemented to date had created 40% more jobs for South African citizens than anticipated. The study also found that significantly more people from local communities were employed during construction than was initially planned, confirming the potential benefits for local communities associated with the implementation of renewable energy projects.

**Resource saving:** It is estimated that the achievement of the targets in the Renewable Energy White Paper will result in water savings of approximately 16.5 million kilolitres per annum. As an already water-stressed nation, it is critical that South Africa engages in a variety of water conservation measures, particularly due to the detrimental effects of climate change on water availability. Renewable energy also translates into revenue savings, as fuel for renewable energy facilities is free, while compared to the continual purchase of fuel for conventional power stations.

**Exploitation of significant renewable energy resource:** At present, valuable renewable resources, including biomass by-products, solar irradiation and wind power remain largely unexploited. The use of these energy flows will strengthen energy security through the development of a diverse energy portfolio in South Africa.

**Economics:** As a result of the excellent resource and competitive procurement processes, both wind power and solar PV power are now proven in South Africa as cheaper forms of energy generation than coal power. They offer excellent value for money to the economy and citizens of South Africa while benefitting society as a whole through the development of clean energy.

**Pollution reduction:** The release of by-products through the burning of fossil fuels for electricity generation has a particularly hazardous impact on human health and contributes to ecosystem degradation. The use of solar irradiation or wind for power generation is a non-consumptive use of a natural resource which produces zero emissions during its operation.

**Climate friendly development:** The uptake of renewable energy offers the opportunity to address energy needs in an environmentally responsible manner and thereby allows South Africa to contribute towards mitigating climate change through the reduction of GHG emissions. South Africa is estimated to currently be responsible for approximately 1% of global GHG emissions (and circa half of those for which Africa is responsible) and is currently ranked 9<sup>th</sup> worldwide in terms of per capita carbon dioxide emissions. The development of SBPM Solar PV Facility and the associated electricity generated as a result of the facility, will result in considerable savings on tons of CO<sub>2</sub> emissions.

**Support for international agreements:** The effective deployment of renewable energy provides a tangible means for South Africa to demonstrate its commitment to its international agreements under the Kyoto Protocol and the Paris Agreement, and for cementing its status as a leading player within the international community.

**Employment creation:** The development, procurement, installation, maintenance and management of renewable energy facilities have significant potential for job creation and skills development in South Africa. The construction phase will create temporary employment opportunities and the operation phase will create limited full-time employment opportunities.

**Acceptability to society:** Renewable energy offers a number of tangible benefits to society, including reduced pollution concerns, improved human and ecosystem health and climate friendly development.

**Support to a new industry sector:** The development of renewable energy offers the opportunity to establish a new industry within the South African economy, which will create jobs and skill local communities which have potential for further renewable energy projects.

**Protecting the natural foundations of life for future generations:** Actions to reduce our disproportionate carbon footprint can play an important part in ensuring our role in preventing dangerous anthropogenic climate change, thereby securing the natural foundations of life for generations to come; this is the basis of sustainable development.

## CHAPTER 5: APPROACH TO UNDERTAKING THE SCOPING AND EIA PROCESS

In terms of the EIA Regulations of December 2014 (as amended) published in terms of the NEMA (Act No. 107 of 1998) as amended, the construction and operation of SBPM Solar PV Facility is a listed activity requiring Environmental Authorisation (EA). The application for EA is required to be supported by a Scoping & Environmental Impact Assessment (EIA) process based on the contracted capacity of the facility being 100MW and Activity 1 of Listing Notice 2 (GNR 325) being triggered.

An EIA process refers to the process undertaken in accordance with the requirements of the relevant EIA Regulations (the 2014 EIA Regulations (GNR 326), as amended), which involves the identification and assessment of direct, indirect, and cumulative environmental impacts associated with a proposed project or activity. The EIA process comprises two main phases: i.e. **Scoping** and **EIA Phase**, and is illustrated in Figure 5.1 Public Participation forms an important component of the process and is undertaken throughout both phases.



**Figure 5.1:** The Phases of an Environmental Impact Assessment (EIA) Process

### 5.1 Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of an Impact Assessment Report

This chapter includes the following information required in terms of Appendix 3: Scope of Assessment and Content of Environmental Impact Assessment Report:

Requirement	Relevant Section
3 (c) a description of the scope of the proposed activity, including all listed and specified activities triggered and being applied for and (ii) a description of the activities to be undertaken, including associated structures and infrastructure.	All listed activities triggered and applied for are included in <b>Section 5.2</b> .
3 (g)(ii) details of the public participation process undertaken in terms of Regulation 41 of the Regulations, including copies of the supporting documents and inputs.	The public participation process followed throughout the EIA process of SBPM Solar PV Facility is included in <b>Section</b>

Requirement	Relevant Section
	<b>5.5.2</b> and copies of the supporting documents and inputs are included in <b>Appendix C</b> .
3 (g)(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.	The main issues raised through the undertaking of the public participation process including consultation with I&APs are included in the Comments and Responses Report in <b>Appendix C8</b> .
3 (g)(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives are included in <b>Section 5.5.3</b> .

## 5.2 Relevant legislative permitting requirements

The legislative permitting requirements applicable to SBPM Solar PV Facility, as identified at this stage in the process and considered within this EIA process, are described in more detail under the respective sub-headings. Additional permitting requirements applicable to the project are detailed within **Section 5.6**.

### 5.2.1 National Environmental Management Act (No. 107 of 1998) (NEMA)

NEMA (No. 107 of 1998) is South Africa's key piece of national environmental legislation that provides for the authorisation of certain controlled activities known as "listed activities". In terms of Section 24(1) of NEMA, the potential impact on the environment associated with listed activities must be considered, investigated, assessed and reported on to the Competent Authority (the decision-maker) charged by NEMA with granting of the relevant Environmental Authorisation (EA). As the proposed project crosses provincial boundaries, the National Department of Forestry, Fisheries and the Environment (DFFE) has been determined as the Competent Authority (CA). The Limpopo Department Economic Development, Environment and Tourism (LDEDET) and the North West Department of Economic Development, Environment, Conservation and Tourism (NW DEDECT) are the Commenting Authorities on the project.

The need to comply with the requirements of the EIA Regulations published under NEMA ensures that developers are provided the opportunity to consider the potential environmental impacts of their activities early in the project development process, and also allows for an assessment to be made as to whether environmental impacts can be avoided, minimised or mitigated to acceptable levels. Comprehensive, independent environmental studies are required to be undertaken in accordance with the EIA Regulations to provide the Competent Authority with sufficient information in order for an informed decision to be taken regarding the Application for EA.

The EIA process being conducted for SBPM Solar PV Facility is being undertaken in accordance with Section 24(5) of the NEMA, which defines the procedure to be followed in applying for EA, and requires that the potential consequences for, or impacts of, listed or specified activities on the environment be considered, investigated, assessed, and reported on to the competent authority. Listed Activities are activities identified in terms of Section 24 of the NEMA which are likely to have a detrimental effect on the environment, and which may not commence without an EA from the competent authority subject to the completion of an environmental assessment process (either a Basic Assessment (BA) or full Scoping and EIA).



Error! Reference source not found. details the listed activities in terms of the EIA Regulations, 2014 (as amended) that apply to the SBPM Solar PV Facility, and for which an application for Environmental Authorisation has been submitted to the DFFE. The table also includes a description of the specific project activities that relate to the applicable listed activities.

**Table 5.1:** Listed activities identified in terms of the Listing Notices (GNR 327, 325 and 324).

<b>Notice Number</b>	<b>Activity Number</b>	<b>Description of listed activity</b>
Listing Notice 1 (GNR 327) 08 December 2014 (as amended)	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 275kV or more.  <b><i>Internal electrical infrastructure required to connect the PV facility to the grid connection infrastructure will consist of an onsite substation and power lines of more than 33kV.</i></b>
Listing Notice 1 (GNR 327) 08 December 2014 (as amended)	12(ii)(a)(c)	The development of – (ii) Infrastructure or structures with a physical footprint of 100 square metres or more  Where such development occurs- (a) within a watercourse; or (c) within 32 metres of a watercourse.  <b><i>The construction and operation of the SBPM PV facility and associated infrastructure will occur within rivers, as well as within 32m of watercourses. The infrastructure will have a physical footprint of more than 100 square metres.</i></b>
Listing Notice 1 (GNR 327) 08 December 2014 (as amended)	14	The development and related operation of facilities and infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.  <b><i>The development of the project will require the construction and operation of facilities and infrastructure for the storage and handling of dangerous goods (combustible and flammable liquids, such as oils, lubricants, solvents) associated with the on-site substation where such storage will occur inside containers with a combined capacity exceeding 80 cubic meters but not exceeding 500 cubic meters.</i></b>
Listing Notice 1 (GNR 327) 08 December 2014 (as amended)	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;  <b><i>Access roads will be developed during the construction phase of the projects. These will exceed 8m in width.</i></b>
Listing Notice 1 (GNR 327) 08 December 2014 (as amended)	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.  <b><i>Existing farm roads within the project site may require widening, and access roads will be widened by more than 6 metres.</i></b>

Notice Number	Activity Number	Description of listed activity
Listing Notice 2 (GNR 325) 08 December 2014 (as amended)	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,  <b><i>The project comprises a renewable energy generation facility, which will utilise solar power technology and will have a generating capacity of up to 100MW.</i></b>
Listing Notice 2 (GNR 325) 08 December 2014 (as amended)	15	The clearance of an area of 20ha or more of indigenous vegetation <sup>6</sup> .  <b><i>The project will result in the clearance of indigenous vegetation within an area in excess of 20ha for the development infrastructure.</i></b>
Listing Notice 3 (GNR 324) 08 December 2014 (as amended)	4(e)(i)(ee) 4(h)(iv)	The development of a road wider than 4 metres with a reserve less than 13,5 metres.  <b>e. Limpopo</b>  (i) Outside urban areas  ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority.  <b>h. North West</b>  iv) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;  <b><i>Some parts of the development area are located within a CBA and will require the construction of new access roads wider than 4m.</i></b>
Listing Notice 3 (GNR 324) 08 December 2014 (as amended)	10(e)(i)	The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres  <b>e. Limpopo</b>  (i) All areas  <b><i>The development of the PV facility and associated infrastructures will require the storage and handling of dangerous goods with a capacity of 80 cubic meters within CBA areas.</i></b>
Listing Notice 3 (GNR 324) 08 December 2014 (as amended)	12(e)(ii)	The clearance of an area of 300 square metres or more of indigenous vegetation  <b>e. Limpopo</b>  ii. Within critical biodiversity areas identified in bioregional plans; or

<sup>6</sup> "Indigenous vegetation" as defined by the 2014 EIA Regulations (GNR 326) refers to vegetation consisting of indigenous plant species occurring naturally in an area, regardless of the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years.

Notice Number	Activity Number	Description of listed activity
<p>Listing Notice 3 (GNR 324) 08 December 2014 (as amended)</p>	<p>14(ii)(a)(c)(e)(i) (dd) 14(ii)(a)(c)(h)(iv)</p>	<p><b>The development of the SBPM Solar PV facility will require the clearance of more than 300 square meters of indigenous vegetation within areas classified as CBA.</b></p> <p>The development of— (ii) infrastructure or structures with a physical footprint of 10 square metres or more;</p> <p>where such development occurs— (a) within a watercourse; or (c) within 32 metres of a watercourse, measured from the edge of a watercourse.</p> <p><b>e. Limpopo</b></p> <p>i. Outside urban areas:</p> <p>(dd) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.</p> <p><b>h. North West</b></p> <p>(iv) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.</p> <p><b>The construction and operation of the SBPM PV facility and associated infrastructure will occur within rivers, as well as within 32m of watercourses. The infrastructure will have a physical footprint of more than 100 square metres..</b></p>
<p>Listing Notice 3 (GNR 324) 08 December 2014 (as amended)</p>	<p>18(e)(i)(ee) 18(h)(v)</p>	<p>The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.</p> <p><b>e. Limpopo</b></p> <p>(i) Outside urban areas</p> <p>(ee) Within critical biodiversity areas identified in systematic biodiversity plan adopted by the competent authority or in bioregional plans</p> <p><b>h. North West</b></p> <p>(v) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority.</p> <p><b>Existing farm roads within the project site may require widening, and access roads will be widened by more than 6 metres.</b></p>

### 5.2.2 National Water Act (No. 36 of 1998) (NWA)

In accordance with the provisions of the National Water Act (No. 36 of 1998) (NWA), all water uses must be licensed with the Competent Authority (i.e., the Regional Department of Water and Sanitation (DWS) or the relevant Catchment Management Agency (CMA)). Water use is defined broadly, and includes taking and storing water, activities which reduce stream flow, waste discharges and disposals, controlled activities (activities which impact detrimentally on a water resource), altering a watercourse, removing water found underground for certain purposes, and recreation.

In terms of the NFEPA (2011) shows the project area overlaps with unclassified FEPA wetlands and unclassified FEPA rivers.

Error! Reference source not found. contains Water Uses associated with the proposed project and identified in terms of the NWA which require licensing either in the form of a General Authorisation (GA), or in the form of a Water Use License (WUL). The table also includes a description of those project activities which relate to the applicable Water Uses.

**Table 5.2: List of Water Uses published under Section 21 of NWA, as amended.**

Notice No.	Activity No.	Description of Water Use
NWA (No. 36 of 1998)	Section 21 (c)	Impeding or diverting the flow of water in a watercourse  <b>Wetlands have been identified within the development area and grid connection corridor. Activities pertaining to the establishment of the infrastructure might encroach on the wetlands which may lead to an impediment and diversion of the flow of water in the watercourse</b>
NWA (No. 36 of 1998)	Section 21 (i)	<b>The development area considered for the establishment of the SBPM Solar PV facility has no wetlands located within the extent of the project area, however project area overlaps with unclassified FEPA wetlands and unclassified FEPA rivers. This will be confirmed during the EIA phase</b>

In the event that the flow of water in the watercourses is affected and the bed, banks or course characteristics are altered then a water use authorisation would be required. This will need to be in accordance with the requirements of the Regulations Regarding the Procedural Requirements for Water Use License Applications and Appeals (GN R267), or a GA registered in accordance with the requirements of Revision of General Authorisation. The process of applying for a WUL or GA registration will only be completed once a positive EA has been received. This is in line with the requirements of the Department of Water and Sanitation (DWS).

### 5.2.3 National Heritage Resources Act (No. 25 of 1999) (NHRA)

The National Heritage Resources Act (No. 25 of 1999) (NHRA) provides an integrated system which allows for the management of national heritage resources, and to empower civil society to conserve heritage resources for future generations. Section 38 of NHRA provides a list of activities which potentially require the undertaking of a Heritage Impact Assessment.

### Section 38: Heritage Resources Management

- 1). *Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as –*
- a. *the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
  - b. *the construction of a bridge or similar structure exceeding 50m in length;*
  - c. *any development or other activity which will change the character of a site –*
    - i). *exceeding 5 000m<sup>2</sup> in extent; or*
    - ii). *involving three or more existing erven or subdivisions thereof; or*
    - iii). *involving three or more erven or divisions thereof which have been consolidated within the past five years; or*
    - iv). *the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;*

*Must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.*

In terms of Section 38(8), approval from the heritage authority is not required if an evaluation of the impact of such development on heritage resources is required in terms of any other legislation (such as NEMA), provided that the consenting authority ensures that the evaluation of impacts fulfils the requirements of the relevant heritage resources authority in terms of Section 38(3) and any comments and recommendations of the relevant resources authority with regard to such development have been taken into account prior to the granting of the consent. However, should heritage resources of significance be affected by the proposed development, a permit is required to be obtained prior to disturbing or destroying such resources as per the requirements of Section 48 of the NHRA, and the South African Heritage Resources Agency (SAHRA) Permit Regulations (GNR 668).

### **5.3 Overview of the Scoping and EIA (S&EIA) Process being undertaken for SBPM Solar PV Facility**

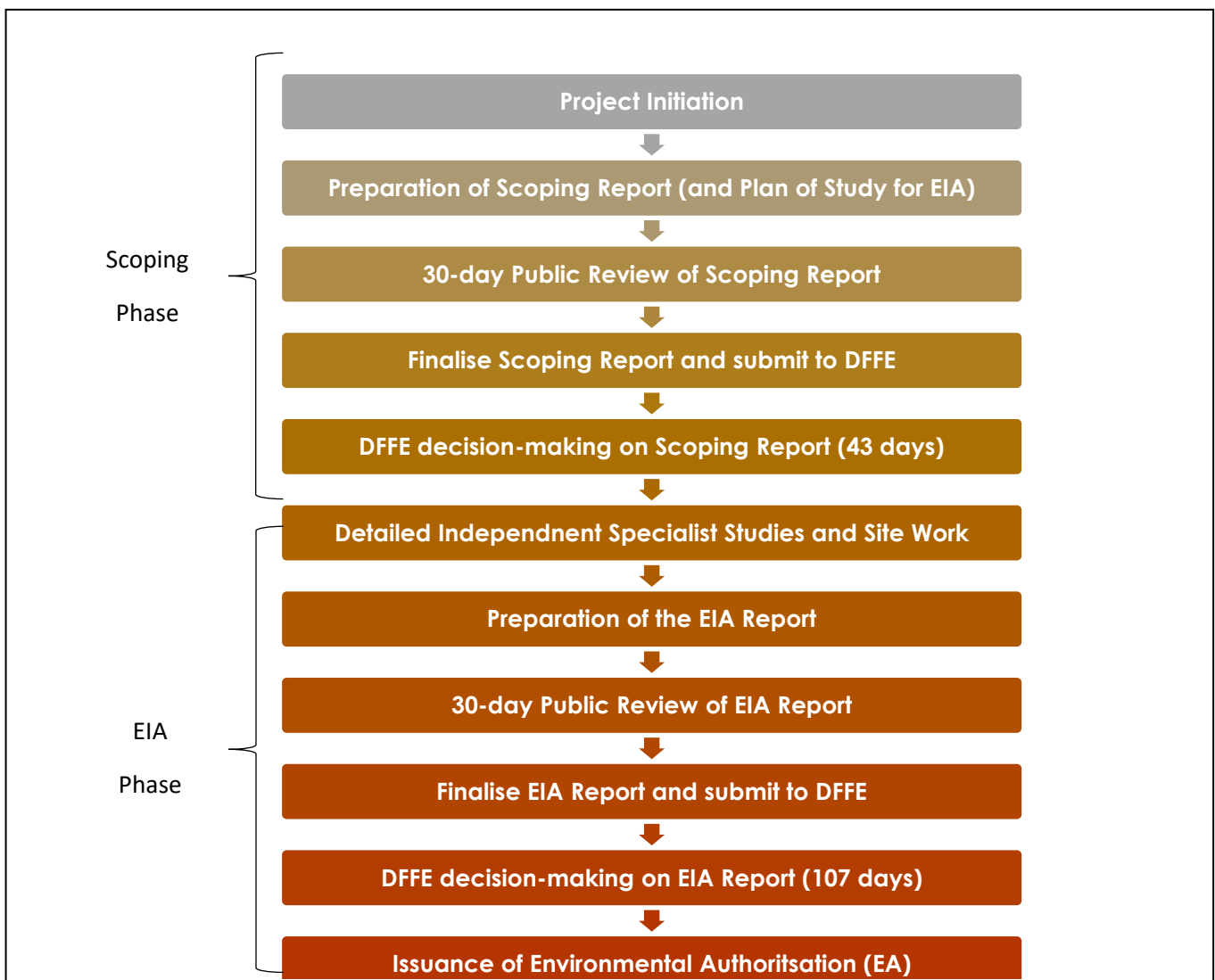
In terms of NEMA, the 2014 EIA Regulations (GNR 326), and Listing Notices (Listing Notice 1 (GNR 327) and Listing Notice 2 (GNR 325) the development of SBPM Solar PV Facility requires EA from DFFE subject to the completion of a full Scoping and Environmental Impact Assessment (S&EIA), as prescribed in Regulations 21 to 24 of the 2014 EIA Regulations (GNR 326). The need for a full S&EIA process to be conducted in support of the application for EA is based on listed activities triggered which are contained within Listing Notice 2 (GNR 325).

The S&EIA process is to be undertaken in two phases as follows (refer to **Figure 5.2**):

- » The **Scoping Phase** includes the identification and description of potential issues associated with the project through a desktop study and consultation with I&APs and key stakeholders through a Public Participation process. The entire development area and development envelope are considered within this process. Through this study, areas of sensitivity within the broader site are identified and delineated in order to identify any environmental fatal flaws, and environmentally sensitive, or no-go areas which need to be considered. In accordance with Regulation 21(1) of the 2014 EIA Regulations (GNR 326) this Scoping Report prepared for the project will be subject to a 30-day review and comment period during which any Interested and Affected Party (I&AP) or Authority are invited to review and provide comment on the findings. Following the completion of this review period, a Final Scoping Report which

incorporates all comments received during the 30-day public review and comment period, will be prepared and submitted to DFFE for its consideration. Following its receipt of the Final Scoping Report DFFE has 43 days within which to either accept the Scoping Report, and advise the applicant to proceed or continue with the tasks contemplated in the Plan of Study for EIA, or refuse the Application for EA in the event that the proposed activity is in conflict with a prohibition contained in legislation, or the Scoping Report does not substantially comply with Appendix 2 of the 2014 EIA Regulations (GNR 326). Acceptance of Scoping was received from DFFE on 24 August 2022.

- » The **EIA Phase** involves a detailed assessment of potentially significant positive and negative direct, indirect, and cumulative impacts identified during the Scoping Phase. This phase includes detailed specialist investigations and a Public Participation process, and results in the compilation of an EIA Report and Environmental Management Programme (EMPr). In accordance with Regulation 23(1)(a) of the 2014 EIA Regulations (GNR 326) the EIA Report and EMPr prepared for the project will also be subject to a 30-day public review and comment period during which members of the public, I&APs, and authorities will be invited to review and provide comment on the EIA Report and EMPr. Following the conclusion of this review period a Final EIA Report and EMPr which incorporates all comments received during the 30-day review and comments period, will be prepared and submitted to DFFE for its consideration. Following its receipt of the Final EIA Report and EMPr, DFFE has 107 days within which to either grant or refuse the EA.



**Figure 5.2:** Regulated timeframe of an Environmental Impact Assessment (EIA) Process

#### 5.4 Objectives of the EIA Phase

As per the EIA Regulations (GNR 326) the objectives of the EIA Phase are to, through a consultative process:

- » Determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context.
- » Describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the development footprint on the approved site as contemplated in the accepted Scoping Report.
- » Identify the location of the development footprint within the approved site as contemplated in the accepted Scoping Report based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment.
- » Determine the:
  - » Nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and
  - » Degree to which these impacts:
    - » Can be reversed
    - » May cause irreplaceable loss of resources
    - » Can be avoided, managed or mitigated
- » Identify the most ideal development footprint for the activity within the development envelope of the approved site as contemplated in the accepted Scoping Report based on the lowest level of environmental sensitivity identified during the assessment.
- » Identify, assess, and rank the impacts the activity will impose on the development footprint on the approved site as contemplated in the accepted Scoping Report through the life of the activity;
- » Identify suitable measures to avoid, manage or mitigate identified impacts.
- » Identify residual risks that need to be managed and monitored.
- »
- » This EIA Report assesses potential positive and negative, direct, indirect, and cumulative impacts associated with all phases of the project life cycle including pre-construction, construction, operation and decommissioning. In this regard the EIA Report aims to provide the CA with sufficient information to make an informed decision regarding the proposed project.

#### 5.5 Overview of the EIA Phase

Key tasks undertaken within the EIA Phase include:

- » Consultation with relevant decision-making and regulating authorities (at National, Provincial and Local levels).
- » Undertaking a Public Participation Process in accordance with Chapter 6 of GNR326, and the DFFE (2017) Public Participation guidelines in terms of NEMA EIA Regulations, Department of Environmental Affairs, Pretoria, South Africa (hereinafter referred to as "the Guidelines") in order to identify issues and concerns associated with the proposed Project.
- » Undertaking of independent specialist studies in accordance with Appendix 6 of the EIA Regulations, 2014 (GNR326), as amended, and the requirements of the Specialist Protocols published in Regulation

GNR 320, issued 20 March 2020 and GNR 1150 of 30 October 2020, where relevant, as well as other relevant guidelines.

- » Preparation of an EIA Report in accordance with the requirements of Appendix 3 of the 2014 EIA Regulations (GNR 326).
- » Preparation of a Comments and Response (C&R) Report detailing all comments raised by I&APs and responses provided as part of the EIA Phase.
- » Submission of a Final EIA, including an Environmental Management Programme (EMPr), to NWDEDECT for review and approval.

### **5.5.1 Authority Consultation and Application for Authorisation in terms of the 2014 EIA Regulations (as amended)**

As the proposed project crosses provincial boundaries, the National DFFE has been determined as the competent authority. LDEDET and NW DEDECT are the Commenting Authorities on the project. Consultation with these authorities is being undertaken throughout the S&EIA Phase. To date, this consultation has included the following:

- » Submission of a pre-application meeting request form to the DFFE via email on **03 May 2022**. Following submission of the pre-application form, a case officer has been allocated, and no pre-application meeting was considered necessary (refer to **Appendix B**).
- » Submission of the Application for Environmental Authorisation to the DFFE via the use of the DFFE Novell Filr System.
- » Submission of the Scoping Report for review and comment by:
  - \* The competent and commenting authorities.
  - \* State departments that administer laws relating to a matter affecting the environment relevant to an Application for EA.
  - \* Organs of State which have jurisdiction in respect of the activity to which the application relates.
- » Submission of a Final Scoping Report on **13 July 2022**.
- » Receipt of acceptance of the Scoping Report and approval of the Plan of Study for the EIA Phase on **24 August 2022**.

The submissions, as listed above, were undertaken electronically, as required by the DFFE. A record of all authority correspondence undertaken during the Scoping Phase is included in **Appendix B**.

### **5.5.2 Public Participation Process**

Public participation is an essential and regulatory requirement for an environmental authorisation process and is guided by Regulations 41 to 44 of the EIA Regulations 2014 (GN R326) (as amended). The purpose of public participation is clearly outlined in Regulation 40 of the EIA Regulations 2014 (GN R326) (as amended) and is being followed for this proposed project.

The Public Participation Process for the SBPM Solar PV Facility has been undertaken concurrently to that for the SCSC Solar PV Facility, located adjacent to the site. The benefit to the stakeholder is that all information relevant to all related applications has been made available for review together, and not only for comments to be raised across the two applications at one time, but also provided a complete picture of the potential impacts and/or benefits related to the suite of projects located in close proximity to one another.



The sharing of information forms the basis of the public participation process and offers the opportunity for I&APs to become actively involved in the EIA process from the outset. The public participation process is designed to provide sufficient and accessible information to I&APs in an objective manner. The public participation process affords I&APs opportunities to provide input into and receive information regarding the EIA process in the following ways:

- » During the **Scoping Phase**:
  - \* provide an opportunity to submit comments regarding the project;
  - \* assist in identifying reasonable and feasible alternatives, where required;
  - \* identify issues of concern and suggestions for enhanced
  - \* contribute relevant local information and knowledge to the environmental assessment;
  - \* allow registered I&APs to verify that their comments have been recorded, considered and addressed, where applicable, in the environmental investigations;
  - \* foster trust and co-operation;
  - \* generate a sense of joint responsibility and ownership of the environment;
  - \* comment on the findings of the Scoping Phase results; and
  - \* Identify issues of concern and suggestions for enhanced benefits.
  
- » During the **EIA Phase**:
  - \* contribute relevant local information and knowledge to the environmental assessment;
  - \* verify that issues have been considered in the environmental investigations as far as possible as identified within the Scoping Phase;
  - \* comment on the findings of the environmental assessments; and
  - \* attend a Focus Group Meeting to be conducted for the project.
  
- » During the **decision-making phase**:
  - \* to advise I&APs of the outcome of the competent authority's decision, and how and by when the decision can be appealed.

The Public Participation process therefore aims to ensure that:

- » Information containing all relevant facts in respect of the application is made available to potential stakeholders and I&APs for their review;
- » The information presented during the public participation process is presented in such a manner, i.e. local language and technical issues, that it avoids the possible alienation of the public and prevents them from participating;
- » Public participation is facilitated in such a manner that I&APs are provided with a reasonable opportunity to comment on the project;
- » A variety of mechanisms are provided to I&APs to correspond and submit their comments i.e. fax, post, email, telephone, text message (SMS and WhatsApp); and
- » An adequate review period is provided for I&APs to comment on the findings of the Scoping and EIA Reports.

In terms of the requirement of Chapter 6 of the EIA Regulations of December 2014, as amended, the following key public participation tasks are required to be undertaken:

- » Fix a notice board at a place conspicuous to the public at the boundary or on the fence of—
  - (i) the site where the activity to which the application relates is or is to be undertaken; and
  - (ii) any alternative site mentioned in the application.

- » Give written notice to:
  - (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
  - (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  - (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
  - (v) the municipality which has jurisdiction in the area;
  - (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
  - (vii) any other party as required by the competent authority.
- » Place an advertisement in one local newspaper.
- » Open and maintain a register of I&APs and Organs of State.
- » Release of a Scoping Report for a 30-day review and comment period.
- » Prepare a Comments and Responses (C&R) report which documents the comments received on the EIA process and during the 30-day review and comment period of the Scoping Report and the responses provided by the project team.

**i. Stakeholder identification and Register of Interested and Affected Parties**

42. A proponent or applicant must ensure the opening and maintenance of a register of I&APs and submit such a register to the competent authority, which register must contain the names, contact details and addresses of –
- (a) All persons who, as a consequence of the public participation process conducted in respect of that application, have submitted written comments or attended meetings with the proponent, applicant or EAP;
  - (b) All persons who have requested the proponent or applicant, in writing, for their names to be placed on the register; and
  - (c) All organs of state which have jurisdiction in respect of the activity to which the application relates.

I&APs have been identified through a process of networking and referral, obtaining information from Savannah Environmental's existing stakeholder database, liaison with potentially affected parties in the greater surrounding area and a registration process involving the completion of a reply form. Key stakeholders and affected and surrounding landowners have been identified and registered on the project database. Other stakeholders are required to formally register their interest in the project through either directly contacting the Savannah Environmental Public Participation team via phone, text message (SMS and WhatsApp), email or fax, or registering their interest via the online stakeholder engagement platform. An initial list of key stakeholders identified and registered is listed in **Table 5.3**.

**Table 5.3:** Initial list of Stakeholders identified for the inclusion in the project database during the public participation process for the SBPM Solar PV Facility

<b>Organs of State</b>
<b>National Government Departments</b>
Department Forestry, Fisheries and the Environment (DFFE)
Department of Mineral Resources and Energy (DMRE)
Department of Agriculture, Land Reform, and Rural Development (DALRRD)
Department of Water and Sanitation (DWS)
Department of Communications and Digital Technologies

<b>Government Bodies and State-Owned Companies</b>
Eskom Holdings SOC Limited
National Energy Regulator of South Africa (NERSA)
Air Traffic Navigation Services (ATNS)
South African Civil Aviation Authority (CAA)
South African Heritage Resources Agency (SAHRA)
South African National Roads Agency Limited (SANRAL)
Telkom SA SOC Limited
Transnet SA SOC Limited
<b>Provincial Government Departments</b>
North West Department of Economic Development, Environment, Conservation and Tourism (NW DEDCT)
Provincial Government of Limpopo – Limpopo Department Economic Development, Environment and Tourism (LDEDET)
North West Department of Public Works and Roads (NW DPWR)
Limpopo Department of Transport and Community Safety
North West Provincial Heritage Resources Agency ((NW PHRA) – provincial Heritage Authority
The Limpopo Provincial Heritage Resources Authority (LIHRA)
North West Department of Community Safety and Transport Management (NW DCSTM)
<b>Local Government Departments</b>
Waterberg and Bojanala Platinum District Municipality
Thabazimbi Local and Moses Kotane Local Municipality
<b>Commenting Stakeholders</b>
BirdLife South Africa
Endangered Wildlife Trust (EWT)
Wildlife and Environment Society of South Africa (WESSA)
<b>Landowners</b>
Affected landowners, tenants and occupiers
Neighbouring landowners, tenants and occupiers

As per Regulation 42 of the EIA Regulations, 2014 (as amended), all relevant stakeholder and I&AP information has been recorded within a register of I&APs (refer to **Appendix C1** for a listing of the recorded parties). In addition to the above-mentioned EIA Regulations, point 4.1 of the Public Participation Guidelines has also been followed. The register of I&APs contains the names<sup>7</sup> of:

- » All persons who requested to be registered on the database through the use of the online stakeholder engagement platform or in writing and disclosed their interest in the project.
- » All Organs of State which hold jurisdiction in respect of the activity to which the application relates; and
- » All persons who submitted written comments or attended virtual meetings (or in-person consultation where sanitary conditions can be maintained) and viewed the narrated presentations on the Savannah Environmental online platform during the public participation process.

I&APs have been encouraged to register their interest in the EIA process from the onset of the project, and the identification and registration of I&APs will be on-going for the duration of the EIA process. The database

<sup>7</sup> Contact details and addresses have not been included in the I&AP database as this information is protected by the Protection of Personal Information Act (No 4 of 2013).

of I&APs will be updated throughout the EIA process and will act as a record of all I&APs involved in the public participation process.

## ii. Advertisements and Notifications

- 40.(2)(a) Fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of –
- (i) The site where the activity to which the application or proposed application relates is or is to be undertaken; and
  - (ii) Any alternative site.
- 40.(2)(b) Giving written notice, in any of the manners provided for in section 47D of the Act, to –
- (i) The occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;
  - (ii) Owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;
  - (iii) The municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area;
  - (iv) The municipality which has jurisdiction in the area;
  - (v) Any organ of state having jurisdiction in respect of any aspect of the activity; and
  - (vi) Any other party as required by the competent authority.
- 40.(2)(c) Placing an advertisement in –
- (i) One local newspaper; or
  - (ii) Any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
- 40.(2)(d) Placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official Gazette referred to in paragraph (c)(ii); and
- 40.(2)(e) Using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to –
- (i) Illiteracy;
  - (ii) Disability; or
  - (iii) Any other disadvantage.

The EIA process was announced with an invitation to the Organs of State, potentially affected and neighbouring landowners and general public to register as I&APs and to actively participate in the process. This was achieved via the following:

- » Compilation of a background information document (BID) (refer to **Appendix C3**) providing technical and environmental details on the project and how to become involved in the EIA process. The BID and the process notification letter announcing the EIA process, notifying Organs of State, potentially affected and neighbouring landowners, as well as registered stakeholders/IAPs of SBPM Solar PV Facility, and providing background information of the project and inviting I&APs to register on the project's database were distributed via email on **10 May 2022**. The evidence of the distribution is contained in **Appendix C** of the Scoping Report. The BID is also available electronically on the Savannah Environmental website (<http://www.savannahsa.com/public-documents/energy-generation/>).

- » Placement of site notices announcing the EIA process at visible points along the boundary of the development area (i.e. the boundaries of the affected property), in accordance with the requirements of the EIA Regulations on **11 May 2022**. Photographs and the GPS co-ordinates of the site notices are contained in **Appendix C2** of the Scoping Report.
- » Placement of the process advert in The Rustenburg Herald Newspaper on **15 April 2022** announcing the proposed SBPM Solar PV facility development.
- » Placement of an advertisement in the Platinum Bushveld Newspaper (in English) on **03 June 2022** at the commencement of the EIA process. This advert:
  - \* Announced the project and the associated EIA process.
  - \* Provided details of how I&APs can become involved in the EIA process, including details of the public participation consultant.
  - \* Provided all relevant details to access the Savannah Environmental online stakeholder engagement platform.
- » A copy of the newspaper advert, as sent to the newspaper and the newspaper advert tear sheet is included in **Appendix C2** of the Scoping Report.
- » The Scoping Report was made available for review by I&APs for a 30-day review and comment period from **03 June 2022** to **04 June 2022**. The full Scoping Report was made available on the Savannah Environmental website, and all registered I&APs were notified of the availability on **03 June 2022** via email which included the link to access the report on the Savannah Environmental website. The evidence of distribution of the Scoping Report has been included in **Appendix C3**.
- » Focus group meetings were held with key stakeholders on Wednesday, 15 June 2022 at 09h00, 11h00 and 14h00 via a virtual platform.
- » Notification letter distributed to all registered parties advising them of the availability of the EIA Report for review on comment on **11 November 2022**.
- » An advertisement announcing the availability of and inviting comment on the EIA Report in the Platinum Bushveld Newspaper and Rustenburg Herald on **11 November 2022**. A copy of the newspaper advert as sent to the newspaper is included in **Appendix C2** of the EIA Report. The advert tear sheet will be included in the final EIA Report as **Appendix C2**.
- » The Draft EIA Report is available for review and comment by I&APs for a 30-day period from **11 November 2022** to **12 December 2022**. The Draft EIA Report is available on the Savannah Environmental website (<https://savannahsa.com/public-documents/energy-generation/>). I&APs will be encouraged to review the EIA Report and submit written comment. The EIA Report will be circulated to Organs of State via electronic transfer (Dropbox, WeTransfer, etc), or CD and/or hardcopy as per individual request. Evidence of distribution of the EIA Report will be included in the final EIA Report as **Appendix C4** and **Appendix C5**.

### iii. **Public Involvement and Consultation**

In order to accommodate the varying needs of stakeholders and I&APs within the surrounding area, as well as capture their views, comments, issues and concerns regarding the project, various opportunities have been and will continue to be provided to I&APs to note their comments and issues. I&APs have been consulted through the following means:

**Table 5.4:** Public involvement for the SBPM Solar PV Facility

Activity	Date
Announcement of the EIA process in one local newspaper: Platinum Bushveld Newspaper and Rustenburg Herald (English advertisement)	03 June 2022 & 15 April 2022, respectively
Distribution of the BID, process notification letters and stakeholder reply form announcing the EIA process and inviting I&APs to register on the project database.  The BID and electronic reply form was also made available on the online stakeholder engagement platform.	10 May 2022
Placement of site notices at the project site	11 May 2022
Announcement of the availability of the Scoping Report for a 30-day review and comment period, including details on how to access the Scoping Report via the online stakeholder engagement platform.	03 June 2022
Distribution of notification letters announcing the availability of the Scoping Report for a 30-day review and comment period. These letters were distributed to Organs of State, Government Departments, Ward Councillors, landowners within the surrounding area (including neighbouring landowners) and key stakeholder groups.	03 June 2022
30-day review and comment period of the Scoping Report.	03 June 2022- 04 June 2022
Virtual meetings through the use of virtual platforms as determined through discussions with the relevant stakeholder group: <ul style="list-style-type: none"> <li>» Landowners</li> <li>» Authorities and key stakeholders (including Organs of State, local municipality and official representatives of community-based organisations).</li> <li>» Where an I&amp;AP does not have access to a computer and/or internet to participate in a virtual meeting telephonic discussions (including WhatsApp video call) will be set-up and minuted for inclusion. The preferred language of the I&amp;AP has been considered when setting up these discussions.</li> <li>» Direct in-person consultation will only take place in limited numbers and where sanitary conditions can be maintained at all times.</li> </ul>	Focus group meetings were held with key stakeholders on Wednesday, 15 June 2022 at 09h00, 11h00 and 14h00 via a virtual platform.
On-going consultation (i.e. telephone liaison; e-mail communication) with all I&APs.	Throughout the S&EIA process
Advertising of the availability of the EIA Report for a 30-day review and comment period in the Rustenburg Herald (English advertisement).	11 November 2022
Distribution of notification letters announcing the availability of the EIA Report for a 30-day review and comment period. These letters were distributed to Organs of State, Government Departments, Ward Councillors, landowners within the surrounding area (including neighbouring landowners), registered I&APs and key stakeholder groups.	11 November 2022
30-day review and comment period of the EIA Report.	11 November 2022 – 12 December 2022
Virtual meetings through the use of virtual platforms as determined through discussions with the relevant stakeholder group: <ul style="list-style-type: none"> <li>» Landowners.</li> </ul>	Date to be confirmed

Activity	Date
<ul style="list-style-type: none"> <li>» Authorities and key stakeholders (including Organs of State, local municipality and official representatives of community-based organisations).</li> <li>» Where an I&amp;AP does not have access to a computer and/or internet to participate in a virtual meeting telephonic discussions (including WhatsApp video call) will be set-up and minuted for inclusion. The preferred language of the I&amp;AP has been considered when setting up these discussions.</li> </ul>	
<p>On-going consultation (i.e. telephone liaison; e-mail communication) with all I&amp;APs.</p>	<p>Throughout the S&amp;EIA process</p>

**iv. Registered I&APs entitled to Comment on the Scoping Report**

- 43.(1) A registered I&AP is entitled to comment, in writing, on all reports or plans submitted to such party during the public participation process contemplated in these Regulations and to bring to the attention of the proponent or applicant any issues which that party believes may be of significance to the consideration of the application, provided that the interested and affected party discloses any direct business, financial, personal or other interest which that party may have in the approval or refusal of the application.
- (2) In order to give effect to section 24O of the Act, any State department that administers a law relating to a matter affecting the environment must be requested, subject to regulation 7(2), to comment within 30 days.
- 44.(1) The applicant must ensure that the comments of interested and affected parties are recorded in reports and plans and that such written comments, including responses to such comments and records of meetings, are attached to the reports and plans that are submitted to the competent authority in terms of these Regulations.
- (2) Where a person desires but is unable to access written comments as contemplated in subregulation (1) due to –
  - (a) A lack of skills to read or write;
  - (b) Disability; or
  - (c) Any other disadvantage;
 Reasonable alternative methods of recording comments must be provided for.

I&APs registered on the database have been notified by means of a notification letter of the release of the EIA Report for a 30-day review and comment period, invited to provide comment on the EIA Report, and informed of the manner in which, and timeframe within which such comment must be made. The report has been made available in soft copy. Hard copies of the report are available on request.

The EIA Report has been made available on the Savannah Environmental website (<https://savannahsa.com/public-documents/energy-generation/>). All registered I&APs were notified regarding the availability of the report. The notification was distributed prior to commencement of the 30-day review and comment period, on 12 November 2022. Where I&APs are not able to provide written comments (including SMS and WhatsApp), other means of consultation, such as telephonic discussions are used to provide the I&APs with a platform to verbally raise their concerns and comments on the proposed development.

