

# BUFFELSPOORT SOLAR PHOTOVOLTAIC (PV) ENERGY FACILITY

North West Province

Scoping Report

June 2022

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## PROJECT DETAILS

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<b>Title</b>	:	Environmental Impact Assessment Process: Scoping Report for the Buffelspoort Solar Photovoltaic (PV) Energy Facility, North West Province
<b>Authors</b>	:	Savannah Environmental (Pty) Ltd Mmakoena Mmola Jo-Anne Thomas
<b>Client</b>	:	Buffelspoort Solar Project (Pty) Ltd
<b>Report Revision</b>	:	Revision 0 – Draft for Public Review
<b>Date</b>	:	June 2022

**When used as a reference this report should be cited as:** Savannah Environmental (202) Scoping Report for the Buffelspoort Solar Photovoltaic (PV) Energy Facility, North West Province.

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## PURPOSE OF THE SCOPING REPORT AND INVITATION TO COMMENT

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Buffelspoort Solar Project (Pty) Ltd has appointed Savannah Environmental as the independent environmental consultant to undertake the Scoping and Environmental Impact Assessment (S&EIA) process for the proposed Buffelspoort Solar PV Energy Facility, North West Province. The S&EIA process is being undertaken in accordance with the requirements of the 2014 EIA Regulations promulgated in terms of the National Environmental Management Act (No. 107 of 1998) (NEMA).

This Scoping Report represents the findings of the Scoping Phase of the EIA process and contains the following chapters:

- » **Chapter 1** provides background to the Project and the EIA process.
- » **Chapter 2** provides a description of the 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 Project.
- » **Chapter 5** outlines the process which was followed during the Scoping Phase of the EIA process.
- » **Chapter 6** describes the existing biophysical and social environment within and surrounding the study area and development footprint.
- » **Chapter 7** provides an identification and evaluation of the potential issues associated with the proposed Project.
- » **Chapter 8** presents the conclusions of the scoping evaluation for the Project.
- » **Chapter 9** describes the Plan of Study (PoS) for the EIA Phase.
- » **Chapter 10** provides references used to compile the Scoping Report.

The Scoping Report is available for review from **Tuesday, 14 June 2022 – Friday, 15 July 2022** on the Savannah Environmental website (<https://savannahsa.com/public-documents/energy-generation/>).

Please submit your comments by <b>15 July 2022</b> to:
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PO Box 148, Sunninghill, 2157
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Comments can be made as written submission via fax, post or email.



## EXECUTIVE SUMMARY

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Buffelspoort Solar Project (Pty) Ltd is proposing to develop a Solar Photovoltaic (PV) Energy Facility and associated infrastructure (hereafter referred to as the "Project") on a site, located approximately 6km west of Mooinooi, within the jurisdiction of the Rustenburg Local Municipality and the Bojanala Platinum District Municipality in the North West Province on the following affected properties (i.e., the project site) (refer to **Figure 1**):

### Solar PV Energy Facility:

- » Portion 75 of Farm Buffelspoort 343JQ
- » Portion 134 of Farm Buffelspoort 343JQ

### Grid Connection Corridor:

- » Portion 75 of Farm Buffelspoort 343JQ
- » Portion 88 of Farm Buffelspoort 343JQ
- » Portion 89 of Farm Buffelspoort 343JQ
- » Portion 101 of Farm Buffelspoort 343JQ
- » Portion 119 of Farm Buffelspoort 343JQ
- » Portion 120 of Farm Buffelspoort 343JQ
- » Portion 101 of Farm Kafferskraal 342JQ
- » Portion 121 of Farm Kafferskraal 342JQ
- » Portion 122 of Farm Kafferskraal 342JQ
- » Portion 148 of Farm Kafferskraal 342JQ
- » Portion 236 of Farm Kafferskraal 342JQ
- » Portion 303 of Farm Kafferskraal 342JQ
- » Portion 374 of Farm Kafferskraal 342JQ
- » Portion 376 of Farm Kafferskraal 342JQ

The Project will have a contracted capacity of up to 40MWp and will be known as the Buffelspoort Solar PV Energy Facility. The purpose of the Project will be to supply power to a private off-taker through connecting to an existing 88kV Substation via a newly proposed 88kV single circuit overhead power line. The overhead power line will be approximately 2.5km in length and will be routed across several privately-owned properties from the onsite facility substation to the point of interconnection, north of the N4. The construction of the Project is aimed at diversifying the energy mix for the private off-taker and to reduce their reliance on Eskom supplied power. It is also a conscious effort for the off-taker to contribute to their sustainability targets and reduce their carbon footprint.

A technically feasible project site<sup>1</sup>, with an extent of ~223ha has been identified by Buffelspoort Solar Project (Pty) Ltd as a technically suitable area for the development of the proposed Project. A development area<sup>2</sup> of ~77ha has been identified within the project site by the project developer<sup>3</sup> for the development.

Infrastructure associated with the Solar PV Energy Facility and will include the following:

- » Solar PV arrays comprising PV panels and mounting structures.
- » Inverters and transformers.
- » Cabling between the arrays.
- » Onsite facility substation.
- » 88kV single circuit overhead power line for the distribution of the generated power, which will be connected to an existing 88kV Substation just north of the proposed project site.
- » Battery Energy Storage System (BESS)<sup>4</sup> – to be initiated at a later stage than the Solar PV Energy Facility.
- » Temporary laydown area.
- » Operations and Maintenance (O&M) building, which will include a site security office, warehouse, storage area and workshop.
- » Main access road (existing – to be upgraded with hard surface) and internal (new) gravel roads.
- » Fencing around the site, including an access gate.