All comments raised as part of the discussions and written comments submitted during the 30-day review and comment period will be recorded and included in Appendix C of the Final EIA Report.

**v. Identification and Recording of Comments**

Comments raised by I&APs to date have been synthesised into a Comments and Responses (C&R) Report which is included in **Appendix C8**. The C&R Report includes detailed responses from members of the EIA project team and/or the Project Developer to the issues and comments raised during the public participation process to date. Comments received during the review period of the Draft EIA Report and responses to these will be included in the final EIA Report, which will be submitted to NWDEDECT for review and decision-making.

Meeting notes of all the telephonic discussions and virtual meetings conducted during the 30-day review and comment period of the Scoping Report are included in **Appendix C7**. Notes of meetings held during the EIA Phase will also be included within this appendix within the Final EIA Report, which will be submitted to DFFE for review and decision-making.

## 5.6 Outcomes of the DFFE Web-Based Screening Tool

In terms of GN R960 (promulgated on 5 July 2019) and Regulation 16(1)(b)(v) of the 2014 EIA Regulations (as amended), the submission of a Screening Report generated from the national web based environmental screening tool is compulsory for the submission of applications in terms of Regulations 19 and 21 of the EIA Regulations.

The requirement for the submission of a Screening Report for the SBPM Solar PV is applicable as it triggers Regulation 19 of the EIA Regulations, 2014, as amended. **Table 5.5** provides a summary of the specialist assessments identified in terms of the screening tool and responses to each assessment from the project team considering the development area under consideration.

**Table 5.5:** Sensitivity ratings from the DFFE's web-based online Screening Tool associated with the development of the SBPM Solar PV facility

Specialist Assessment	Sensitivity Rating as per the Screening Tool (relating to the need for the study)	Project Team Response
Agricultural Impact Assessment	Very high	<p>The Agricultural Impact Assessment was concluded that two soil forms were identified throughout the 50 m regulated area namely Glenrosa and Arcadia. The Glenrosa soil form is of most importance in the study area as it demonstrates the most sensitive land capability.</p> <p>The Glenrosa's land capability has been determined to be class "II" and a climate capability level 8 has been assigned to the area given the low Mean Annual Precipitation (MAP) and the high Mean Annual Potential Evapotranspiration (MAPE) rates. The combination between the most sensitive determined land capability and climate capability resulted in a land potential level "L5". According to Smith (2006), the "L5" land potential level is characterised by restricted potential. Regular and/or moderate to severe limitations are expected due to soil, slope, temperatures, or rainfall.</p> <p>The land potential level, mentioned above, was used to determine the sensitivities of soil resources. "Moderately Low" sensitivities were determined throughout the project area by</p>



Specialist Assessment	Sensitivity Rating as per the Screening Tool (relating to the need for the study)	Project Team Response
		<p>means of baseline findings. These baseline findings concur well with the Department of Agriculture, Forestry and Fisheries (DAFF, 2017) which also indicated “Very Low” sensitivities as well as “Moderate” sensitivities.</p> <p>Considering the low sensitivities associated with land potential resources, it is the specialist’s opinion that the proposed activities will have an acceptable impact on soil resources and that the proposed activities may proceed as have been planned as no loss of land capability is evident. It is also expected that no segregation of high production agricultural resources will occur. The Agricultural Impact Assessment is included to this EIA as <b>Appendix D</b>.</p>
Landscape/Visual Impact Assessment	Very high	<p>The project site is located in an area that has a distinct rural and agricultural character. The Swartklip mine town which was built around the Siyanda Bakgatla Platinum Mine is located ~1km from the project site. Tiramogo lodge is located adjacent (south-east) of the proposed SBPM Solar PV facility site. Although numerous mining related structures and activities dominate the landscape of the greater area (particularly the western portion of the site area closer to the existing Union Section Mine and the Siyanda Bakgatla Platinum Mine, there are a number of overhead power lines and substations in close proximity to the project area. The Ivan, Fridge and the Mortimer substations are located in the northwest of the project site. The visual impact is not expected to be of high significance due to the fact that the proposed development is located within an industrial/mining area. Therefore, no visual impact assessment has been included in this report.</p>
Archaeological and Cultural Heritage Impact Assessment	Low	<p>A Heritage Screening is included in this Scoping Report as <b>Appendix F</b>. Overall, the archaeological field assessment has determined that the overall archaeological sensitivity of the development area is low with few ex situ surface scatters identified. These resources are not conservation-worthy and have been sufficiently recorded in this report.</p>
Palaeontology Impact Assessment	Medium	<p>A Heritage Impact Assessment (which covers palaeontological aspects of the project site) is included in this EIA Report as <b>Appendix F</b>. No impacts to palaeontological heritage resources are considered likely due to the Pyramid Gabbro-Norite which has zero palaeontological sensitivity underlying the development area.</p>
Terrestrial Biodiversity Impact Assessment	Very high	<p>An Ecological Assessment (including flora and fauna) has been undertaken for the PV facility and is included as <b>Appendix D</b> of the EIA Report. Based on the outcomes of the desktop study, available data and field assessments, it has been indicated that the development area falls within the areas identified as Low to Medium-Low Sensitivity.</p>

Specialist Assessment	Sensitivity Rating as per the Screening Tool (relating to the need for the study)	Project Team Response
Aquatic Biodiversity Impact Assessment	Very high	An Aquatic study has been undertaken for the PV facility and is included as <b>Appendix E</b> of the EIA Report. During the site visit, four (4) HGM units were identified and assessed within the 500 m regulated area, The average ecosystem service score ranges between "Intermediate" and "Moderately High".
Civil Aviation Assessment	Medium	The Civil Aviation Authority (CAA) and Air Traffic Navigation Services (ATNS) will be consulted throughout the Scoping/EIA process to obtain input.
Defence Assessment	Low	A defence of military base is not located within close proximity to the PV facility.
RFI Assessment	Medium	The project site under consideration for the development of the SBPM Solar PV Facility is located within an area that as classified as having medium sensitivity for telecommunication. The Telkom will however be consulted during the 30-day review and comment period of the EIA Report to provide written comment on the proposed development.
Geotechnical Assessment	The screening report does not indicate a rating for this theme.	A geotechnical study will be undertaken by the applicant as part of the technical studies for the project design.
Socio Economic Assessment	The screening report does not indicate a rating for this theme.	A Social Impact Assessment has been undertaken and is included in the Scoping Report as <b>Appendix G</b> .
Plant Species Assessment	Low	An Ecological Assessment (including flora and fauna) has been undertaken for the PV facility and is included as <b>Appendix D</b> of the EIA Report. Based on the outcomes of the desktop study, available data and field assessments, it has been indicated that the development area falls within the areas identified as Low to Medium-Low Sensitivity.
Animal Species Assessment	Medium	
Avian theme	Low	An Avifaunal Scoping Assessment has been undertaken and is included in the EIA Report as <b>Appendix F</b> .

### 5.6.1 Evaluation of Issues Identified through the Scoping Process

Direct, indirect, and cumulative environmental impacts associated with the project identified during the Scoping Phase have been evaluated through consideration of existing information available for the SBPM Solar PV Facility development area.

In order to evaluate issues and assign an order of priority, the following methodology was used to identify the characteristics of each potential issue/impact:

- » The **nature**, which includes a description of what causes the impact, what will be affected and how it will be affected.
- » The **extent**, wherein it is indicated whether the impact will be local (limited to the immediate area or site of development), regional or national.
- » Identify **sensitive receptors** that may be impacted on by the proposed development and the types of impacts that are most likely to occur.

- » The **significance** of potential impacts in terms of the requirements of the 2014 EIA Regulations (including (nature, significance, consequence, extent, duration and probability of the impacts, the degree to which these impacts:
  - (a) Can be reversed;
  - (b) May cause irreplaceable loss of resources; and
  - (c) Can be avoided, managed or mitigated.
- » Identify the potential impacts that will be considered further in the EIA Phase through detailed investigations.

The evaluation of the proposed project resulted in a description of the nature, significance, consequence, extent, duration and probability of the identified issues, as well as recommendations regarding further studies required within the EIA Phase.

### **5.6.2 Finalisation of the EIA Report**

This final stage of the draft EIA Phase entails the recording and capturing of comments received from stakeholders and I&APs on the Final Scoping Report to refine the report and ensure that the comments have been addressed, where required. All written comments received are recorded and addressed within the C&R Report (**Appendix C8**).

### **5.7 Assumptions and Limitations of the EIA Process**

The following assumptions and limitations are applicable to the EIA process of SBPM Solar PV Facility:

- » All information provided by the developer and I&APs to the environmental team was correct and valid at the time it was provided.
- » It is assumed that the development area for the solar PV facility identified by the developer represents a technically suitable site for the establishment of SBPM Solar PV Facility which is based on the design undertaken by technical consultants for the project.
- » The development footprint (the area that will be affected during the operation phase) will include the footprint for the PV facility and associated infrastructure (i.e. internal access roads, and the BESS).
- » The Scoping Phase evaluation of impacts has been largely based on desktop studies as well as the findings of studies which have been completed previously for this specific site. This information has been used to inform this Scoping report and will be verified by specialists in the EIA phase to assess the project development footprint for SBPM Solar PV Facility.

### **5.8 Legislation and Guidelines that have informed the preparation of this Scoping Report**

The following legislation and guidelines have informed the scope and content of this Scoping Report:

- » National Environmental Management Act (Act No. 107 of 1998);
- » EIA Regulations of December 2014, published under Chapter 5 of NEMA (as amended);
- » Department of Environmental Affairs (2017), Public Participation guidelines in terms of NEMA EIA Regulations.
- » Department of Environmental Affairs (2017), Integrated Environmental Management Guideline: Guideline on Need and Desirability.

- » Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for environmental authorisation; and
- » International guidelines – the Equator Principles, the IFC Performance Standards, the Sustainable Development Goals, World Bank Environmental and Social Framework, and the and World Bank Group Environmental, Health, and Safety Guidelines (EHS Guidelines).

Several other Acts, standards or guidelines have also informed the project process and the scope of issues addressed and assessed in this EIA Report. A review of legislative requirements applicable to the proposed project is provided in **Table 5.6**.

**Table 5.6:** Relevant legislative permitting requirements applicable to the SBPM Solar PV Facility

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
<b>National Legislation</b>			
Constitution of the Republic of South Africa (No. 108 of 1996)	<p>In terms of Section 24, the State has an obligation to give effect to the environmental right. The environmental right states that:</p> <p><i>“Everyone has the right –</i></p> <ul style="list-style-type: none"> <li>» <i>To an environment that is not harmful to their health or well-being, and</i></li> <li>» <i>To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:</i> <ul style="list-style-type: none"> <li>* <i>Prevent pollution and ecological degradation,</i></li> <li>* <i>Promote conservation, and</i></li> <li>* <i>Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”</i></li> </ul> </li> </ul>	Applicable to all authorities	There are no permitting requirements associated with this Act. The application of the Environmental Right however implies that environmental impacts associated with proposed developments are considered separately and cumulatively. It is also important to note that the “right to an environment clause” includes the notion that justifiable economic and social development should be promoted, through the use of natural resources and ecologically sustainable development.
National Environmental Management Act (No 107 of 1998) (NEMA)	<p>The 2014 EIA Regulations have been promulgated in terms of Chapter 5 of NEMA. Listed activities which may not commence without EA are identified within the Listing Notices (GNR 327, GNR 325 and GNR 324) which form part of these Regulations (GNR 326).</p> <p>In terms of Section 24(1) of NEMA, the potential impact on the environment associated with these listed activities must be assessed and reported on to the competent authority charged by NEMA with granting of the relevant environmental authorisation.</p> <p>Considering the capacity of the proposed SBPM Solar PV Facility project (i.e. contracted capacity of 100MW) and the triggering of Activity 1 of Listing Notice 2 (GNR 325) a full</p>	<p>DFFE – Competent Authority</p> <p>Limpopo (DEDET) – Commenting Authority</p> <p>North West (DEDECT) – Commenting Authority</p>	The listed activities triggered by the proposed Project have been identified and are being assessed as part of the S&EIA process currently underway for the Project. The S&EIA process will culminate in the submission of a Final EIA Report to DFFE for review and decision-making.

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	Scoping and EIA process is required in support of the Application for EA.		
National Environmental Management Act (No 107 of 1998) (NEMA)	<p>In terms of the "Duty of Care and Remediation of Environmental Damage" provision in Section 28(1) of NEMA every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.</p> <p>In terms of NEMA, it is the legal duty of a project proponent to consider a project holistically, and to consider the cumulative effect of a variety of impacts.</p>	<p>DFFE Limpopo (DEDET) – Commenting Authority</p> <p>North West (DEDECT) – Commenting Authority</p>	While no permitting or licensing requirements arise directly by virtue of the proposed project, this section finds application through the consideration of potential cumulative, direct, and indirect impacts. It will continue to apply throughout the life cycle of the project.
Environment Conservation Act (No. 73 of 1989) (ECA)	<p>The Noise Control Regulations in terms of Section 25 of the ECA contain regulations applicable for the control of noise in the Provinces of Limpopo, North West, Mpumalanga, Northern Cape, Eastern Cape, and KwaZulu-Natal Provinces.</p> <p>The Noise Control Regulations cover the powers of a local authority, general prohibitions, prohibitions of disturbing noise, prohibitions of noise nuisance, use of measuring instruments, exemptions, attachments, and penalties.</p> <p>In terms of the Noise Control Regulations, no person shall make, produce or cause a disturbing noise, or allow it to be made, produced or caused by any person, machine, device or apparatus or any combination thereof (Regulation 04).</p>	<p>DFFE Limpopo (DEDET) – Commenting Authority</p> <p>North West (DEDECT) – Commenting Authority</p> <p>Thabazimbi Local Municipality</p> <p>Moses Kotane Local Municipality</p>	Noise impacts are expected to be associated with the construction phase of the project. Considering the location of the development area in relation to residential areas and provided that appropriate mitigation measures are implemented, construction noise is unlikely to present a significant intrusion to the local community. There is therefore no requirement for a noise permit in terms of the legislation.
National Water Act (No. 36 of 1998) (NWA)	A water use listed under Section 21 of the NWA must be licensed with the Regional DWS, unless it is listed in Schedule 1 of the NWA (i.e. is an existing lawful use), is permissible under	Regional Department of Human Settlement, Water and Sanitation	Wetlands have been identified within the development area and grid corridor ( <b>Appendix E</b> ). As a result, a general

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>a GA, or if a responsible authority waives the need for a licence.</p> <p>Water use is defined broadly, and includes consumptive and non-consumptive water uses, taking and storing water, activities which reduce stream flow, waste discharges and disposals, controlled activities (activities which impact detrimentally on a water resource), altering a watercourse, removing water found underground for certain purposes, and recreation.</p> <p>Consumptive water uses may include taking water from a water resource (Section 21(a)) and storing water (Section 21(b)).</p> <p>Non-consumptive water uses may include impeding or diverting of flow in a water course (Section 21(c)), and altering of bed, banks or characteristics of a watercourse (Section 21(i)).</p>		<p>authorisation or water use authorisation for the Project may be required from the DWS. The process to be undertaken will only be confirmed and completed once a positive EA has been received. This is in line with the requirements from the DWS.</p>
<p>Minerals and Petroleum Resources Development Act (No. 28 of 2002) (MPRDA)</p>	<p>In accordance with the provisions of the MPRDA a mining permit is required in accordance with Section 27(6) of the Act where a mineral in question is to be mined, including the mining of materials from a borrow pit.</p> <p>Section 53 of the MPRDA states that any person who intends to use the surface of any land in any way which may be contrary to any object of the Act, or which is likely to impede any such object must apply to the Minister for approval in the prescribed manner.</p>	<p>Department of Mineral Resources and Energy (DMRE)</p>	<p>Any person who wishes to apply for a mining permit in accordance with Section 27(6) must simultaneously apply for an Environmental Authorisation in terms of NEMA. No borrow pits are expected to be required for the construction of the project, and as a result a mining permit or EA in this regard is not required to be obtained.</p> <p>In terms of Section 53 of the MPRDA approval is required from the Minister of Mineral Resources and Energy to ensure that the proposed development does not sterilise a mineral resource that might occur on site.</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
<p>National Environmental Management: Air Quality Act (No. 39 of 2004) (NEM:AQA)</p>	<p>The National Dust Control Regulations (GNR 827) published under Section 32 of NEM:AQA prescribe the general measures for the control of dust in all areas and provide a standard for acceptable dustfall rates for residential and non-residential areas.</p> <p>In accordance with the Regulations (GNR 827) any person who conducts any activity in such a way as to give rise to dust in quantities and concentrations that may exceed the dustfall standard set out in Regulation 03 must, upon receipt of a notice from the air quality officer, implement a dustfall monitoring programme.</p> <p>Any person who has exceeded the dustfall standard set out in Regulation 03 must, within three months after submission of the dustfall monitoring report, develop and submit a dust management plan to the air quality officer for approval.</p>	<p>Limpopo (DEDET)</p> <p>North West (DEDECT / Waterberg District Municipality / Bojanala Platinum District</p>	<p>In the event that the project results in the generation of excessive levels of dust the possibility could exist that a dustfall monitoring programme would be required for the project, in which case dustfall monitoring results from the dustfall monitoring programme would need to be included in a dust monitoring report, and a dust management plan would need to be developed.</p>
<p>National Heritage Resources Act (No. 25 of 1999) (NHRA)</p>	<p>Section 07 of the NHRA stipulates assessment criteria and categories of heritage resources according to their significance.</p> <p>Section 35 of the NHRA provides for the protection of all archaeological and palaeontological sites, and meteorites.</p> <p>Section 36 of the NHRA provides for the conservation and care of cemeteries and graves by SAHRA where this is not the responsibility of any other authority.</p> <p>Section 38 of the NHRA lists activities which require developers or any person who intends to undertake a listed activity to notify the responsible heritage resources authority and furnish</p>	<p>South African Heritage Resources Agency (SAHRA)</p> <p>The Limpopo Provincial Heritage Resources Authority (LIHRA)</p> <p>North West Provincial Heritage Resources Agency (NW PHRA)</p>	<p>The Heritage Impact Assessment has concluded that the overall, the archaeological field assessment has determined that the overall archaeological sensitivity of the development area is low with few ex situ surface scatters identified. These resources are not conservation-worthy and have been sufficiently recorded in this report.</p>



Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>it with details regarding the location, nature, and extent of the proposed development.</p> <p>Section 44 of the NHRA requires the compilation of a Conservation Management Plan as well as a permit from SAHRA for the presentation of archaeological sites as part of tourism attraction.</p>		
<p>National Environmental Management: Biodiversity Act (No. 10 of 2004) (NEM:BA)</p>	<p>Section 53 of NEM:BA provides for the MEC / Minister to identify any process or activity in such a listed ecosystem as a threatening process.</p> <p>Three government notices have been published in terms of Section 56(1) of NEM:BA as follows:</p> <ul style="list-style-type: none"> <li>» Commencement of TOPS Regulations, 2007 (GNR 150).</li> <li>» Lists of critically endangered, vulnerable and protected species (GNR 151).</li> <li>» TOPS Regulations (GNR 152).</li> </ul> <p>It provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), and vulnerable (VU) or protected. The first national list of threatened terrestrial ecosystems has been gazetted, together with supporting information on the listing process including the purpose and rationale for listing ecosystems, the criteria used to identify listed ecosystems, the implications of listing ecosystems, and summary statistics and national maps of listed ecosystems (NEM:BA: National list of ecosystems that are threatened and in need of protection, (Government Gazette 37596, GNR 324), 29 April 2014).</p>	<p>DFFE Limpopo (DEDET)  North West (DEDECT)</p>	<p>Two Nationally Protected tree species were recorded, <i>Boscia albitrunca</i> (Shepard's Tree) and <i>Vachellia erioloba</i> (Camelthorn).</p> <p>Under NEM:BA, a permit would be required for any activity that is of a nature that may negatively impact on the survival of a listed protected species.</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
<p>National Environmental Management: Biodiversity Act (No. 10 of 2004) (NEM:BA)</p>	<p>Chapter 5 of NEM:BA pertains to alien and invasive species, and states that a person may not carry out a restricted activity involving a specimen of an alien species without a permit issued in terms of Chapter 7 of NEM:BA, and that a permit may only be issued after a prescribed assessment of risks and potential impacts on biodiversity is carried out.</p> <p>Applicable, and exempted alien and invasive species are contained within the Alien and Invasive Species List (GNR 864).</p>	<p>DFFE Limpopo (DEDET) North West (DEDECT)</p>	<p>Four (4) IAP species were recorded within the project area. These species are listed under the Alien and Invasive Species List 2020, Government Gazette No. GN1003 as Category 1b. These IAP species must be controlled by implementing an IAP Management Programme.</p>
<p>Conservation of Agricultural Resources Act (No. 43 of 1983) (CARA)</p>	<p>Section 05 of CARA provides for the prohibition of the spreading of weeds.</p> <p>Regulation 15 of GN R1048 published under CARA provides for the classification of categories of weeds and invader plants, and restrictions in terms of where these species may occur.</p> <p>Regulation 15E of GN R1048 published under CARA provides requirement and methods to implement control measures for different categories of alien and invasive plant species.</p>	<p>Department of Agriculture, Land Reform and Rural Development (DALRD)</p>	<p>CARA will find application throughout the life cycle of the project. In this regard, soil erosion prevention and soil conservation strategies need to be developed and implemented. In addition, a weed control and management plan must be implemented.</p> <p>In terms of Regulation 15E (GN R1048) where Category 1, 2 or 3 plants occur a land user is required to control such plants by means of one or more of the following methods:</p> <ul style="list-style-type: none"> <li>» Uprooting, felling, cutting or burning.</li> <li>» Treatment with a weed killer that is registered for use in connection with such plants in accordance with the directions for the use of such a weed killer.</li> <li>» Biological control carried out in accordance with the stipulations of the Agricultural Pests Act (No. 36 of 1983), the ECA and any other applicable legislation.</li> </ul>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
			<ul style="list-style-type: none"> <li>» Any other method of treatment recognised by the executive officer that has as its object the control of plants concerned, subject to the provisions of sub-regulation 4.</li> <li>» A combination of one or more of the methods prescribed, save that biological control reserves and areas where biological control agents are effective shall not be disturbed by other control methods to the extent that the agents are destroyed or become ineffective.</li> </ul>
<p>National Forests Act (No. 84 of 1998) (NFA)</p>	<p>According to this Act, the Minister may declare a tree, group of trees, woodland or a species of trees as protected. Notice of the List of Protected Tree Species under the National Forests Act (No. 84 of 1998) was published in GNR 734.</p> <p>The prohibitions provide that “no person may cut, damage, disturb, destroy or remove any protected tree, or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister”.</p>	<p>Department of Agriculture, Land Reform and Rural Development (DALRD)</p>	<p>Two Nationally Protected tree species were recorded, <i>Boscia albitrunca</i> (Shepard's Tree) and <i>Vachellia erioloba</i> (Camelthorn).</p> <p>A licence is required for the removal of protected trees. It is therefore necessary to conduct a survey that will determine the number and relevant details pertaining to protected tree species present in the development footprint for the submission of relevant permits to authorities prior to the disturbance of these individuals.</p>
<p>National Veld and Forest Fire Act (No. 101 of 1998) (NVFFA)</p>	<p>Chapter 4 of the NVFFA places a duty on owners to prepare and maintain firebreaks, the procedure in this regard, and the role of adjoining owners and the fire protection association. Provision is also made for the making of firebreaks on the international boundary of the Republic of South Africa. The applicant must ensure that firebreaks are wide and long enough to have a reasonable chance of preventing a</p>	<p>DFFE</p>	<p>While no permitting or licensing requirements arise from this legislation, this Act will be applicable during the construction and operation of SBPM Solar PV Facility, in terms of the preparation and maintenance of firebreaks, and the need to provide</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>veldfire from spreading to or from neighbouring land, it does not cause soil erosion, and it is reasonably free of inflammable material capable of carrying a veldfire across it.</p> <p>Chapter 5 of the Act places a duty on all owners to acquire equipment and have available personnel to fight fires. Every owner on whose land a veldfire may start or burn or from whose land it may spread must have such equipment, protective clothing and trained personnel for extinguishing fires, and ensure that in his or her absence responsible persons are present on or near his or her land who, in the event of fire, will extinguish the fire or assist in doing so, and take all reasonable steps to alert the owners of adjoining land and the relevant fire protection association, if any.</p>		<p>appropriate equipment and trained personnel for firefighting purposes.</p>
<p>Hazardous Substances Act (No. 15 of 1973) (HAS)</p>	<p>This Act regulates the control of substances that may cause injury, or ill health, or death due to their toxic, corrosive, irritant, strongly sensitising or inflammable nature or the generation of pressure thereby in certain instances and for the control of certain electronic products. To provide for the rating of such substances or products in relation to the degree of danger, to provide for the prohibition and control of the importation, manufacture, sale, use, operation, modification, disposal or dumping of such substances and products.</p> <ul style="list-style-type: none"> <li>» Group I and II: Any substance or mixture of a substance that might by reason of its toxic, corrosive etc., nature or because it generates pressure through decomposition, heat or other means, cause extreme risk of injury etc., can be declared as Group I or Group II substance</li> <li>» Group IV: any electronic product, and</li> <li>» Group V: any radioactive material.</li> </ul>	<p>Department of Health (DoH)</p>	<p>It is necessary to identify and list all Group I, II, III, and IV hazardous substances that may be on site and in what operational context they are used, stored or handled. If applicable, a license would be required to be obtained from the DoH.</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>The use, conveyance, or storage of any hazardous substance (such as distillate fuel) is prohibited without an appropriate license being in force.</p>		
<p>National Environmental Management: Waste Act (No. 59 of 2008) (NEM:WA)</p>	<p>The Minister may by notice in the Gazette publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment.</p> <p>The Minister may amend the list by –</p> <ul style="list-style-type: none"> <li>» Adding other waste management activities to the list.</li> <li>» Removing waste management activities from the list.</li> <li>» Making other changes to the particulars on the list.</li> </ul> <p>In terms of the Regulations published in terms of NEM:WA (GNR 912), a BA or EIA is required to be undertaken for identified listed activities.</p> <p>Any person who stores waste must at least take steps, unless otherwise provided by this Act, to ensure that:</p> <ul style="list-style-type: none"> <li>» The containers in which any waste is stored, are intact and not corroded or in</li> <li>» Any other way rendered unfit for the safe storage of waste.</li> <li>» Adequate measures are taken to prevent accidental spillage or leaking.</li> <li>» The waste cannot be blown away.</li> <li>» Nuisances such as odour, visual impacts and breeding of vectors do not arise, and</li> <li>» Pollution of the environment and harm to health are prevented.</li> </ul>	<p>DFFE – Hazardous Waste Limpopo (DEDET) &amp; North West (DEDECT) – General Waste</p>	<p>No waste listed activities are triggered by SBPM Solar PV Facility; therefore, no Waste Management License is required to be obtained. General and hazardous waste handling, storage and disposal will be required during construction and operation. The National Norms and Standards for the Storage of Waste (GNR 926) published under Section 7(1)(c) of NEM:WA will need to be considered in this regard.</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
National Road Traffic Act (No. 93 of 1996) (NRTA)	<p>The technical recommendations for highways (TRH 11): "Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads" outline the rules and conditions which apply to the transport of abnormal loads and vehicles on public roads and the detailed procedures to be followed in applying for exemption permits are described and discussed.</p> <p>Legal axle load limits and the restrictions imposed on abnormally heavy loads are discussed in relation to the damaging effect on road pavements, bridges, and culverts.</p> <p>The general conditions, limitations, and escort requirements for abnormally dimensioned loads and vehicles are also discussed and reference is made to speed restrictions, power/mass ratio, mass distribution, and general operating conditions for abnormal loads and vehicles. Provision is also made for the granting of permits for all other exemptions from the requirements of the National Road Traffic Act and the relevant Regulations.</p>	<p>South African National Roads Agency (SANRAL) – national roads</p> <p>Limpopo Department of Transport and Community Safety (LDTCS)</p> <p>North West Department of Community Safety and Transport Management (NW DCSTM):</p>	<p>An abnormal load / vehicle permit may be required to transport the various components to site for construction. These include route clearances and permits required for vehicles carrying abnormally heavy or abnormally dimensioned loads and transport vehicles exceeding the dimensional limitations (length) of 22m. Depending on the trailer configuration and height when loaded, some of the on-site substation and BESS components may not meet specified dimensional limitations (height and width) which will require a permit.</p>
<b>Provincial Policies / Legislation</b>			
Bophuthatswana Nature Conservation Act. No. 3 of 1973.	<p>This Act provides for the sustainable utilisation of wild animals, aquatic biota and plants; provides for the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora; provides for offences and penalties for contravention of the Act; provides for the appointment of nature conservators to implement the provisions of the Act; and provides for the issuing of permits and other authorisations. Amongst other regulations, the following may apply to the current project:</p>	North West (DEDECT)	<p>Two Nationally Protected tree species were recorded, <i>Boscia albitrunca</i> (Shepard's Tree) and <i>Vachellia erioloba</i> (Camelthorn).</p> <p>A collection/destruction permit must be obtained from Limpopo (DEDET) &amp; North West (DEDECT) for the removal of any protected plant or animal species found on site.</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>Boundary fences may not be altered in such a way as to prevent wild animals from freely moving onto or off of a property;</p> <p>Aquatic habitats may not be destroyed or damaged;</p> <p>The owner of land upon which an invasive species is found (plant or animal) must take the necessary steps to eradicate or destroy such species;</p> <p>The Act provides lists of protected species for the Province.</p>		
<p>Limpopo Environmental Management Act No 7 of 2003</p>	<p>This Act provides for the sustainable utilisation of wild animals, aquatic biota and plants; provides for the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora; provides for offences and penalties for contravention of the Act; provides for the appointment of nature conservators to implement the provisions of the Act; and provides for the issuing of permits and other authorisations. Amongst other regulations, the following may apply to the current project:</p> <p>Boundary fences may not be altered in such a way as to prevent wild animals from freely moving onto or off of a property;</p> <p>Aquatic habitats may not be destroyed or damaged;</p> <p>The owner of land upon which an invasive species is found (plant or animal) must take the necessary steps to eradicate or destroy such species;</p> <p>The Act provides lists of protected species for the Province.</p>	<p>Limpopo (DEDET)</p>	<p>Two Nationally Protected tree species were recorded, <i>Boscia albitrunca</i> (Shepard's Tree) and <i>Vachellia erioloba</i> (Camelthorn).</p> <p>A collection/destruction permit must be obtained from Limpopo (DEDET) for the removal of any protected plant or animal species found on site.</p>

### 5.8.1 Best Practice Guidelines Birds & Solar Energy (2017)

The Best Practice Guidelines Birds & Solar Energy (2017) proposed by the Birds and Renewable Energy Specialist Group (BARESG) (convened by BirdLife South Africa and the Endangered Wildlife Trust) contain guidelines for assessing and monitoring the impact of solar generation facilities on birds in Southern Africa. The guidelines recognise the impact that solar energy may have on birds, through for example the alteration of habitat, the displacement of populations from preferred habitat, and collision and burn mortality associated with elements of solar hardware and ancillary infrastructure; and the fact that the nature and implications of these effects are poorly understood.

The guidelines are aimed at Environmental Assessment Practitioners (EAPs), avifaunal specialists, developers and regulators and propose a tiered assessment process, including:

- (i) Preliminary avifaunal assessment – an initial assessment of the likely avifauna in the area and possible impacts, preferably informed by a brief site visit and by collation of available data; also including the design of a site-specific survey and monitoring project should this be deemed necessary.
- (ii) Data collection – further accumulation and consolidation of the relevant avian data, possibly including the execution of baseline data collection work (as specified by the preliminary assessment), intended to inform the avian impact study.
- (iii) Impact assessment – a full assessment of the likely impacts and available mitigation options, based on the results of systematic and quantified monitoring if this was deemed a requisite at preliminary assessment.
- (iv) Monitoring – repetition of baseline data collection, plus the collection of mortality data. This helps to develop a complete before and after picture of impacts, and to determine if proposed mitigation measures are implemented and are effective, or require further refinement. Monitoring may only be necessary for projects with the potential for significant negative impacts on birds (i.e. large area affected and / or vulnerable species present).

In terms of the guidelines the quantity and quality of baseline data required to inform the assessment process at each site should be set in terms of the size of the site and the predicted impacts of the solar technology in question, the anticipated sensitivity of the local avifauna (for example, the diversity and relative abundance of priority species present, proximity to important flyways, wetlands or other focal sites) and the amount of existing data available for the area.

Data collection could vary from a single, short field visit (Regime 1, for e.g. at a small or medium sized site with low avifaunal sensitivity), to a series of multi-day survey periods, including the collection of various forms of data describing avian abundance, distribution and movement and spread over 12 months (Regime 3, for e.g. at a large developments located in a sensitive habitat, or which otherwise may have significant impacts on avifauna). **Table 5.7** is taken from the best practise guidelines and provides a summary of the recommended assessment regimes in relation to proposed solar energy technology, project size, and likely risk).



**Table 5.3:** Recommended avian assessment regimes in relation to proposed solar energy technology, project size, and known impact risks.

Type of technology*	Size**	Avifaunal Sensitivity***		
		Low	Medium	High
All except CSP power tower	Small (< 30ha)	Regime 1	Regime 1	Regime 2
	Medium (30 – 150ha)	Regime 1	Regime 2	Regime 2
	Large (> 150ha)	Regime 2****	Regime 2	Regime 3
CSP power tower	All	Regime 3		

Regime 1: One site visit (peak season); minimum 1 – 5 days.

Regime 2: Pre- and post-construction; minimum 2 – 3 x 3 – 5 days over 6 months (including peak season); carcass searches.

Regime 3: Pre- and post-construction; minimum 4 – 5 x 4 – 8 days over 12 months, carcass searches.

\* Different technologies may carry different intrinsic levels of risk, which should be taken into account in impact significance ratings

\*\* For multi-phased projects, the aggregate footprint of all the phases should be used. At 3ha per MW, Small = < 10MW, Medium = 10 – 50MW, Large = > 50MW.

\*\*\* The avifaunal sensitivity is based on the number of priority species present, or potentially present, the regional, national or global importance of the affected area for these species (both individually and collectively), and the perceived susceptibility of these species (both individually and collectively) to the anticipated impacts of development. For example, an area would be considered to be of high avifaunal sensitivity if one or more of the following is found (or suspected to occur) within the broader impact zone:

- 1) Avifaunal habitat (e.g. a wetlands, nesting or roost sites) of regional or national significance.
- 2) A population of a priority species that is of regional or national significance.
- 3) A bird movement corridor that is of regional or national significance.
- 4) A protected area and / or Important Bird and Biodiversity Area.

An area would be considered to be of medium avifaunal sensitivity if it does not qualify as high avifaunal sensitivity, but one or more of the following is found (or suspected to occur) within the broader impact zone

- 1) Avifaunal habitat (e.g. a wetland, nesting or roost sites) of local significance.
- 2) A locally significant population of a priority species.
- 3) A locally significant bird movement corridor.

An area would be considered to be of low avifaunal sensitivity if it does not meet any of the above criteria.

\*\*\*\* Regime 1 may be applied to some large sites, but only in instances where there is abundant existing data to support the assessment of low sensitivity.

Bird distribution patterns fluctuate widely in response to environmental conditions (e.g. local rainfall patterns, nomadism, migration patterns, seasonality), meaning that a composition noted at a particular moment in time will differ during another time period at the same locality. For this reason, the PV transects are counted 4 times in Spring and then again 4 times in Autumn. The spring survey has already been conducted and the findings has been used to inform the avifauna scoping report completed for the scoping phase. The result from the Autumn season bird monitoring will be used to inform both the development footprint as well as Avifauna Impact Assessment report to be completed for the EIA phase.

### 5.8.2 The IFC Environmental Health and Safety (EHS) Guidelines

The IFC EHS Guidelines are technical reference documents with general and industry specific examples of Good International Industry Practice (GIIP). The following IFC EHS Guidelines have relevance to the proposed project:

- » IFC EHS General Guidelines
- » IFC Project Developer's Guide to Utility-Scale Solar Photovoltaic Power Plants

The General EHS Guidelines are designed to be used together with the relevant Industry Sector EHS Guidelines, however no Industry Sector EHS Guidelines have been developed for PV solar power to date. The application of the General EHS Guidelines should be tailored to the hazards and risks associated with a project and should take into consideration site-specific variables which may be applicable, such as host country context, assimilative capacity of the environment, and other project factors. In instances where host country regulations differ from the standards presented in the EHS Guidelines, whichever is the more stringent of the two in this regard should be applied.

The General EHS Guidelines include consideration of the following:

- » Environmental:
  - \* Air Emissions and Ambient Air Quality
  - \* Energy Conservation
  - \* Wastewater and Ambient Water Quality
  - \* Water Conservation
  - \* Hazardous Materials Management
  - \* Waste Management
  - \* Noise
  - \* Contaminated Land
- » Occupational Health and Safety:
  - \* General Facility Design and Operation
  - \* Communication and Training
  - \* Physical Hazards
  - \* Chemical Hazards
  - \* Biological Hazards
  - \* Radiological Hazards
  - \* Personal Protective Equipment (PPE)
  - \* Special Hazard Environments
  - \* Monitoring
- » Community Health and Safety:
  - \* Water Quality and Availability
  - \* Structural Safety of Project Infrastructure
  - \* Life and Fire Safety (L&FS)
  - \* Traffic Safety
  - \* Transport of Hazardous Materials
  - \* Disease Prevention
  - \* Emergency Preparedness and Response
- » Construction and Decommissioning:
  - \* Environment
  - \* Occupational Health & Safety
  - \* Community Health & Safety

### **5.8.3 IFC's Project Developer's Guide to Utility-Scale Solar Photovoltaic Power Plants (2015)**

While no Industry Sector EHS Guidelines have been developed for PV Solar Power, the IFC has published a Project Developer's Guide to Utility-Scale Solar Photovoltaic Power Plants (IFC, 2015). Chapter 8 of the Project Developer's Guide pertains to Permits, Licensing and Environmental Considerations, and states that in order to deliver a project which will be acceptable to international lending institutions, environmental and social assessments should be carried out in accordance with the requirements of the key international standards and principles, namely the Equator Principles and IFC's Performance Standards (IFC PS).

Some of the key environmental considerations for solar PV power plants contained within the Project Developer's Guide include:

- » Construction phase impacts (i.e. OHS, temporary air emissions from dust and vehicle emissions, noise related to excavation, construction and vehicle transit, solid waste generation and wastewater generation from temporary building sites and worker accommodation).
- » Water usage (i.e. the cumulative water use requirements).
- » Land matters (i.e. land acquisition procedures and the avoidance or proper mitigation of involuntary land acquisition / resettlement).
- » Landscape and visual impacts (i.e. the visibility of the solar panels within the wider landscape and associated impacts on landscape designations, character types and surrounding communities).
- » Ecology and natural resources (i.e. habitat loss / fragmentation, impacts on designated areas and disturbance or displacement of protected or vulnerable species).
- » Cultural heritage (i.e. impacts on the setting of designated sites or direct impacts on below-ground archaeological deposits as a result of ground disturbance during construction).
- » Transport and access (i.e. impacts of transportation of materials and personnel).
- » Drainage / flooding (i.e. flood risk associated with the site).
- » Consultation and disclosure (i.e. consultation with key authorities, statutory bodies, affected communities and other relevant stakeholders as early as possible).
- » Environmental and Social Management Plan (ESMP) (i.e. compile an ESMP to ensure that mitigation measures for relevant impacts are identified and incorporated into project construction procedures and contracts).

## CHAPTER 6: DESCRIPTION OF THE RECEIVING ENVIRONMENT

This chapter provides a description of the local environment. This information is provided in order to assist the reader in understanding the possible effects of the project on the environment within which it is proposed to be developed. Aspects of the biophysical, social and economic environment that could be directly or indirectly affected by or could affect the SBPM Solar PV Facility have been described. This information has been sourced from both existing information available for the area as well as collected field data by specialist consultants and aims to provide the context within which this EIA process is being conducted.

### 6.1 Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of an Environmental Impact Assessment

This chapter includes the following information required in terms of the EIA Regulations, 2014 - Appendix 3: Scope of Assessment and Content of Environmental Impact Assessment Reports:

Requirement	Relevant Section
3(1)(h)(iv) the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.	<p>The environmental attributes associated with the development of SBPM Solar PV Facility is included as a whole within this chapter. The environmental attributes that are assessed within this chapter includes the following:</p> <ul style="list-style-type: none"> <li>» The regional setting of the broader study area and the project site indicates the geographical aspects associated with the SBPM Solar PV Facility. This is included in <b>Section 6.2</b>.</li> <li>» The climatic conditions present within the broader study area have been included in <b>Section 6.3</b>.</li> <li>» The biophysical characteristics of the Project Site and the surrounding areas are included in <b>Section 6.4</b>. The characteristics considered are topography and terrain, geology, soils and agricultural potential and the ecological profile which includes the vegetation patterns, listed plant species, critical biodiversity areas and broad-scale processes, freshwater resources, terrestrial fauna and avifauna.</li> <li>» The heritage and cultural aspects (including archaeology, cultural landscape and palaeontology) has been included in <b>Section 6.5</b>.</li> <li>» The visual quality of the surrounding area and the project site has been considered in <b>Section 6.6</b></li> <li>» The social profile characteristics associated with the broader study area and the project site have been included in <b>Section 6.7</b></li> </ul>

A more detailed description of each aspect of the affected environment is included within the specialist Reports contained within **Appendices D – H**.

### 6.2. Regional Setting

The SBPM Solar PV Facility development area is located approximately 6.5km west of the town of Northam, within the Thabazimbi Local Municipality and the Waterberg District Municipality in the Limpopo Province. The proposed grid connection routes for the PV facility extend to the North West Province within the Moses Kotane Local Municipality and the Bojanala Platinum District Municipality.