A grid connection corridor, which varies in width from 200m to 300m and is up to 2.5km in length has been identified for assessment. The proposed grid connection infrastructure will be positioned within the confines of the assessed corridor. This corridor will allow for the consideration and avoidance of sensitive environmental features.

The full extent of the development area and the grid connection corridor (200-300m wide and ~2.5km long) have been considered within this Scoping Report with the aim of determining the suitability from an environmental and social perspective and identifying areas that should be avoided in development planning. Within this identified development area, a development footprint<sup>5</sup> or facility layout will be defined for assessment in the EIA Phase. The development area is larger than the area required for the development footprint of a 40MWp Solar PV Energy Facility and therefore provides the opportunity for the optimal placement of infrastructure, ensuring avoidance of major identified environmental sensitivities or constraints identified through this S&EIA process.

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<sup>1</sup> The project site is the aerial extent of the affected properties (~223ha) within which the Buffelspoort Solar PV Energy Facility is proposed.

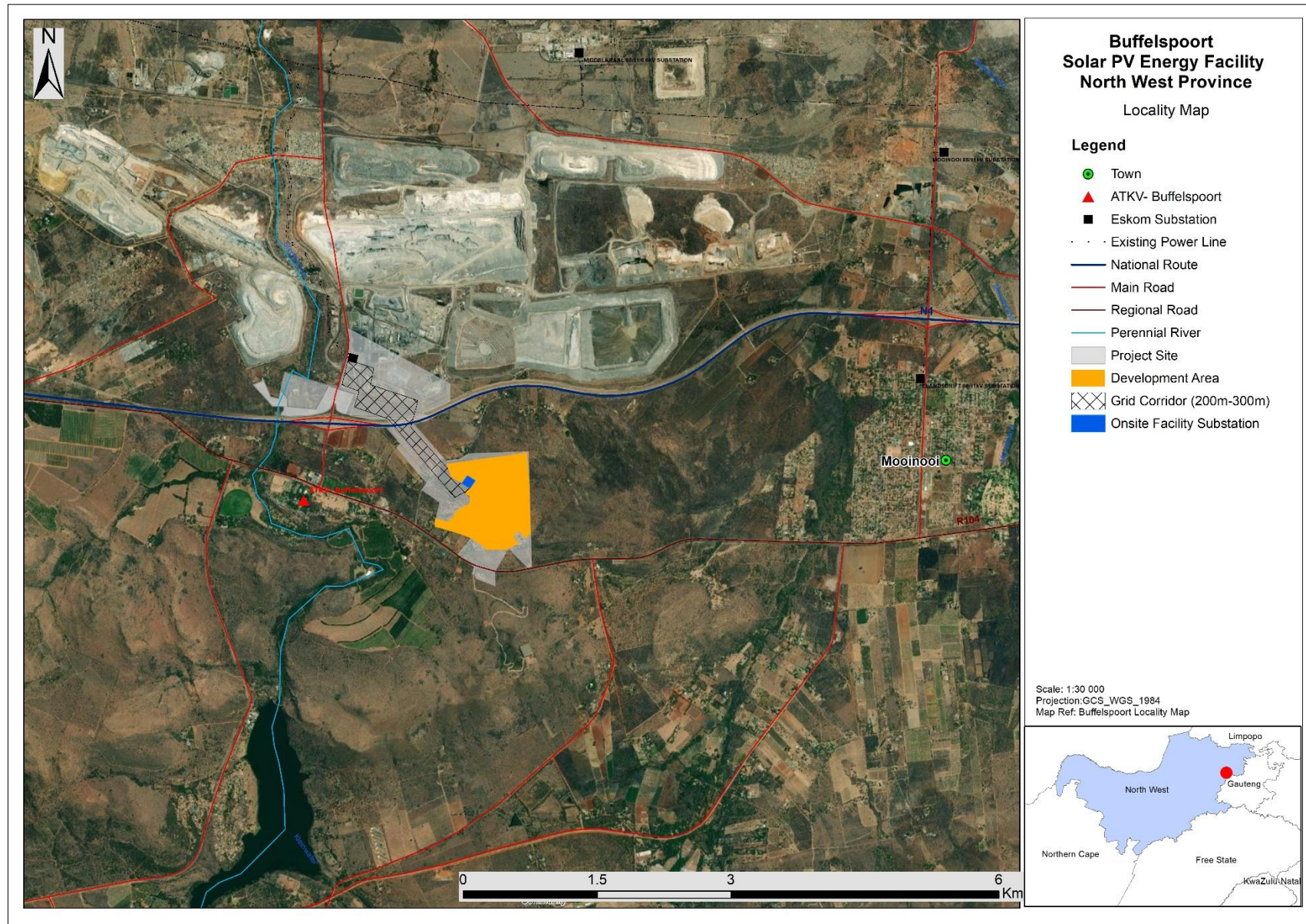
<sup>2</sup> The development area is that identified area (located within the project site) which has been assessed by specialists within this Scoping Report with the aim of identifying areas of sensitivity which should be avoided by the development footprint or facility layout. The development area is ~77ha in extent.

<sup>3</sup> The project developer, Buffelspoort Solar Project (Pty) Ltd will be the party responsible for the construction and day-to-day operation and maintenance of the proposed Solar PV Energy Facility.

<sup>4</sup> The BESS is included as part of the ESIA process albeit that the facility will only be installed after the Solar PV Energy Facility has come into operation. The total electricity requirements for the offtaker is currently under review and an energy master plan is being developed, which will only be finalised post implementation of the Solar PV Energy Facility to address all the electricity needs of the offtaker. The BESS has been included in this ESIA in order to ensure that should the energy master plan require this component to be included sooner than expected that it has already been authorized.

<sup>5</sup> The development footprint is the defined area (located within the development area) where the Solar PV Energy Facility and other associated infrastructure for the Project is planned to be constructed. This is the actual footprint of the facility, and the area which would be disturbed.

The facility layout (to be confirmed during the EIA Phase) for the Project, including a BESS, and all associated infrastructure, will be informed by the environmental sensitivities or constraints identified through the scoping evaluation, ensuring avoidance of the identified environmental sensitivities or constraints through the appropriate placement of infrastructure within the development footprint and grid connection corridor.



**Figure 1:** Locality map of the project site within which the Project is proposed to be developed

## 1. Environmental Permitting Requirements

The Project triggers the need for the following environmental permit:

- » **An Environmental Authorisation (EA)** from the North West Department: Economic Development, Environment, Conservation and Tourism (NWDEDECT) in accordance with the requirements of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and Environmental Impact Assessment (EIA) Regulations (GNR 326), 2014, as amended.

Savannah Environmental has been appointed as the Independent Environmental Assessment Practitioner (EAP) in accordance with NEMA and Regulations 21 to 24 of the 2014 EIA Regulations (GNR 326) to undertake the required S&EIA in support of the application for Environmental Authorisation (EA) and the public participation process for the Project, in order to identify and assess all potential environmental impacts associated with the proposed Project and recommend appropriate mitigation measures in an Environmental Management Programme (EMPr).

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 fore warned of potential environmental issues and allows for the resolution of issues reported on in the Scoping and EIA Reports as well as a dialogue with Interested and Affected Parties (I&APs). Comprehensive, independent environmental specialist studies are required in accordance with the EIA Regulations to provide the competent authority with sufficient information in order to make an informed decision. The EIA process being undertaken for the proposed general waste disposal site comprises two phases – i.e., Scoping and Impact Assessment - and involves the identification and assessment of environmental impacts through specialist studies, as well as public participation. The process 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 development area 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 development area 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.

## 2. Potential Impacts Identified

Potential impacts associated with the development of the Project expected to occur during the construction, operation and decommissioning phases. The conclusion of the findings of the scoping study is that the potential impacts identified to be associated with the construction and operation of the Project are anticipated to be at a site or localised level, with few impacts extending from a local to

national extent which includes both positive and negative impacts. The following provides a summary of the findings of the specialist studies undertaken:

- » *Terrestrial Ecology (including flora, fauna and avifauna)*: The terrestrial habitat expected in the development area and grid connection corridor consists of Marikana Thornveld (Endangered) and Moot Plains Bushveld (Vulnerable), which based on the desktop scoping assessment is expected to host three (3) flora SCC, namely *Adromischus umbraticola* subsp. *umbraticola*, *Delosperma leendertziae* and *Stenostelma umbelluliferum*. Portions of the development area and grid connection corridor are classified as CBA2, ESA1 and ESA2. The 500 m regulated zone around the development area and grid connection corridor also overlaps with a CR river and unclassified NFEPA wetlands. A total of ten (10) fauna SCC were given a high likelihood of occurrence, while a further thirteen (13) were given a moderate likelihood of occurrence. The SABAP2 Data lists 366 avifauna species that could be expected to occur within the proposed development area. Twenty (20) of these expected species are regarded as threatened (Table 5 5). Two (2) of the species have a low likelihood of occurrence due to lack of suitable habitat and food sources in the proposed development area.

The development of the Project could result in the loss or degradation of the habitat and vegetation, most of which is still in a natural condition and is expected to support a number of fauna species. The construction of the facility could also lead to the displacement/mortalities of the fauna and more specifically SCC fauna species. The operation of the facility could result in the disruption of ecological life cycles. This could be as a result of a number of things, but mainly due to dust, noise, light pollution and heat radiation. The disturbance of the soil/vegetation layer will allow for the establishment of flora alien invasive species. In turn, the new infrastructure will provide refuge for invasive/feral fauna species. Erosion is another possible impact that could result from the disturbance of the topsoil and vegetation cover. A number of machines, vehicles and equipment will be required, aided by chemicals and concrete mixes for the Project. Leaks, spillages or breakages from any of these could result in contamination of the receiving water resources. Contaminated water resources are likely to have an effect on the associated biota. Details on the impacts to avifauna due to the proposed Project will be included as part of the Avifauna Impact Assessment during the EIA Phase of the process.

- » *Freshwater*: A key consideration for the scoping level impact assessment is the presence of the water resources delineated in proximity to the development area and grid connection corridor. The available data also suggests the presence of drainage features and wetlands within proximity to the site. A Zone of Regulation (ZoR) of 500m is applicable for any wetland system that is present beyond the Project boundary.