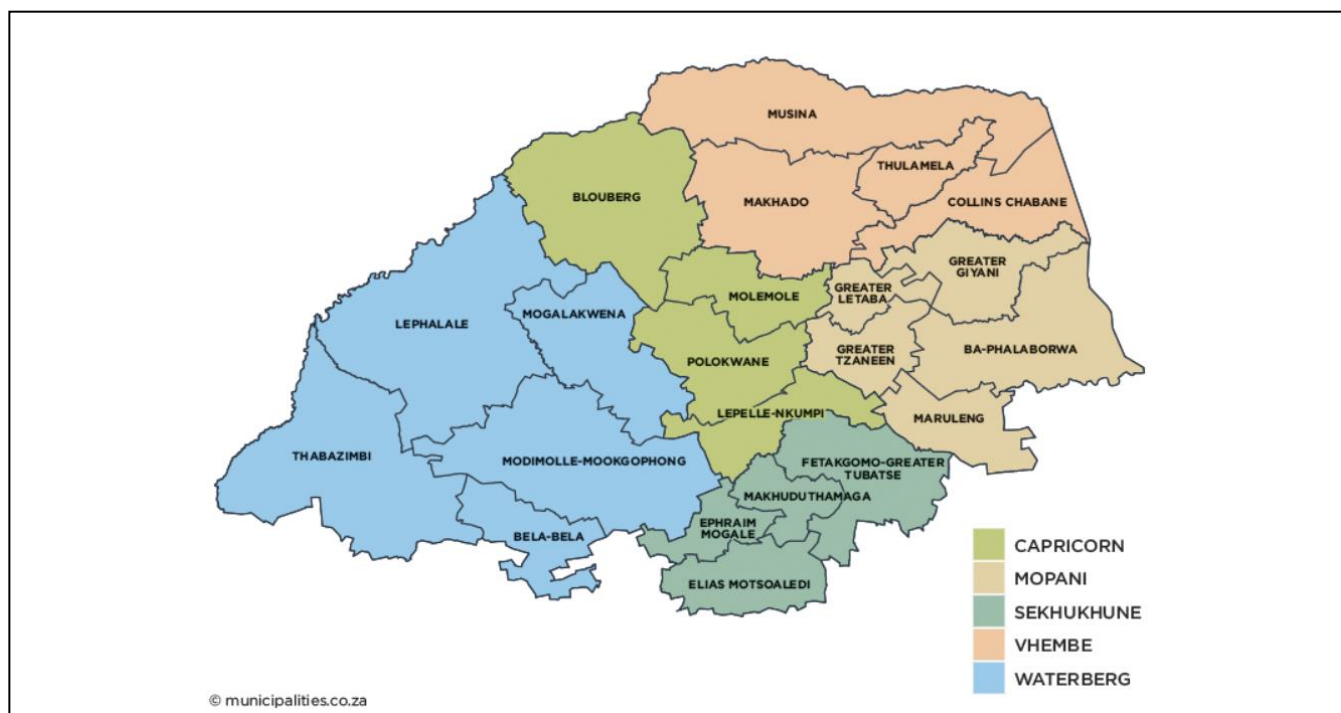
### 6.2.1 Limpopo Province

Limpopo, South Africa's northern-most province, borders onto Mozambique, Zimbabwe and Botswana. It also borders the Mpumalanga, Gauteng and North West provinces. Named after the Limpopo River, which flows along its northern border, it is a region of contrasts, from true Bushveld country to majestic mountains, primeval indigenous forests, unspoiled wilderness and patchworks of farmland. In the eastern region lies the northern half of the magnificent Kruger National Park. Limpopo ranks fifth in South Africa in both surface area and population, covering an area of 125 754km<sup>2</sup> and being home to a population of 5 779 090. The capital is Polokwane (previously Pietersburg). Other major cities and towns include Bela-Bela (Warmbad), Lephalale (Ellisras), Makhado (Louis Trichardt), Musina (Messina), Thabazimbi and Tzaneen.

Mining is the primary driver of economic activity. Limpopo is rich in mineral deposits, including platinum-group metals, iron ore, chromium, high and middle-grade coking coal, diamonds, antimony, phosphate and copper, as well as mineral reserves such as gold, emeralds, scheelite, magnetite, vermiculite, silicon and mica. The province is a typical developing area, exporting primary products and importing manufactured goods and services.

The climatic conditions in the province allow for double harvesting seasons, which results in it being the largest producer of various crops in the agricultural market. Sunflowers, cotton, maize and peanuts are cultivated in the Bela-Bela–Modimolle area. Bananas, litchis, pineapples, mangoes and pawpaw's, as well as a variety of nuts, are grown in the Tzaneen and Makhado areas. Extensive tea and coffee plantations create many employment opportunities in the Tzaneen area. The Bushveld is cattle country, where controlled hunting is often combined with ranching.

Limpopo is divided into five district municipalities, namely, Capricorn, Mopani, Sekhukhune, Vhembe and Waterberg and which are further subdivided into 22 local municipalities (refer to Figure 6.1).

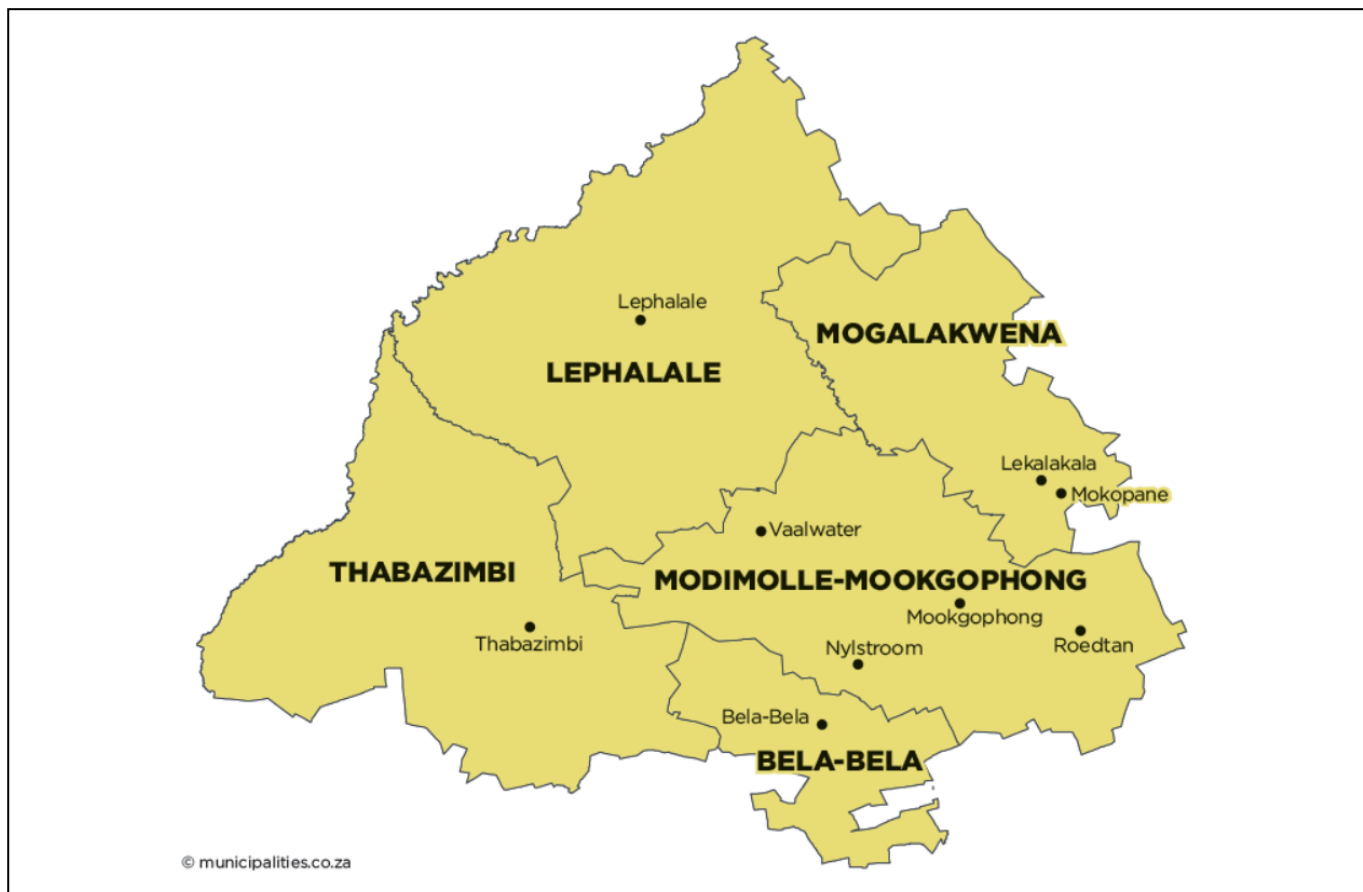


**Figure 6.1: District municipalities of the Limpopo Province** (Source: [www.municipalities.co.za](http://www.municipalities.co.za)).

The Waterberg District Municipality is a Category C municipality located in the western part of the Limpopo Province. It is strategically located in sharing its borders with Capricorn District Municipality in the north and Sekhukhune District Municipality in the east. The south-western boundary abuts the North West, while the Gauteng Province lies on the south-eastern side.

The municipality is the biggest district in the province, making up just more than a third of its geographical area. It shares five-border control points with Botswana, namely Groblersbrug, Stockpoort, Derdepoort, Zanzibar and Platjan. It is comprised of five local municipalities: Bela-Bela, Lephalale, Modimolle-Mookgophong, Mogalakwena and Thabazimbi.

The region, as we know it today, is more than three million years old. With its great variety of wildlife, birds and scenic splendour. It is one of South Africa's prime ecotourism destinations.



**Figure 6.2:** Map showing the Thabazimbi Local Municipality of the Waterberg DM (Source: [www.municipalities.co.za](http://www.municipalities.co.za)).

The broader Project Site for the establishment of the SBPM Solar PV Facility and associated infrastructure is located within the Thabazimbi Local Municipality. The Thabazimbi Local Municipality is a Category B municipality within the Waterberg District in the south-western part of the Limpopo Province. It has Botswana as its international neighbour and is a mere two-hour drive from Pretoria. It is one of five municipalities in the district. Thabazimbi is known as 'mountain of iron', which is a Setswana name referring to the highly lucrative iron ore reef first discovered in the municipality in 1919. The Marakele National Park, which is a subsidiary of

the National Parks Board, and in the same standard as the Kruger National Park and Mapungubwe is located within this municipality. Thabazimbi Municipality is surrounded by platinum-producing areas. Other minerals produced in the area include andalusite.

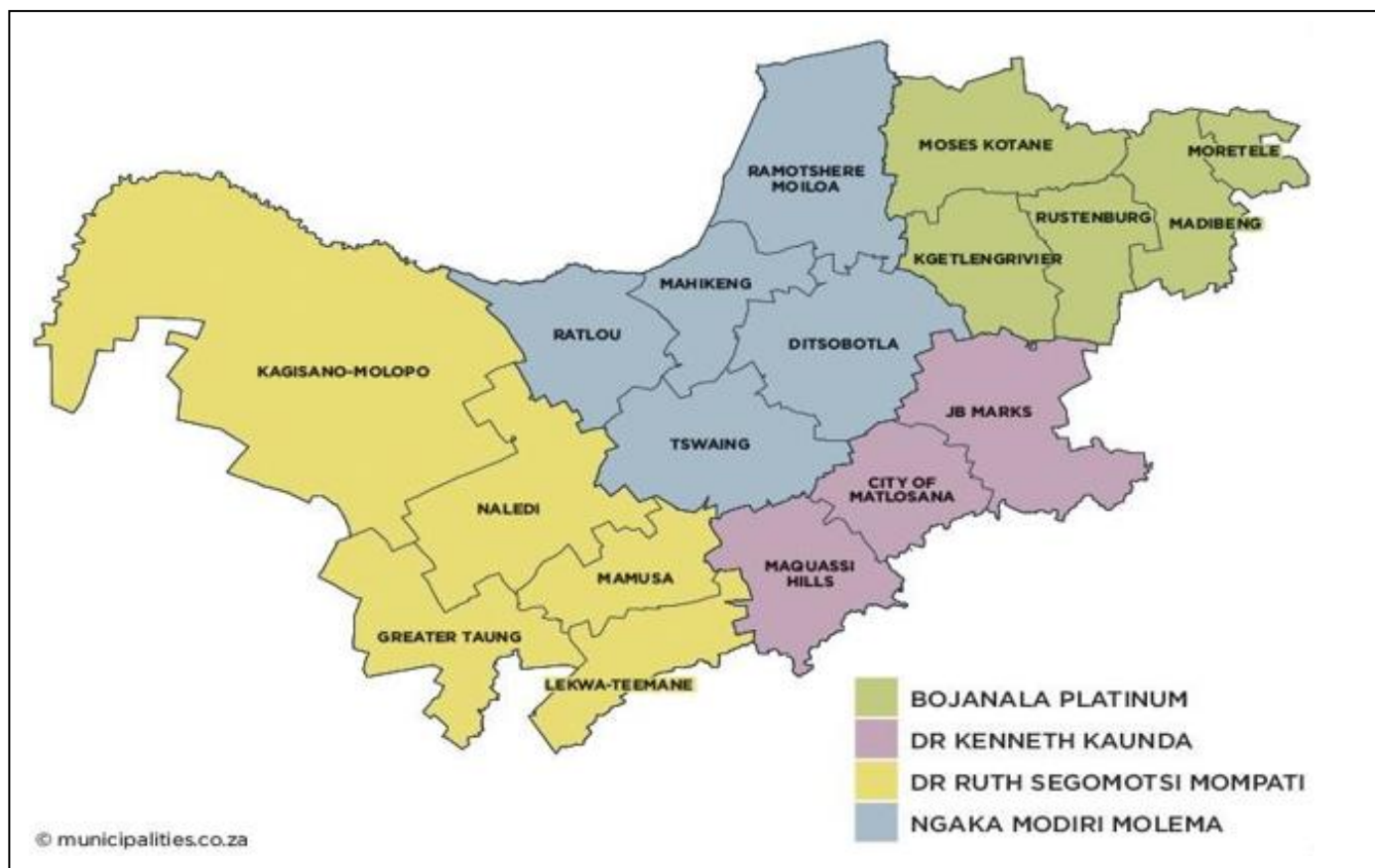
Agriculture has also proven to be a strong economic sector in the municipality. Agricultural commodities produced are wheat, beans and maize. The municipality's goals are aligned with those of the Provincial Growth and Development Strategy in Limpopo. This will ensure that the growth trajectory also addresses the objective of poverty eradication through job creation and business opportunity stimulation.

### **6.2.2 North West Province**

The North West Province is situated in the central-northern extent of South Africa. The province is bordered by Northern Cape Province to the west, and south-west; Free State Province to the south; Gauteng Province to the east; Limpopo Province to the north-east; and Botswana to the north. It occupies an area of land approximately 104 882km<sup>2</sup> in extent, making it South Africa's 6th largest in terms of area; and has a population of 3 509 953 (2011) and population density of 33/km<sup>2</sup> (2011), making it South Africa's 7th most densely populated Province.

The North West Province is characterised by altitudes ranging from 920 - 1782m AMSL, which makes it one of the provinces with the most uniform terrain. The central and western extents of the province are characterised by gently undulating plains, while the eastern extent is characterised as mountainous, and includes the Magaliesberg mountain range. Ancient igneous rock formations dominate the north-eastern and north-central extent of the province; and the Gatsrand between Potchefstroom and Carletonville is considered to be one of the most ancient, preserved landscapes in the world. The geology of the province is significant given its mineral resources which are rich in platinum, gold, uranium, iron, chrome, manganese, and diamonds.

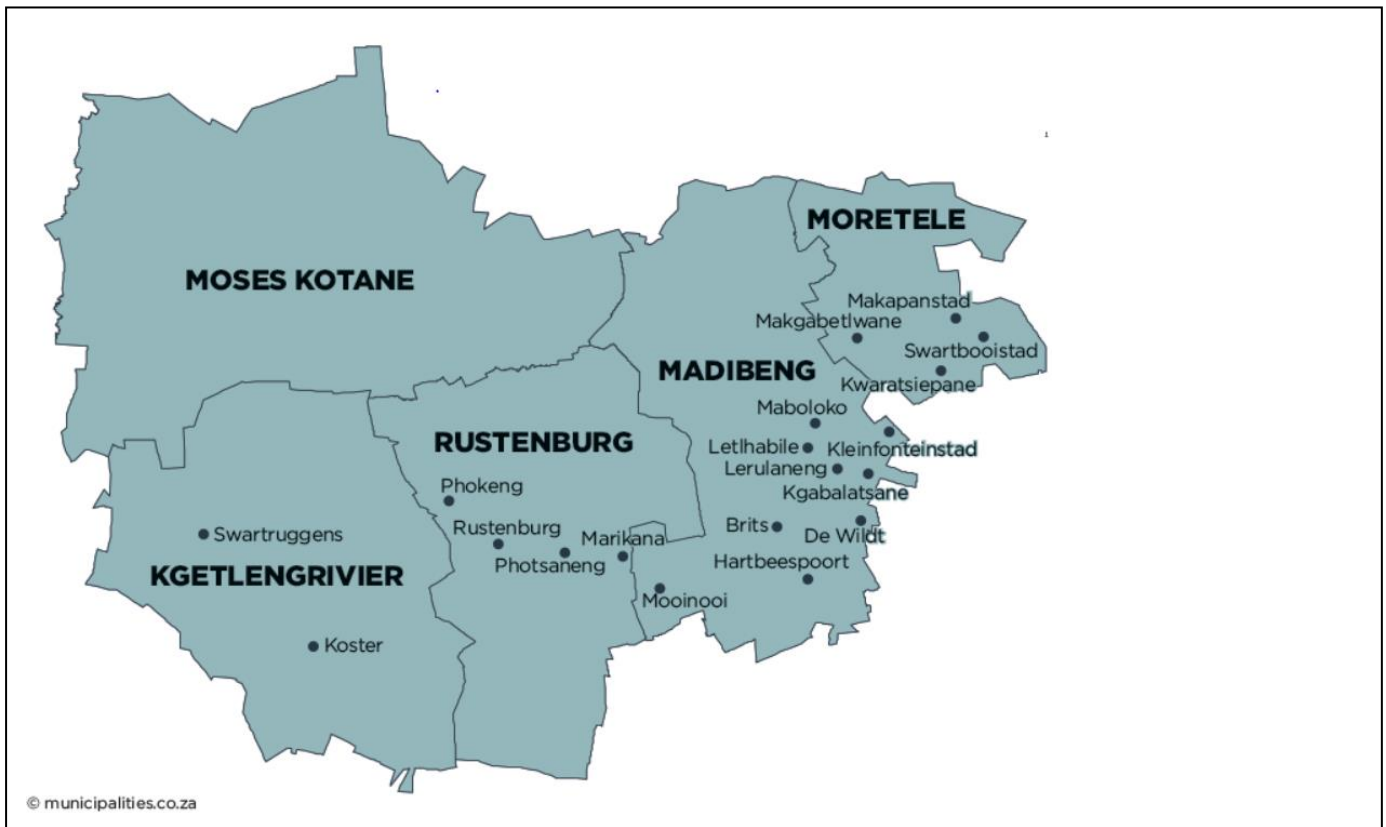
In terms of land use patterns, approximately 69% of the North West Province is in a natural, or near-natural state; while 31% of the province is irreversibly modified as a result of croplands (25.6%), urban (3.5%), and mining (0.7%) activities. The province is predominantly rural with the main economic activities comprising mining and agriculture. The North West Province comprises 4 Districts, namely Bojanala Platinum, Ngaka Modiri Molema, Dr Ruth Segomotsi Mompati, and Dr Kenneth Kaunda (**refer to Figure 6.3**).



**Figure 6.3:** Map showing the municipalities of the North West (Source: [www.municipalities.co.za](http://www.municipalities.co.za)).

Bojanala Platinum District Municipality is situated in the North West province. It is one of the four district municipalities in the province and comprises the five local municipalities of (1) Kgetlengrivier, (2) Madibeng, (3) Moses Kotane, (4) Moretele and (5) Rustenburg. It is bordered by Waterberg District Municipality to the north, City of Tshwane to the east, West Rand District Municipality to the south-east, Dr Kenneth Kaunda District Municipality to the south and Ngaka Modiri Molema District Municipality to the west. Main centres are Brits, Derby, Hartbeesfontein, Hartbeespoort, Koster, Madikwe, Marikana, Moonooi, Phatsima, Rustenburg, Swartruggens, Tlhabane.





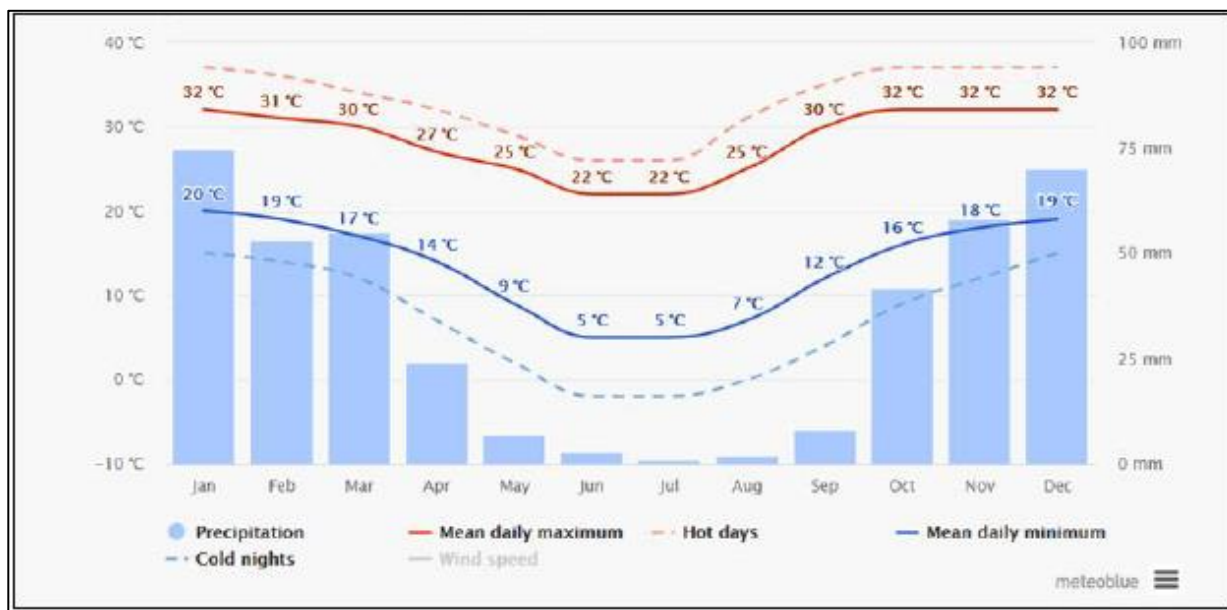
**Figure 6.4:** Map showing the Moses Kotane Local Municipality of the Bojanala Platinum DM (Source: [www.municipalities.co.za](http://www.municipalities.co.za)).

The proposed grid connection routes for the PV development extend into the Moses Kotane Local Municipality. The Moses Kotane Local Municipality (MKLM) is a category B4 local municipality, which refers to a municipality that is mainly rural with communal tenure. The municipality covers an area of approximately 5,738 km<sup>2</sup> (31.3% of the Municipality is an EXCO-type with 31 Wards). It is led by Council, made up of 75 Councillors comprising Dikgosi, Ward and PR Councillors. The joint senior political leadership, commonly referred to as TROIKA, consists of the Speaker, Mayor and the Single Whip. The mayor is the head of a 10-member Executive Committee (EXCO), who head various Portfolio Committees. The Municipality consists of 107 villages and 2 formal towns (Mogwase and Madikwe). The N4 Corridor which is the east-west bound road connecting Rustenburg and Pretoria runs to the south of Moses Kotane Local Municipality. The R510 north south bound road connect the Municipality to the north.

### 6.3. Climatic Conditions

According to the Köppen-Geiger classification of climate zones (Köppen 1936) the project area falls within the climate classified as Bsh = Hot semi-arid climates, this climate is characterized by hot summers, mild winters, and low precipitation levels. The area is characteristically warm with erratic and extremely variable rainfall, ranging from 450 to 750 mm per year, with an average of 620 mm. The rainfall in the area is exclusively due to thunderstorms that occur during the summer months (October to March); whilst winter months are normally dry. Hail, which is often associated with thunderstorms occurs during the sizzling summer months. Given the project area's proximity to Swartklip, the climate should be similar. Swartklip has a semi-arid climate prevailing. The highest average temperature in Swartklip is 29°C in January and the lowest is

19°C in June. The average annual temperature for Swartklip is 25°C and there is about 353 mm of rain in a year. It is dry for 215 days a year with an average humidity of 52% and a UV index of five.



**Figure 6.5:** Climate graph for the project area, within which the proposed project site is located (source: Meteoblue 2021)

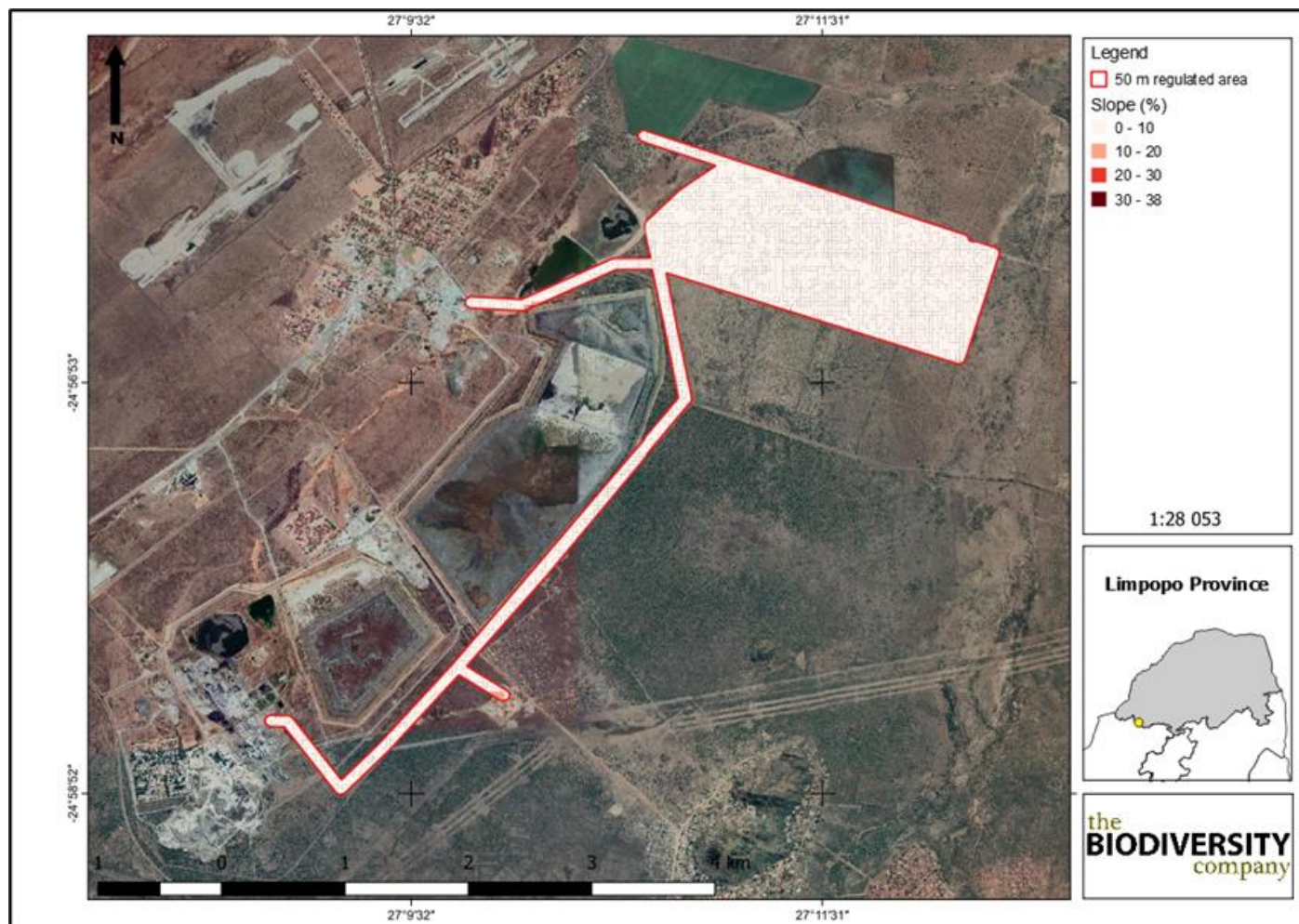
#### 6.4. Biophysical Characteristics of the Study Area and Development Area

The following section provides an overview and description of the biophysical characteristics of the study area and has been informed by specialist studies (**Appendix D-H**) undertaken for this EIA Report.

##### 6.4.1. Topography and Terrain

The slope of the entire project site is relatively even (flat). The slope percentage of the development area and immediate surrounds was determined and is illustrated in **Figure 6.6**. The slope percentage ranges from 0 to 10%, with some small patches within the development area characterised by a slope percentage up to 38%. The study area occurs on land that ranges in elevation from approximately 981m to 1 045m above sea level. The terrain of the site is of a non-uniform undulating topography.

Most of the development area is characterised by a slope percentage between 0 and 10%, with some small patches within the development area characterised by a slope percentage of up to 38% (refer to **Figure 6.6**).



**Figure 6.6:** Slope percentage calculated for the development area within which the SBPM Solar PV and associated grid connection is proposed

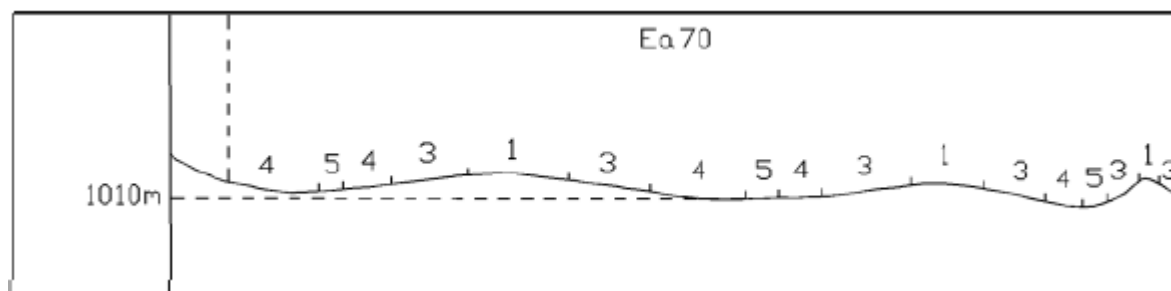
#### 6.4.2. Geology, Soils and Agricultural Potential

##### Geology Setting of the Project Site

The geology of the project area is characterised by predominantly norite and pyroxenite of the Bushveld Complex, and red syenite of the Pilanesberg Complex in places. The area is characterised by Vertic, Melanic, and red structured diagnostic horizons, of which these soils are all undifferentiated.

##### Soil Forms, Land Capability and Agricultural Potential of the Project Site

According to the land type database (Land Type Survey Staff, 1972 - 2006), the project infrastructure is located in the Ea 70 land type. The Ea land type consists of one or more of the following soils: Vertic, Melanic, and red structured diagnostic horizons, of which these soils are all undifferentiated. The land terrain unit for the featured land type is illustrated from **Figure 6.7** with the expected soils listed in **Table 6.1**.



**Figure 6.7:** Illustration of land type Ea 70 terrain unit (Land Type Survey Staff, 1972 - 2006)

**Table 6.1:** Soils expected at the respective terrain units within the Da 76-land type (land Type Survey Staff, 1972 – 2006)

Terrain Units							
1 (20%)		3(40%)		4(31%)		5(9%)	
Arcadia	60%	Arcadia	74%	Arcadia	76%	Rensburg	34%
Bare Rock	15%	Shortlands	9%	Swartland	11%	Arcadia	33%
Hutton	8%	Bare Rock	6%	Shortlands	6%	Dundee	22%
Shortlands	7%	Hutton	5%	Hutton	5%	Bonheim	6%
Glenrosa	7%	Glenrosa	4%	Bonheim	2%	Swartland	5%
Milkwood	5%	Milkwood	2%				

The land capability was determined by using the guidelines described in “The farming handbook” (Smith, 2006). Land capability is divided into eight classes, and these may be divided into three capability groups. The land capabilities for the development area, are described in **Table 6.2**.

**Table 6.2:** Land capability for the soils within the development area

Land capability class	Increased Intensity of Use									
	W	F	LG	MG	IG	LC	MC	IC	VIC	
I	W	F	LG	MG	IG	LC	MC	IC	VIC	Arable Land
II	W	F	LG	MG	IG	LC	MC	IC		
III	W	F	LG	MG	IG	LC	MC			
IV	W	F	LG	MG	IG	LC				
V	W	F	LG	MG						Grazing Land
VI	W	F	LG	MG						
VII	W	F	LG							
VIII	W									Wildlife

W- Wildlife	F- Forestry	LG-Light Grazing
MG-Moderate Grazing	IG- Intensive Grazing	LC – Light Cultivation
MC- Moderate Cultivation	IC- Intensive Cultivation	VIC – Very Intensive Cultivation

Land capability has been classified into 15 different categories by the DAFF (2017) which indicates the national land capability category and associated sensitivity related to soil resources. The land potential classes are determined by combining the land capability results and the climate capability of a region as shown in Table 6.3. The final land potential results are then described in **Table 6.4**. These land potential classes are regarded as the final delineations subject to sensitivity, given the comprehensive addition of

climatic conditions as those relevant to the DAFF (2017) land capabilities. The main contributors to the climatic conditions as per Smith (2006) is that of MAP, Mean Annual Potential Evaporation (MAPE), mean September temperatures, mean June temperatures and mean annual temperatures. These parameters will be derived from Mucina and Rutherford (2006) for each vegetation type located within a relevant project area. This will give the specialist the opportunity to consider micro-climate, aspect, topography etc.

**Table 6.3:** The combination table for land potential classification

Land capability class	Climate capability class							
	C1	C2	C3	C4	C5	C6	C7	C8
I	L1	L1	L2	L2	L3	L3	L4	L4
II	L1	L2	L2	L3	L3	L4	L4	L5
III	L2	L2	L3	L3	L4	L4	L5	L6
IV	L2	L3	L3	L4	L4	L5	L5	L6
V	Vlei	Vlei	Vlei	Vlei	Vlei	Vlei	Vlei	Vlei
VI	L4	L4	L5	L5	L5	L6	L6	L7
VII	L5	L5	L6	L6	L7	L7	L7	L8
VIII	L6	L6	L7	L7	L8	L8	L8	L8

**Table 6.4:** The land potential classes

LC	Very high potential: No limitations. Appropriate contour protection must be implemented and inspected.
L2	High potential: Very infrequent and/or minor limitations due to soil, slope, temperatures or rainfall. Appropriate contour protection must be implemented and inspected
L3	Good potential: Infrequent and/or moderate limitations due to soil, slope, temperatures or rainfall. Appropriate contour protection must be implemented and inspected.
L4	Moderate potential: Moderately regular and/or severe to moderate limitations due to soil, slope, temperatures or rainfall. Appropriate permission is required before ploughing virgin land.
L5	Restricted potential: Regular and/or severe to moderate limitations due to soil, slope, temperatures or rainfall.
L6	Very restricted potential: Regular and/or severe limitations due to soil, slope, temperatures or rainfall. Non-arable
L7	Low potential: Severe limitations due to soil, slope, temperatures or rainfall. Non-arable
L8	Very low potential: Very severe limitations due to soil, slope, temperatures or rainfall. Non-arable

The most sensitive land capability of the above mentioned soils have been determined to be class "II". A climate capability level 8 has been assigned to the area given the low Mean Annual Precipitation (MAP) and the high Mean Annual Potential Evapotranspiration (MAPE) rates. By using the determined land capability for the most sensitive soil and the determined climate capability a land potential of "L5" was calculated. According to Smith (2006), the "L5" land potential level is characterised by restricted potential. Regular and/or moderate to severe limitations are expected due to soil, slope, temperatures or rainfall

#### 6.4.3. Land Use

The current land use of the site is characterised by existing and historical cropping activities, livestock grazing and game farms. Mining activities and infrastructure are also evident in the region. The project site location is bordering the eastern end of the Siyanda Bakgatla Platinum Mine area near Northam where it is located

6.5km west from Northam. Furthermore, the properties affected by the grid route are characterised by grazing and irrigated and rainfed production of grain crops and livestock farming.

#### 6.4.4. Ecological Profile of the Study Area and the Development Area

##### i. Broad-Scale Vegetation Patterns

The project site is situated within the Dwaalboom Thornveld vegetation type **Figure 6.8**. The SBPM Solar PV Facility is mapped as overlapping within the Dwaalboom Thornveld vegetation type.

#### **Dwaalboom Thornveld**

Dwaalboom Thornveld is restricted to, and is distributed in, the Limpopo and North-West Provinces within flats north of the Dwarsberge and associated ridges mainly west of the Crocodile River in the Dwaalboom area but including a patch around Sentrum. South of the ridges it extends eastwards from the Nietverdiend area, north of the Pilanesberg to the Northam area at an altitude range of between 900 and 1,200m AMSL. Its main vegetation and landscape features include plains with a layer of scattered, low to medium high, deciduous microphyllous trees and shrubs with a few broad-leaved tree species. There is almost a continuous herbaceous layer dominated by grass species.

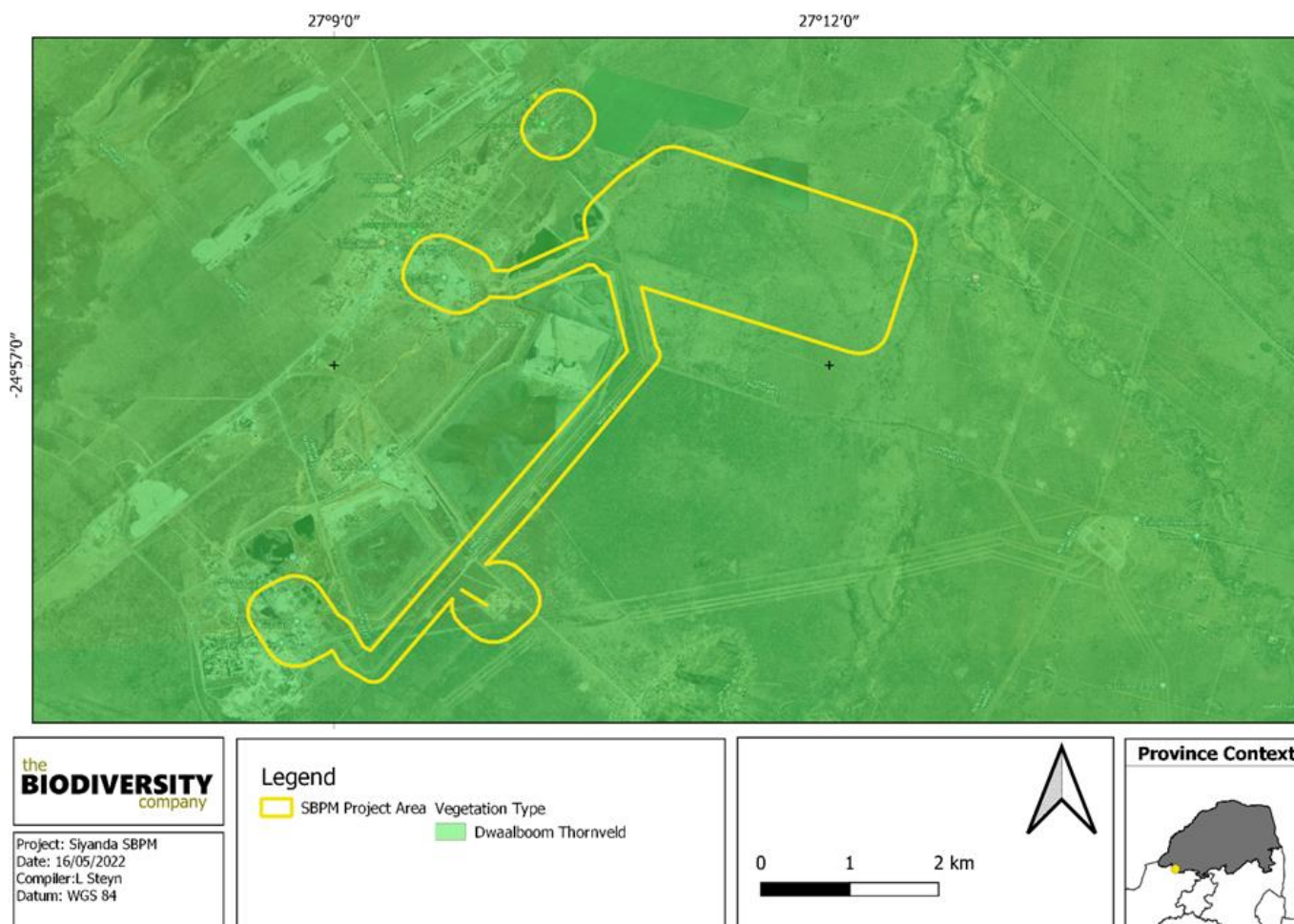
#### Important Plant Taxa in Dwaalboom Thornveld:

Based on Mucina and Rutherford's (2006) vegetation classification, important plant taxa are those species that have a high abundance, a frequent occurrence (not being particularly abundant) or are prominent in the landscape within a particular vegetation type.

#### Important Taxa:

- » **Trees:** *Vachellia erioloba*, *Vachellia erubescens*, *Vachellia nilotica*, *Vachellia tortilis* subsp. *heteracantha*, *Senegalia fleckii*, *Senegalia burkei*, *Searsia lancea* (Mucina & Rutherford, 2006).
- » **Shrubs:** *Diospyros lycioides* subsp. *lycioides*, *Grewia flava*, *Mystroxydon aethiopicum* subsp. *burkenum*, *Agathisanthemum bojeri* (Mucina & Rutherford, 2006).
- » **Graminoids:** *Aristida bipartite*, *Bothriochloa insculpta*, *Digitaria eriantha* subsp. *eriantha*, *Ischaemum afrum*, *Panicum maximum* and *Cymbopogon pospischilii* (Mucina & Rutherford, 2006).

According to Mucina and Rutherford (2006) Dwaalboom Thornveld is classified as Least Threatened. Although the target for conservation is 19%, only 6% of this vegetation type is currently under statutory conservation in reserves such as the Madikwe Game Reserve (approximately 150km west of the project area). Cultivation and to a lesser extent urbanisation have resulted in the transformation of approximately 14% of Dwaalboom Thornveld and exotic invasive plants are present. Incidences of erosion are low to very low (Mucina & Rutherford, 2006).



**Figure 6.8:** Vegetation map of the project site showing that the SBPM Solar PV Facility site and associated grid connection corridor falls within the Dwaalboom Thornveld vegetation type.