The development of the Project could result in the encroachment into water resources and result in the loss or degradation of these systems. Water resources are also likely to be traversed by linear infrastructure, but these systems can be avoided by spanning infrastructure. These disturbances could also result in the infestation and establishment of alien vegetation which would in turn affect the functioning of the systems. Earthworks will expose and mobilise earth materials which could result in sedimentation of the receiving systems. A number of machines, vehicles and equipment will be required, aided by chemicals and concrete mixes for the Project. Leaks, spillages or breakages from any of these could result in contamination of the receiving water resources. Contaminated water resources are likely to influence the associated biota. It is anticipated to increase stormwater runoff due to the hardened surfaces and the crossings will result in an increase in run-off volume and velocities, resulting in altered flow regimes. The changes could result in physical changes to the



receiving systems caused by erosion, run-off and also sedimentation, and the functional changes could result in changes to the vegetative structure of the systems. The reporting of surface run-off to the systems could also result in the contamination of the systems, transporting (in addition to sediment) diesel, hydrocarbons and soil from the operational areas.

- » *Soils and Agricultural Potential:* Various soil forms are expected throughout the development area and grid connection corridor, of which some are commonly associated with high land capabilities. Even though the soil depth, texture and permeability of these soils ensure high land capability, the climatic capability of the area often reduces the land potential considerably. The harsh climatic conditions are associated with low annual rainfall and high evapotranspiration potential demands of the area. The area is not favourable for most cropping practices, which corresponds to the current mining activities in the area.

The proposed Project could result in the loss of land capability. The disturbances could further also result in the infestation and establishment of alien vegetation, which in turn can have a detrimental impact on soil resources. The development of the Project could also result in compaction and/or erosion. Further to this, construction activities could also cause leaks and/or spillages resulting in contamination of soil resources, which could affect the salinity or pH of the soil, which can render the fertility of the soil unable to provide nutrition to plants.

- » *Heritage (including archaeology and palaeontology):* A total of eleven (11) heritage features and resources were identified within the development area and grid connection corridor. These consist of one (1) burial ground with approximately 100 graves (**BFP-06**), three (3) localities with recent historic structures (**BFP-08, BFP-10 and BFP-11**), and one (1) kraal (**BFP-09**), as well as six (6) low to moderate significance archaeological sites (**BFP-01, BFP-02, BFP-03, BFP-04, BFP-05 and BFP-07**). According to the SAHRIS PalaeoMap of, the Palaeontological Sensitivity of the area is zero or insignificant
- » *Visual:* Possible visual receptors within the landscape that may be sensitive to landscape change resulting from the construction and operation of the proposed Project include observers travelling along the N4 national road and R104 arterial roads, as well as farm residences within a 1 – 3 km radius of the development area. In general terms, it is envisaged that the structures, where visible from shorter distances (e.g., less than 1 km and potentially up to 3 km), and where sensitive visual receptors may find themselves within this zone, may constitute a high visual prominence, potentially resulting in a visual impact. This may include observers travelling along the roads N4 and R104, and from residences in closer proximity to the proposed Project.
- » *Social:* The extent of the impacts identified at the Scoping Phase is local, regional and national and the significance of the impacts varies from low to high. Both positive and negative impacts were also identified to be associated with the construction and operation phases of the project. The positive impacts include skills development, employment creation, increase in the country's Gross Domestic Product (GDP), and impacts on the local economy. The negative impacts will include loss of sense of place, increased pressure on infrastructure and basic services, temporary increase in traffic disruptions and loss of agricultural space.

### 3. Overall Conclusion and Fatal Flaw Analysis

The findings of the desktop and in-field scoping study indicate that no environmental fatal flaws are associated with the development area and grid connection corridor. This conclusion must be confirmed through a detailed investigation of the development footprint within the EIA Phase of the process. While some impacts of potential significance do exist, it is anticipated that the implementation of appropriate mitigation measures would assist in reducing the significance of such impacts to acceptable levels. It is however recommended that the location of the development footprint within the development area be considered outside of the potential sensitive areas as far as possible in order to ensure that the Project does not have a detrimental impact on the environment. This forms part of the 'funnel-down approach' for the identification of an appropriate footprint within the development area.

With an understanding of which areas within the development area and grid connection corridor are considered sensitive to the development of the proposed facility and associated infrastructure, the project developer can prepare the detailed infrastructure layout for consideration within the EIA Phase. During the EIA Phase, more detailed environmental studies will be conducted in line with the Plan of Study for EIA contained in Chapter 9 of this Scoping Report. These studies will consider the detailed layout produced by the project developer and make recommendations for the implementation of avoidance strategies (if required), and mitigation and management measures to ensure that the final assessed layout retains an environmental impact within acceptable limits. The sensitivity map will be further refined in the EIA Phase on the basis of these specialist studies, in order to provide an assessment of environmental acceptability of the final design of the facility.

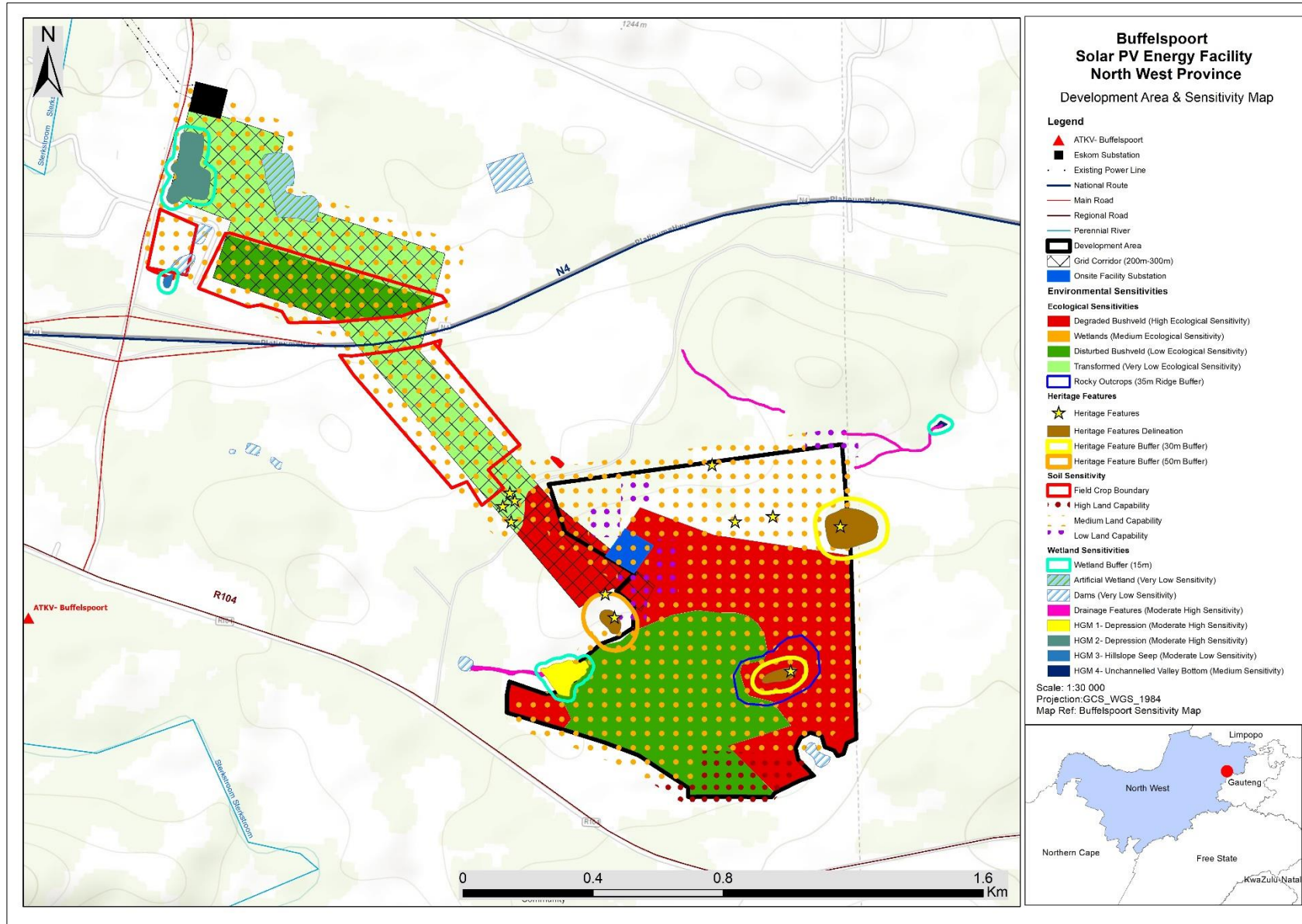
**Table 1** details the sensitive environmental features which are considered to pose a risk or constraint in terms of the development of a Solar PV Energy Facility within the identified development area. **Figure 2** provides an environmental sensitivity map of the scoping phase no-go areas.

**Table 2:** Overall sensitivity of the development area and grid connection corridor

Specialist Field	Identified sensitivities and/or no-go areas
<b>Ecology (including flora, fauna and avifauna)</b>	Based on the desktop assessment information, it can be said that the majority of the site will have a high sensitivity rating. This assumption is based on the development area and grid connection corridor overlapping with a CBA2, ESA1, ESA2, the Magaliesberg Biosphere Reserve, NPAES Priority Focus Area, the Magaliesberg IBA, a CR river and five unclassified NFEPA wetlands around the site. <b>Figure 2</b> shows the development area and grid connection corridor as comprising four (4) habitats which range in sensitivity from very low to high. None of the habitats identified within the development area and grid connection corridor are regarded as no-go areas from an ecological perspective. A 35m pre-cautionary buffer has been recommended around the rocky ridge identified within the development area (refer to <b>Figure 2</b> ).
<b>Freshwater</b>	As per the DFFE screening report, the aquatic biodiversity theme sensitivity indicates a high sensitivity. This is attributed to the presence of aquatic CBAs within the site. Desktop information suggests the presence of a CR river to the west of the site which overlaps with the 500 m regulated area around the grid connection corridor and the presence of five unclassified NFEPA wetlands within the 500 m regulated area of the grid connection corridor. <b>Figure 2</b> shows the presence of natural and artificial wetland features and dams within the grid connection corridor and the development area, as well as drainage features within the immediate surrounds. The artificial wetland and dams are regarded to be of very low sensitivity and the drainage features are regarded to be of moderate to high sensitivity. The wetlands range in sensitivity from moderate low to