**ii. Listed Plant Species**

The Plants of Southern Africa (POSA ) database indicates that 428 species of indigenous plants are expected to occur within the project area (The full list of species will be provided in the final report). One (1) Species of Conservation Concern (SCC) based on their conservation status could be expected to occur within the project area and are provided in below. It is believed that additional SCC will be recorded in the assessment.

**Table 6.5:** Threatened flora species that may occur within the project area.

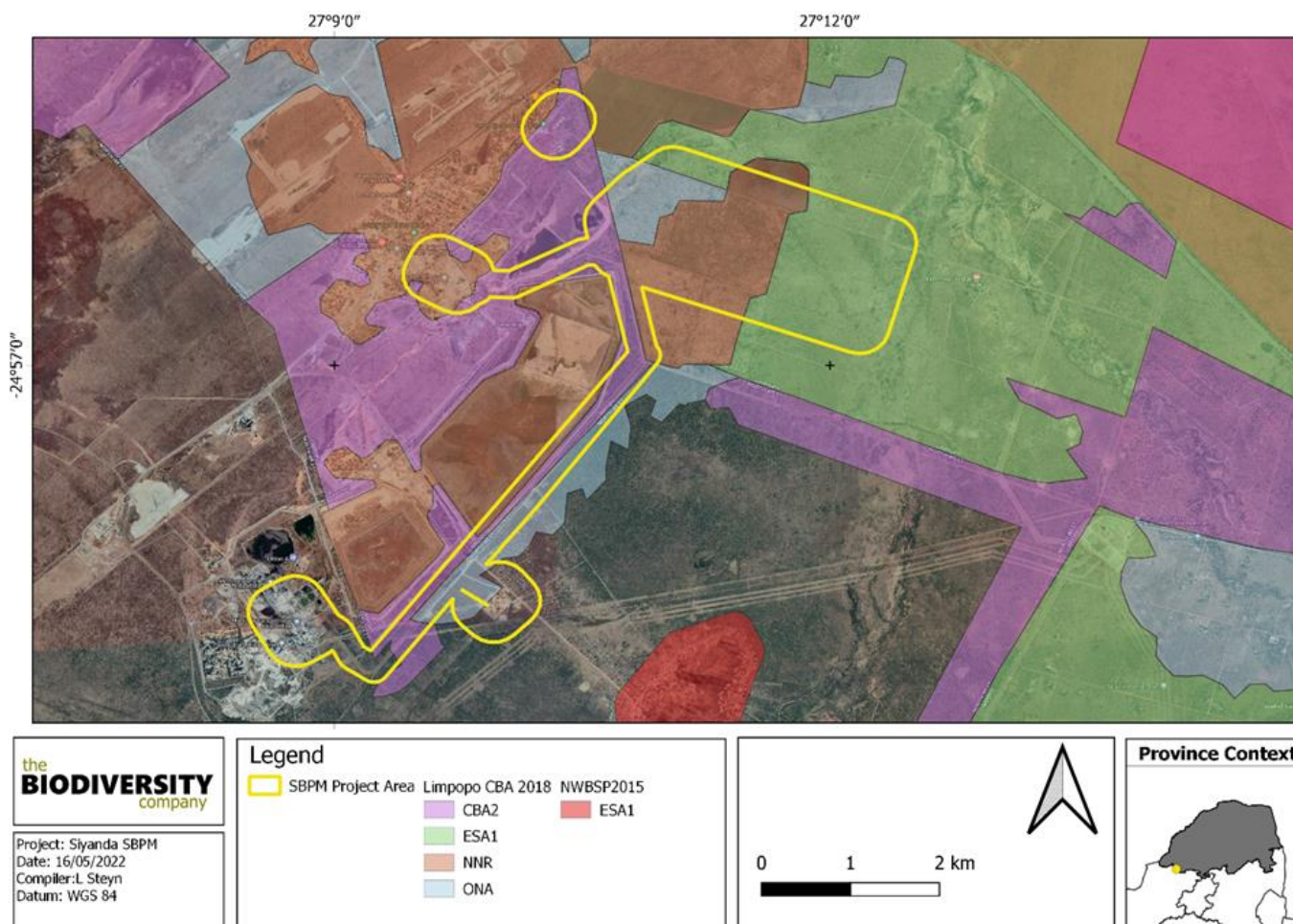
Family	Taxon	Author	IUCN	Ecology
Apocynaceae	<i>Stenostelma umbelluliferum</i>	Schltr.) Bester & Nicholas	NT	Indigenous; Endemic

**iii. Protected tree species**

A number of protected *Vachellia erioloba* (Camel thorn) trees were recorded within the SBPM Solar PV Facility feasibility area. This is a nationally protected tree in terms of the National Forest Act.

**iv. Critical Biodiversity Areas**

The key output of a systematic biodiversity plan is a map of biodiversity priority areas. The map delineates Critical Biodiversity Areas (CBAs), Ecological Support Areas (ESAs), Other Natural Areas (ONAs), Protected Areas (PAs), and areas that have been irreversibly modified from their natural state. The provincial CBA spatial data for the North West Province indicates that the project does not traverse any CBA nor Ecological Support Areas (ESAs) and Other Natural Areas (ONAs). Based on the Limpopo Conservation Plan the SBPM Solar PV Facility Project Site traverses ESA1, NNR, and ONA areas, whereas the grid connection traverses CBA2, NNR and ONA area. **Figure 6.9** shows the development area superimposed on the Terrestrial CBA map.



**Figure 6.9:** Critical Biodiversity Areas (CBAs), as per the North West CBA spatial data and the Limpopo C-Plan map, located within the SBPM Solar PV Facility Project Site and associated grid connection corridor

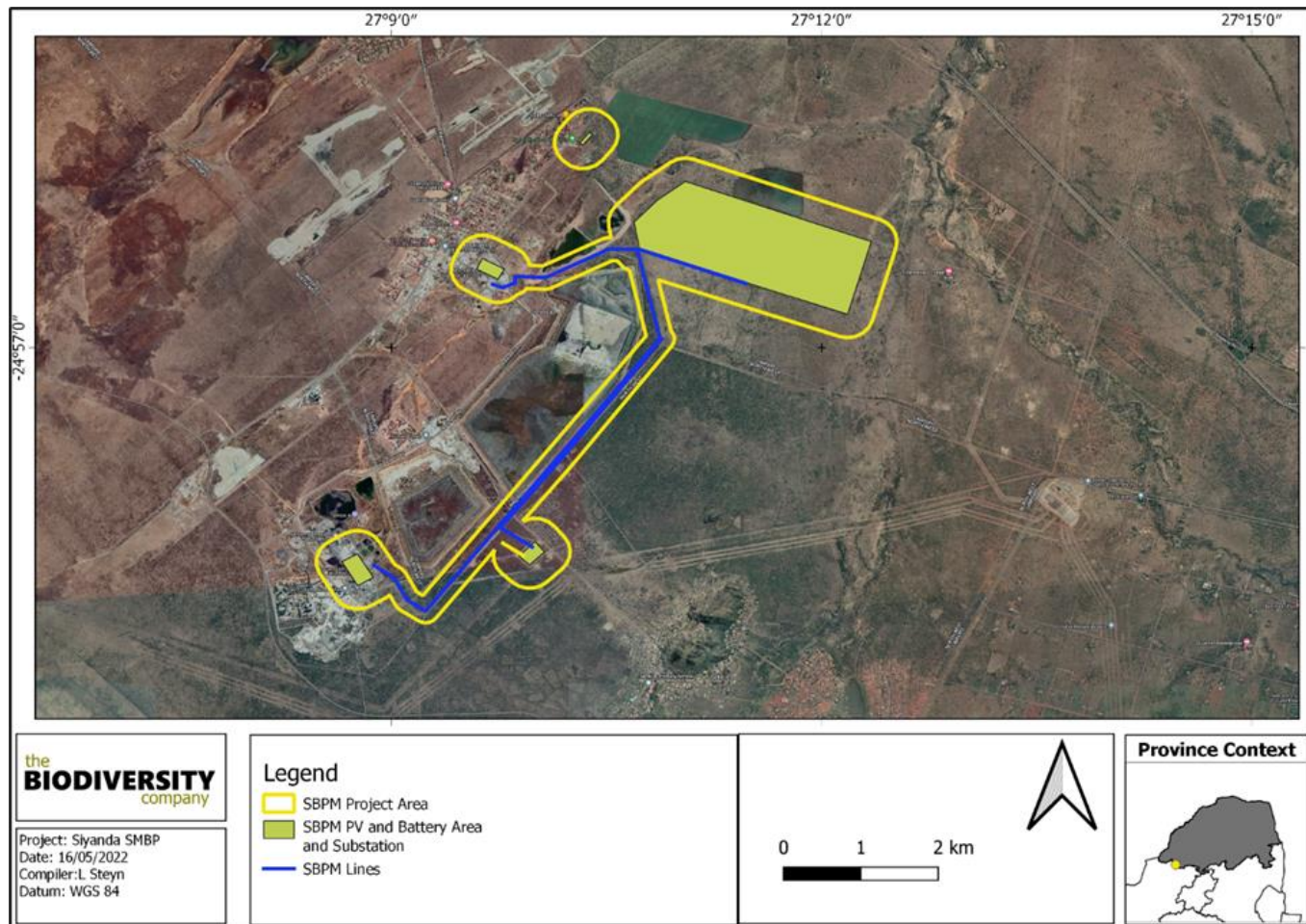
#### vi. Ecosystem Threat Status and Protection Level

The Ecosystem Threat Status is an indicator of an ecosystem's well-being, based on the level of change in structure, function or composition. Ecosystem types are categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT) or Least Concern (LC), based on the proportion of the original extent of each ecosystem type that remains in good ecological condition. According to the spatial dataset the proposed project overlaps with a LC ecosystem (refer to **Figure 6.10**).

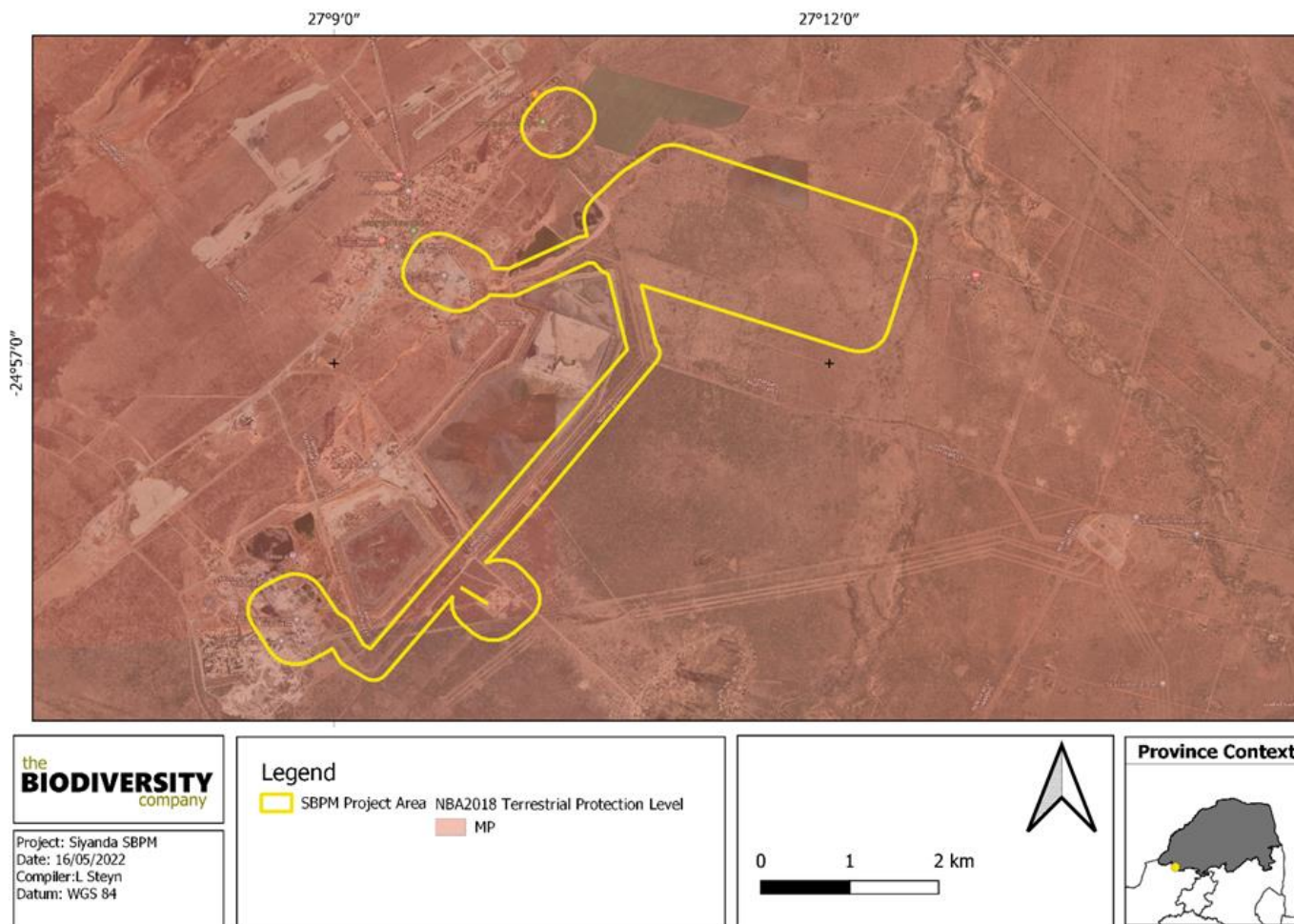
The Ecosystem Protection Level is an indicator of the extent to which ecosystems are adequately protected or under-protected. Ecosystem types are categorised as Well Protected (WP), Moderately Protected (MP),



Poorly Protected (PP), or Not Protected (NP), based on the proportion of the biodiversity target for each ecosystem type that is included within one or more protected areas. NP, PP or MP ecosystem types are collectively referred to as under-protected ecosystems. The proposed Project overlaps with a MP ecosystem (refer to **Figure 6.11**).



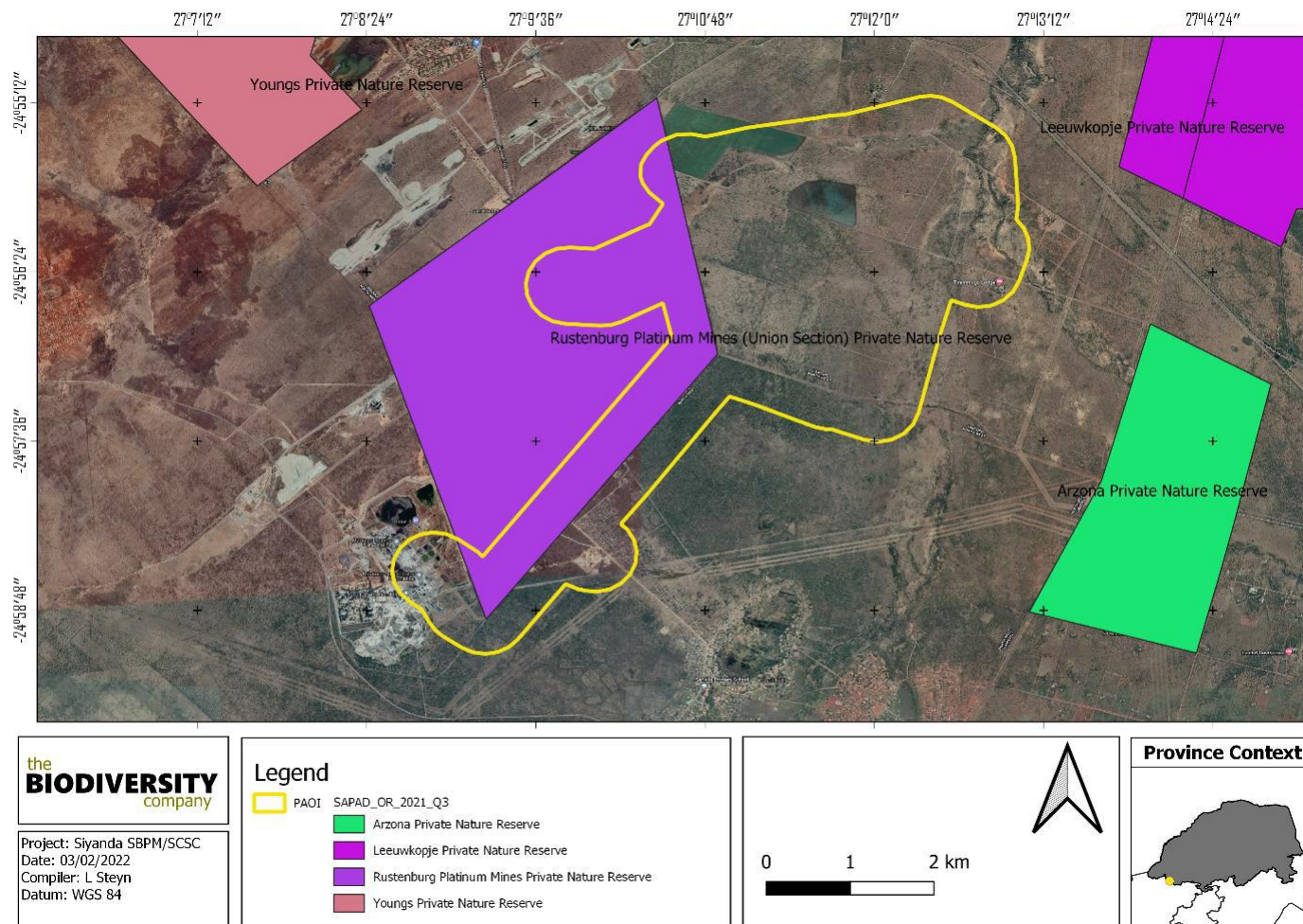
**Figure 6.10:** Map illustrating the ecosystem threat status and that the SBPM Solar PV Facility Project Site and associated grid connection corridor falls within a Least Concern ecosystem



**Figure 6.11:** Map illustrating that the SBPM Solar PV Facility Project Site and associated grid connection corridor falls within an ecosystem that is moderately Protected

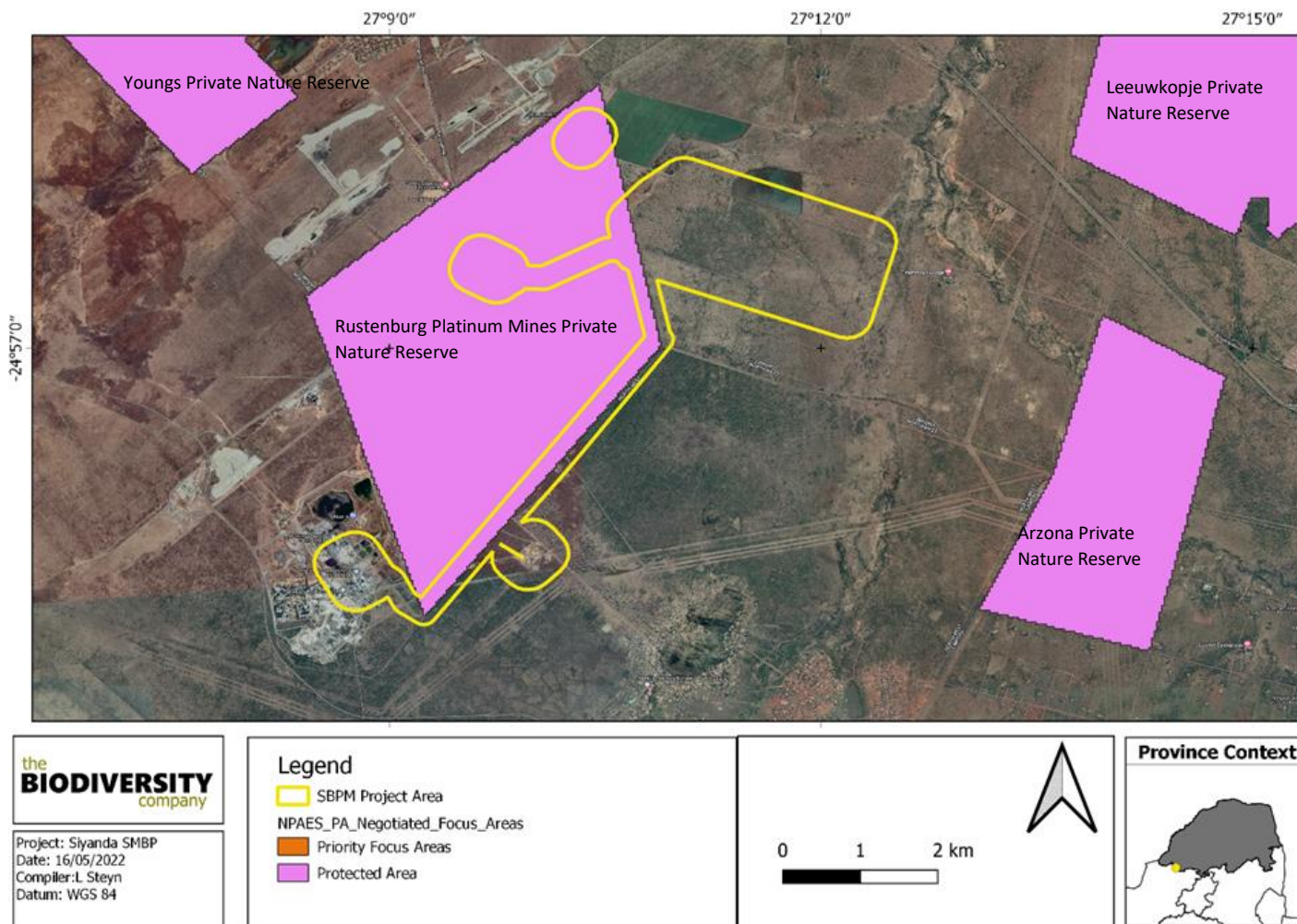
**vii. Conservation/ Protected Areas within the Broader Project Site**

According to the protected area spatial datasets from South African Protected Areas Database (SAPAD) (2021) the project area overlaps with the Rustenburg Platinum Mines (Union Section) Private Nature Reserve (**Figure 6.12**). From the imagery, and confirmed by the site visit, the portion of the reserve in which the project area is located is comprised of an old tailings dam in various stages of rehabilitation and is therefore not considered ecologically sensitive. Several additional private nature reserves are in close proximity to the project area. These are the Leopard Hills, Animalia, Youngs and Leeuwkopje private nature reserves. All of these reserves are within 5km of the project area which means that the project area is within the buffer zone of the nature reserves.



**Figure 6.12:** The SBPM and SCSC Solar PV Facility Project Site and associated grid connection corridor in relation to the protected areas

National Protected Area Expansion Strategy 2016 (NPAES) areas were identified through a systematic biodiversity planning process. They present the best opportunities for meeting the ecosystem-specific protected area targets set in the NPAES and were designed with a strong emphasis on climate change resilience and requirements for protecting freshwater ecosystems. These areas should not be seen as future boundaries of protected areas, as in many cases only a portion of a particular focus area would be required to meet the protected area targets set in the NPAES. They are also not a replacement for fine scale planning which may identify a range of different priority sites based on local requirements, constraints and opportunities (NPAES, 2016). The Project site overlaps with an NPAES protected area (**Figure 6.13**), however, it should be noted that the protected area in which the Project Area is located is comprised of an old tailings dam in various stages of rehabilitation is therefore not considered ecologically sensitive.

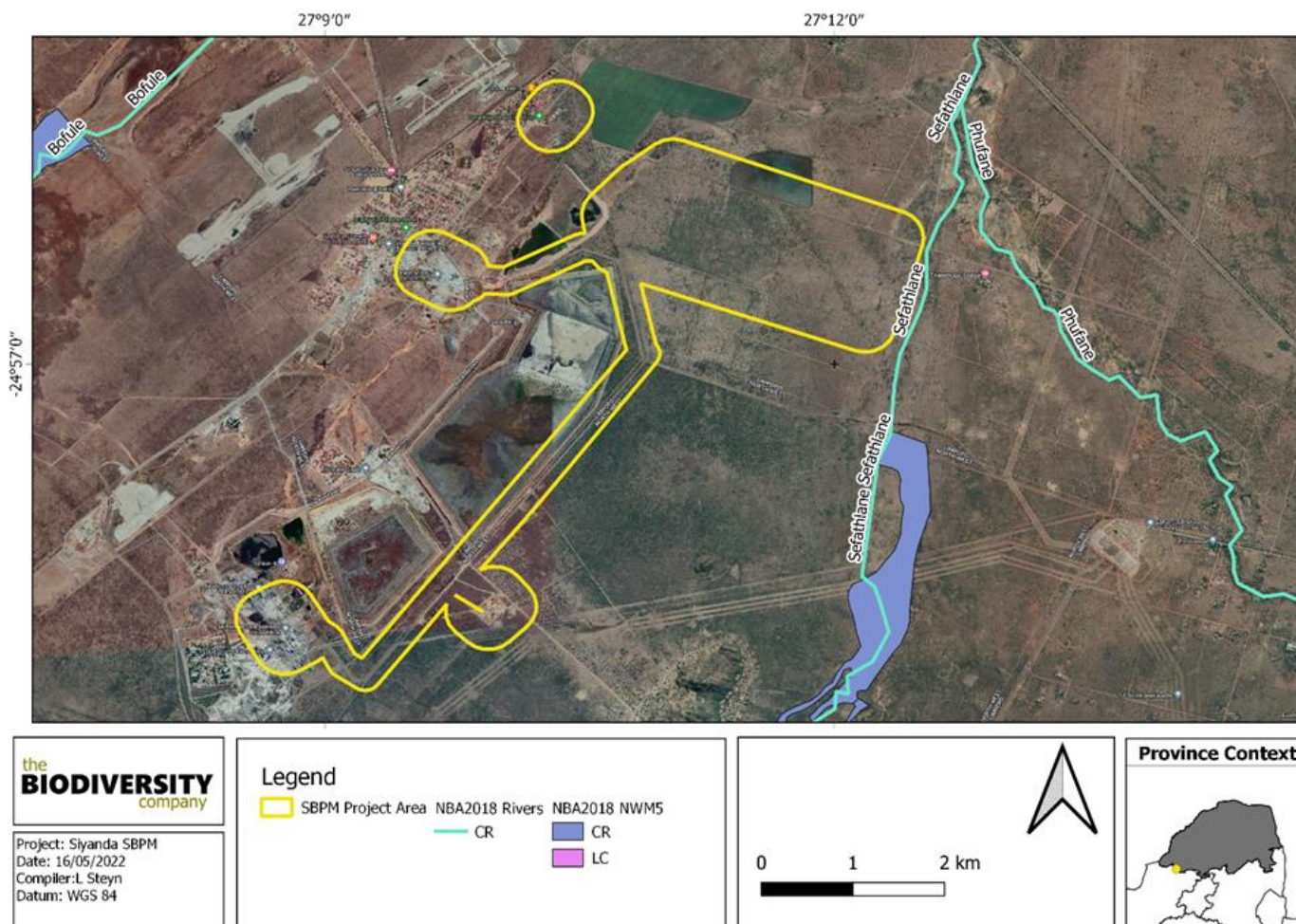


**Figure 6.13:** The SBPM Solar PV Facility Project Site and associated grid connection corridor in relation to the National Protected Area Expansion Strategy

**viii. Wetlands and Freshwater Resources**

**Aquatic Ecosystems**

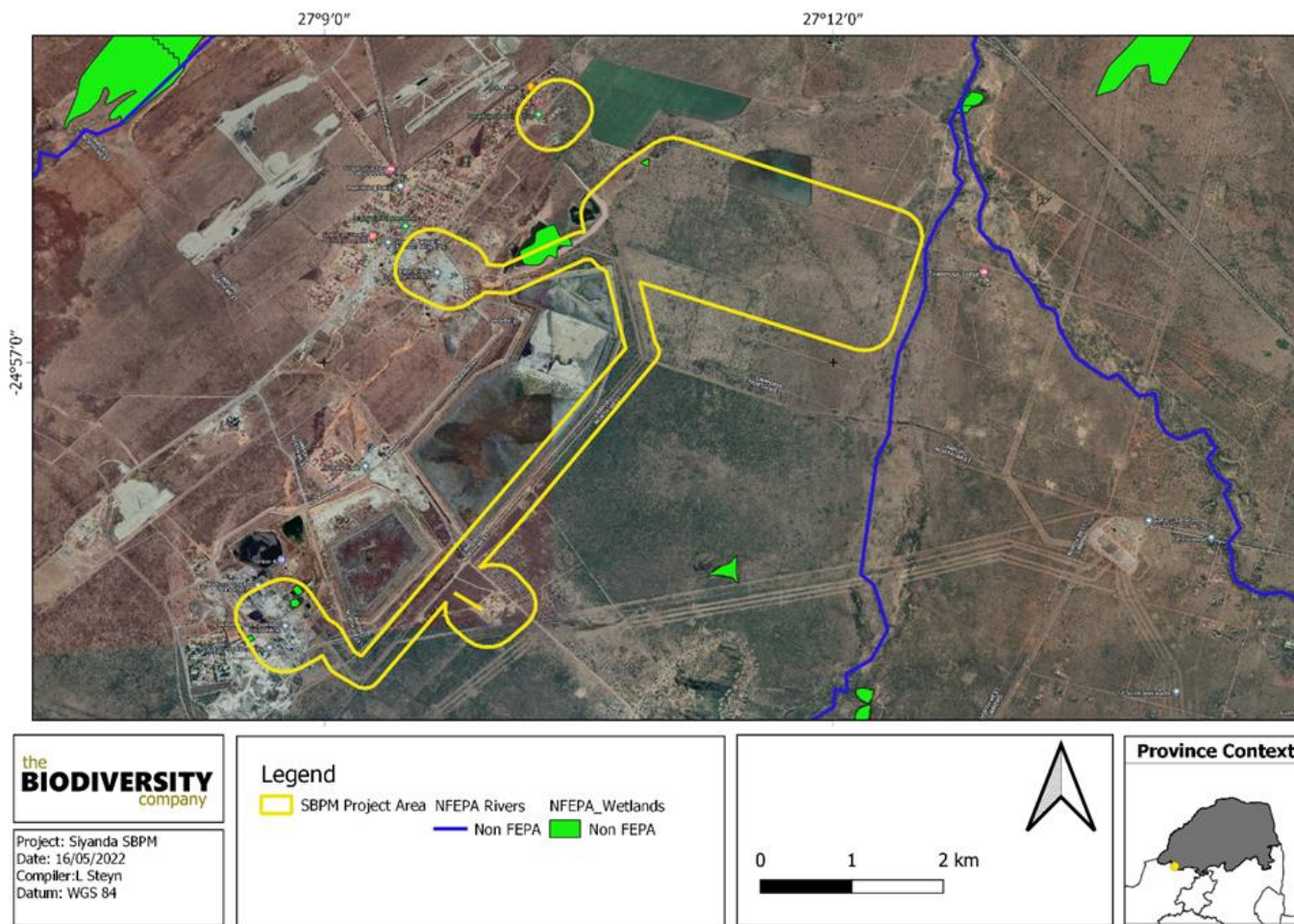
The South African Inventory of Inland Aquatic Ecosystems (SAIIAE) was released with the National Biodiversity Assessment NBA 2018. Ecosystem Threat Status (ETS) of river and wetland ecosystem types are based on the extent to which each river ecosystem type had been altered from its natural condition. Ecosystem types are categorised as CR, EN, VU or LT, with CR, EN and VU ecosystem types collectively referred to as 'threatened'. The Project Area borders on a CR wetland and CR NBA River. The reach of the Sefathlane River proximal to the area is regarded as CR. **(Figure 6.14).**



**Figure 6.14:** Map showing ecosystem threat status of rivers and wetlands ecosystem in the Project Area

In an attempt to better conserve aquatic ecosystems, South Africa has categorised its river systems according to set ecological criteria (i.e., ecosystem representation, water yield, connectivity, unique features, and threatened taxa) to identify Freshwater Ecosystem Priority Areas (FEPAs). The FEPAs are intended to be conservation support tools and envisioned to guide the effective implementation of measures to achieve the National Environment Management Biodiversity Act's (NEM:BA) biodiversity goals.

**Figure 6.15** shows the location of the SBPM Solar PV Facility Project Site and associated grid connection corridor in relation to wetland FEPAs. Based on this information, the Project Area overlaps with unclassified FEPA wetlands and unclassified FEPA rivers.



**Figure 6.15:** The location of NFEPA wetlands in relation to the SBPM Solar PV Facility Project Site and associated grid connection corridor

**ix. Terrestrial Fauna Communities**

**Mammals**

The International Union for Conservation of Nature (IUCN) Red List Spatial Data lists 85 mammal species that could be expected to occur within the area. This list includes large mammal species that are normally restricted to protected areas, as these were observed during the screening assessment. Twelve (12) (smaller non-protected area restricted species) of these expected species are regarded as threatened (Table 6.6), five of these have a low likelihood of occurrence based on the lack of suitable habitat and food sources in the Project Area.

**Table 6.6:** Threatened mammal species that are expected to occur within the Project Area

Species	Common Name	Conservation Status		Likelihood of occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
<i>Aonyx capensis</i>	Cape Clawless Otter	NT	NT	Moderate
<i>Atelerix frontalis</i>	South Africa Hedgehog	NT	LC	Moderate
<i>Cloetis percivali</i>	Short-eared Trident Bat	EN	LC	Moderate

Species	Common Name	Conservation Status		Likelihood of occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
<i>Crocidura mariquensis</i>	Swamp Musk Shrew	NT	LC	Moderate
<i>Crocuta crocuta</i>	Spotted Hyaena	NT	LC	Low
<i>Felis nigripes</i>	Black-footed Cat	VU	VU	Moderate
<i>Leptailurus serval</i>	Serval	NT	LC	Confirmed
<i>Panthera pardus</i>	Leopard	VU	VU	Low
<i>Parahyaena brunnea</i>	Brown Hyaena	NT	NT	Confirmed
<i>Poecilogale albinucha</i>	African Striped Weasel	NT	LC	Low
<i>Redunca fulvorufula</i>	Mountain Reedbuck	EN	LC	Low
<i>Smutsia temminckii</i>	Temminck's Ground Pangolin	VU	VU	Low

- » *Aonyx capensis* (Cape Clawless Otter):  
The most widely distributed otter species in Africa (IUCN, 2017). This species is predominantly aquatic, and it is seldom found far from water. This species has a high likelihood of occurrence based on the presence of the two rivers in the Project Area.
- » *Atelerix frontalis* (South African Hedgehog)  
Has a tolerance to a degree for habitat modification and occurs in a wide variety of semi-arid and sub-temperate habitats (IUCN, 2017). Based on the Red List of Mammals of South Africa, Lesotho and Swaziland (2016), *A. frontalis* populations are decreasing due to the threats of electrocution, veld fires, road collisions, predation from domestic pets and illegal harvesting. Suitable grasslands occur in the project area, although somewhat disturbed, that can function as habitat for this species, as such the likelihood of occurrence is rated as moderate.
- » *Cloeotis percivali* (Short-eared Trident Bat)  
Occurs in savanna areas where there is sufficient cover in the form of caves and mine tunnels for day roosting (IUCN, 2017). It feeds exclusively on moths and appears to be very sensitive to disturbance. Suitable habitat and roosting area can be found around the project area and therefore the likelihood of finding this species is rated as moderate.
- » *Crocidura maquassiensis* (Maquassie Musk Shrew)  
Listed as VU on a regional basis and is known to be found in rocky, mountain habitats. It may tolerate a wider range of habitats and individuals have been collected in Kwa-Zulu Natal from a garden, and in mixed bracken and grassland alongside a river at 1,500 m (IUCN, 2017). This species has a moderate likelihood of occurring based on the rocky habitat found in the project area.
- » *Felis nigripes* (Black-footed cat)  
Endemic to the arid regions of southern Africa, this species is naturally rare, has cryptic colouring, is small in size and is nocturnal. These factors have contributed to a lack of information on this species. The highest densities of this species have been recorded in the more arid Karoo region of South Africa. The

habitat in the project area can be considered to be somewhat suitable for the species and the likelihood of occurrence is therefore rated as moderate.

» *Leptailurus serval* (Serval)

Occurs widely through sub-Saharan Africa and is commonly recorded from most major national parks and reserves (IUCN, 2017). The Serval's status outside reserves is not certain, but they are inconspicuous and may be common in suitable habitat as they are tolerant of farming practices provided there is cover and food available. In sub-Saharan Africa they are found in habitat with well-watered savanna long-grass environments and are particularly associated with reedbeds and other riparian vegetation types. Suitable habitat is present for this species in the project area, as such the likelihood of occurrence is rated as high. This species was confirmed during the field assessment.

» *Parahyaena brunnea* (Brown Hyaena)

Endemic to southern Africa. This species occurs in dry areas, generally with annual rainfall less than 100 mm, particularly along the coast, semi-desert, open scrub and open woodland savanna. Given its known ability to persist outside of formally protected areas the likelihood of occurrence of this species in the project area is moderate to good. This species was confirmed during the screening assessment.

### Amphibians

Based on the IUCN Red List Spatial Data and Amphibian Map, 30 amphibian species are expected to occur within the area. One (1) are regarded as threatened (Table 5-3).

**Table 6.7:** Threatened amphibian species that are expected to occur within the project area

Species	Common Name	Conservation Status		Likelihood of occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
<i>Pyxicephalus adspersus</i>	Giant Bullfrog	NT	LC	Moderate

Giant Bull Frog (*Pyxicephalus adspersus*) is a species of conservation concern that will possibly occur in the project area, especially in the area with the wetlands. The Giant Bull Frog is listed as near threatened on a regional scale. It is a species of drier savannas where it is fossorial for most of the year, remaining buried in cocoons. They emerge at the start of the rains, and breed in shallow, temporary waters in pools, pans and ditches (IUCN, 2017).

### Reptiles

Based on the IUCN Red List Spatial Data and the Reptile MAP database, 91 reptile species are expected to occur within the area. Three (3) are regarded as threatened (Table 6.8).

**Table 6.8:** Threatened reptile species that are expected to occur within the project area

Species	Common Name	Conservation Status		Likelihood of occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
<i>Crocodylus niloticus</i>	Nile Crocodile	VU	VU	Low
<i>Lygodactylus waterbergensis</i>	Waterberg Dwarf Gecko	NT	NT	Low



Species	Common Name	Conservation Status		Likelihood of occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
<i>Pseudocordylus transvaalensis</i>	Northern Crag Lizard	NT	NT	Low

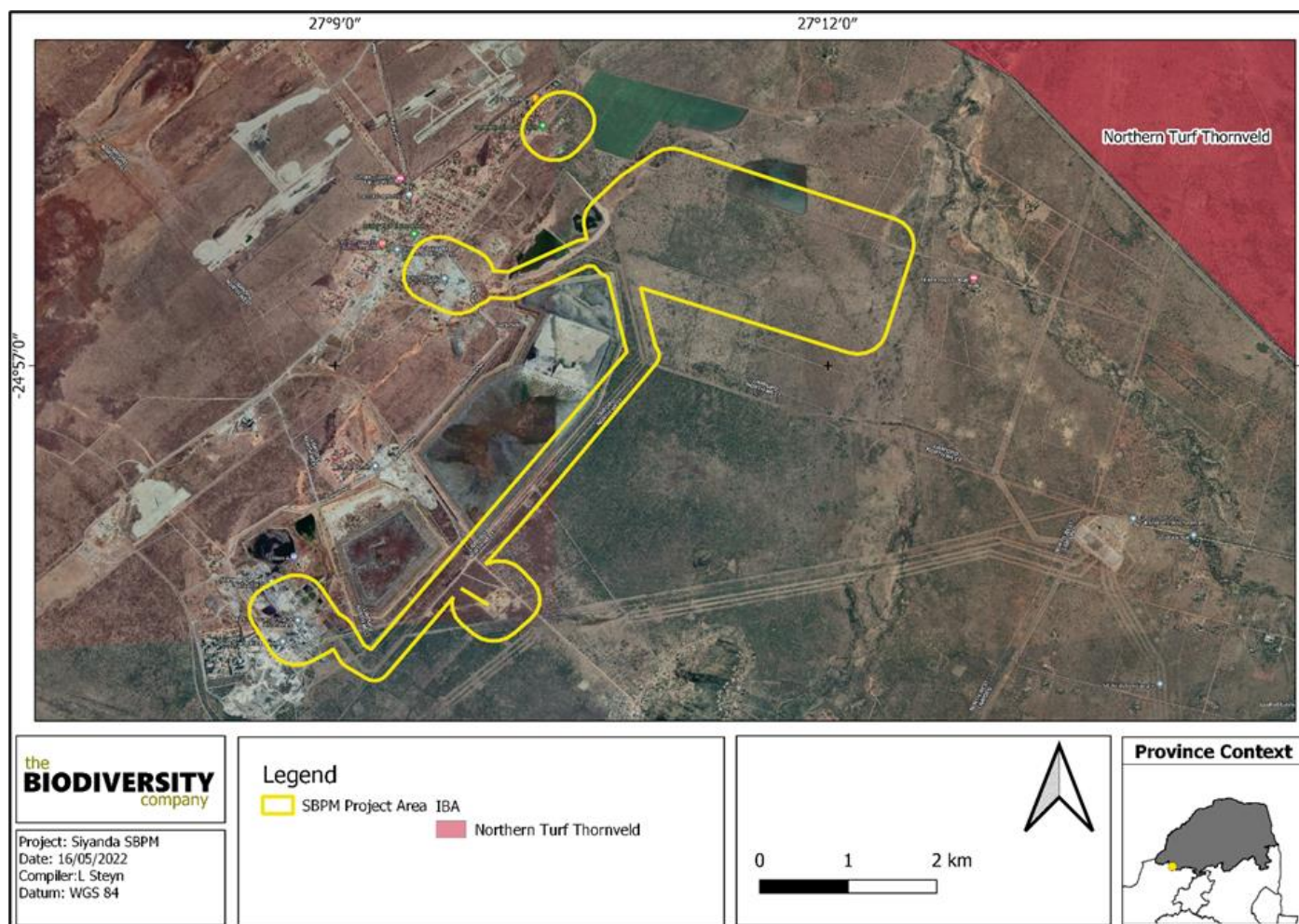
- » *Crocodylus niloticus* (Nile Crocodile)  
Listed as VU on a regional basis. The Nile crocodile is quite widespread throughout sub-Saharan Africa, in different types of aquatic environments such as lakes, rivers, and marshlands. The species has a low likelihood of occurrence based on the rivers in the Project Area.
- » *Lygodactylus waterbergensis* (Waterberg Dwarf Gecko)  
Classified as NT both regionally and internationally. This species is endemic to Limpopo Province, where it is found in rocky areas of the grassland and savannas. The likelihood of occurrence is low as rocky habitat is present in the Project Area.
- » *Pseudocordylus transvaalensis* (Northern Crag Lizard)  
Categorised as NT on both a regional and a global scale. This species is threatened by the pet trade and is listed on CITES. The likelihood of occurrence in the Project Area is low.

#### **x. Avifauna**

The project Area is adjacent to the Northern Turf Thornveld Important Bird & Biodiversity Area (IBA) ((refer to **Figure 6.16**). The Northern Turf Thornveld IBA consists of a group of privately owned farms that forms a triangle delineated roughly by the Crocodile River in the east and the Biespruit in the west, the confluence of these two rivers is approximately 3km south-west of Thabazimbi. This IBA is important as it is home to the Yellow-throated Sandgrouse and is regarded as the core range of the resident South African population (Birdlife South Africa, 2015B).

Other important birds in the IBA include the Secretary bird, Kori Bustard, Lanner Falcon and Black-winged Pratincole.

Common biome-restricted species found within this IBA include Kurrichane Thrush, White-throated Robin-Chat, Burchell's Starling, White-bellied Sunbird and the fairly common Kalahari Scrub Robin (Birdlife South Africa, 2015B).



**Figure 6.16:** The Project Area in relation to the Northern Turf Thornveld IBA

The SABAP Data lists 306 avifauna species that could be expected to occur within the area. Ten (10) of these expected species are regarded as threatened (refer to **Table 6.9**). Three (3) species have a low likelihood of occurrence based on the lack of suitable habitat.

**Table 6.9:** Threatened avifauna species that are expected to occur within the Project Site

Species	Common Name	Conservation Status		Likelihood of occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
<i>Ardeotis kori</i>	Bustard, Kori	NT	NT	Low
<i>Ciconia nigra</i>	Stork, Black	VU	LC	Low
<i>Coracias garrulus</i>	Roller, European	NT	LC	Moderate
<i>Falco biarmicus</i>	Falcon, Lanner	VU	LC	High
<i>Glareola nordmanni</i>	Pratincole, Black-winged	NT	NT	Low
<i>Mycteria ibis</i>	Stork, Yellow-billed	EN	LC	Moderate
<i>Polemaetus bellicosus</i>	Eagle, Martial	EN	EN	High
<i>Pterocles gutturalis</i>	Sandgrouse, Yellow-throated	NT	LC	Observed

Species	Common Name	Conservation Status		Likelihood of occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
<i>Sagittarius serpentarius</i>	Secretarybird	VU	EN	High
<i>Tyto capensis</i>	Grass-owl, African	VU	LC	High

- » *Coracias garrulous* (European Roller)  
A winter migrant from most of South-central Europe and Asia occurring throughout sub-Saharan Africa (IUCN, 2017). The European Roller has a preference for bushy plains and dry savannah areas (IUCN, 2017). There is a moderate chance of this species occurring in the project area as they prefer to forage in open areas.
- » *Falco biarmicus* (Lanner Falcon)  
Native to South Africa and inhabits a wide variety of habitats, from lowland deserts to forested mountains (IUCN, 2017). They may occur in groups up to 20 individuals but have also been observed solitary. Their diet is mainly composed of small birds such as pigeons and francolins. The likelihood of incidental records of this species in the project area is rated as high due to the natural veld condition and the presence of many bird species on which Lanner Falcons may predate.
- » *Mycteria ibis* (Yellow-billed Stork)  
Listed as EN on a regional scale and LC on a global scale. This species is migratory and has a large distributional range which includes much of sub-Saharan Africa. It is typically associated with freshwater ecosystems, especially wetlands and the margins of lakes and dams (IUCN, 2017). The presence of some water bodies within the project area creates a high possibility that this species may occur there.
- » *Polemaetus bellicosus* (Martial Eagle)  
Listed as EN on a regional scale and on a global scale. This species has an extensive range across much of sub-Saharan Africa, but populations are declining due to deliberate and incidental poisoning, habitat loss, reduction in available prey, pollution and collisions with power lines (IUCN, 2017). It inhabits open woodland, wooded savanna, bushy grassland, thornbush and, in southern Africa, more open country and even sub-desert (IUCN, 2017). Suitable foraging and breeding area is found in the project area.
- » *Sagittarius serpentarius* (Secretarybird)  
Occurs in sub-Saharan Africa and inhabits grasslands, open plains, and lightly wooded savanna. It is also found in agricultural areas and sub-desert (IUCN, 2017). The likelihood of occurrence is rated as high due to the extensive grasslands and wetland areas present in the project area.
- » *Tyto capensis* (African Grass-owl)  
Rated as VU on a regional basis. The distribution of the species includes the eastern parts of South Africa. The species is generally solitary, but it does also occur in pairs in moist grasslands where it roosts (IUCN, 2017). This species specifically has a preference for nesting in dense stands of the grass species *Imperata cylindrica*. Wetlands with suitable habitat can be found in the project area therefore the likelihood of occurrence is rated as high.

### First monitoring survey

A first field assessment was conducted 4-8 April 2022, during this survey the 134 bird species were recorded of which three were SCCs. The SCCs recorded were Lanner Falcon (VU- regionally), White-backed Vulture (CR-regionally and internationally) and Yellow-throated Sandgrouse (NT- regionally). These species were recorded on numerous occasions spread throughout the project area. Of the 134 species 18 species (**Table 6.10**) were identified that would be at risk for power line collisions, electrocutions or habitat loss due to the development.

**Table 6.10:** Species at risk for Collision, electrocution and habitat loss

Common Name	Scientific Name	RD (Regional, Global)	Collision	Electrocution	Habitat Loss
African Darter	<i>Anhinga rufa</i>		x		x
African Fish Eagle	<i>Haliaeetus vocifer</i>		x	x	
African Hawk Eagle	<i>Aquila spilogaster</i>		x	x	
Black-headed Heron	<i>Ardea melanocephala</i>		x	x	
Black-winged Kite	<i>Elanus caeruleus</i>			x	
Brown Snake Eagle	<i>Circaetus cinereus</i>			x	
Cape Shoveler	<i>Spatula smithii</i>		x	x	
Cape Vulture	<i>Gyps africanus</i>	EN, EN	x	x	x
Egyptian Goose	<i>Alopochen aegyptiaca</i>		x	x	
Hadedda (Hadada) Ibis	<i>Bostrychia hagedash</i>			x	x
Hamerkop	<i>Scopus umbretta</i>			x	
Helmeted Guineafowl	<i>Numida meleagris</i>			x	
Knob-billed Duck	<i>Sarkidiornis melanotos</i>		x	x	
Pale Chanting Goshawk	<i>Melierax canorus</i>		x		
Pied Crow	<i>Corvus albus</i>		x	x	
Red-billed Teal	<i>Anas erythrorhyncha</i>		x	x	
Western Cattle Egret	<i>Bubulcus ibis</i>		x	x	
White-faced Whistling Duck	<i>Dendrocygna viduata</i>		x	x	
Yellow-throated Sandgrouse	<i>Pterocles gutturalis</i>	NT, LC			x

### Second monitoring survey

One hundred and eight (108) bird species were recorded during the second survey which was conducted 27-30 June 2022. Two of the species recorded were SCC on a national or international scale. One individual Cape Vulture was found circling north of the Project Areas and an additional six (6) individuals of this species

was observed west of the Project Area. A total of thirty-one (31) Yellow-throated Sandgrouse were observed in various parts of the Project Area.

**Table 6.11:** Species of conservation concern observed during the survey

Common Name	Scientific Name	Conservation Status	
		Regional	Global
Cape Vulture	<i>Gyps coprotheres</i>	EN	EN
Yellow-throated Sandgrouse	<i>Pterocles gutturalis</i>	NT	LC

## 6.5. Integrated Heritage including Archaeology, Palaeontology and the Cultural Landscape

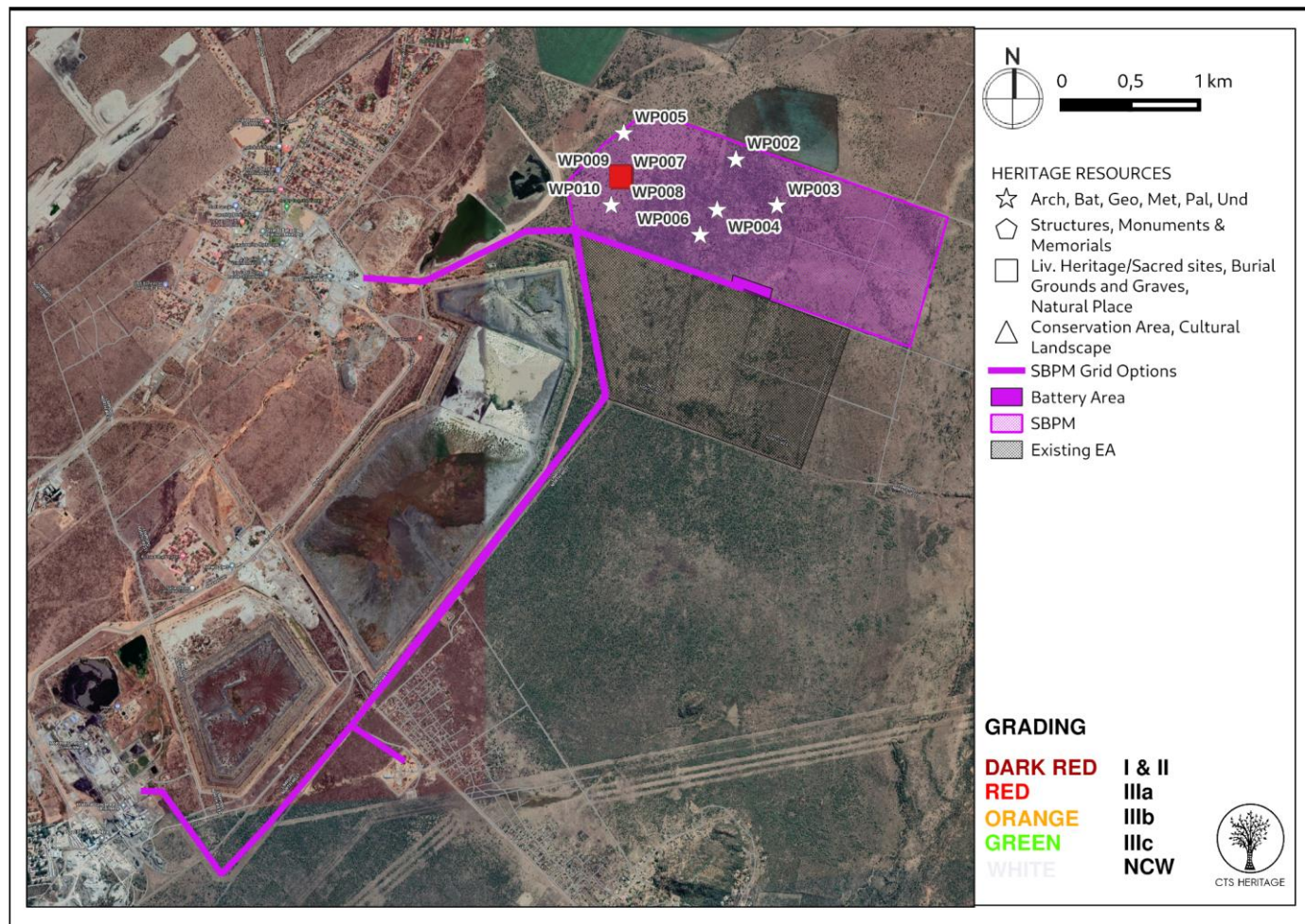
### 6.5.1. Cultural Landscape

The proposed site is characterised by the rural and mining landscape character. There are no cultural landscape elements that have been noted.

### 6.5.2. Archaeology

Several archaeological and heritage impact assessments have been conducted in the area. Van Schalkwyk and colleagues conducted a high coverage archaeological survey 5 km away from the area proposed for development (2003, SAHRIS ID 5706). These practitioners reported several Late Iron Age stone-walled sites with faunal and cultural remains, including pottery. They suggested that these sites were likely associated with the Tswana people. The report did not mention the exact number of Iron Age sites that Van Schalkwyk, and colleagues encountered during the survey. As for the Stone Age, Van Schalkwyk and colleagues documented only isolated Middle and Later Stone Age specimens. Conversely, other reports (Pistorius 2002, SAHRIS ID 5725; Roodt 2007, SAHRIS ID 50057; Kruger 2014, SAHRIS ID 318678), reported no Stone Age remains. Interestingly, surveys pertaining to the immediate vicinity of the proposed development report minimal amounts of archaeology. Kruger (2014) surveyed the Grootkuil farm (part of portion 5 of the farm) and documented one historical structure that constituted the original Grootkuil farmhouse.

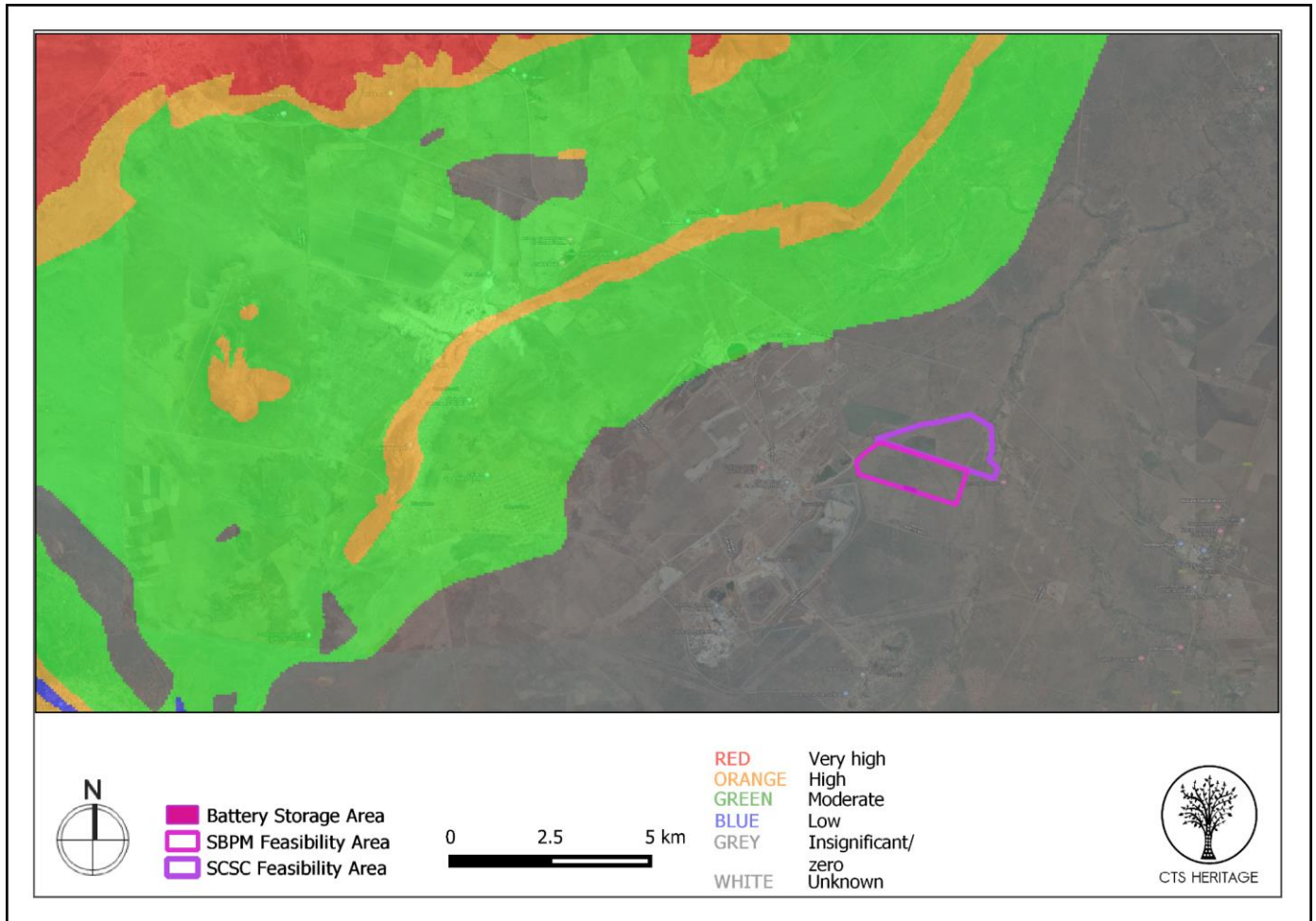
Kruger also mentioned the presence of dense vegetation coverage at the farm that would lower the probability of discovering sub-surface cultural remains. Pistorius (2002) surveyed a narrow strip for the Eskom power line on a neighbouring farm called Spitskop and reported several ex-situ potsherds. As significant archaeological heritage has been documented in the broader region, it is possible that the prospective development may negatively impact on similar archaeological heritage. **Figure 6.17** shows the heritage resources identified during the field assessment within the study area.



**Figure 6.17:** Heritage resources identified during the field assessment within the study area

### 6.5.3. Palaeontology

According to the SAHRIS Palaeosensitivity Map (**Figure 6.18**), the area proposed for development is underlain by sediments of zero paleontological sensitivity. The area proposed for the development has been previously assessed in a palaeontological desktop study conducted by Professor Bruce Rubidge (Palaeontological Desktop Study – Siyanda Chrome Smelting Company Pty. Ltd, SAHRIS ID 375246, 2015). In the assessment, Rubidge proposed that since the study area was underlain by gabbros and norites of the Precambrian Bushveld Igneous Complex, fossil preservation was highly unlikely. Rubidge, however, noted that fossil-bearing Quaternary alluvial deposits, although not visible on a geological map, could be still present in low-lying areas. Rubidge, hence, recommended that if fossils were exposed as a result of development activities, that a qualified palaeontologist should be contacted to assess the exposure for fossils before further development took place so that the necessary rescue operations were implemented. This recommendation is reiterated for this project.



**Figure 6.18:** Palaeosensitivity map indicating fossil sensitivity underlying the study area.

### 6.6 Visual Quality

The project site is located in an area that has a distinct rural and agricultural character. The Swartklip mine town which was built around the Siyanda Bakgatla Platinum Mine is located ~1km from the project site. Tiramogo lodge is located adjacent (south-east) of the proposed SBPM Solar PV facility site. Numerous mining related structures and activities dominate the landscape of the greater area, particularly the western portion of the site area closer to the existing Union Section Mine and the Siyanda Bakgatla Platinum Mine. There are also a number of overhead power lines and substations in close proximity to the project area. The Ivan, Fridge and the Mortimer substations are located in the north west of the project site (**refer to Figure 6.19**).

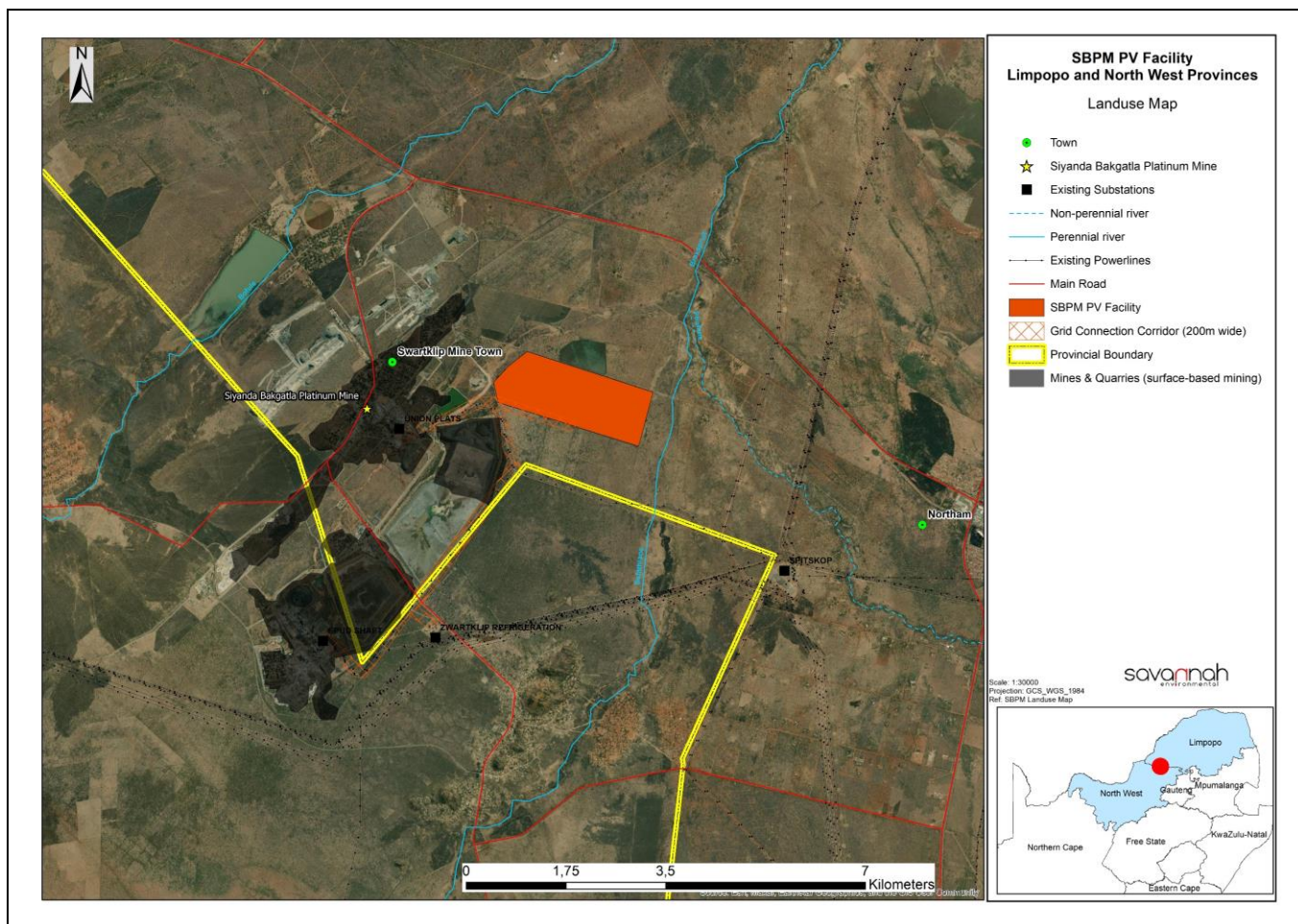


Figure 6.19: Land cover and broad land use patterns within the project area

## 6.7 Social Profile

### i Profile of the Broader Area

Table 6.11 provides a baseline summary of the socio-economic profile of the Thabazimbi Local Municipality within which the SBPM Solar PV Facility is located. In order to provide context against which the LM's socio-economic profile can be compared, the socio-economic profiles of the Waterberg District Municipality, Limpopo Province, and South Africa as a whole have also been considered. The data presented in this section have been derived from the 2011 Census, the Local Government Handbook South Africa 2019, Limpopo Spatial Development Framework (LSDF) 2015, Limpopo Development Plan (2015-2019), and the Waterberg District Municipality and Thabazimbi Local Municipality IDPs<sup>8</sup>.

<sup>8</sup> While information was derived from the Local Government Handbook South Africa 2019, Limpopo SDF, Waterberg DM and Thabazimbi LM IDPs, these sources largely make use of statistical information derived from the Census 2011. The information presented in this Chapter may therefore be somewhat outdated, but is considered sufficient for the purposes of this assessment (i.e. to provide an overview of the socio-economic characteristics against which impacts can be identified and their significance assessed).



**Table 6.11:** Baseline description of the socio-economic characteristics of the area within which the SBPM Solar PV Facility and associated grid connection is proposed

<b>Location characteristics</b>
<ul style="list-style-type: none"> <li>» The project is proposed within the Limpopo Province, which covers the area that lies Northern most in South Africa, just South of Zimbabwe.</li> <li>» The project is proposed within the Thabazimbi LM of the Waterberg DM.</li> <li>» The Thabazimbi LM is approximately 11214.4km<sup>2</sup> in extent, whilst Waterberg is 45315.6km<sup>2</sup> in extent.</li> <li>» The grid connection crosses into the North West Province, which is located to the west of the major population centre of Gauteng Province.</li> <li>» The grid connection is proposed within Moses Kotane LM (MKLM) of the Bojanala Platinum DM (BPLM).</li> </ul>
<b>Population characteristics</b>
<ul style="list-style-type: none"> <li>» According to the Statistics SA Thabazimbi had a population intercensal growth rate of 0.028% for the period 2011-2016.</li> <li>» Thabazimbi population for the year 2016 (Community Survey) was 96 232.</li> <li>» The Waterberg District Municipality (WDM) population constitutes 12.6% of the total provincial population with an average household size of 3.5.</li> <li>» The Thabazimbi Local Municipality (TLM) constitutes approximately 12.5% of the total population of the WDM with an average household size that is lower than the above-mentioned at 2.8.</li> <li>» Between 2001 and 2011, the population growth rate was 0.8% at the Provincial level followed by 1.2% at the district level and the TLM has the highest rate of 2.6%</li> <li>» The majority of the population in Limpopo, WDM and TLM (59.8%, 64.3% and 63%, respectively) is within the working age group (15 to 64 years).</li> <li>» There is a notably higher percentage at the District and Local Municipality levels, probably linked with in-migration in search of employment opportunities</li> <li>» Dependency ratios in Limpopo, WDM and TLM are estimated to be 67.35, 55.5% and 30.8% respectively; the significant difference in dependency is likely to reflect high number of migrants in the TLM.</li> <li>» The Bojanala covers an area of 18 333km<sup>2</sup> and is seated in Rustenburg.</li> <li>» The district contributed 52.14% of the North West Province's GDP in 2016.</li> <li>» The local municipality of Moses Kotane is owed to its location within the major tourism and mining belt of the North West Province, Pilanesberg and Sun City.</li> </ul>
<b>Economic, education and household characteristics</b>
<ul style="list-style-type: none"> <li>» Over 17% of the working age population (15 to 64 years) in LP has no formal education and only 22.4% has obtained a grade 12/matric education (Census, 2011).</li> <li>» The WDM closely follows the province with 12.5% of the working age population having no formal education and 23.3% having obtained a grade 12/matric education.</li> <li>» Both the Province and District have 9% of the working age population with tertiary level education.</li> <li>» Although TLM cannot be considered to have high levels of education, its population has higher education levels as compared to the Province and District, this is most likely due to the number of qualified employees working at the various mining operations.</li> <li>» Nearly 9% of the working age population has no formal education, 56.4% has obtained a grade 12/matric education and 8% have higher educational training.</li> <li>» According to Waterberg District IDP Report (2012/13), there are 333 schools in the WDM and 67 of them are based within the TLM.</li> <li>» According to WDM IDP Report (2013), mining plays an important role in LP's economy, it is currently the most dominant contributor to the Province's Gross Geographic Product (GGP) at 29.4%.</li> <li>» The sectors with the smallest contribution to the GGP are manufacturing, agriculture, forestry and fishing and the construction industry at 2.5% each.</li> </ul>

- » WDM's main GDP contribution comes from mining (47,4%) and agriculture (21%); another significant contributor is tourism (WDM IDP, 2011/12).
- » Mining activities in WDM include minerals such as platinum, iron ore, coal and diamonds.
- » WDM is home to a world-renowned biosphere and as a result, tourism plays a major role in the economy.
- » The WDM's agricultural activities comprise 30% of the province's agricultural activities, contributing over 4% to the Districts GGP.
- » These activities include crop, cattle and game farming.
- » Similar to the Province and District, TLM's economy is driven by three pillars: mining, agriculture and tourism (Thabazimbi Local Municipality Agriculture Strategy Report, 2012).
- » Although mining constitutes the lowest land use in the TLM, statistics indicate that it contributes significantly to the Gross Domestic Product (GDP) and employment rates.
- » TLM contributes 36% to the District's GDP.
- » According to TLM IDP Report (2015), mining has been instrumental through its recruitment practices in driving significantly in migration into the municipal area, thereby contributing significantly to the current population profile.
- » Agriculture and eco-tourism also contribute fairly significantly to the economy; agricultural activities constitute 40% of the district's agricultural activities. According to WDM IDP Report (2013) maize, sorghum, sunflowers, wheat, soya beans, groundnuts, paprika, potatoes, tomatoes, onions, cabbage and citrus fruits are commonly grown in TLM.
- » Cattle farming including cattle ranches and poultry and pig production are also common in TLM.
- » Game farming activities within TLM include auctioning of animals, hunting and processing food items.
- » The main economic sectors are mining, community services, finance, trade, transport and manufacturing with the BPDm.
- » The MKLM main economic sectors are tourism, manufacturing, agriculture and mining. The majority of persons and households in the LM live in areas under traditional authority.

#### Services

- » The majority of the WDM and TLM population (87,6% and 77,9%) live in formal dwellings and a greater percentage than the province lives in informal dwellings (11,2% and 20,6)
- » Approximately 2% of the population reside in traditional dwellings and 1,2% in WDM.
- » Cattle farming including cattle ranches and poultry and pig production are also common in TLM. Game farming activities within TLM include auctioning of animals, hunting and processing food items.
- » The most dominant source of energy for lighting in Limpopo is electricity at ~ 88%.
- » Considerably few people in the WDM and TLM make use of electricity compared to the province
- » In TLM, only 35% of the population use electricity for lighting, 33,5% for cooking and 31% for heating purposes, respectively.
- » WDM and TLM have the highest percentage of households with access to piped water at ~94% and ~95%, respectively.
- » At the ward level in TLM, fewer people have access to piped water as compared to the Local Municipality
- » Approximately 68% of households in Limpopo use pit toilets, ~45% in WDM and 21% in the TLM.
- » In terms of flush toilets, 68% of households in TLM have flush toilets, ~48% in WDM, followed by the province with ~22%.
- » Refuse collection in the broad Project area is poor. Limpopo Province has particularly low levels of formal weekly refuse removal at 21% as compared to ~46% in TLM and 63% in WDM.

## CHAPTER 7: ASSESSMENT OF IMPACTS

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This chapter serves to assess the significance of the positive and negative environmental impacts (direct and indirect) expected to be associated with the development of the SBPM Solar PV Facility and associated infrastructure, including the grid connection. This assessment has considered the construction of a solar PV facility with a contracted capacity of 100MW, within a development area of 574ha. The PV development area includes the following infrastructure:

- » 100MW Solar PV array comprising PV modules and mounting structures.
- » Inverters and transformers.
- » Cabling between the project components.
- » Battery Energy Storage System (BESS).
- » On-site facility substation and power lines between the solar PV facility and the Mine and Eskom substation.
- » Site offices, Security office, operations and control, and maintenance and storage laydown areas.
- » Access roads, internal distribution roads

The development area considered for the proposed SBPM PV Facility includes Portion 4 of Farm Grootkuil 409, and Portion 1 of Farm Rondavel 85 that comprises an area of approximately 1138ha in extent, which was considered through the Scoping Phase of the EIA process by the independent specialists and the EAP. On-site sensitivities were identified through the review of existing information, desktop evaluations and detailed field surveys.

The power generated by the solar PV facility will be transferred to the three step up transformers at the on-site/plant substation via a new 11-22 kV overhead power line. Power will then be delivered from each step-up transformer as follows:

- » two 6.6 km, 33 kV transmission lines to the Mortimer substation with four step down transformers (33/ 6.6kV; 10 MVA),
- » two 4.7 km, 33 kV transmission lines to the Fridge substation with two step down transformers (33/ 6.6kV; 10 MVA),
- » two 2.9 km, 33 kV transmission lines to the Ivan substation with three step down transformers (33/ 11kV; 10 MVA)

The grid connection infrastructure is located within an assessment corridor of 200m wide located in a band along the south-west boundary of the Project Site and traverses Portion 3, Portion 4, Portion 5 of the Farm Grootkuil 409, Portion 1, Portion 2 of Farm Zwartklip 405, Portion 0 of Farm Spitskop 410 and Portion 0 of Farm Turfbult 404. The specialist assessments undertaken as part of this EIA process have considered the development footprint (refer to **Figure 7.1**) which was provided by the developer.

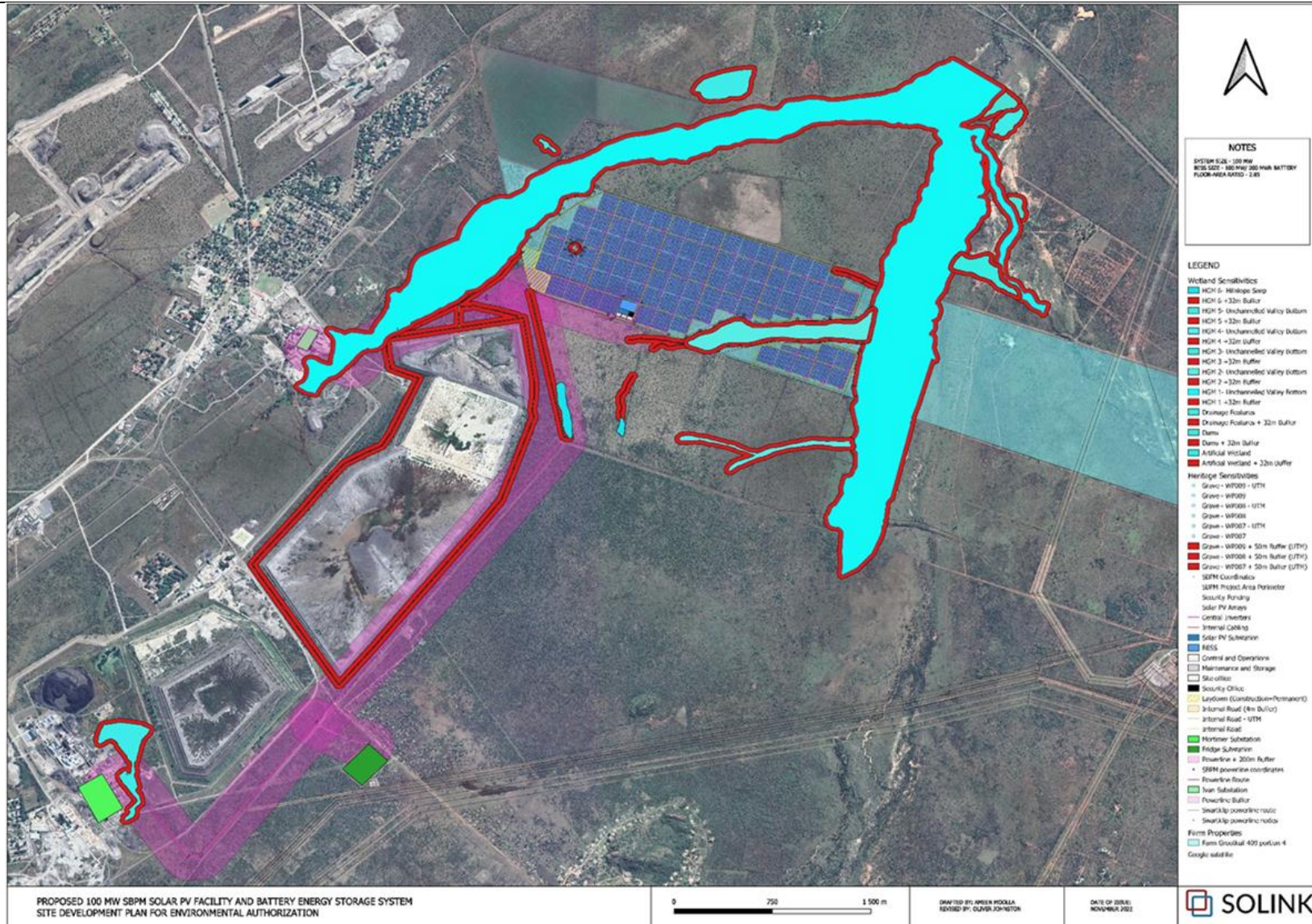


Figure 7.1: Site development layout of the SBPM Solar PV Facility

The sections which follow provide a summary of the specialist input for each field of study in terms of the impacts which are expected to occur, the significance of the impacts, the opportunity for mitigation of the impacts to an acceptable level and the appropriate mitigation measures recommended for the reduction of the impact significance. Note that impacts associated with decommissioning are expected to be similar to those associated with construction activities and in certain instances, these impacts are not considered separately within this chapter. This section of the report must be read together with the detailed specialist studies contained in **Appendix D to H**.

## 7.1 Legal Requirements as per the EIA Regulations, 2014 (as amended) for the undertaking of an Environmental Impact Assessment Report

This chapter of the EIA Report includes the following information required in terms of the EIA Regulations, 2014 - Appendix 3: Scope of Assessment and Content of Environmental Impact Assessment Reports:

Requirement	Relevant Section
3(1)(h)(v) the impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the 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.	The impacts and risks identified to be associated with the development of SBPM Solar PV Facility and associated grid connection, including the nature, significance, consequence, extent, duration and probability of the impacts and the degree to which the impact can be reversed and cause an irreplaceable loss of resources are included in <b>Sections 7.2.2, 7.3.2, 7.4.2, and 7.5.2.</b>
3(1)(h)(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.	The positive and negative impacts associated with the development of the SBPM Solar PV Facility and associated grid connection are included in <b>Sections 7.2.2, 7.3.2, 7.4.2, and 7.5.2.</b>
3(1)(h)(viii) the possible mitigation measures that could be applied and the level of residual risk.	The mitigation measures that can be applied to the impacts associated with the SBPM Solar PV Facility and associated grid connection are included in <b>Sections 7.2.2, 7.3.2, 7.4.2, and 7.5.2.</b>
3(1)(i) a full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity, including (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.	A description of all environmental impacts identified for the SBPM Solar PV Facility and associated grid connection during the EIA process, and the extent to which the impact significance can be reduced through the implementation of the recommended mitigation measures provided by the specialists are included in <b>sections 7.2.2, 7.3.2, 7.4.2, and 7.5.2.</b>
3(1)(j) an assessment of each identified potentially significant impact and risk, including (i) cumulative impacts, (ii) the nature, significance and consequences of the impact and risk, (iii) the extent and duration of the impact and risk, (iv) the probability of the impact and risk occurring, (v) the degree to which the impact and risk can be reversed, (vi) the degree to which the impact and risk may cause irreplaceable loss of resources and,	An assessment of each impact associated with the development of the SBPM Solar PV Facility and associated grid connection, including the nature and significance, the extent and duration, the probability, the reversibility, and the potential loss of irreplaceable resources, as well as the degree to which the

Requirement	Relevant Section
(vii) the degree to which the impact and risk can be avoided, managed or mitigated.	significance of the impacts can be mitigated are included in <b>sections 7.2.2, 7.3.2, 7.4.2, and 7.5.2.</b>
3(m) based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the EMPr as well as well as for inclusion as conditions of authorisation.	Mitigation measures recommended by the various specialists for the reduction of the impact significance are included in <b>sections 7.2.2, 7.3.2, 7.4.2, and 7.5.2.</b>

## 7.2 Potential Impacts on Terrestrial Ecology (including flora and fauna)

The development of the SBPM Solar PV Facility and associated grid connection is likely to result in a variety of impacts associated largely with the disturbance, loss and transformation of intact vegetation and faunal habitat to hard infrastructure such as service areas, roads, operations buildings etc. Potential impacts and the relative significance of the impacts are summarised below (refer to **Appendix D** for more details).

### 7.2.1 Results of the Terrestrial Ecology Impact Assessment

The project area has been altered both currently and historically. The present land use had a direct impact on both the fauna and the flora in the area, which is evident in the disturbed and transformed habitats. Historically, Cultivation, overgrazing and mismanagement has led to the deterioration of most of the area to a disturbed Bushveld that is either encroached upon or invaded by exotic plant species. However, the degraded Bushveld habitat and wetlands/watercourses in the wider project area can be regarded as important, not only within the local landscape, but also regionally; as they are used for habitat, foraging and movement corridors for fauna within a landscape fragmented by development.

The degraded Bushveld habitat and wetlands/watercourses in the project area have a High ecological theme sensitivity. The habitat sensitivity of the degraded Bushveld and wetland/water resources is regarded as high, due to the species recorded and the role of this intact unique habitat to biodiversity within a very fragmented local landscape, not to mention the sensitivity according to various ecological datasets. The high sensitivity terrestrial areas still:

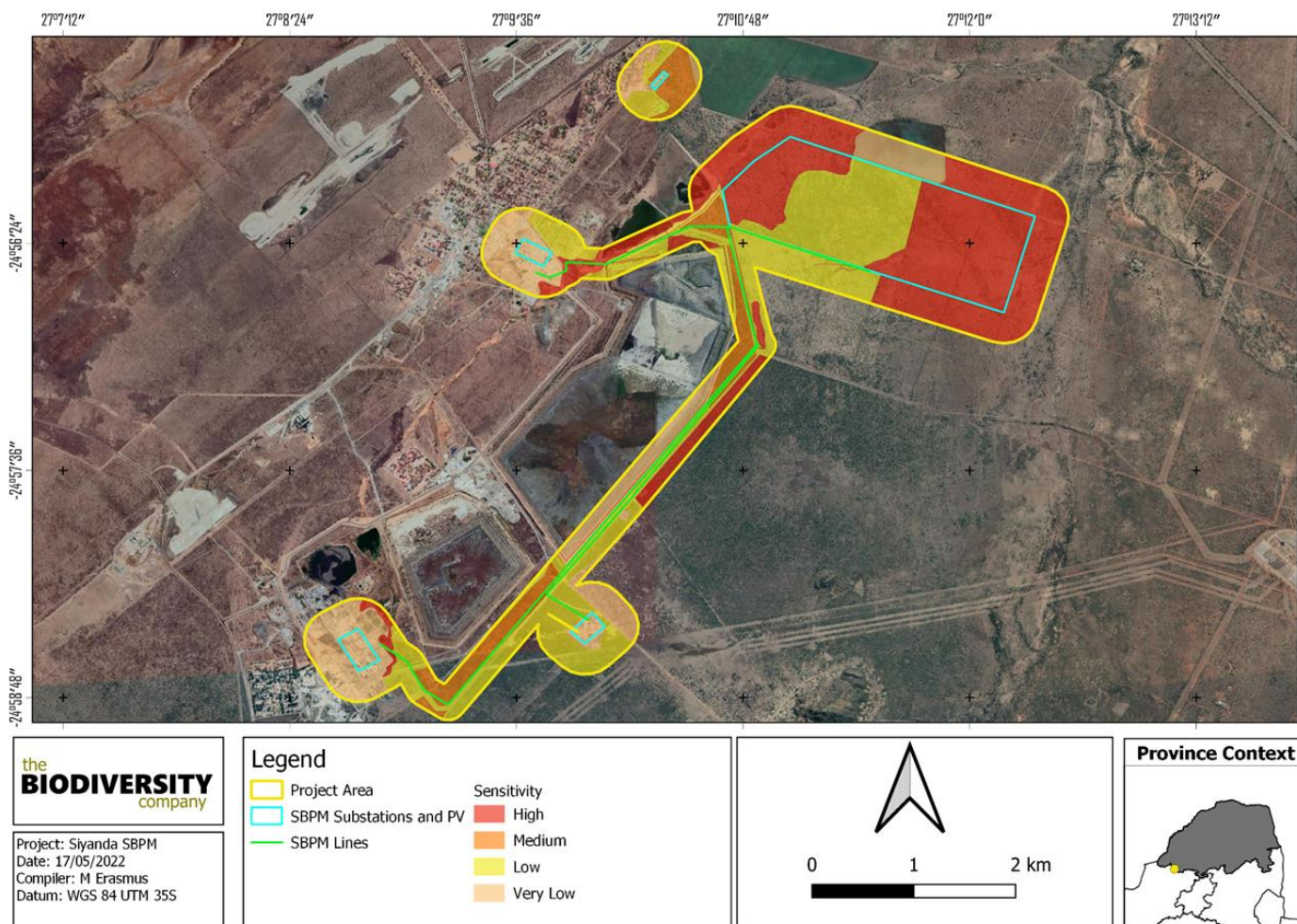
- » Support nearby CBA/ESAs as per the LCP; and
  - » Support various organisms (Including SCC) and may play an important role in the ecosystem, if left to recover from the superficial impacts.