	<p>moderate high. A 15m no-go buffer has been recommended around the wetland features.</p>
<p><b>Soils and Agricultural Potential</b></p>	<p>Various soil forms are expected throughout the development area and grid connection corridor, of which some are commonly associated with high land capabilities. Even though the soil depth, texture and permeability of these soils ensure high land capability, the climatic capability of the area often reduces the land potential considerably.</p> <p>The agriculture theme sensitivity as indicated in the screening report indicates predominantly medium sensitivity, with patches of low and high occurring within the development area and grid connection corridor. <b>Figure 2</b> shows the development area and grid connection corridor as predominantly comprising areas of medium land capability sensitivity, with patches of low and high land capability sensitivity. Field crop boundaries have been identified along the grid connection corridor.</p> <p>There are no areas identified within the development area and the grid connection corridor which are regarded as no-go areas (i.e., very high sensitivity) from a soils and agricultural potential perspective.</p>
<p><b>Heritage (including archaeology and palaeontology)</b></p>	<p>A total of eleven (11) heritage features and resources were identified within the development area and grid connection corridor. These consist of one (1) burial ground with approximately 100 graves (<b>BFP-06</b>), three (3) localities with recent historic structures (<b>BFP-08, BFP-10 and BFP-11</b>), and one (1) kraal (<b>BFP-09</b>), as well as six (6) low to moderate significance archaeological sites (<b>BFP-01, BFP-02, BFP-03, BFP-04, BFP-05 and BFP-07</b>) (refer to <b>Figure 2</b>).</p> <p>The informal cemetery comprising approximately 100 graves (<b>BFP-06</b>) is regarded to be of high sensitivity and a 50m no-go buffer has been recommended around this site (refer to <b>Figure 2</b>). The continuous stone walls (<b>BFP-01 and BFP-07</b>) are also regarded to be of high sensitivity and a 30 m no-go buffer has been recommended around these sites.</p>



**Figure 2:** Environmental sensitivity map from the results of the scoping evaluation for the Buffelspoort Solar PV Energy Facility

## 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.

**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.

**Development area:** The development area is that identified area (located within the project site) which has been assessed by specialists within this Scoping Report with the aim of identifying areas of sensitivity which should be avoided by the development footprint or facility layout. The development area is ~77ha in extent.

**Development footprint:** The development footprint is the defined area (located within the development area) where the Solar PV Energy Facility and other associated infrastructure for the Project is planned to be constructed. This is the actual footprint of the facility, and the area which would be disturbed.

**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.

**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.

**Photovoltaic effect:** Electricity can be generated using photovoltaic panels (semiconductors) which are comprised of individual photovoltaic cells that absorb solar energy to produce electricity. The absorbed solar radiation excites the electrons inside the cells and produces what is referred to as the Photovoltaic Effect

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

**Project developer** The project developer, Buffelspoort Solar Project (Pty) Ltd will be the party responsible for the construction and day-to-day operation and maintenance of the proposed Solar PV Energy Facility.

**Project site:** The project site is the aerial extent of the affected properties (~223ha) within which the Buffelspoort Solar PV Energy Facility is proposed.

**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).

**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.



## TABLE OF CONTENTS

<b>PROJECT DETAILS .....</b>	<b>i</b>
<b>PURPOSE OF THE SCOPING REPORT AND INVITATION TO COMMENT .....</b>	<b>ii</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>iii</b>
<b>DEFINITIONS AND TERMINOLOGY .....</b>	<b>xiii</b>
<b>TABLE OF CONTENTS .....</b>	<b>xvii</b>
<b>APPENDICES LIST .....</b>	<b>xx</b>
<b>CHAPTER 1: INTRODUCTION .....</b>	<b>1</b>
1.1..... Requirement for an Environmental Impact Assessment Process	1
1.2..... Legal Requirements as per the EIA Regulations, 2014 (as amended) for the undertaking of a Scoping Report	1
1.3..... Project Overview	1
1.4..... Overview of this Environmental Impact Assessment (EIA) Process	4
1.5..... Details of Environmental Assessment Practitioner and Expertise to conduct the S&EIA Process	4
<b>Chapter 2 : PROJECT DESCRIPTION.....</b>	<b>7</b>
2.1..... Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of a Scoping Report	7
2.2..... Nature and Extent of the Buffelspoort Solar PV Energy Facility	7
2.2.1 Project Overview.....	7
2.2.2 Components of the Buffelspoort Solar PV Energy Facility.....	9
2.2.3 Project Development Phases Associated with the Buffelspoort Solar PV Energy Facility .....	11
2.3..... Technology considered for the Solar Energy Facility and the Generation of Electricity	15
<b>CHAPTER 3: CONSIDERATION OF ALTERNATIVES .....</b>	<b>19</b>
3.1..... Legal Requirements as per the EIA Regulations, 2014 (as amended) for the undertaking of a Scoping Report	19
3.2..... Alternatives Considered during the S&EIA Process	19
3.2.1 Consideration of Fundamentally Different Alternatives .....	20
3.2.2 Consideration of Incrementally Different Alternatives .....	20
3.3..... Project Alternatives under Consideration for the Buffelspoort Solar PV Energy Facility	20
3.3.1. Property or Location Alternatives.....	20
3.3.2. Design and Layout Alternatives .....	24
3.3.3. Activity Alternatives .....	24
3.3.4. Technology Alternatives.....	25
3.3.4 The 'Do-Nothing' Alternative.....	25
<b>CHAPTER 4: POLICY, LEGISLATIVE CONTEXT and NEED AND DESIRABILITY .....</b>	<b>26</b>
4.1..... Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of a Scoping Report	26
4.2..... Strategic Electricity Planning in South Africa	26
4.3..... International Policy and Planning Context	28
4.4..... National Policy and Planning Context	30
4.5..... Provincial Policy and Planning Context	37
4.6..... Local Policy and Planning Context	40
4.7..... Need and Desirability of the Proposed Development	42
4.7.1.. Need and Desirability of the Buffelspoort Solar PV Energy Facility	42

<b>4.7.2.. Receptiveness of and desirability of the site to the development of the Buffelspoort Solar PV Energy Facility</b>	<b>43</b>
<b>4.7.3.. Benefits of Renewable Energy and the Need and Desirability in the South African Context</b>	<b>45</b>
<b>CHAPTER 5: APPROACH TO UNDERTAKING THE SCOPING PHASE.....</b>	<b>47</b>
<b>5.1..... Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of a Scoping Report</b>	<b>47</b>
<b>5.2..... Relevant legislative permitting requirements</b>	<b>48</b>
<b>5.2.1 National Environmental Management Act (No. 107 of 1998) (NEMA)</b>	<b>48</b>
<b>5.2.2 National Water Act (No. 36 of 1998) (NWA)</b>	<b>52</b>
<b>5.2.3 National Heritage Resources Act (No. 25 of 1999) (NHRA)</b>	<b>53</b>
<b>5.3..... Overview of the Scoping and EIA (S&amp;EIA) Process being undertaken for Buffelspoort Solar PV Energy Facility</b>	<b>54</b>
<b>5.4..... Objectives of the Scoping Phase</b>	<b>55</b>
<b>5.5..... Overview of the Scoping Phase</b>	<b>56</b>
<b>5.5.1 Authority Consultation and Application for Authorisation in terms of the 2014 EIA Regulations (as amended)</b>	<b>57</b>
<b>5.5.2 Public Participation Process</b>	<b>57</b>
<b>5.6..... Outcomes of the DFFE Web-Based Screening Tool</b>	<b>63</b>
<b>5.6.1 Evaluation of Issues Identified through the Scoping Process</b>	<b>66</b>
<b>5.6.2 Finalisation of the Scoping Report</b>	<b>67</b>
<b>5.7..... Assumptions and Limitations of the S&amp;EIA Process</b>	<b>67</b>
<b>5.8..... Legislation and Guidelines that have informed the preparation of this Scoping Report</b>	<b>67</b>
<b>5.8.1 Best Practice Guidelines Birds &amp; Solar Energy (2017)</b>	<b>80</b>
<b>5.8.2 The IFC Environmental Health and Safety (EHS) Guidelines</b>	<b>82</b>
<b>5.8.3 IFC's Project Developer's Guide to Utility-Scale Solar Photovoltaic Power Plants (2015)</b>	<b>83</b>
<b>CHAPTER 6: DESCRIPTION OF THE RECEIVING ENVIRONMENT.....</b>	<b>84</b>
<b>6.1..... Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of a Scoping Report</b>	<b>84</b>
<b>6.2..... Regional Setting</b>	<b>84</b>
<b>6.3..... Climatic Conditions</b>	<b>88</b>
<b>6.4..... Biophysical Characteristics</b>	<b>88</b>
<b>6.4.1. Topography and Terrain</b>	<b>88</b>
<b>6.4.2. Geology, Soils, Land Type and Agricultural Potential</b>	<b>89</b>
<b>6.4.3.. Land Use</b>	<b>92</b>
<b>6.4.4. Ecological Profile</b>	<b>92</b>
<b>6.5. ... Heritage (including Archaeology and Palaeontology)</b>	<b>104</b>
<b>6.5.1. Identified Heritage Resources</b>	<b>104</b>
<b>6.5.2. Palaeontology</b>	<b>115</b>
<b>6.6..... Visual Quality</b>	<b>115</b>
<b>6.6.1 Identified Visual Receptors</b>	<b>116</b>
<b>6.7..... Social Profile</b>	<b>117</b>
<b>CHAPTER 7: SCOPING OF POTENTIAL ISSUES.....</b>	<b>119</b>
<b>7.1 Legal Requirements as per the EIA Regulations, 2014 (as amended) for the undertaking of a Scoping Report</b>	<b>119</b>
<b>7.2 Evaluation of Potential Impacts associated with the Construction Phase, Operation and Decommissioning phases</b>	<b>121</b>
<b>7.2.1 Impacts on ecology (including flora, fauna and avifauna)</b>	<b>121</b>