The ecological integrity, importance and functioning of these terrestrial biodiversity areas provide a variety of ecological services considered beneficial, with one key service being the maintenance of biodiversity. The preservation of these systems is the most important aspect to consider for the proposed project.

Four (4) different terrestrial habitat types were delineated within the project area, and one set of wetland habitats as a whole. All habitats within the assessment area of the proposed project were allocated a sensitivity category. The sensitivities of the habitat types delineated are detailed in **Table 7.1** and illustrated in **Figure 7.1**.

**Table 7.1:** Summary of habitat types delineated within the project area

Habitat (Area)	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance
Degraded Bushveld	Medium	High	Medium	Low	High
Wetlands	Medium	Medium	Medium	Low	High
Fragmented Bushveld	Medium	Low	Medium	Low	Medium
Disturbed Bushveld	Low	Low	Low	Medium	Low
Transformed	Very Low	Very Low	Very Low	Low	Very Low



**Figure 7.1:** Ecological sensitivity of the project area showing location of proposed infrastructure

Any development in high sensitivity areas must be avoided, which will occur with the selection of the project area. Development within the high sensitivity areas within the project area will lead the direct destruction and loss of functional habitats; and the faunal species that are expected to utilise this habitat. Thus, if these areas are not maintained in a natural or near natural state, destroyed or fragmented, then meeting targets for biodiversity features will not be achieved. The mitigation measures, management and associated monitoring regarding the expected impacts will be the most important factor of this project and must be considered by the issuing authority.

**7.2.2 Description of the Impacts**

The potential impacts during the construction and operation phases of the project are presented in **Table 7.2**.

**Table 7.2:** Potential impacts to biodiversity associated with the proposed activity

<b>Main Impact</b>	<b>Project activities that can cause loss/impacts to habitat (especially with regard to the proposed infrastructure areas):</b>	<b>Secondary impacts anticipated</b>
1. Destruction, fragmentation and degradation of habitats and ecosystems	Physical removal of vegetation, including protected species.	Displacement/loss of flora & fauna (including possible SCC)
	Access roads and servitudes	Increased potential for soil erosion
	Soil dust precipitation	Habitat fragmentation
	Dumping of waste products	Increased potential for establishment of alien & invasive vegetation
	Random events such as fire (cooking fires or cigarettes)	Erosion
<b>Main Impact</b>	<b>Project activities that can cause the spread and/or establishment of alien and/or invasive species</b>	<b>Secondary impacts anticipated</b>
2. Spread and/or establishment of alien and/or invasive species	Vegetation removal	Habitat loss for native flora & fauna (including SCC)
	Vehicles potentially spreading seed	Spreading of potentially dangerous diseases due to invasive and pest species
	Unsanitary conditions surrounding infrastructure promoting the establishment of alien and/or invasive rodents	Alteration of fauna assemblages due to habitat modification
	Creation of infrastructure suitable for breeding activities of alien and/or invasive birds	
<b>Main Impact</b>	<b>Project activities that can cause direct mortality of fauna</b>	<b>Secondary impacts anticipated</b>
3. Direct mortality of fauna	Clearing of vegetation	Loss of habitat
		Loss of ecosystem services
	Roadkill due to vehicle collision	Increase in rodent populations and associated disease risk
	Pollution of water resources due to dust effects, chemical spills, etc.	
	Intentional killing of fauna for food (hunting)	
<b>Main Impact</b>	<b>Project activities that can cause reduced dispersal/migration of fauna</b>	<b>Secondary impacts anticipated</b>
4. Reduced dispersal/migration of fauna	Loss of landscape used as corridor	Reduced dispersal/migration of fauna
		Loss of ecosystem services
	Compacted roads	Reduced plant seed dispersal
	Removal of vegetation	
<b>Main Impact</b>	<b>Project activities that can cause pollution in watercourses and the surrounding environment</b>	<b>Secondary impacts anticipated</b>



5. Environmental pollution due to water runoff, spills from vehicles and erosion	Chemical (organic/inorganic) spills	Pollution in watercourses and the surrounding environment
	Erosion	Faunal mortality (direct and indirectly)
		Groundwater pollution
		Loss of ecosystem services
<b>Main Impact</b>	<b>Project activities that can cause disruption/alteration of ecological life cycles due to sensory disturbance.</b>	<b>Secondary impacts anticipated</b>
6. Disruption/alteration of ecological life cycles (breeding, migration, feeding) due to noise, dust and light pollution.	Operation of machinery (Large earth moving machinery, vehicles)	Disruption/alteration of ecological life cycles due to noise
		Loss of ecosystem services
	Project activities that can cause disruption/alteration of ecological life cycles due to dust	Secondary impacts associated with disruption/alteration of ecological life cycles due to dust
	Vehicles	Loss of ecosystem services
<b>Main Impact</b>	<b>Project activities that can cause staff to interact directly with potentially dangerous fauna</b>	<b>Secondary impacts anticipated</b>
8. Staff and others interacting directly with fauna (potentially dangerous) or poaching of animals	All unregulated/supervised activities outdoors	Loss of SCCs

### 7.2.3 Impact tables summarising the significance of impacts on terrestrial ecology during construction, operation and decommissioning (with and without mitigation)

#### Construction Phase Impacts

<b>Nature:</b> <i>Loss of vegetation within development footprint</i>		
Destruction, further loss and fragmentation of the of habitats, ecosystems and vegetation community		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	High (4)	Moderate (3)
<b>Duration</b>	Permanent (5)	Moderate term (3)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Probability</b>	Highly Probable (4)	Probable (3)
<b>Significance</b>	<b>Medium (60)</b>	<b>Medium (30)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Moderate	High
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes, although this impact cannot be well mitigated as the loss of vegetation/habitat is unavoidable.	
<b>Mitigation:</b>		
» Where possible, existing access routes and walking paths must be made use of.		
» All laydown, chemical toilets etc. should be restricted to very low/ low sensitivity areas. Any materials may not be stored for extended periods of time and must be removed from the project area once the		

construction/closure phase has been concluded. No storage of vehicles or equipment will be allowed outside of the designated project areas.
<b>Residual Impacts:</b> The loss of currently intact vegetation is an unavoidable consequence of the project and cannot be entirely mitigated.

<b>Nature:</b> <i>Introduction of alien species, especially plants</i>		
Degradation and loss of surrounding natural vegetation.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	High (4)	Low (2)
<b>Duration</b>	Long-term (4)	Short Term (2)
<b>Magnitude</b>	Moderate (6)	Minor (2)
<b>Probability</b>	Highly Probable (4)	Improbable (2)
<b>Significance</b>	<b>Medium (56)</b>	<b>Low (12)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Moderate	High
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes.	
<b>Mitigation:</b> » The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas		
<b>Residual Impacts:</b> Long-term broad scale. IAP infestation if not mitigated.		

<b>Nature:</b> <i>Displacement of faunal community due to habitat loss, direct mortalities and disturbance</i>		
Construction activity will likely lead to direct mortality of fauna due to earthworks, vehicle collisions, accidental hazardous chemical spills and persecution. Disturbance due to dust and noise pollution and vibration may disrupt behaviour.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	High (4)	Low (2)
<b>Duration</b>	Moderate term (3)	Very Short Term (1)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Probability</b>	Highly Probable (4)	Improbable (2)
<b>Significance</b>	<b>Medium (52)</b>	<b>Low (14)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Moderate	High
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes, to some extent. Noise and disturbance cannot be well mitigated, impacts on fauna due to human presence, such as vehicle collisions, poaching, and persecution can be mitigated.	
<b>Mitigation:</b> » The areas to be developed must be specifically demarcated to prevent movement of staff or any individual into the surrounding environments, signs must be put up to enforce this » Noise must be kept to an absolute minimum during the evenings and at night, to minimize all possible disturbances to amphibian species and nocturnal mammals		

- » Outside lighting should be designed and limited to minimize impacts on fauna. All outside lighting should be directed away from highly sensitive areas. Fluorescent and mercury vapor lighting should be avoided and sodium vapor (green/red) lights should be used wherever possible.
- » A qualified environmental control officer must be on site when construction begins. A site walk through is recommended by a suitably qualified ecologist prior to any construction activities, preferably during the wet season and any SSC should be noted. In situations where the threatened and protected plants must be removed, the proponent may only do so after the required permission/permits have been obtained in accordance with national and provincial legislation. In the abovementioned situation the development of a search, rescue and recovery program is suggested for the protection of these species. Should animals not move out of the area on their own relevant specialists must be contacted to advise on how the species can be relocated
- » Once the development layout has been confirmed, the open areas must be fenced off appropriately pre-construction in order to allow animals to move or be moved into these areas before breaking ground activities occur. Construction activities must take place systemically, especially in relation to the game farm area.

**Residual Impacts:**

It is probable that some individuals of susceptible species will be lost to construction-related activities despite mitigation. However, this is not likely to impact the viability of the local population of any fauna species.

**Operation Phase Impacts**

**Nature:** Continued fragmentation and degradation of habitats and ecosystems

Disturbance created during the construction phase will leave the project area vulnerable to erosion and IAP encroachment.

	Without mitigation	With mitigation
<b>Extent</b>	Moderate (3)	Low (2)
<b>Duration</b>	Permanent (5)	Short Term (2)
<b>Magnitude</b>	High (8)	Low (4)
<b>Probability</b>	Highly Probable (4)	Improbable (2)
<b>Significance</b>	<b>High (64)</b>	<b>Low (16)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Moderate	High
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes, with proper management and avoidance, this impact can be mitigated to a low level.	

**Mitigation:**

- » Where possible, existing access routes and walking paths must be made use of.
- » All laydown, chemical toilets etc. should be restricted to very low/ low sensitivity areas. Any materials may not be stored for extended periods of time and must be removed from the project area once the construction/closure phase has been concluded. No storage of vehicles or equipment will be allowed outside of the designated project areas.
- » Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood and wind events. This will also reduce the likelihood of encroachment by alien invasive plant species.
- » Any woody material removed can be shredded and used in conjunction with the topsoil to augment soil moisture and prevent further erosion.

**Residual Impacts:**

There is still the potential some potential for erosion and IAP encroachment even with the implementation of control measures but would have a low impact.

<b>Nature:</b> <i>Spread of alien and/or invasive species</i>		
Degradation and loss of surrounding natural vegetation		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Moderate (3)	Low (2)
<b>Duration</b>	Long Term (4)	Short Term (2)
<b>Magnitude</b>	Moderate (6)	Minor (2)
<b>Probability</b>	Highly Probable (4)	Improbable (2)
<b>Significance</b>	<b>Medium (52)</b>	<b>Low (12)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Moderate	High
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		
» The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas		
<b>Residual Impacts:</b>		
Long term broad scale IAP infestation if not mitigated.		

<b>Nature:</b> <i>Ongoing displacement and direct mortalities of faunal community (including SCC) due to disturbance (road collisions, collisions with substation, noise, light, dust, vibration)</i>		
The operation and maintenance of the proposed development may lead to disturbance or persecution of fauna in the vicinity of the development.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Moderate (3)	Low (2)
<b>Duration</b>	Long Term (4)	Short Term (2)
<b>Magnitude</b>	High (8)	Low (4)
<b>Probability</b>	Highly Probable (4)	Improbable (2)
<b>Significance</b>	<b>Medium (60)</b>	<b>Low (16)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Moderate	High
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		
» The areas to be developed must be specifically demarcated to prevent movement of staff or any individual into the surrounding environments, signs must be put up to enforce this		
» Noise must be kept to an absolute minimum during the evenings and at night, to minimize all possible disturbances to amphibian species and nocturnal mammals		
» Outside lighting should be designed and limited to minimize impacts on fauna. All outside lighting should be directed away from highly sensitive areas. Fluorescent and mercury vapor lighting should be avoided and sodium vapor (green/red) lights should be used wherever possible.		
» All vehicles (construction or other) accessing the site should adhere to a low speed limit on site (40 km/h max) to avoid collisions with susceptible avifauna, such as nocturnal and crepuscular species (e.g., nightjars and owls) which sometimes forage or rest on roads, especially at night.		
<b>Residual Impacts:</b>		
Disturbance from maintenance activities will occur albeit at a low and infrequent level.		

### Decommissioning Phase Impacts

No decommissioning phase impacts have been considered for this project. The life of operation is unknown and expected for perpetuity.

#### **7.2.4 Overall Result**

The main expected impacts of the proposed infrastructure will include the following:

- » Habitat loss and fragmentation;
- » Degradation of surrounding habitat;
- » Disturbance and displacement caused during the construction and maintenance phases; and
- » Direct mortality during the construction phase.

Mitigation measures as described in this report can be implemented to reduce the significance of the risk but there is always possibility of unexpected impacts. Considering that this area that has been identified as being of significance for biodiversity maintenance and ecological processes, development may proceed but with caution and only with the implementation of mitigation measures.

Considering the above-mentioned information, no fatal flaws are evident for the proposed project. It is the opinion of the specialists that the project, may be favourably considered, on condition that all prescribed mitigation measures and supporting recommendations are implemented.

### **7.3 Potential Impacts on Avifauna**

The development of the SBPM Solar PV Facility and associated grid connection is likely to result in a variety of impacts from an avifaunal perspective. Potential impacts and the relative significance of the impacts are summarised below (refer to **Appendix E** for more details).

#### **7.3.1 Results of the Avifauna Impact Assessment**

The assessment area overlapped with five habitat types namely, Degraded Bushveld, Disturbed, Fragmented Bushveld, Transformed as well as Wetlands and other water resources (Dam and river). These habitats were based on the species compositions in the various areas. The areas of interests outside of the direct footprint were included as these areas could also support species that could be influenced by the development. Habitat types delineated within the direct project footprint and adjacent survey areas are illustrated **Figure 7.2**.

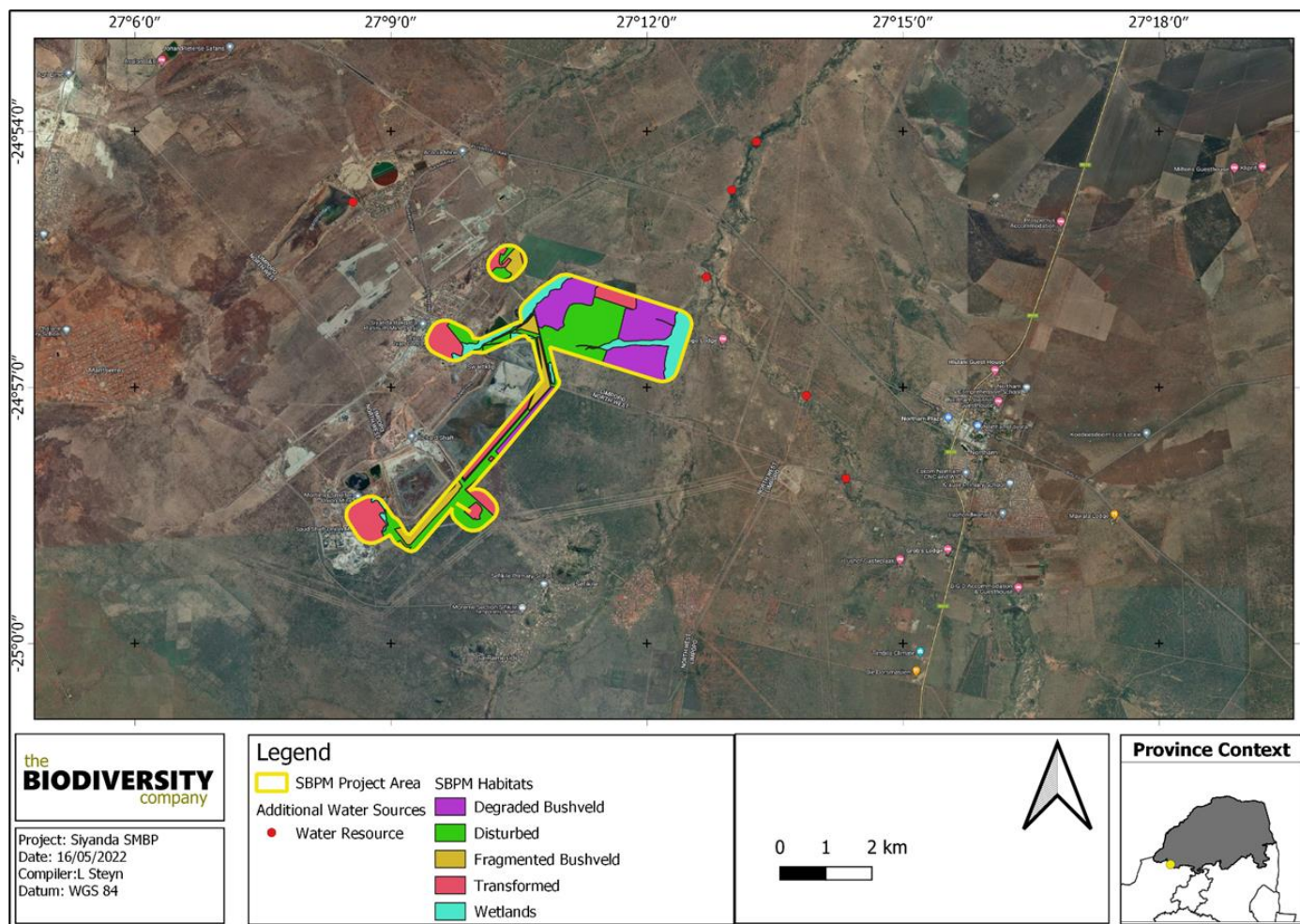
Degraded Bushveld comprised of a number of woody species which provide suitable perching and nesting locations for species such as Black-Winged Kites, Black-chested Snake Eagles and African Hawk Eagles. The present impacts to this habitat unit were found to be limited and it presented a healthy combination of insect, seed and fruit eaters as well as numerous carnivorous species.

The Disturbed habitat is regarded as areas that have been impacted by historic overgrazing, mismanagement and land use. These habitats are not entirely transformed but in a constant disturbed state as it cannot recover to a more natural state due to ongoing disturbances and impacts it receives from grazing and mismanagement. Grass species were mostly prevalent in this habitat, therefore a number of granivores species were found here. These species included Red-billed Queleas, Blue Waxbills and Southern-Masked Weavers.

Transformed habitat included areas where mining previously took place as well as the areas where agriculture is currently taking place. Species found here included Red-faced Mousebirds and Cape-Turtle Doves.

Fragmented Bushveld consisted of areas that were isolated from the other areas, this was mainly due to fences or roads. Some portions of this habitat would previously have been described as disturbed but as it is now allowed to recover, its general ecological state is in a better condition. It is however still exposed to edge effects. Species found here also included a high number of carnivores species due to the larger tree species found here.

Wetlands and Other Water Resources consisted of the onsite wetlands as well as the nearby, Sefathlane, Brakspruit, Phufane rivers as well as the dam found on the Bofule river. Some of the rivers/portions of the rivers were dry during the first survey they did however still have plant growth on the edge that are restricted to water sources. The birds utilising these habitats included Woodlands Kingfisher, White-faced Whistling Duck, Green-backed (Striated) Heron, White-winged Tern, African Darter, Lesser Swamp Warbler and Squacco Heron. The wetlands found in the project area is utilised by the Yellow-throated Sandgrouse as water sources and is thus considered to be sensitive.

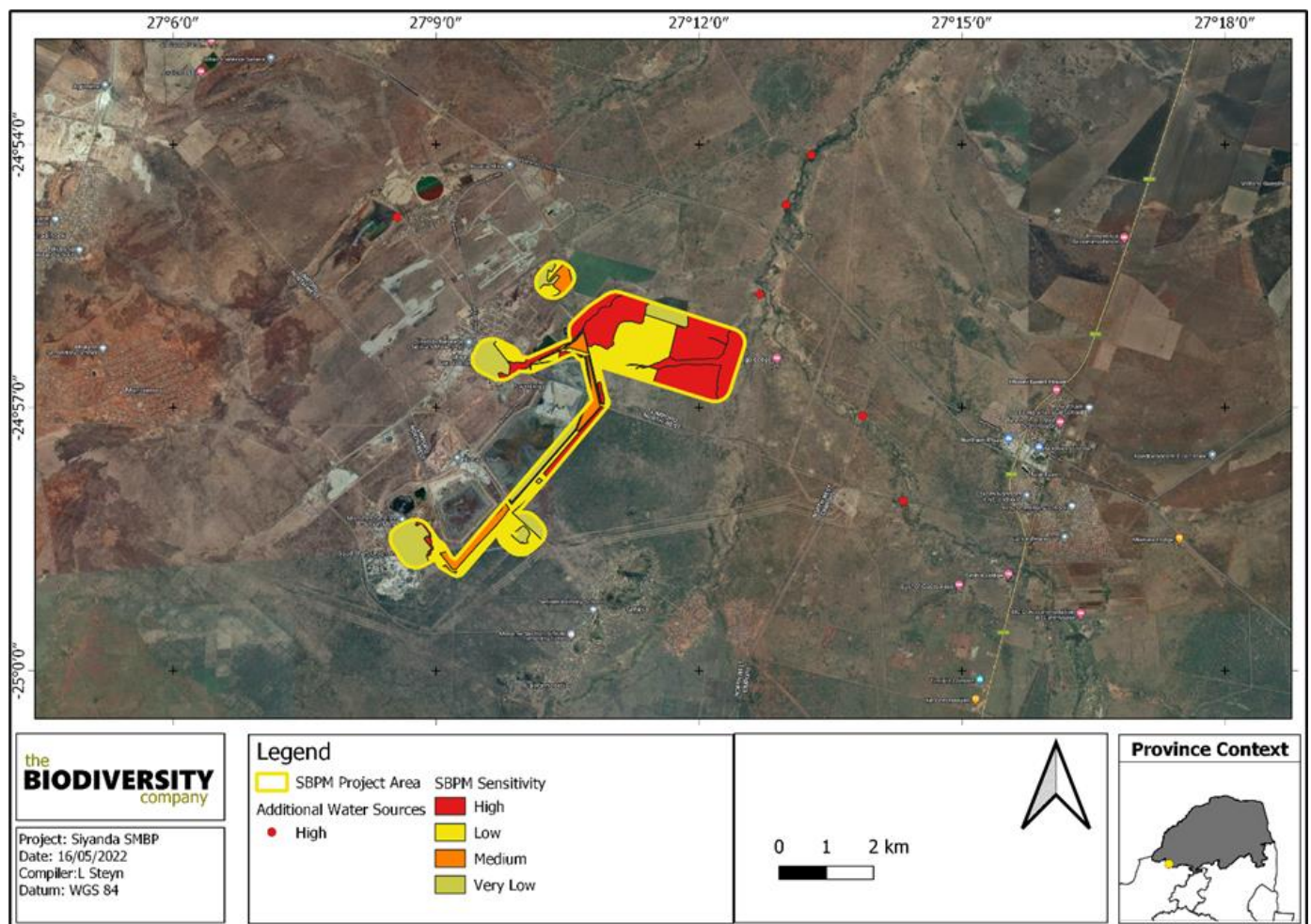


**Figure 7.2:** Avifauna habitats recorded in the project site and surrounds

Sensitivities were compiled for the avifauna study based on the field results and desktop information. All habitats within the assessment area of the proposed project were allocated a sensitivity category. The sensitivities of the habitat types delineated are described in **Table 7.2** and illustrated in **Figure 7.3**. The Wetlands and Degraded Bushveld were given a high sensitivity based on the importance of these areas for the Yellow-throated Sandgrouse as well as a number of risk species that would utilise this area for both foraging, as water source and nesting.

**Table Error! No text of specified style in document.-4SEI Summary of habitat types delineated within field assessment area of project area**

Habitat	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance
Wetlands	High	High	High	Medium	High
Degraded Bushveld	High	High	High	Medium	High
Disturbed Bushveld	Low	Low	Low	Medium	Low
Fragmented Bushveld	Medium	Medium	Medium	Medium	Medium
Transformed	Very Low	Very Low	Very Low	High	Very Low



**Figure 7.3:** Avifauna sensitivities

### 7.3.2 Description of the Impacts

The main expected impacts of the proposed PV and grid infrastructure will include the following:

- » Habitat loss and fragmentation;
- » Electrocutions; and
- » Collisions resulting in mortalities of amongst other SCCs.

Mitigation measures as described in this report can be implemented to reduce the significance of the risk to an acceptable residual risk level. Considering the above-mentioned information and that the facility is required for power supply to an existing mine, it is the opinion of the specialist that the project may be favourably considered, on condition that all the mitigation and recommendations are followed.

### 7.3.3 Impact tables summarising the significance of impacts on avifauna during construction, operation and decommissioning (with and without mitigation)

#### Construction Phase

<b>Nature:</b> <i>Destruction, fragmentation and degradation of habitats</i>		
Destruction, fragmentation and degradation of habitats.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Regional (4)	Local Area (3)
<b>Duration</b>	Short Term (2)	Short Term (2)
<b>Magnitude</b>	High (8)	Moderate (6)
<b>Probability</b>	Highly Probable (4)	Probable (3)
<b>Significance</b>	<b>Medium (56)</b>	<b>Medium (33)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Low
<b>Irreplaceable loss of resources?</b>	Yes	Yes
<b>Can impacts be mitigated?</b>	To some extent, habitat will still be lost	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>» The loss of habitat in the project footprint cannot be negated but can be restricted to some extent. The loss of habitat will result in the loss of territory, feeding area, nesting sites and prey availability for numerous species.</li> <li>» The habitat outside the footprint can be protected by implementing the following mitigations:</li> <li>» Construction activity to only be within the project footprint and the area is to be well demarcated.</li> <li>» Areas where vegetation has been cleared must be re-vegetated within local indigenous plant species.</li> <li>» The affected area must be monitored for invasive plant encroachment and erosion and must be controlled.</li> <li>» The use of laydown areas within the development footprint must be used, to avoid habitat loss and disturbance to adjoining areas.</li> <li>» All areas to be developed must be walked through prior to any activity to ensure no nests or avifauna species are found in the area.</li> <li>» Should any Species of Conservation Concern not move out of the area, or their nest be found in the area a suitably qualified specialist must be consulted to advise on the correct actions to be taken.</li> <li>» The wetland areas must be avoided during development. This is especially pertinent to the wetland on the western side of the PV where the Yellow-throated Sandgrouse is known to utilise the water source.</li> </ul>		
<b>Residual Impacts:</b>		
The loss of habitat is a residual impact that is unavoidable. The disturbance may also cause some erosion and invasive alien plant encroachment. Movement corridors will be disrupted in the area.		



<b>Nature:</b> <i>Displacement of avifaunal community (Including several SCC) due to disturbance such as noise, light, dust, vibration</i>		
Displacement of avifaunal community (Including several SCC) due to disturbance such as noise, light, dust, vibration		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Regional (4)	Local Area (3)
<b>Duration</b>	Short Term (2)	Short Term (2)
<b>Magnitude</b>	High (8)	Moderate (6)
<b>Probability</b>	Highly Probable (4)	Improbable (2)
<b>Significance</b>	<b>Medium (56)</b>	<b>Low (22)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Low
<b>Irreplaceable loss of resources?</b>	Yes	Yes
<b>Can impacts be mitigated?</b>	Yes, but only to a limited extent. The mitigation of noise pollution during construction is difficult to mitigate against	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>» Minimize disturbance impact by abbreviating construction time. Schedule the activities to avoid breeding and movement time.</li> <li>» Ensure lights are kept to a minimum, lights must be red or green and not white to reduce confusion for nocturnal migrants. Lights should be placed so that they face downward onto working areas and not straight or upward to reduce the sky glow effect.</li> <li>» Dust management need to be done in the areas where the vegetation will be removed, this includes wetting of the soil.</li> </ul>		
<b>Residual Impacts:</b>		
Displacement of endemic and SCC avifauna species.		

<b>Nature:</b> <i>Collection of eggs and poaching</i>		
Collection of eggs and poaching		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Regional (4)	Footprint and surrounding areas (2)
<b>Duration</b>	Short Term (2)	Short Term (2)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Probability</b>	Highly Probable (4)	Improbable (2)
<b>Significance</b>	<b>Medium (48)</b>	<b>Low (16)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	High
<b>Irreplaceable loss of resources?</b>	Yes	No
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>» All personnel should undergo environmental induction with regards to avifauna and in particular awareness about not harming, collecting or hunting terrestrial species (e.g., guineafowl and francolin), and owls, which are often persecuted out of superstition.</li> <li>» Signs must be put up stating that should any person be found poaching any species they will be fined.</li> </ul>		
<b>Residual Impacts:</b>		
There is a possibility that the eggs to be poached could be that of an SCC with decreasing numbers		

<b>Nature:</b> <u>Roadkill</u>		
Mortality of avifauna as a result of collisions with vehicles		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (3)	Footprint and surrounding areas (2)
<b>Duration</b>	Short Term (2)	Short Term (2)
<b>Magnitude</b>	Moderate (6)	Minor (2)
<b>Probability</b>	Highly Probable (4)	Improbable (2)
<b>Significance</b>	<b>Medium (44)</b>	<b>Low (12)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Low
<b>Irreplaceable loss of resources?</b>	Yes	No
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>» All construction vehicles should adhere to clearly defined and demarcated roads. No off-road driving to be allowed outside of the construction area.</li> <li>» All vehicles (construction or other) accessing the site should adhere to a low speed limit on site (40 km/h max) to avoid collisions with susceptible avifauna, such as nocturnal and crepuscular species (e.g., nightjars and owls) which sometimes forage or rest on roads, especially at night.</li> </ul>		
<b>Residual Impacts:</b>		
Roadkills could still occur		

## Operation Phase

<b>Nature:</b> <u>Collisions with PV panels, BESS, associated power lines and connection lines and fences</u>		
Collisions with PV panels, BESS, associated powerlines and connection lines and fences		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Regional (4)	Footprint and surrounding areas (2)
<b>Duration</b>	Long term (4)	Long Term (4)
<b>Magnitude</b>	High (8)	Moderate (6)
<b>Probability</b>	Highly Probable (4)	Probable (3)
<b>Significance</b>	<b>High (64)</b>	<b>Medium (36)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Low
<b>Irreplaceable loss of resources?</b>	Yes	No
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>» The design of the proposed solar plant must be of a type or similar structure as endorsed by the Eskom-Endangered Wildlife Trust (EWT) Strategic Partnership on Birds and Energy, considering the mitigation guidelines recommended by Birdlife South Africa.</li> <li>» Infrastructure should be consolidated where possible in order to minimise the amount of ground and air space used. This would involve using existing/approved pylons and associated infrastructure for different lines.</li> <li>» White strips must be placed on the edge of the solar panels to reduce reflection and prevent collisions. This is especially pertinent to Yellow-throated Sandgrouse, as the species exhibits daily movement between water resources and feeding/nesting areas. The species may recognise the panel array as water bodies (lake effect as described above) and collide with the panels, causing mortality.</li> <li>» If any powerlines/connection lines are to be placed above ground, they must be marked with industry standard bird flight diverters.</li> <li>» Fencing mitigations: <ul style="list-style-type: none"> <li>• Top 2 strands must be smooth wire</li> </ul> </li> </ul>		

<ul style="list-style-type: none"> <li>• Routinely retention loose wires</li> <li>• Minimum 30cm between wires</li> <li>• Place markers on fences</li> </ul>
<p><b>Residual Impacts:</b> Some collisions of SCCs might still occur regardless of mitigations</p>

<p><b>Nature:</b> <u>Electrocution with solar plant connections, substation and power line</u></p> <p>Electrocution with solar plant connections, substation and power line</p>		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Regional (4)	Footprint and surrounding areas (2)
<b>Duration</b>	Long term (4)	Long Term (4)
<b>Magnitude</b>	High (8)	Moderate (6)
<b>Probability</b>	Highly Probable (4)	Improbable (2)
<b>Significance</b>	<b>High (64)</b>	<b>Low (24)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	High
<b>Irreplaceable loss of resources?</b>	Yes	No
<b>Can impacts be mitigated?</b>	Yes	
<p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>» The design of the proposed solar plant, substation and grid lines must be of a type or similar structure as endorsed by the Eskom-EWT Strategic Partnership on Birds and Energy, considering the mitigation guidelines recommended by Birdlife South Africa.</li> <li>» Infrastructure should be consolidated where possible/practical in order to minimise the amount of ground and air space used. This would involve using the existing/approved pylons and associated infrastructure for different lines.</li> <li>» Ensure that monitoring is sufficiently frequent to detect electrocutions reliably and that any areas where electrocutions occurred are repaired as soon as possible.</li> <li>» During the first year of operation quarterly reports, summarizing interim findings should be compiled and submitted to BirdLife South Africa. If the findings indicate that electrocutions have not occurred or are minimal with no red-listed species, an annual report can be submitted.</li> </ul>		
<p><b>Residual Impacts:</b> Electrocutions might still occur regardless of mitigations</p>		

<p><b>Nature:</b> <u>Roadkill during maintenance procedures</u></p> <p>Mortality as a result of collision with vehicles during maintenance procedures</p>		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (3)	Local (3)
<b>Duration</b>	Long term (4)	Long Term (4)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Significance</b>	<b>Medium (39)</b>	<b>Low (22)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Low
<b>Irreplaceable loss of resources?</b>	Yes	No
<b>Can impacts be mitigated?</b>	Yes	
<p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>» All personnel should undergo environmental induction with regards to avifauna and their behaviour on roads.</li> </ul>		

<ul style="list-style-type: none"> <li>» All vehicles should adhere to clearly defined and demarcated roads. No off-road driving to be allowed.</li> <li>» All vehicles accessing the site should adhere to a low speed limit on site (40 km/h max) to avoid collisions with susceptible avifauna, such as nocturnal and crepuscular species (e.g., nightjars and owls) which sometimes forage or rest on roads, especially at night.</li> </ul>
<p><b>Residual Impacts:</b> Road collisions can still occur regardless of mitigations</p>

<p><b>Nature:</b> <i>Habitat degradation and displacement of resident, visiting and breeding species (as well as SCCs).</i></p> <p>Habitat degradation and displacement of resident, visiting and breeding species (as well as SCCs).</p>		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Regional (4)	Local (3)
<b>Duration</b>	Long term (4)	Short Term (2)
<b>Magnitude</b>	High (8)	Moderate (6)
<b>Probability</b>	Highly Probable (4)	Probable (3)
<b>Significance</b>	<b>High (64)</b>	<b>Medium (33)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Low
<b>Irreplaceable loss of resources?</b>	Yes	No
<b>Can impacts be mitigated?</b>	No, the footprint has already been disturbed. The area surrounding the development can be mitigated to some extent	
<p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>» Minimising habitat destruction caused by the maintenance by demarcating the footprint so that it does not increase yearly.</li> <li>» All areas where maintenance must be for example grass cutting walked through prior to any activity to ensure no nests or fauna species are found in the area. Should any Species of Conservation Concern not move out of the area, or their nest be found in the area a suitably qualified specialist must be consulted to advise on the correct actions to be taken.</li> </ul>		
<p><b>Residual Impacts:</b> Migratory routes of avifauna species could change, and the species composition could also change regardless of mitigations</p>		

## Decommissioning Phase Impacts

<p><b>Nature:</b> <i>Continued fragmentation and degradation of habitats</i></p> <p>Continued fragmentation and degradation of habitats</p>		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (3)	Footprint and surrounding areas (2)
<b>Duration</b>	Long term (4)	Very Short Term (1)
<b>Magnitude</b>	High (8)	Minor (2)
<b>Probability</b>	Highly Probable (4)	Very Improbable (1)
<b>Significance</b>	<b>Medium (60)</b>	<b>Low (5)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Low
<b>Irreplaceable loss of resources?</b>	Yes	No
<b>Can impacts be mitigated?</b>	Yes	
<p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>» Implementation of a rehabilitation plan.</li> </ul>		

<ul style="list-style-type: none"> <li>» Implementation of an alien invasive management plan and monitoring on an annual basis for 3 years post construction.</li> <li>» There should be follow-up rehabilitation and revegetation of any remaining bare areas with indigenous flora.</li> </ul>
<p><b>Residual Impacts:</b> No significant residual risks are expected, although IAP encroachment and erosion might still occur but would have a negligible impact if effectively managed.</p>

<p><b>Nature:</b> <i>Displacement of faunal community (including SCC) due disturbance (road collisions, noise, dust, vibration).</i></p> <p>Displacement of faunal community (including SCC) due disturbance (road collisions, noise, dust, vibration).</p>		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Regional (4)	Local (3)
<b>Duration</b>	Long term (4)	Moderate Term (3)
<b>Magnitude</b>	High (8)	Moderate (6)
<b>Probability</b>	Highly Probable (4)	Improbable (2)
<b>Significance</b>	<b>High (64)</b>	<b>Low (24)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Low
<b>Irreplaceable loss of resources?</b>	Yes	No
<b>Can impacts be mitigated?</b>	Yes	
<p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>» Minimize disturbance impact by abbreviating construction time.</li> <li>» Schedule the activities to avoid breeding and movement times report.</li> <li>» Dust management need to be done in the areas where the vegetation will be removed, this includes wetting of the soil. This area must be rehabilitated as soon as possible.</li> <li>» All construction vehicles should adhere to clearly defined and demarcated roads. No off-road driving to be allowed outside of the decommissioning area.</li> <li>» All vehicles (construction or other) accessing the site should adhere to a low speed limit on site (40 km/h max) to avoid collisions with susceptible avifauna, such as nocturnal and crepuscular species (e.g., nightjars and owls) which sometimes forage or rest on roads, especially at night.</li> </ul>		
<p><b>Residual Impacts:</b> If this is mitigated and monitored correctly no residual impacts should be present</p>		

#### 7.3.4 Overall Result

The main expected impacts of the proposed PV and grid infrastructure will include the following:

- » Habitat loss and fragmentation;
- » Electrocutions; and
- » Collisions resulting in mortalities of amongst other SCCs.

Mitigation measures as described in this report can be implemented to reduce the significance of the risk to an acceptable residual risk level. Considering the above-mentioned information and that the facility and associated grid connection is required for power supply to an existing mine, it is the opinion of the specialist that the project may be favourably considered, on condition that all the mitigation and recommendations are followed.

#### 7.4 Assessment of Impacts on Soils and Agricultural Potential

According to site sensitivity verification, the land capability has been identified to be of very low to low and low to medium and thus only an Agricultural Compliance Statement report has been compiled (refer to **Appendix F**).

## **7.5 Assessment of Impacts on Heritage Resources (including archaeology, palaeontology and cultural landscape)**

Potential impacts on heritage resources and the relative significance of the impacts associated with the development of the SBPM Solar PV Facility are summarised below (refer to **Appendix G**).

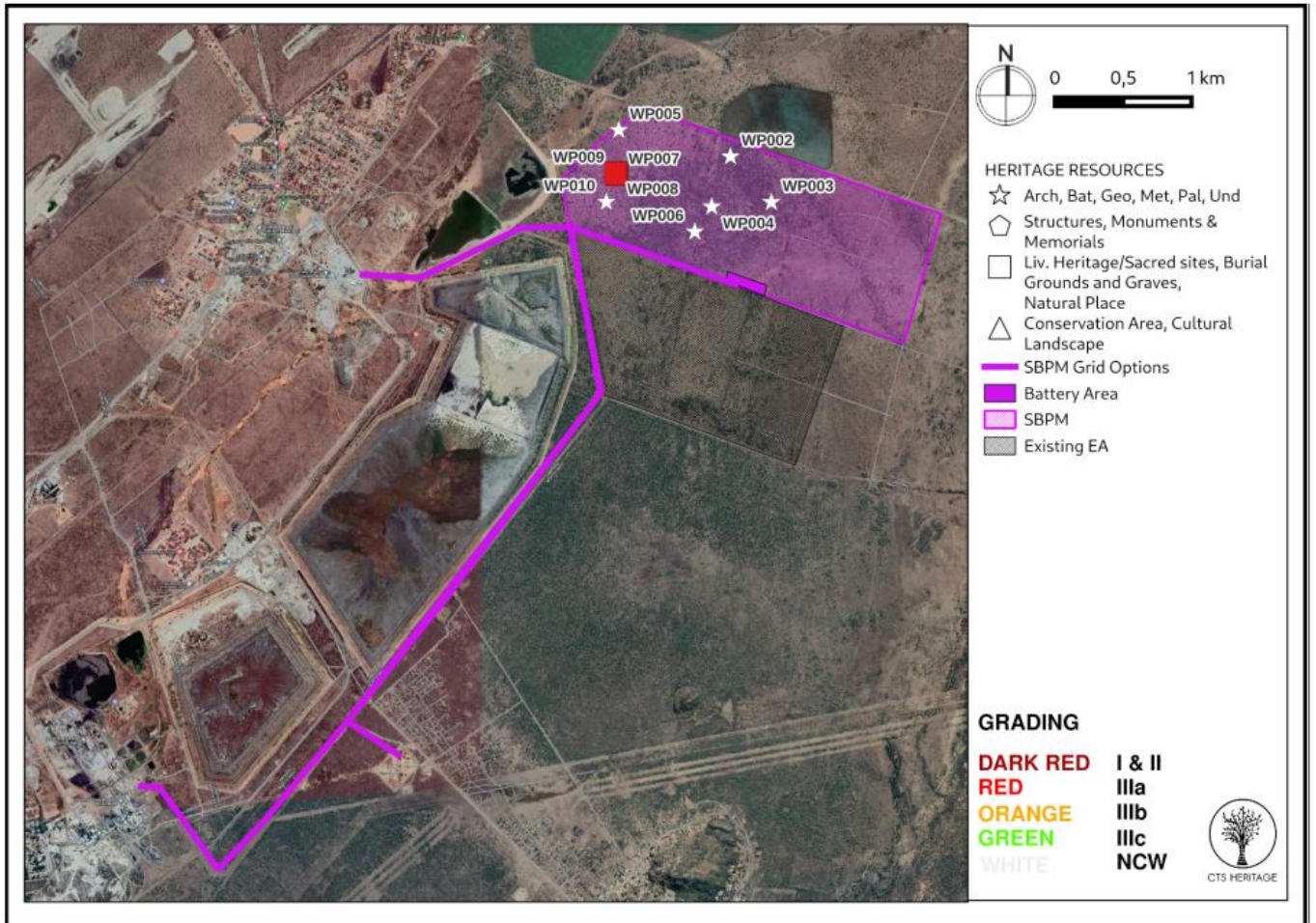
### **7.5.1 Results of the Heritage Impact Assessment**

#### **Archaeology**

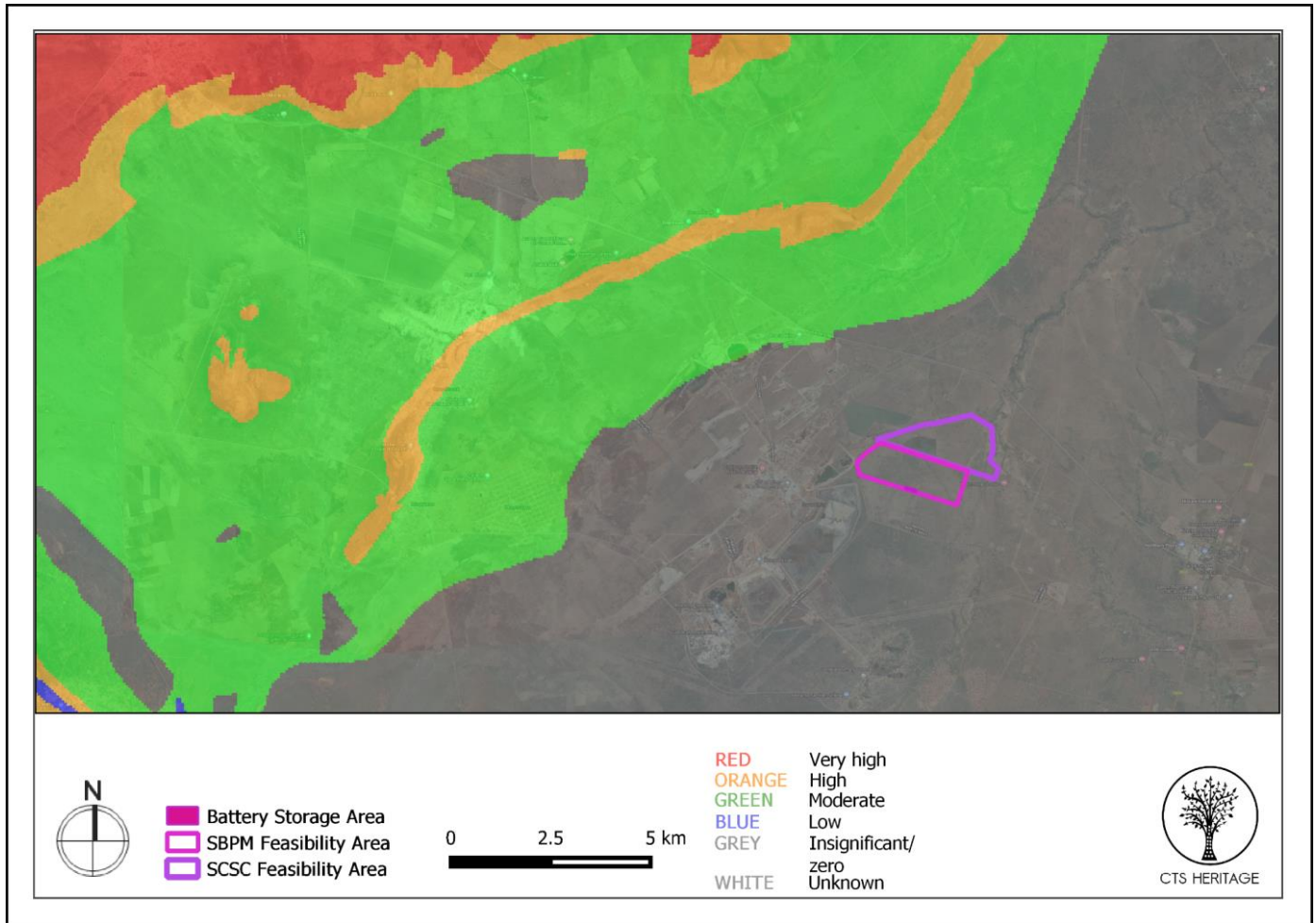
Heritage sites recorded during the field survey are shown in **Figure 7.4**. The majority of the resources identified within the study area are low-density surface scatters of MSA or early LSA lithics without any archaeological context. These resources are considered to be Not Conservation-Worthy and have been sufficiently recorded in this assessment. The area in which the possible graves are situated is highly sensitive. It is possible to establish whether or not these are graves through the implementation of various technologies such as ground-truthing with sub-surface survey or prospecting technology. Additionally, such intervention could determine whether unmarked graves are also present in the area, and the extent of the possible burial ground. This could take place at the discretion of the developer. In the absence of subsurface survey data, it is recommended that a No-Go Zone of at least a 50m radius is implemented around the graves to ensure that the graves and their sense of place is not impacted by the proposed development.

#### **Palaeontology**

According to the SAHRIS Palaeosensitivity Map (**Figure 7.5**), the area proposed for development is underlain by sediments of zero palaeontological sensitivity. The area proposed for development has been previously assessed in a palaeontological desktop study conducted by Professor Bruce Rubidge (Palaeontological Desktop Study – Siyanda Chrome Smelting Company Pty. Ltd, SAHRIS ID 375246, 2015). In the assessment, Rubidge proposed that since the study area was underlain by gabbros and norites of the Precambrian Bushveld Igneous Complex, fossil preservation was highly unlikely. Rubidge, however, noted that fossil-bearing Quaternary alluvial deposits, although not visible on a geological map, could be still present in low-lying areas. Rubidge, hence, recommended that if fossils were exposed as a result of development activities, that a qualified palaeontologist should be contacted to assess the exposure for fossils before further development took place so that the necessary rescue operations were implemented. This recommendation is reiterated for this project.



**Figure 7.4:** Heritage resources identified during the field assessment, relative to the broader study area



**Figure 7.5:** Palaeontological sensitivity of the area surrounding the broader study area

### 7.5.2 Description of Impacts

The following impacts are expected from a heritage perspective:

- » Possible destruction of archaeological heritage.
- » Possible destruction of palaeontological heritage.

### 7.5.3 Impact tables summarising the significance of impacts on heritage during construction, operation and decommissioning (with and without mitigation)

#### Construction Phase Impacts

##### Archaeology

**Nature:** *Possible destruction of archaeological heritage*

It is possible that buried archaeological resources may be impacted by the proposed development in the preferred location

	Without mitigation	With mitigation
--	--------------------	-----------------



<b>Extent</b>	Limited to the development footprint	Limited to the development footprint
<b>Duration</b>	Where manifest, the impact will be permanent	Where manifest, the impact will be permanent
<b>Magnitude</b>	3 possible burials were identified within the area proposed for development. These have high local significance.	3 possible burials were identified within the area proposed for development. These have high local significance.
<b>Probability</b>	It is likely that significant archaeological resources will be impacted	It is unlikely that significant archaeological resources will be impacted
<b>Significance</b>	<b>(9+5+1)x5 = 75 (High)</b>	<b>(3+5+1)x1 = 9 (Low)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Any impacts to heritage resources that do occur are irreversible	Any impacts to heritage resources that do occur are irreversible
<b>Irreplaceable loss of resources?</b>	Likely	Not likely
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>» Implement a 50m no go buffer around sites WP007, WP008 and WP009</li> <li>» Should any previously unrecorded archaeological resources or possible burials be identified during the course of construction</li> <li>» activities, work must cease in the immediate vicinity of the find, and SAHRA must be contacted regarding an appropriate way</li> <li>» forward.</li> </ul>		
<b>Residual Impacts:</b>		
None		

## Palaeontology

<b>Nature:</b> <i>Possible destruction of palaeontological heritage</i>		
It is possible that buried palaeontological resources may be impacted by the proposed development in the preferred location		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Limited to the development footprint	Limited to the development footprint
<b>Duration</b>	Where manifest, the impact will be permanent	Where manifest, the impact will be permanent
<b>Magnitude</b>	According to the SAHRIS Palaeosensitivity Map ( <b>Figure 7.5</b> ), the area proposed for development of the PV facilities is underlain by sediments that have zero palaeontological sensitivity. As such, no palaeontological resources will be impacted by the proposed development	According to the SAHRIS Palaeosensitivity Map ( <b>Figure 7.5</b> ), the area proposed for development of the PV facilities is underlain by sediments that have zero palaeontological sensitivity. As such, no palaeontological resources will be impacted by the proposed development
<b>Probability</b>	It is unlikely that significant fossils will be impacted	It is unlikely that significant fossils will be impacted
<b>Significance</b>	<b>(1+5+1)x1=7 (Low)</b>	<b>(1+5+1)x1=7 (Low)</b>
<b>Status (positive or negative)</b>	Negative	Negative

<b>Reversibility</b>	Any impacts to heritage resources that do occur are irreversible	Any impacts to heritage resources that do occur are irreversible
<b>Irreplaceable loss of resources?</b>	Unlikely	Not likely
<b>Can impacts be mitigated?</b>	No	
<b>Mitigation:</b>		
» Should any previously unrecorded palaeontological resources be identified during the course of construction activities, work must cease in the immediate vicinity of the find, and SAHRA must be contacted regarding an appropriate way forward.		
<b>Residual Impacts:</b>		
None		

#### 7.5.4 Overall Result

Overall, the archaeological field assessment has determined that the overall archaeological sensitivity of the development area is low with few ex situ surface scatters identified. These resources are not conservation-worthy and have been sufficiently recorded in this report.

A cluster of possible graves was also identified within the SBPM PV development area. It is possible to establish whether or not these are graves through the implementation of various technologies such as ground-truthing with sub-surface survey or prospecting technology. Additionally, such intervention could determine whether unmarked graves are also present in the area, and the extent of the possible burial ground. This could take place at the discretion of the developer. In the absence of subsurface survey data, it is recommended that a No-Go Zone of at least a 50m radius is implemented around the graves to ensure that the graves and their sense of place is not impacted by the proposed development.

The farmers and landowners were consulted, but they were not aware of any significant in-situ archaeological sites or graves on the property. While the field assessment was as thorough as possible, there remains the possibility that archaeological resources that were not recorded are present but are obscured by top soil or vegetation. Recommendations in this regard are included below.

No impacts to palaeontological heritage resources are considered likely due to the Pyramid Gabbro-Norite which has zero palaeontological sensitivity underlying the development area.

There is no objection to the proposed development of the SCSC PV facility and its associated grid infrastructure on condition that:

- » A 50m no-go development buffer is implemented around sites WP007, WP008 and WP009 as per Figure 7.4.
- » Should any previously unrecorded archaeological or palaeontological resources or possible burials be identified during the course of construction activities, work must cease in the immediate vicinity of the find, and SAHRA must be contacted regarding an appropriate way forward.

#### 7.6 Social Impact Assessment

Potential social impacts and the relative significance of the impacts associated with the development of the SBPM Solar PV Facility are summarised below (refer to **Appendix H**).

### 7.6.1 Description of Impacts

Social impacts are expected to occur during both the construction and operation phases of the associated infrastructure. The status of the impacts will either be positive or negative and either mitigation or enhancement measures are recommended for the management of the impacts depending on the status of the impacts.

#### Construction Phase

The majority of social impacts associated with the project are anticipated to occur during the construction phase of the development, and are typical of the type of social impacts generally associated with construction activities. These impacts will be temporary and short-term (~14 months), but could have long-term effects on the surrounding social environment if not planned or managed appropriately. It is therefore necessary that the detailed design phase be conducted in such a manner so as not to result in permanent social impacts associated with the ill-placement of project components or associated infrastructure or result in the mismanagement of the construction phase activities.

The positive and negative social impacts identified and assessed for the construction phase includes:

- » Direct and indirect employment opportunities
- » Economic multiplier effects
- » Influx of jobseekers and change in population
- » Safety and security impacts
- » Impacts on daily living and movement patterns
- » Nuisance impacts, including noise and dust

#### Operation Phase

It is anticipated that the SBPM solar facility will operate for approximately 25 years, or as long as required by the mine.

The potential positive and negative social impacts that could arise because of the operation of the proposed project include the following:

- » Direct and indirect employment opportunities
- » Development of renewable energy infrastructure
- » Socio-economic benefits
- » Visual impact and sense of place impacts

### 7.6.2 Impact tables summarising the significance of social impacts during construction, operation and decommission (with and without mitigation measures)

#### Construction Phase Impacts

<b>Nature:</b> <b>Employment opportunities and skills development</b>
--

**Impact description:** The creation of employment opportunities and skills development opportunities during the construction phase for the country and local economy

	Rating	Motivation	Significance
<b>Prior to Enhancement</b>			
<b>Duration</b>	Short-term (1)	The construction period will last for less than one year	<b>Low Positive (30)</b>
<b>Extent</b>	Local – Regional (5)	The impact will occur at a local, regional and national level	
<b>Magnitude</b>	Low (4)	The creation of employment opportunities will assist to an extent in alleviating unemployment levels within the area	
<b>Probability</b>	Probable (3)	Construction of the project will result in the creation of a number of direct and indirect employment opportunities, which will assist in addressing unemployment levels within the area and aid in skills development of communities in the area	

**Enhancement measures:**

To enhance the local employment, skills development and business opportunities associated with the construction phase, the following measures should be implemented:

- It is recommended that a local employment policy be adopted to maximise the opportunities made available to the local labour force. Main Street 1886 Proprietary Limited should make it a requirement for contractors to implement a 'locals first' policy, especially for semi and low skilled job categories.
- Enhance employment opportunities for the immediate local area, i.e., Moses Kotane and Thabazimbi Local Municipality. If this is not possible, then the broader focus areas should be considered for sourcing workers.
- Consideration must be given to women during the recruitment process.
- It is recommended that realistic local recruitment targets be set for the construction phase.
- Training and skills development programmes should be initiated prior to the commencement of the construction phase.

**Post Enhancement**

<b>Duration</b>	Short-term (1)	The construction period will last for less than one year	<b>Low Positive (55)</b>
<b>Extent</b>	Regional (4)	The impact will occur at a local, regional and national level	
<b>Magnitude</b>	Moderate(6)	The creation of employment opportunities will assist to an extent in alleviating unemployment levels within the area	
<b>Probability</b>	Definite (5)	Construction of the project will result in the creation of a number of direct and indirect employment opportunities, which will assist in addressing unemployment levels within the area and aid in the skills development of communities in the area	

**Residual Risks:**

Improved pool of skills and experience in the local area

**Nature:**

**Multiplier effects on the local economy**

<b>Impact description:</b> Significance of the impact from the economic multiplier effects from the use of local goods and services			
	<b>Rating</b>	<b>Motivation</b>	<b>Significance</b>
<b>Prior to Enhancement</b>			
<b>Duration</b>	Long-term (4)	Will continue for the duration of the project due to legal obligation to pay taxes.	<b>Medium Positive (36)</b>
<b>Extent</b>	Local – Regional (4)	Will include mostly local and some regional impacts	
<b>Magnitude</b>	Low (4)	Will derive from increased cash flow from wages, local procurement, economic growth, taxes and LED and HRD initiatives.	
<b>Probability</b>	Probable (3)	Will depend on; proportion of local spending by employees, capacity of local enterprises to supply; effectiveness of LED and HRD initiatives, contributions to local government.	
<b>Enhancement measures:</b>			
<ul style="list-style-type: none"> <li>It is recommended that a local procurement policy be adopted by the developer to maximise the benefit to the local economy, where feasible (Moses Kotane and Thabazimbi Local Municipality).</li> <li>Main Street 1886 Proprietary Limited should develop a database of local companies, specifically Historically Disadvantaged (HD) companies, which qualify as potential service providers (e.g. construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction contractors. These companies should be notified of the tender process and invited to bid for project-related work where applicable.</li> <li>It is a requirement to source as much good and services as possible from the local area.</li> <li>Engage with local authorities and business organisations to investigate the possibility of procurement of construction materials, goods and products from local suppliers, where feasible.</li> </ul>			
<b>Post Enhancement</b>			
<b>Duration</b>	Long-term (4)	As for pre-enhancement	<b>Medium Positive (60)</b>
<b>Extent</b>	Local – Regional (4)	SMME capacity building will limit procurement from outside the local municipality	
<b>Magnitude</b>	Low (4)	Mitigation will likely increase intensity of multiplier effects as it will concentrate impact to local area, sustainability of initiatives will also be increased if aligned with other those of other institutions	
<b>Probability</b>	Definite (5)	Increased local employment and procurement as well as skilled SMME's skill enhance likelihood of benefits to local economy	
<b>Residual Risks:</b>			
Improved local service sector, growth in local business.			

<b>Nature:</b>			
<b>Migration from jobseekers and population changes</b>			
<b>Impact description:</b> Added pressure on economic and social infrastructure during construction as a result of in-migration of people			
	<b>Rating</b>	<b>Motivation</b>	<b>Significance</b>
<b>Prior to Mitigation</b>			

<b>Duration</b>	Short-term (2)	Influx related pressure on services will start during construction and continue during the operational phase	<b>Medium Negative (30)</b>
<b>Extent</b>	Local (2)	May affect resource management on local district municipal level	
<b>Magnitude</b>	Moderate (6)	Intensify existing service delivery and resource problems and backlogs, especially sewerage and road networks	
<b>Probability</b>	Probable (3)	Population influx will affect the ability of the local municipality to meet increased demand	
<b>Mitigation:</b>			
<ul style="list-style-type: none"> <li>• A Community Liaison Officer should be appointed. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process.</li> <li>• Main Street 1886 Proprietary Limited) Ltd should liaise with the Moses Kotane and Thabazimbi Local Municipality to address potential impacts on local services.</li> </ul>			
<b>Post Mitigation</b>			
<b>Duration</b>	Short-term (2)	As for pre-mitigation	<b>Low Negative (16)</b>
<b>Extent</b>	Local (2)	Safety measures will likely restrict impacts on road users	
<b>Magnitude</b>	Low (4)	Appropriate mitigation will reduce the risk of this project	
<b>Probability</b>	Improbable (2)	As for pre-mitigation	
<b>Residual Risks:</b>			
Possibility of outside workers remaining in the area after construction is completed and subsequent pressures on local infrastructure.			

<b>Nature:</b>			
<b>Safety and security</b>			
<b>Impact description:</b> Temporary increase in safety and security concerns associated with the influx of people during the construction phase			
	<b>Rating</b>	<b>Motivation</b>	<b>Significance</b>
<b>Prior to Mitigation</b>			
<b>Duration</b>	Short-term (2)	Will be limited to the construction phase which is less than one year.	<b>Low Negative (27)</b>
<b>Extent</b>	Local – Regional (3)	Safety concerns will affect nearby communities.	
<b>Magnitude</b>	Low (4)	Could place the lives of neighbouring community members at risk.	
<b>Probability</b>	Probable (3)	Traffic would need to be considered in the area	

<b>Mitigation:</b>			
<ul style="list-style-type: none"> <li>• Access in and out of the construction area should be strictly controlled by a security company.</li> <li>• The appointed EPC contractor must appoint a security company and appropriate security procedures are to be implemented to limit access to the site and surrounding areas.</li> <li>• The contractor must ensure that open fires on the site for heating, smoking or cooking are not allowed except in designated areas.</li> <li>• The contractor must provide adequate firefighting equipment on site and provide firefighting training to selected construction staff.</li> <li>• Have clear rules and regulations for access to the proposed site to control loitering.</li> <li>• A comprehensive employee induction programme would cover land access protocols, fire management and road safety must be prepared. A Community Liaison Officer should be appointed. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process</li> </ul>			
<b>Post Mitigation</b>			
<b>Duration</b>	Short-term (2)	As for pre-mitigation	<b>Low Negative (16)</b>
<b>Extent</b>	Local (2)	Safety measures will likely restrict impacts on nearby communities	
<b>Magnitude</b>	Low (4)	Appropriate mitigation will reduce the risk of this project	
<b>Probability</b>	Improbable (2)	As for pre-mitigation	
<b>Residual Risks:</b>			
None anticipated.			

<b>Nature:</b>			
<b>Disruption of daily living and movement patterns</b>			
<b>Impact description:</b> Temporary increase in traffic disruptions and movement patterns during the construction phase			
	<b>Rating</b>	<b>Motivation</b>	<b>Significance</b>
<b>Prior to Mitigation</b>			
<b>Duration</b>	Short-term (2)	Will be limited to the construction phase which is less than one year	<b>Medium Negative (40)</b>
<b>Extent</b>	Local (2)	Will affect road users from nearby communities	
<b>Magnitude</b>	Moderate (6)	Will affect the quality of life of neighbouring communities	
<b>Probability</b>	Highly probable (4)	Traffic would need to be considered in the area	
<b>Mitigation:</b>			
<ul style="list-style-type: none"> <li>• All vehicles must be road worthy, and drivers must be qualified, obey traffic rules, follow speed limits and be made aware of the potential road safety issues.</li> <li>• Heavy vehicles should be inspected regularly to ensure their road safety worthiness.</li> <li>• Implement penalties for reckless driving for the drivers of heavy vehicles as a way to enforce compliance to traffic rules.</li> <li>• Avoid heavy vehicle activity during 'peak' hours (when people are driving to and from work).</li> <li>• The developer and engineering, procurement and construction (EPC) contractors must ensure that any damage / wear and tear caused by construction related traffic to the roads is repaired.</li> <li>• A comprehensive employee induction programme which covers land access protocols and road safety must be prepared.</li> </ul>			

<ul style="list-style-type: none"> <li>A Community Liaison Officer should be appointed. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process.</li> </ul>			
<b>Post Mitigation</b>			
<b>Duration</b>	Short-term (2)	As for pre-mitigation	<b>Low Negative (16)</b>
<b>Extent</b>	Local (2)	Safety measures will likely restrict impacts on road users	
<b>Magnitude</b>	Low (4)	Appropriate mitigation will reduce the risk of this project	
<b>Probability</b>	Improbable (2)	As for pre-mitigation	
<b>Residual Risks:</b> None anticipated.			

<b>Nature:</b> <b>Nuisance impacts (noise&amp; dust)</b>			
<b>Impact description:</b> Nuisance impacts in terms of temporary increase in noise and dust, and the wear and tear on private farm roads for access to the site			
	<b>Rating</b>	<b>Motivation</b>	<b>Significance</b>
<b>Prior to Mitigation</b>			
<b>Duration</b>	Short-term (2)	Nuisance impacts will only be limited to the construction phase.	<b>Medium Negative (44)</b>
<b>Extent</b>	Local (1)	This will remain within the project extent from construction activities.	
<b>Magnitude</b>	High (8)	Dust impacts and noise nuisance from construction activities.	
<b>Probability</b>	Highly Probable (4)	Movement of heavy construction vehicles during the construction phase has a potential to create noise, damage to roads and dust.	
<b>Mitigation:</b>			
<ul style="list-style-type: none"> <li>The movement of construction vehicles on the site should be confined to agreed access road/s.</li> <li>The movement of heavy vehicles associated with the construction phase should be timed (where possible) to avoid times days of the week, such as weekends, when the volume of traffic travelling along the access roads may be higher.</li> <li>Dust suppression measures should be implemented, such as wetting on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers.</li> <li>All vehicles must be roadworthy, and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits.</li> <li>A Community Liaison Officer should be appointed. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process</li> </ul>			
<b>Post Mitigation</b>			
<b>Duration</b>	Short-term (2)	As for pre-mitigation	<b>Low Negative (18)</b>
<b>Extent</b>	Local (1)	Mitigation measures will assist with increasing the impact.	
<b>Magnitude</b>	Moderate (6)	Appropriate mitigation will reduce the risk of this project	
<b>Probability</b>	Improbable (2)	As for pre-mitigation	
<b>Residual Risks:</b> None anticipated			



## Operation Phase Impacts

<b>Nature:</b>			
<b>Job creation during operation</b>			
<b>Impact description:</b> The creation of employment opportunities and skills development opportunities during the operation phase for the country and local economy			
	<b>Rating</b>	<b>Motivation</b>	<b>Significance</b>
<b>Prior to Enhancement</b>			
<b>Duration</b>	Long term (4)	Project will be operational up to 30years	<b>Medium Positive (33)</b>
<b>Extent</b>	Regional (3)	Any new positions are likely to be filled by persons living in the local municipal area	
<b>Magnitude</b>	Low (4)	It is anticipated that ~10 jobs will be generated during the operation phase. A number of highly skilled personnel may need to be recruited from outside the local municipal area	
<b>Probability</b>	Probable (3)	Employment opportunities will be created during the operation phase	
<b>Enhancement measures:</b>			
<ul style="list-style-type: none"> <li>It is recommended that a local employment policy is adopted by the developer to maximise the project opportunities being made available to the local community. Enhance employment opportunities for the immediate local area, Moses Kotane &amp; Thabazimbi Local Municipality, if this is not possible, then the broader focus areas should be considered for sourcing employees.</li> <li>The recruitment selection process should seek to promote gender equality and the employment of women wherever possible</li> <li>The developer should establish vocational training programs for the local employees to promote the development of skills</li> </ul>			
<b>Post Enhancement</b>			
<b>Duration</b>	Long-term (4)	As for pre-enhancement	<b>Medium Positive (44)</b>
<b>Extent</b>	Local - regional (3)	As for pre-enhancement	
<b>Magnitude</b>	Low (4)	Mitigation will maximise local job creation	
<b>Probability</b>	High Probable (4)	Mitigation will maximise probability that any local recruitment targets are achieved and local benefits optimised	
<b>Residual Risks:</b>			
Improved pool of skills and experience in the local area			

<b>Nature:</b>			
<b>Development of clean, renewable energy infrastructure</b>			
<b>Impact description:</b> Development of clean, renewable energy infrastructure			
	<b>Rating</b>	<b>Motivation</b>	<b>Significance</b>
<b>Prior to Enhancement</b>			
<b>Duration</b>	Long term (4)	Adding a renewable energy sector to the Northam economy may contribute to the diversification of the local economy and provide greater economic stability.	<b>Medium Positive (48)</b>
<b>Extent</b>	Local - Regional National (4)	The generation of renewable energy will contribute to South Africa's electricity	

		market. Since the off-taker of the power generated by the facility will be Sasol limited (which is currently dependent on Eskom for electricity supply), the proposed development will indirectly relieve the national grid	
<b>Magnitude</b>	Low (4)	The proposed facility will only generate up to 100MW	
<b>Probability</b>	Highly Probable (4)	Facility will help contribute to the total carbon emissions associated with non-renewable energy generation	
<b>Enhancement measures:</b> None anticipated			
<b>Post Enhancement</b>			
<b>Duration</b>	Long term (4)	As for pre-enhancement	<b>Medium Positive (48)</b>
<b>Extent</b>	National (4)	As for pre-enhancement	
<b>Magnitude</b>	Low (4)	As for pre-enhancement	
<b>Probability</b>	Highly Probable (4)	As for pre-enhancement	
<b>Residual Risks:</b> Reduce carbon emissions through the use of renewable energy and contribute to reducing global warming			

<b>Nature:</b> <b>Socio-economic benefits associated with community trust and SED investments</b>			
<b>Impact description:</b> Development of clean, renewable energy infrastructure			
	<b>Rating</b>	<b>Motivation</b>	<b>Significance</b>
<b>Prior to Enhancement</b>			
<b>Duration</b>	Long term (4)	Adding a renewable energy sector to the Moses Kotane & Thabazimbi economy may contribute to the diversification of the local economy and provide greater economic stability.	<b>Medium Positive (50)</b>
<b>Extent</b>	Local – Regional National (4)	The generation of renewable energy will contribute to South Africa's electricity market, and the proposed development will indirectly relieve the national grid	
<b>Magnitude</b>	Moderate (6)	The proposed facility will only generate up to 100MW – 120MW	
<b>Probability</b>	Highly Probable (4)	Facility will help contribute to the total carbon emissions associated with non-renewable energy generation	
<b>Enhancement measures:</b> None anticipated			
<b>Post Enhancement</b>			
<b>Duration</b>	Long term (4)	As for pre-enhancement	<b>Medium Positive (64)</b>
<b>Extent</b>	National (4)	As for pre-enhancement	
<b>Magnitude</b>	High (8)	As for pre-enhancement	
<b>Probability</b>	Highly Probable (4)	As for pre-enhancement	
<b>Residual Risks:</b> Social upliftment of the local communities through the development and operation of the project.			

<b>Nature</b>			
<b>Visual impacts and impacts on sense of place</b>			
<b>Impact description:</b> Visual impacts and sense of place impacts associated with the operation phase of the project			
	<b>Rating</b>	<b>Motivation</b>	<b>Significance</b>
<b>Prior to Mitigation</b>			
<b>Duration</b>	Long term (4)	Impact on sense of place relates to the change in the landscape character and visual impact of the proposed solar energy facility	<b>Low Negative (18)</b>
<b>Extent</b>	Local (1)	Dependent on the demographics of the population that resides in the area and their perceptions	
<b>Magnitude</b>	Low (4)	There are industrial/mining operations and formal residential areas located in proximity to the site	
<b>Probability</b>	Improbable (2)	There are no tourist attractions located adjacent to the property and therefore the anticipated impact on the areas visual quality and sense of place is low.	
<b>Mitigation:</b> None anticipated			
<b>Post Mitigation</b>			
<b>Duration</b>	N.A. – Mitigation not possible.		<b>N.A. – Mitigation not possible.</b>
<b>Extent</b>	N.A. – Mitigation not possible.		
<b>Magnitude</b>	N.A. – Mitigation not possible.		
<b>Probability</b>	N.A. – Mitigation not possible.		
<b>Residual Risks:</b> None anticipated if the visual impact will be removed after decommissioning, provided the solar energy facility infrastructure is removed and the site is rehabilitated to its original (current) status			

### Assessment of Decommissioning

Typically, major social impacts associated with the decommissioning phase are linked to the loss of jobs and associated income and will be similar to the impacts during the construction phase associated with construction activities. This has implications for the households who are directly affected, the communities within which they live, and the relevant local authorities. The impact of the decommissioning phase is expected to be negligible due to the small number of permanent employees affected. The potential impacts associated with decommissioning phase can also be effectively managed with the implementation of a retrenchment and downscaling programme. With mitigation, the impacts are assessed to be Low (negative).

#### 7.6.3 Overall Result

From a social perspective, it is concluded that the project is supported, but that mitigation measures should be implemented and adhered to. Positive and negative social impacts have been identified. The

assessment of the key issues indicated that there are no negative impacts that can be classified as fatal flaws, and which are of such significance that they cannot be successfully mitigated. Positive impacts could be enhanced by implementing appropriate enhancement measures and through careful planning. Based on the social assessment, the following general conclusions and findings can be made:

- » The potential negative social impacts associated with the construction phase are typical of construction related projects and not just focused on the construction of PV facilities and pivot infrastructure (these relate to intrusion and disturbance impacts, safety and security) and could be reduced with the implementation of the mitigation measures proposed.
- » Employment opportunities will be created in the construction and operation phases and the impact is rated as positive even if only a small number of individuals will benefit in this regard.
- » The proposed project could assist the local economy in creating entrepreneurial development, especially if local businesses could be involved in the provision of general material and services during the construction and operational phases.
- » Capacity building and skills training amongst employees are critical and would be highly beneficial to those involved, especially if they receive portable skills to enable them to also find work elsewhere and in other sectors.
- » The proposed development also represents an investment in infrastructure for the generation of clean, renewable energy, which, given the challenges created by climate change, represents a positive social benefit for society.

The following recommendations are made based on the Social Impact Assessment during the stakeholder engagement process. The proposed mitigation measures should be implemented to limit the negative impacts and enhance the positive impacts. Based on the social assessment, the following recommendations are made:

- » In terms of employment related impacts, it is important to consider that job opportunities for the unskilled and semi-skilled are scarce commodities in the study area and could create competition among the local unemployed. Introducing an outside workforce will therefore most likely worsen local endeavours to obtain jobs and provoke discontent as well as put pressure on the local services available. Local labour should be utilised to enhance the positive impact of employment creation in the area. Local businesses should be involved with the construction activities where possible. It is imperative that local labour be sourced to ensure that benefits accrue to the local communities. Preference should thus be given to the use of local labour during the construction and operational phases of the project as far as possible.
- » Locals should also be allowed an opportunity to be included in a list of possible local suppliers and service providers, enhancing the multiplier effect. This aspect would serve to mitigate other subsequent negative impacts such as those associated with the inflow of outsiders to the area, the increased pressure on the infrastructure and services in the area, as well as the safety and security concerns.
- » Impacts associated with the construction period should be carefully mitigated to minimise any dust and noise pollution.
- » Safety and security concerns should be considered during the planning and construction phases of the proposed project.

The proposed project and associated infrastructure will create a number of potential socio-economic opportunities and benefits and is unlikely to result in permanent damaging social impacts. From the specialist's perspective it is concluded that the project is acceptable subject to the implementation of the

recommended mitigation and enhancement measures and management actions identified for the project. Considering the findings of the report and potential for mitigation it is the reasoned opinion of the specialist that the project can be authorised from a social perspective.

## CHAPTER 8: ASSESSMENT OF POTENTIAL CUMULATIVE IMPACTS

As identified and assessed in Chapter 7, a solar PV facility development may have effects (positive and negative) on natural resources, the social environment and on the people living in a project area. The preceding impact assessment chapter has reported on the assessment of the impacts associated with the SBPM Solar PV Facility and associated grid connection largely in isolation (from other similar developments).

Cumulative impacts are defined as the total impacts resulting from the successive, incremental, and/or combined effects of a project when added to other existing, planned and/or reasonably anticipated future projects, as well as background pressures (IFC 2013). This chapter assesses the potential for the impacts associated with the project to become more significant when considered in combination with the other operating or proposed solar PV facility projects within the area. Other developments within the area, such as existing mining operations, have also been considered.

### 8.1 Legal Requirements as per the EIA Regulations, 2014 (as amended) for the undertaking of an Impact Assessment Report

This chapter of the EIA Report includes the following information required in terms of the EIA Regulations, 2014 – Appendix 3: Scope of Assessment and Content of Environmental Impact Assessment Report:

Requirement	Relevant Section
3(1) (j)(i) an assessment of each identified potentially significant impact and risk, including cumulative impacts.	The cumulative impacts associated with the development of the SBPM Solar PV Facility and associated grid connection are included and assessed within this chapter.

### 8.2 Approach taken to Assess Cumulative Impacts

The cumulative impacts that have the potential to be compounded through the development of the wind farm and its associated infrastructure in proximity to other similar developments include impacts such as those listed below. The role of the cumulative assessment is to confirm if such impacts are relevant to the Merino Wind Farm within the project site being considered for the development. This assessment considers whether the cumulative impact will result in:

- » Unacceptable loss of threatened or protected vegetation types, habitat, or species through clearing, resulting in an impact on the conservation status of such flora, fauna, sensitive habitats or ecological functioning.
- » Unacceptable risk to avifauna through habitat loss, displacement, and collision with wind turbines.
- » Unacceptable loss of high agricultural potential areas presenting a risk to food security and increased soil erosion.
- » Unacceptable loss of heritage resources (including palaeontological and archaeological resources).
- » Unacceptable negative impact to socio-economic factors and components.

Further to the above, positive cumulative impacts are also expected and will be associated with socio-economic aspects and benefits.

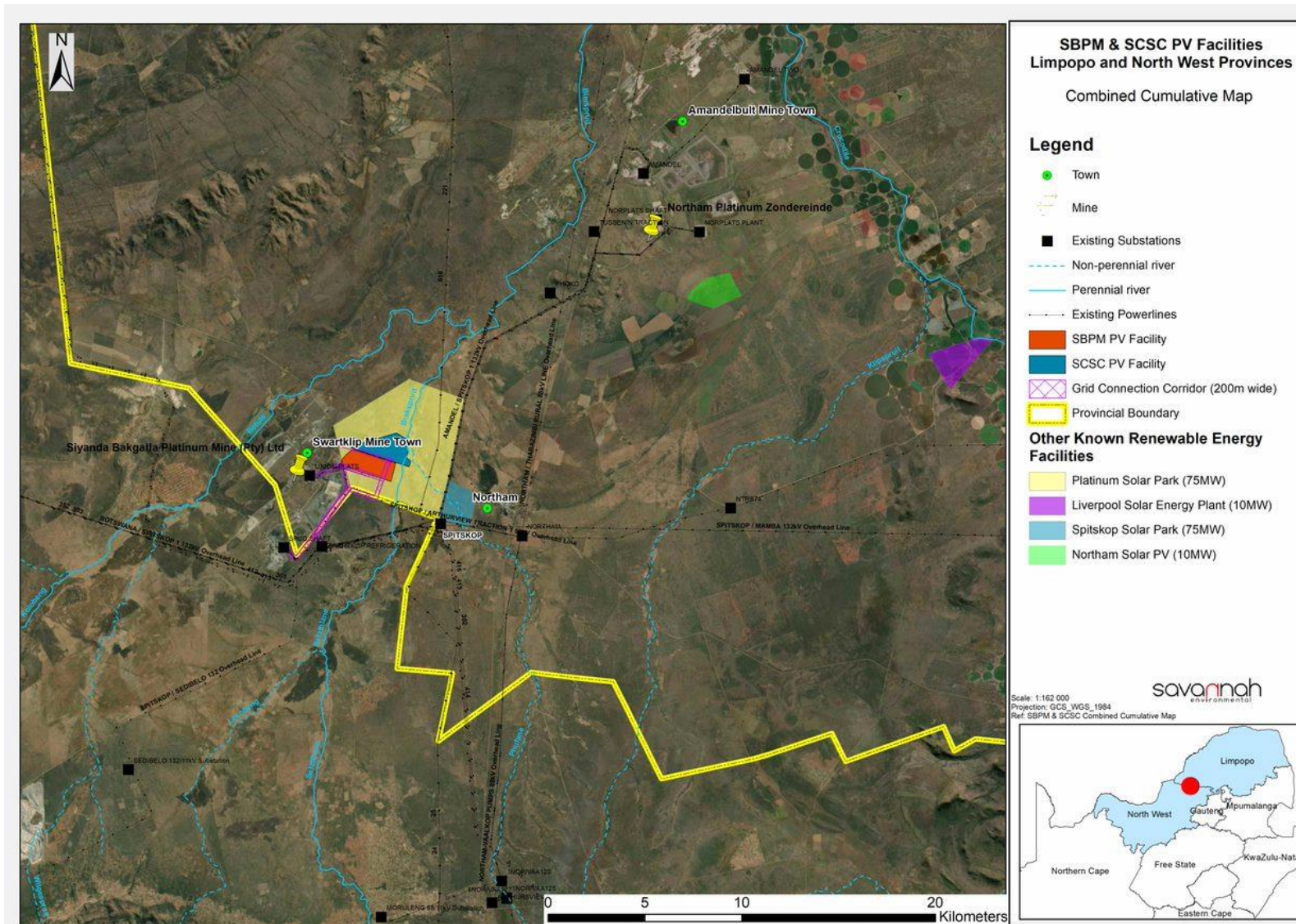
The current land use of the site is characterised by existing and historical cropping activities, livestock grazing and game farms. Mining activities and infrastructure are also evident in the region. The Solar PV facility and associated infrastructure is located on a site bordering the eastern end of the Siyanda Bakgatla Platinum Mine area near Northam where the site is located ~6.5km west of the town of Northam and is accessible via the Swartklip Road which branches off the R510 provincial route. Furthermore, the properties affected by the grid route are characterised by grazing and irrigated and rainfed production of grain crops and livestock farming. Activities within the broader area which have resulted in impacts include:

- » Mining activities
- » Present energy distribution infrastructure, including power lines
- » Wood harvesting
- » Grazing and trampling of natural vegetation by livestock
- » Invasive species
- » Farm roads and main roads (and associated traffic and wildlife road mortalities)
- » Fences

**Figure 8.1** indicates the location of the SBPM Solar PV Facility and associated grid connection in relation to all other operating and proposed renewable energy facilities located within the surrounding area of the project site. These projects were identified using the DFFE Renewable Energy Database and current knowledge of projects operating and being proposed in the area. For the assessment of cumulative impacts, only developments within a 30km radius from the SBPM Solar PV Facility were considered (**Table 8.1** and **Figure 8.1**), which is in line with the DFFE requirements.

**Table 8.1:** Renewable energy facilities located within the broader area (within a 30km radius) of the SBPM Solar PV Facility

Project Name	Project Status
Platinum Solar Park (75MW)	Authorised
Liverpool Solar Energy Plant (10MW)	Authorised
Spitskop Solar Park (75MW)	In Process
Northam Solar Facility (10MW)	Authorised
SCSC Solar Facility (100MW)	In process



**Figure 8.1:** Cumulative map illustrating other approved and/or constructed renewable energy facilities located within a 30km radius of the SBPM Solar PV Facility and associated grid connection



### 8.3 Cumulative Impacts on Ecology

<b>Nature:</b> <i>Cumulative habitat loss within the region</i>		
The development of the proposed infrastructure will contribute to cumulative habitat loss within ESAs and thereby impact the ecological processes in the region.		
	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Moderate (3)	High (4)
<b>Duration</b>	Moderate Term (3)	Long Term (4)
<b>Magnitude</b>	Moderate (6)	High (8)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	<b>Medium (15)</b>	<b>Medium (19)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	High	High
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	To some degree, but most of the impact results from the presence of the various facilities which cannot be well mitigated.	To some degree, but most of the impact results from the presence of the various facilities which cannot be well mitigated.
<b>Mitigation:</b>		
» Ensure that a rehabilitation plan and IAP management plan be compiled for each development and are effectively implemented.		

### 8.4 Cumulative Impacts on Avifauna

The impacts of projects are often assessed by comparing the post-project situation to a pre-existing baseline. Where projects can be considered in isolation this provides a good method of assessing a project's impact. However, in areas where baselines have already been affected, or where future development will continue to add to the impacts in an area or region, it is appropriate to consider the cumulative effects of development. This is similar to the concept of shifting baselines, which describes how the environmental baseline at a point in time may represent a significant change from the original state of the system. This section describes the potential impacts of the project that are cumulative for terrestrial fauna and flora.

Localised cumulative impacts include the cumulative effects from operations that are close enough to potentially cause additive effects on the environment or sensitive receivers (such as the nearby existing solar facility and the existing powerlines). These include dust deposition, noise and vibration, disruption of corridors or habitat, groundwater drawdown, groundwater and surface water quality, and transport.

Long-term cumulative impacts due to the large number of developments close by can lead to the loss of endemic and threatened species, loss of habitat and vegetation types and even degradation of well conserved areas. A number of solar plants and power lines can already be found in the project site, this combination of obstacles increases the risk of bird collisions and habitat loss as well as territorial disputes (species forced out of the one area to just again be forced out). The table below assumes that the impacts have been mitigated and the risk reduced.

<b>Nature:</b> <i>Loss of habitat and increase in bird collisions</i>		
	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>

<b>Extent</b>	Local (3)	Regional (4)
<b>Duration</b>	Moderate Term (3)	Long Term (4)
<b>Magnitude</b>	Moderate (6)	Moderate (6)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	<b>Medium (36)</b>	<b>Medium (42)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	None	None
<b>Irreplaceable loss of resources?</b>	Yes	Yes
<b>Can impacts be mitigated?</b>	No	
<b>Mitigation:</b> » Even though collisions can be mitigated to some extent for individual lines/solar plants their combined densities will increase the rate of collisions. Monitoring of the implementation of mitigation measures needs to be done to ensure the cumulative impact does not become high.		
<b>Residual Impacts:</b> Loss of habitat for endemic and SCC. Loss of SCC due to collisions.		

### 8.5 Cumulative Impacts on Soils and Agricultural Potential

According to site sensitivity verification, the land capability has been identified to be of very low to low and low to medium sensitivity and thus only an Agricultural Compliance Statement report has been compiled.

### 8.6 Cumulative Impacts on Heritage resources (including archaeology and palaeontology)

The preferred area proposed for development is located within an area that has been previously impacted by the development of various mine infrastructure and an existing PV installation. As such, it is not anticipated that the proposed PV development will have a negative cumulative impact on the broader landscape which is already dominated by mining infrastructure and agriculture. In terms of renewable development activities which can have an industrial feel, it is recommended that such infrastructure be grouped or clustered to avoid sprawl across natural landscapes.

<b>Nature:</b> <i>Cumulative Impact to the sense of place and known archaeological resources</i>		
	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Low	Low
<b>Duration</b>	Medium Term	Long Term
<b>Magnitude</b>	Low	Moderate
<b>Probability</b>	Improbable	Probable
<b>Significance</b>	<b>(4+3+1)x2=16 (Low)</b>	<b>(5+4+1)x3=30 (Medium)</b>
<b>Status (positive or negative)</b>	Neutral	Neutral
<b>Reversibility</b>	High	Low
<b>Irreplaceable loss of resources?</b>	Unlikely	Possible
<b>Can impacts be mitigated?</b>	N/A	N/A
<b>Mitigation:</b> N/A		

### 8.6 Cumulative Social Impacts

The potential for cumulative impacts to occur as a result of the projects is therefore likely. Potential cumulative impacts identified for the project include positive impacts on the economy, business development, and employment, as well as negative impacts such as on pressure on local services and change in visual impacts

Potential cumulative social impacts identified for the project include positive impacts on the economy, business development, and employment, as well as such as on pressure on local services and change in visual impacts.

<b>Nature:</b> An increase in employment opportunities, skills development and business opportunities with the establishment of more than one solar energy facility		
	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Local -regional (3)	Local-regional (3)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Low (4)	Moderate (6)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	<b>Medium (33)</b>	<b>Medium (52)</b>
<b>Status (positive or negative)</b>	Positive	Positive
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	N/A	N/A
<b>Can impacts be mitigated?</b>	Yes	Yes
<b>Confidence in findings:</b> High.		
<b>Mitigation:</b> The establishment of a number of solar energy facilities in the area does have the potential to have a positive cumulative impact on the area in the form of employment opportunities, skills development and business opportunities. The positive benefits will be enhanced if local employment policies are adopted and local services providers are utilised by the developers to maximise the project opportunities available to the local community.		

<b>Nature:</b> <i>Negative impacts and change to the local economy with an in-migration of labourers, businesses and jobseekers to the area</i>		
	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Local (1)	Local-regional (3)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Minor (2)	Low (4)
<b>Probability</b>	Very improbable (1)	Improbable (2)
<b>Significance</b>	<b>Low (7)</b>	<b>Low (22)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Yes	
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impacts be mitigated?</b>	Yes	
<b>Confidence in findings:</b> High.		
<b>Mitigation:</b> <ul style="list-style-type: none"> <li>» Develop a recruitment policy / process (to be implemented by contractors), which will ensure the sourcing of labour locally, where available.</li> <li>» Work together with government agencies to ensure that service provision is in line with the development needs of the local area.</li> </ul>		

- » Form joint ventures with community organisations, through Trusts, which can provide local communities with benefits, such as employment opportunities and services.
- » Develop and implement a recruitment protocol in consultation with the municipality and local community leaders. Ensure that the procedures for applications for employment are clearly communicated.

<b>Nature:</b> <i>Visual impact on sense of place and landscape character</i>		
	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Local (1)	Local-regional (3)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Low (4)	Moderate (6)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	<b>Low (27)</b>	<b>Medium (39)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Yes	
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impacts be mitigated?</b>	No, only best practice measures can be implemented	
<b>Confidence in findings:</b> High.		
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>» Maintain and manage the facilities to be in a good and neat condition to ensure that no degradation of the area and sites takes place and impacts the visual quality of the area.</li> <li>» Implement the relevant mitigation measures as recommended in the Visual Impact Assessment</li> </ul>		

## 8.7 Conclusion regarding Cumulative Impacts

Cumulative impacts are expected to occur with the development of the SBPM Solar PV Facility and associated grid connection throughout all phases of the project life cycle and within all areas of study considered as part of this EIA report. The main aim for the assessment of cumulative impacts considering the SBPM Solar PV Facility is to test and determine whether the development will be acceptable within the landscape proposed for the development, and whether the loss, from an environmental and social perspective, will be acceptable without whole-scale change.

The following conclusions can be drawn regarding the cumulative impacts associated with the project:

- » There will be no unacceptable risk to avifauna through habitat loss and fragmentation, electrocutions, and collisions resulting in mortalities amongst other SCCs with the development of the Project and other renewable energy projects within the surrounding area, provided the recommended mitigation measures are implemented. The cumulative impact is therefore acceptable.
- » There will be no unacceptable loss of heritage resources associated with the development of the Project.
- » There will be no unacceptable loss of soil resources due to the fact that the site sensitivity verification shows that the land capability has been identified to be of very low to low and low to medium sensitivity.
- » There will be no unacceptable negative impacts socially and the proposed project and associated infrastructure will create a number of potential socio-economic opportunities and benefits and is unlikely to result in permanent damaging social impacts. From a social perspective it is concluded that the project is acceptable subject to the implementation of the recommended mitigation and enhancement measures and management actions identified for the project.

- » There will be no unacceptable loss or impact on ecological aspects (habitat loss and fragmentation, degradation of surrounding habitat, disturbance, displacement and direct mortality of species) due to the development of the Project and other renewable energy projects within the surrounding area, provided the recommended mitigation measures are implemented. The cumulative impact is therefore acceptable.
- » There will be no significant loss of sensitive and significant wetlands. The cumulative impact is therefore acceptable.

Based on the specialist cumulative assessment and findings, the development of the SBPM Solar PV Facility and associated grid connection and its contribution to the overall impact of all renewable energy projects to be developed within a 30km radius, it can be concluded that the contribution of the SBPM Solar PV Facility and associated grid connection to cumulative impacts will be mainly of a medium to low significance. Positive impacts of medium significance are associated with impacts on the social environment. Therefore, it can be concluded that the development of the SBPM Solar PV Facility and associated grid connection will not result in unacceptable, high cumulative impacts and will not result in a whole-scale change of the environment.

## CHAPTER 9: CONCLUSIONS

The Applicant, Main Street 1886 Proprietary Limited, is proposing the development of the SBPM solar photovoltaic (PV) facility and associated infrastructure on a site located approximately 6.5km west of the town of Northam within the Thabazimbi Local Municipality and the Waterberg District Municipality in the Limpopo Province. The proposed grid connection route for the SBPM PV facility extends into the North West Province within the Moses Kotane Local Municipality and the Bojanala Platinum District Municipality. The purpose of the proposed project is to generate electricity for exclusive use by the Siyanda Bakgatla Platinum Mine. The construction of the PV facility aims to reduce the Siyanda Bakgatla Platinum Mine's dependency on direct supply from Eskom's national grid for operation activities, while simultaneously decreasing the mine's carbon footprint.

The solar PV facility will comprise several arrays of PV panels and associated infrastructure and will have a contracted capacity of up to 100MW. A project site consisting of Portion 4 of the Farm Grootkuil 409 KQ (~1138ha in extent) is being considered for the SBPM solar PV facility. The full extent of the project site was evaluated in the Scoping Phase to identify sensitivities and a facility layout has been provided and assessed within this EIA process. A dedicated development area for the solar PV facility (~574ha in extent) has been demarcated to avoid the identified environmental sensitivities. The grid connection for the facility will consist of a facility substation and 33Kv power lines into the existing mine substations (Mortimer, Fridge and Ivan). The grid connection infrastructure is located within an assessment corridor of 200m wide located in a band along the south-west boundary of the project site and traverses Portion 4, Portion 5 of the Farm Grootkuil 409, Portion 1, Portion 2 of Farm Zwartklip 405, Portion 0 of Farm Spitskop 410 and Portion 0 of Farm Turfbult 404.

An additional 100MW PV facility to be known as SCSC PV is being proposed adjacent to the project site within Portion 4 of the Farm Grootkuil 409 and is being assessed through a separate Environmental Impact Assessment (EIA) process.

From a regional perspective, the Limpopo Province, and particularly the area under investigation, is considered favourable for the development of a commercial solar facility by virtue of prevailing climatic conditions, relief, the extent of the affected properties, the availability of a grid connection and the availability of land on which the development can take place.

### 9.1 Legal Requirements as per the EIA Regulations, 2014 (as amended) for the undertaking of an Environmental Impact Assessment

This chapter of the EIA Report includes the following information required in terms of Appendix 3: Content of the Environmental Impact Assessment Report:

Requirement	Relevant Section
3(1)(k) where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report.	A summary of the findings of the specialist studies undertaken for the Project has been included in section 9.2.

Requirement	Relevant Section
<p>3(1)(l) an environmental impact statement which contains (i) a summary of the key findings of the environmental impact assessment, (ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred development footprint on the approved site as contemplated in the accepted scoping report indicating any areas that should be avoided, including buffers and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives.</p>	<p>An environmental impact statement containing the key findings of the environmental impacts of the Project has been included as section 9.9. An Environmental Sensitivity and Layout map of the Project has been included as <b>Figure 9.1</b> which overlays the development footprint (as assessed within the EIA) of the SBPM Solar PV Facility and associated infrastructure with the environmental sensitive features located within the Development Area.</p> <p>A summary of the positive and negative impacts associated with the Project has been included in section 9.2.</p>
<p>3(1)(o) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation.</p>	<p>All conditions required to be included in the Environmental Authorisation of the Project has been included in section 9.10.</p>
<p>3(1)(q) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation</p>	<p>A reasoned opinion as to whether the Project should be authorised has been included in section 9.10</p>

## 9.2 Evaluation of the SBPM Solar PV Facility

The preceding chapters of this report together with the specialist studies contained within **Appendices D-H** provide a detailed assessment of the potential impacts that may result from the development of the Project. This chapter concludes the environmental assessment of the Project by providing a summary of the results and conclusions of the assessment of both the Project Site and Development Footprint for the SBPM Solar PV Facility and associated infrastructure. In so doing, it draws on the information gathered as part of the EIA process, the knowledge gained by the environmental specialists and the EAP and presents a combined and informed opinion of the environmental impacts associated with the Project.

No environmental fatal flaws or unacceptable impacts were identified in the detailed specialist studies conducted, provided that the recommended mitigation measures are implemented. These measures include, amongst others, the avoidance of sensitive features within the development area as specified by the specialists.

The potential environmental impacts associated with the Project assessed through the EIA process include:

- » Impacts on terrestrial ecology (flora and fauna).
- » Impacts on aquatic ecology.
- » Impacts on avifauna.
- » Impacts on land use, soils, and agricultural potential.
- » Impacts on heritage resources, including archaeology, palaeontology and the cultural landscape.
- » Positive and negative social impacts.

The environmental sensitivities identified by the relevant specialists for the Project Site are illustrated in **Figure 9.1**. The Development Footprint, as assessed, has been overlain with the relevant environmental sensitivities.

### 9.2.1 Impacts on Ecology

The Terrestrial Ecology Assessment determined that the project area has been altered both currently and historically. The present land use had a direct impact on both the fauna and the flora in the area, which is evident in the disturbed and transformed habitats. Historically, cultivation, overgrazing and mismanagement has led to the deterioration of most of the area to a disturbed Bushveld that is either encroached upon or invaded by exotic plant species.

However, the degraded Bushveld habitat and wetlands/watercourses in the wider project area can be regarded as important, not only within the local landscape, but also regionally; as they are used for habitat, foraging and movement corridors for fauna within a landscape fragmented by development.

The degraded Bushveld habitat and wetlands/watercourses in the project area have a High ecological theme sensitivity. The habitat sensitivity of the degraded Bushveld and wetland/water resources is regarded as high, due to the species recorded and the role of this intact unique habitat to biodiversity within a very fragmented local landscape, not to mention the sensitivity according to various ecological datasets. The high sensitivity terrestrial areas still:

- » Support nearby CBA/ESAs as per the LCP; and
- » Support various organisms (including SCC) and may play an important role in the ecosystem, if left to recover from the superficial impacts.

The ecological integrity, importance and functioning of these terrestrial biodiversity areas provide a variety of ecological services considered beneficial, with one key service being the maintenance of biodiversity. The preservation of these systems is the most important aspect to consider for the proposed project.

Development in high sensitivity areas must be avoided, which will occur with the selection of the Project Site. Development within the high sensitivity areas within the Project Site will lead the direct destruction and loss of functional habitats; and the faunal species that are expected to utilise this habitat. Thus, if these areas are not maintained in a natural or near natural state, destroyed or fragmented, then meeting targets for biodiversity features will not be achieved. The mitigation measures, management and associated monitoring regarding the expected impacts will be the most important factor of this Project.

The main expected impacts of the proposed Project will include:

- » Habitat loss and fragmentation;
- » Degradation of surrounding habitat;
- » Disturbance and displacement caused during the construction and maintenance phases; and
- » Direct mortality during the construction phase.

Mitigation measures as described in this report can be implemented to reduce the significance of the risk. Considering that this area that has been identified as being of significance for biodiversity maintenance and ecological processes, development may proceed but with caution and only with the implementation of mitigation measures.



Considering the above-mentioned information, no fatal flaws are evident for the proposed Project. It is the opinion of the specialist that the proposed Project may be favourably considered, on condition that all prescribed mitigation measures and supporting recommendations are implemented.

### **9.2.2 Impacts on Aquatic Ecology**

During the site visit, four (4) HGM units were identified and assessed within the 500 m regulated area namely three unchannelled valley bottoms and a hillslope seep wetland. One (1) of the HGM unit scored overall PES scores of D – “Largely Modified” due to the modification to the hydrology and vegetation of the wetland through anthropogenic activities. The remaining three (3) HGM units scored overall PES scores of E – “Seriously Modified”. The unchannelled valley bottom wetlands scored “Medium” importance and sensitivity scores due to the moderate protection level of both the wet veg and wetland units. The hillslope seep wetland scored a “Low” importance and sensitivity score due to the low protection level of the wet veg as well as the wetland itself. The average ecosystem service score ranges between “Intermediate” and “Moderately High”.

A 15 m post mitigation buffer was assigned to the wetland systems.

Based on the results and conclusions of the aquatic assessment, it is expected that the proposed activities will have low residual impacts on the wetlands and thus no fatal flaws were identified for the Project. A General Authorisation (GN 509 of 2016) is required for the water use authorisation.

The following Zones of Regulation (ZoR) are applicable to the drainage line identified within the assessment area:

- » A 32 m Zone of Regulation in accordance with the National Environmental Management Act, 1998 (Act No. 107 of 1998) should be assigned to the drainage lines; and
- » A 100 m ZoR in accordance with the National Water Act, 1998 (Act No. 36 of 1998) should be assigned to the drainage lines.

### **9.2.3 Impact on Avifauna**

From a desktop perspective the project area overlaps CBA2 and ESA1 classified areas and falls within the Northern Turf Thornveld IBA. This IBA is important as it is home to the Yellow-throated Sandgrouse and is regarded as the core range of the resident South African population. Other important birds in the IBA include the Secretarybird, Kori Bustard, Lanner Falcon and Black-winged Pratincole. Common biome-restricted species found within this IBA include Kurrichane Thrush, White-throated Robin-Chat, Burchell's Starling, White-bellied Sunbird the fairly common Kalahari Scrub Robin (Birdlife South Africa, 2015B).

During the field assessment 134 bird species were recorded of which three are SCCs on a national or international scale. The Lanner Falcon (VU- regionally) was observed on four occasions, while the Yellow-throated Sandgrouse (NT- regionally) was observed twice and the Cape Vulture (EN-regionally and internationally) once. The Yellow-throated Sandgrouse is regarded as one of the core residents of the Northern Turf Thornveld IBA area. Of the 134 species, 18 species (13%) were identified as 'high risk' species. High risk species are those that would be at greater risk to power line collisions, electrocutions or habitat loss due to the development. In the second survey 108 species were recorded, of which two were SCC, i.e. Yellow-throated Sandgrouse and Cape Vulture (EN-regionally and internationally).

Any development in the medium-high sensitivity areas will lead to the direct destruction and loss of portions of functional ESA and CBA areas, and therefore, will also negatively impact the avifaunal species that utilise this habitat. Thus, if these areas are not maintained in a natural or near natural state, destroyed or fragmented, then meeting targets for biodiversity features will not be achieved. The mitigations, management and associated monitoring regarding these operational impacts will be the most important factor of this project and must be considered by the issuing authority. Mitigation measures as described in this report can be implemented to reduce the significance of the risk to an acceptable residual risk level. Considering the above-mentioned information and that the facility and associated grid connection is required for power supply to an existing mine, it is the opinion of the specialist that the project may be favourably considered, on condition that all the mitigation and recommendations are followed.

#### **9.2.4 Impacts on Land Use, Soils and Agricultural Potential**

During the baseline assessment two soil forms were identified throughout the 50 m regulated area namely Glenrosa and Arcadia. The Glenrosa soil form is of most importance in the study area as it demonstrates the most sensitive land capability.

The Glenrosa's land capability has been determined to be class "II" and a climate capability level 8 has been assigned to the area given the low Mean Annual Precipitation (MAP) and the high Mean Annual Potential Evapotranspiration (MAPE) rates. The combination between the most sensitive determined land capability and climate capability resulted in a land potential level "L5". According to Smith (2006), the "L5" land potential level is characterised by restricted potential. Regular and/or moderate to severe limitations are expected due to soil, slope, temperatures or rainfall.

The land potential level, mentioned above, was used to determine the sensitivities of soil resources. "Moderately Low" sensitivities were determined throughout the project area by means of baseline findings. These baseline findings concur well with the Department of Agriculture, Forestry and Fisheries (DAFF, 2017) which also indicated "Very Low" sensitivities as well as "Moderate" sensitivities.

Considering the low sensitivities associated with land potential resources, it is the specialist's opinion that the proposed activities will have an acceptable impact on soil resources and that the proposed activities may proceed as have been planned as no loss of land capability is evident. It is also expected that no segregation of high production agricultural resources will occur.

#### **9.2.5 Impacts on Heritage Resources (incl. archaeology and palaeontology)**

Overall, the archaeological field assessment has determined that the overall archaeological sensitivity of the development area is low with few ex situ surface scatters identified. These resources are not conservation-worthy and have been sufficiently recorded in this report.

A cluster of possible graves was also identified within the SBPM PV development area. It is possible to establish whether or not these are graves through the implementation of various technologies such as ground-truthing with sub-surface survey or prospecting technology. Additionally, such intervention could determine whether unmarked graves are also present in the area, and the extent of the possible burial ground. This could take place at the discretion of the developer. In the absence of subsurface survey data,

it is recommended that a NO-GO ZONE of at least a 50m radius is implemented around the graves to ensure that the graves and their sense of place is not impacted by the proposed development.

The farmers and landowners were consulted, but they were not aware of any significant in-situ archaeological sites or graves on the property. While the field assessment was as thorough as possible, there remains the possibility that archaeological resources that were not recorded are present but are obscured by topsoil or vegetation.

No impacts to palaeontological heritage resources are considered likely due to the Pyramid Gabbro-Norite which has zero palaeontological sensitivity underlying the development area.

There is no objection to the proposed development of the SCSC PV facility and its associated grid infrastructure on condition that:

- » A 50m no-go development buffer is implemented around sites WP007, WP008 and WP009 as per Figure 7.4.
- » Should any previously unrecorded archaeological or palaeontological resources or possible burials be identified during the course of construction activities, work must cease in the immediate vicinity of the find, and SAHRA must be contacted regarding an appropriate way forward.

#### **9.2.6 Impact on the Social Environment**

Impacts are expected to occur with the development of SBPM Solar Energy Facility during the construction, operation and decommissioning phases. Both positive and negative impacts are identified and assessed.

##### Potential Social Impacts during the Construction Phase

From a social perspective, it is concluded that the project is supported, but that mitigation measures should be implemented and adhered to. Positive and negative social impacts have been identified. The assessment of the key issues indicated that there are no negative impacts that can be classified as fatal flaws, and which are of such significance that they cannot be successfully mitigated. Positive impacts could be enhanced by implementing appropriate enhancement measures and through careful planning. Based on the social assessment, the following general conclusions and findings can be made:

- » The potential negative social impacts associated with the construction phase are typical of construction related projects and not just focused on the construction of PV facilities and pivot infrastructure (these relate to intrusion and disturbance impacts, safety and security) and could be reduced with the implementation of the mitigation measures proposed.
- » Employment opportunities will be created in the construction and operation phases and the impact is rated as positive even if only a small number of individuals will benefit in this regard.
- » The proposed project could assist the local economy in creating entrepreneurial development, especially if local businesses could be involved in the provision of general material and services during the construction and operational phases.
- » Capacity building and skills training amongst employees are critical and would be highly beneficial to those involved, especially if they receive portable skills to enable them to also find work elsewhere and in other sectors.

- » The proposed development also represents an investment in infrastructure for the generation of clean, renewable energy, which, given the challenges created by climate change, represents a positive social benefit for society.

The following recommendations are made based on the Social Impact Assessment during the stakeholder engagement process. The proposed mitigation measures should be implemented to limit the negative impacts and enhance the positive impacts. Based on the social assessment, the following recommendations are made:

- » In terms of employment related impacts, it is important to consider that job opportunities for the unskilled and semi-skilled are scarce commodities in the study area and could create competition among the local unemployed. Introducing an outside workforce will therefore most likely worsen local endeavours to obtain jobs and provoke discontent as well as put pressure on the local services available. Local labour should be utilised to enhance the positive impact of employment creation in the area. Local businesses should be involved with the construction activities where possible. It is imperative that local labour be sourced to ensure that benefits accrue to the local communities. Preference should thus be given to the use of local labour during the construction and operational phases of the project as far as possible.
- » Locals should also be allowed an opportunity to be included in a list of possible local suppliers and service providers, enhancing the multiplier effect. This aspect would serve to mitigate other subsequent negative impacts such as those associated with the inflow of outsiders to the area, the increased pressure on the infrastructure and services in the area, as well as the safety and security concerns.
- » Impacts associated with the construction period should be carefully mitigated to minimise any dust and noise pollution.
- » Safety and security concerns should be considered during the planning and construction phases of the proposed project.

The proposed project and associated infrastructure will create a number of potential socio-economic opportunities and benefits and is unlikely to result in permanent damaging social impacts. From the specialist's perspective it is concluded that the project is acceptable subject to the implementation of the recommended mitigation and enhancement measures and management actions identified for the project. Considering the findings of the report and potential for mitigation it is the reasoned opinion of the specialist that the project can be authorised from a social perspective.

### **9.2.7 Assessments of Cumulative Impacts**

Cumulative impacts and benefits on various environmental and social receptors will occur to varying degrees with the development of several renewable energy facilities in South Africa. The degree of significance of these cumulative impacts is difficult to predict without detailed studies based on more comprehensive data/information on each of the receptors and the site-specific developments. The alignment of renewable energy developments with South Africa's National Energy Response Plan and the global drive to move away from the use of non-renewable energy resources and to reduce greenhouse gas emissions is undoubtedly positive. The economic benefits of renewable energy developments at a local, regional and national level have the potential to be significant.

There are several authorised renewable energy projects within a 30km radius of the proposed site, namely:

- » 75MW Platinum Solar Park
- » 10MW Liverpool Solar Energy Plant
- » 75MW Spitskop Solar Park
- » 10MW Northam Solar Park

All cumulative impacts associated with the Project are expected to be of a medium or low significance. A summary of the cumulative impacts is included in **Table 9.1** below.

**Table 9.1: Summary of the cumulative impact significance for the SBPM Solar PV Facility**

Specialist Assessment	Overall significance of impact of the proposed project considered in isolation	Cumulative significance of impact of the project and other projects in the area
Ecology	Medium	Medium
Aquatic Ecology	Low	Low
Avifauna	Medium	Medium
Soil, Land use, and agricultural potential	Low	Low
Heritage (including archaeology, palaeontology and sense of place)	Low	Low
Socio-Economic	Positive impacts: Low  Negative impacts: Medium or Low (depending on the impact being considered)	Positive impacts: Medium  Negative impacts: Medium or Low (depending on the impact being considered)

Based on the specialist cumulative assessment and findings, the development of the Project and its contribution to the overall impact of all renewable energy projects to be developed within a 30km radius, it can be concluded that the contribution of the project to cumulative impacts will be of a medium to low significance. Therefore, it was concluded that the development of the Project will not result in unacceptable, high cumulative impacts and will not result in a whole-scale change of the environment.

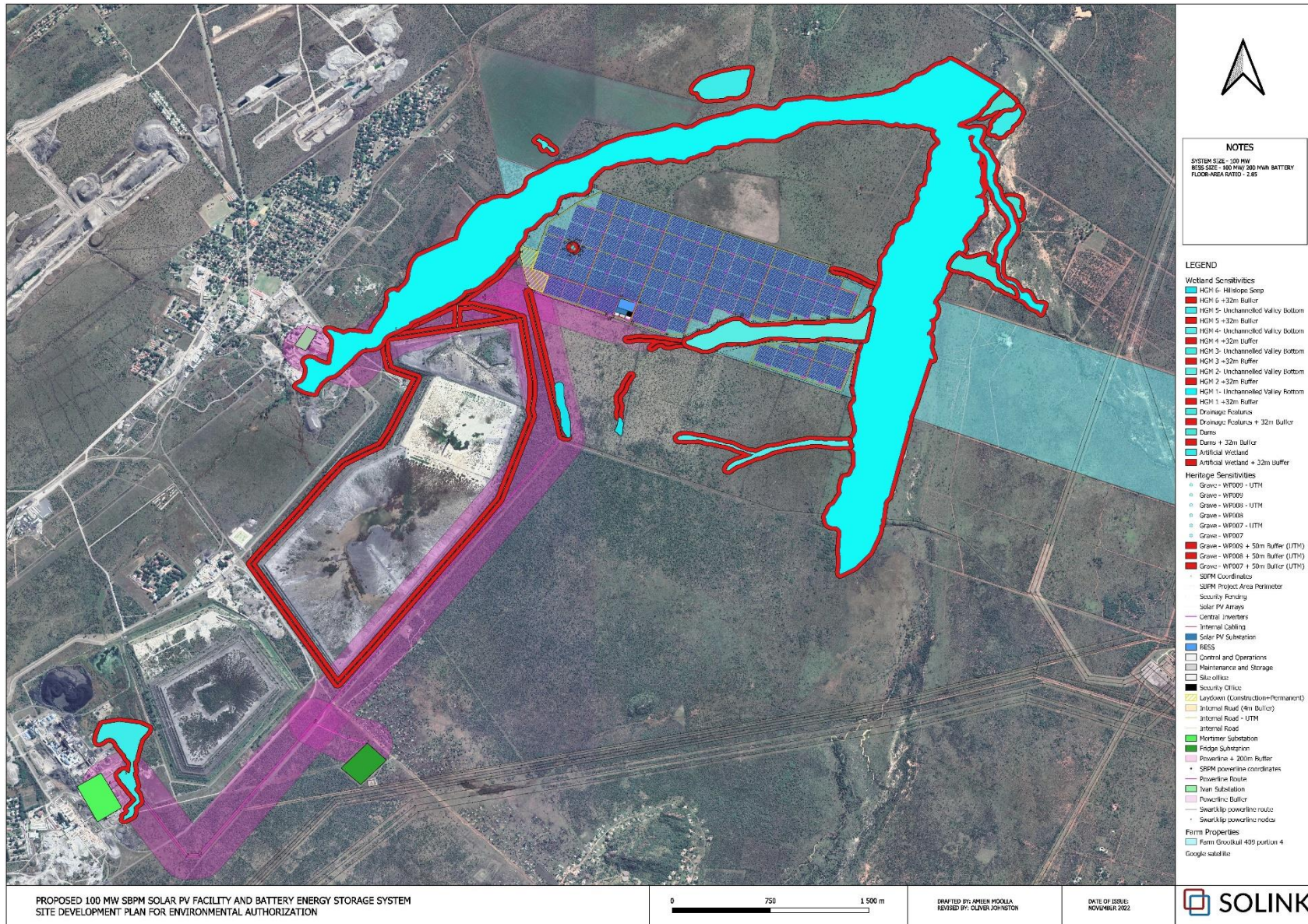
### 9.3 Optimisation of the Layout

Taking into consideration the solar resource, proximity to the off-taker and point of interconnection, land availability and suitability, geographical and topographical location, access to road infrastructure and proximity to towns with a need for socio-economic upliftment, the development of the Project within the Development Footprint is considered to be desirable. The Development Footprint within which the facility is proposed is sufficient in extent for the installation of a solar PV facility of up to 100MW, while allowing for the avoidance of environmental site sensitivities. Similarly, the power line corridor identified is sufficient for the placement of the power line while allowing for the avoidance of environmental sensitivities. To ensure avoidance of these sensitive environmental features, the facility layout has been optimised by the Project Developer as illustrated in **Figure 9.2**. The final positioning of the power line towers within the power line corridor will similarly take cognisance of the identified sensitivities during the final design phase.

This approach ensures the application of the mitigation hierarchy (i.e., avoid, minimise, mitigate and offset) to the SBPM Solar PV Facility project, which ultimately ensures the avoidance, reduction and/or mitigation of all identified detrimental or adverse impacts on sensitive features as far as possible.

In summary the Environmental sensitivities identified include:

- » Degraded bushveld
- » Heritage features
- » Wetland systems
- » Northern Turf Thornveld IBA



**Figure 9.1** Site Development Plan of the SBPM Solar PV Facility, as assessed within this EIA report, overlain on the identified environmental sensitive features (refer to **Appendix M** for A3 Map)

## 9.4 Environmental Costs versus Benefits of the Project

Environmental costs (including those to the natural environment, economic and social environment) can be anticipated at a local and site-specific level and are considered acceptable provided the mitigation measures as outlined in the EIA Report and the EMPr are implemented and adhered to. No fatal flaws have been identified. These environmental costs could include:

- » Loss of biodiversity, flora and fauna due to the clearing of land for the construction and utilisation of land for the SBPM Solar PV Facility - The cost of loss of biodiversity has been minimised/avoided through the limited placement of project components and infrastructure within the ecological features, and sensitive areas considered to be of high sensitivity.
- » Impact on avifauna - The current types of bird species recorded in the Development Footprint will not have a high residual impact should all the mitigations and recommendations be implemented.
- » Impacts on aquatic resources – The Project will not result in any direct impacts on water resources and as a result has a low residual impact on aquatic ecology.
- » Impacts on heritage resources – the project will not impact on any significant heritage resources and as a result has a low impact.

Benefits of the Project include the following:

- » The Project will result in important economic benefits at the local and regional scale through job creation, income and other associated downstream economic development. These will persist during the pre-construction, construction, operation and decommissioning phases of the Project.
- » The Project contributes towards the Provincial and Local goals for the development of renewable energy as outlined in the respective IDPs.
- » The SBPM Solar PV Facility is a climate friendly development. The uptake of renewable energy offers the opportunity to address energy needs in an environmentally responsible manner and thereby allows South Africa to contribute towards mitigating climate change through reducing greenhouse gas (GHG) emissions. South Africa is estimated to be responsible for ~1% of global GHG emissions and currently ranked 9th worldwide in terms of per capita CO<sub>2</sub> emissions.

The private offtaker will contribute towards pollution reduction as it will not use electricity from sourced which entail the release of by-products through the burning of fossil fuels for electricity generation, but will utilise a renewable energy resource, in this case solar radiation.

- » The Project will improve the grid stability as the private offtake will be less depended on the Eskom Energy supply.

The benefits of the Project are expected to occur at a national, regional, and local level. As the costs to the environment at a site-specific level have been largely limited through the appropriate placement of infrastructure in the development area within medium and low sensitive areas, and through the avoidance of features and areas considered to be of high and very high sensitivity, the benefits of the Project are expected to partially offset the localised environmental costs of the Project.

## 9.5 Overall Conclusion (Impact Statement)

A technically viable Development Footprint for the Project was proposed Main Street 1886 Proprietary Limited and assessed as part of the EIA process. The environmental assessment of the Project was undertaken by independent specialists and their findings have informed the results of this EIA Report. Main



Street 1886 Proprietary Limited has proposed a technically viable layout for the Project and associated infrastructure, which has been assessed as part of the independent specialist studies. This layout was developed considering identified environmental sensitivities with the main purpose to avoid impacts on these. This is in line with tier 2 of the mitigation hierarchy.

From a review of the relevant policy and planning framework, it was concluded that the Project is well aligned with the policy framework, and a clear need for the Project is seen from a policy perspective at a local, provincial and National level.

The specialists considered desktop data, results from field work, existing literature and the National Web-based Environmental Screening Tool to inform the identification of sensitivities. The specialist findings have concluded that there are no identified environmental fatal flaws associated with the implementation of the Project. The impacts that are expected to remain after the avoidance of the sensitive areas have been reduced through the recommendation of specific mitigation measures by the specialists. The minimisation of the significance of the impacts is in line with tier 2 of the mitigation hierarchy. Therefore, it is concluded that impacts can be mitigated to acceptable levels or enhanced through the implementation of the recommended mitigation or enhancement measures.

As detailed in the cost-benefit analysis, the benefits of the Project are expected to occur at a national, regional and local level. As the costs to the environment at a site-specific level have been largely limited through the appropriate placement of infrastructure within lower sensitive areas through the avoidance of features and areas considered to be sensitive, the benefits of the Project are expected to partially offset the localised environmental costs of the SBPM Solar PV Facility. From a social perspective, both positive and negative impacts are expected.

It can be concluded that the development of the Project will not result in unacceptable environmental impacts (subject to the implementation of the recommended mitigation measures).

## **9.6 Overall Recommendation**

Considering the findings of the independent specialist studies, the impacts identified, the Development Footprint proposed by the Project Developer, the avoidance of the sensitive environmental features within the Development Footprint, as well as the potential to further minimise the impacts to acceptable levels through mitigation, it is the reasoned opinion of the EAP that the Project is acceptable within the landscape and can reasonably be authorised subject avoidance the sensitive areas identified through the EIA process and the implementation of recommended mitigation measures. The following Project details should be included within the EA for the Project:

- » The SBPM Solar PV Facility with a contracted capacity of up to 100MW, to be located on Portion 4 of the Farm Grootkuil 409 KQ and has a development area of approximately 574ha. The grid connection for the facility will consist of a facility substation and 33Kv power lines into the existing mine substations (Mortimer, Fridge and Ivan). The grid connection infrastructure is located within an assessment corridor of 200m wide located in a band along the south-west boundary of the project site and traverses Portion 4, Portion 5 of the Farm Grootkuil 409, Portion 1, Portion 2 of Farm Zwartklip 405, Portion 0 of Farm Spitskop 410 and Portion 0 of Farm Turfbult 404.

The following infrastructure is to be included within an authorisation issued for the project:

- » 100MW Solar PV array comprising PV modules and mounting structures.
- » Inverters and transformers.
- » Cabling between the project components.
- » Battery Energy Storage System (BESS).
- » On-site facility substation and power lines between the solar PV facility and the Mine and Eskom substation.
- » Site offices, Security office, operations and control, and maintenance and storage laydown areas.
- » Access roads, internal distribution roads
- » Grid connection solution within a 200m wide corridor to consist of the following:
  - The power generated by the solar PV facility will be transferred to the three step up transformers at the on-site/plant substation. Power will then be delivered from each step-up transformer as follows:
    - \* two 6.6 km, 33 kV transmission lines to the Mortimer substation with four step down transformers (33/ 6.6kV; 10 MVA),
    - \* two 4.7 km, 33 kV transmission lines to the Fridge substation with two step down transformers (33/ 6.6kV; 10 MVA),
    - \* two 2.9 km, 33 kV transmission lines to the Ivan substation with three step down transformers (33/ 11kV; 10 MVA)

The following key conditions would be required to be included within an authorisation issued for the Project:

- » All mitigation measures detailed within this EIA Report, as well as the specialist reports contained within **Appendices D to H** are to be implemented.
- » The EMPs as contained within **Appendix J, K and L** of this EIA Report should form part of the contract with the Contractors appointed to construct and maintain the SPBM Solar PV Facility and associated infrastructure in order to ensure compliance with environmental specifications and management measures. The implementation of this EMP for all life cycle phases of the Project is considered key in achieving the appropriate environmental management standards as detailed for this Project.

A 32 m Zone of Regulation in accordance with the National Environmental Management Act, 1998 (Act No. 107 of 1998) should be assigned to the drainage lines; and A 100 m Zone of Regulation in accordance with the National Water Act, 1998 (Act No. 36 of 1998) should be assigned to the drainage lines.

- » A follow-up assessment on avian biodiversity and species abundance within the project area and surrounding areas must be conducted within one year after the facility has been in operation and should be repeated every 3-5 years.
- » A 50m no-go development buffer is implemented around sites WP007, WP008 and WP009.
- » Should any previously unrecorded archaeological resources or possible burials be identified during the course of construction activities, work must cease in the immediate vicinity of the find, and SAHRA must be contacted regarding an appropriate way forward.
- » Obtain the necessary permits for specimens or protected plant species that will be lost due to construction of the project.
- » As far as possible, locate infrastructure within areas that have been previously disturbed or in areas with lower sensitivity scores.
- » A site walk through is recommended by a suitably qualified ecologist prior to any construction activities, preferably during the wet season and any SSC should be noted.

A validity period of 10 years of the Environmental Authorisation is requested, should the project obtain approval from the Department of Forestry, Fisheries and the Environment.

## CHAPTER 10: REFERENCES

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109674	HIA Phase 1	M Hutten	01/05/2010	HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED DE PUT RESIDENTIAL TOWNSHIP DEVELOPMENT SOUTH OF NORTHAM, LIMPOPO

318678	AIA Phase 1	Neels Kruger	19/05/2014	ARCHAEOLOGICAL IMPACT ASSESSMENT (AIA) OF A DEMARCATED SURFACE PORTION ON THE FARM GROOTKUIL 409KQ FOR THE PROPOSED PLATINUM PHOTOVOLTAIC POWER PLANT DEVELOPMENT, THABAZIMBI LOCAL MUNICIPALITY, WATERBERG DISTRICT MUNICIPALITY, LIMPOPO PROVINCE
369743	Heritage Impact Assessment Specialist Reports	Prof. Anton van Vollenhoven	21/09/2016	HERITAGE IMPACT ASSESSMENT - Input for Environmental Impact Assessment report undertaken in terms of the National Environmental Management Act 107 of 1998
375246	PIA Desktop	Bruce Rubidge	01/12/2015	Palaeontological Desktop Study "Siyanda Chrome Smelting Company Pty. Ltd
5057	AIA Phase 1	Frans Roodt	20/02/2007	Phase 1 Heritage Resources Impact Assessment (Scoping & Evaluation) Rhebokkloof Wild Life Estate Thabazimbi, Limpopo
5702	AIA Phase 1	Johnny Van Schalkwyk	01/02/2003	Arch Survey Mantserre-Kraalhoek-Mopyane Water Scheme, NW Province
5706	AIA Phase 1	Johnny Van Schalkwyk, Frank Teichert, Anton Pelser	01/06/2003	Survey of Archaeological Sites for the Amandelbult Platinum Mine Seismic Exploration Program
5725	AIA Phase 1	Julius CC Pistorius	01/12/2002	A Cultural Heritage Assessment for Eskom's Proposed New Power Line Between the Spitskop Substation and the Union Plats Substation in the Limpopo
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