<b>7.2.2</b>	<b>Impacts on Freshwater Features</b>	123
<b>7.2.3</b>	<b>Impacts on Soils and Agricultural Potential</b>	125
<b>7.2.4</b>	<b>Impacts on Heritage (Archaeology and Palaeontology)</b>	128
<b>7.2.5</b>	<b>Impacts on the Visual Quality of the Area</b>	131
<b>7.2.6</b>	<b>Social Impacts</b>	135
<b>7.3</b>	<b>Evaluation of Potential Cumulative Impacts Associated with the Buffelspoort Solar PV Energy Facility</b>	141
<b>CHAPTER 8: CONCLUSIONS</b>		<b>145</b>
<b>8.1</b>	<b>Legal Requirements as per the EIA Regulations, 2014 (as amended) for the undertaking of a Scoping Report</b>	<b>145</b>
<b>8.2</b>	<b>Overview of the Buffelspoort Solar PV Energy Facility</b>	<b>145</b>
<b>8.3</b>	<b>Sensitivity Analysis for the Buffelspoort Solar PV Energy Facility</b>	<b>147</b>
8.3.1	Ecological Sensitive Features (including flora, fauna and avifauna)	147
8.3.2	Freshwater Sensitive Features	148
8.3.3	Soils and Agricultural Potential Sensitive Features	148
8.3.4	Heritage sensitive features (incl. archaeology and palaeontology)	149
<b>8.4</b>	<b>Overall Conclusion and Fatal Flaw Analysis</b>	<b>149</b>
<b>CHAPTER 9: PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESSMENT</b>		<b>152</b>
<b>9.1</b>	<b>Legal Requirements as per the EIA Regulations, 2014 (as amended) for the Undertaking of a Scoping Report</b>	<b>152</b>
<b>9.2</b>	<b>Objectives of the EIA Phase</b>	<b>153</b>
<b>9.3</b>	<b>Consideration of Alternatives</b>	<b>153</b>
<b>9.4</b>	<b>Description of Project to be assessed during the EIA Phase</b>	<b>154</b>
<b>9.4.1</b>	<b>Project description</b>	<b>154</b>
<b>9.4.2</b>	<b>Scope of the EIA Phase and EIA Report</b>	<b>155</b>
<b>9.5</b>	<b>Exclusion of specialist studies during the EIA Phase for the Buffelspoort Solar PV Energy Facility</b>	<b>157</b>
<b>9.6</b>	<b>Specialist Assessments to be undertaken during the EIA Phase</b>	<b>157</b>
<b>9.7</b>	<b>Methodology for the Assessment of Potential Impacts</b>	<b>167</b>
<b>9.8</b>	<b>Authority Consultation</b>	<b>168</b>
<b>9.9</b>	<b>Public Participation Process</b>	<b>169</b>
<b>9.10</b>	<b>Key Milestones of the Programme for the EIA</b>	<b>169</b>
<b>CHAPTER 10: REFERENCES</b>		<b>171</b>

## APPENDICES LIST

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<b>Appendix A:</b>	EIA Project Consulting Team
<b>Appendix B:</b>	Authority Consultation
<b>Appendix C:</b>	Public Participation Process
<i>Appendix C1:</i>	<i>I&amp;AP Database</i>
<i>Appendix C2:</i>	<i>Site Notices and Newspaper Advertisements</i>
<i>Appendix C3:</i>	<i>Background Information Document</i>
<i>Appendix C4:</i>	<i>Organs of State Correspondence</i>
<i>Appendix C5:</i>	<i>Stakeholder Correspondence</i>
<i>Appendix C6:</i>	<i>Comments Received</i>
<i>Appendix C7:</i>	<i>Minutes of Meetings</i>
<i>Appendix C8:</i>	<i>Comments and Responses Report</i>
<b>Appendix D:</b>	Terrestrial Ecology, Freshwater and Soils Scoping Assessment
<b>Appendix E:</b>	Heritage Scoping Assessment
<b>Appendix F:</b>	Visual Scoping Assessment
<b>Appendix G:</b>	Social Scoping Assessment
<b>Appendix H:</b>	Specialist Declarations and CVs
<b>Appendix I:</b>	Maps (A3)
<b>Appendix J:</b>	DFFE Screening Report
<b>Appendix K:</b>	Details of EAP and Declaration of Interest
<b>Appendix L:</b>	SG Codes for the Affected Properties

## CHAPTER 1: INTRODUCTION

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Buffelspoort Solar Project (Pty) Ltd is proposing to develop a Solar Photovoltaic (PV) Energy Facility and associated infrastructure (hereafter referred to as the "Project") on a site, located approximately 6km west of Mooinooi, within the jurisdiction of the Rustenburg Local Municipality and the Bojanala Platinum District Municipality in the North West Province on the following affected properties (i.e., the project site) (refer to **Figure 1.1**):

### Solar PV Energy Facility:

- » Portion 75 of Farm Buffelspoort 343JQ
- » Portion 134 of Farm Buffelspoort 343JQ

### Grid Connection Corridor:

- » Portion 75 of Farm Buffelspoort 343JQ
- » Portion 88 of Farm Buffelspoort 343JQ
- » Portion 89 of Farm Buffelspoort 343JQ
- » Portion 101 of Farm Buffelspoort 343JQ
- » Portion 119 of Farm Buffelspoort 343JQ
- » Portion 120 of Farm Buffelspoort 343JQ
- » Portion 101 of Farm Kafferskraal 342JQ
- » Portion 121 of Farm Kafferskraal 342JQ
- » Portion 122 of Farm Kafferskraal 342JQ
- » Portion 148 of Farm Kafferskraal 342JQ
- » Portion 236 of Farm Kafferskraal 342JQ
- » Portion 303 of Farm Kafferskraal 342JQ
- » Portion 374 of Farm Kafferskraal 342JQ
- » Portion 376 of Farm Kafferskraal 342JQ

The Project will have a contracted capacity of up to 40MWp and will be known as the Buffelspoort Solar PV Energy Facility. The purpose of the Project will be to supply power to a private off-taker through connecting to an existing 88kV Substation via a newly proposed 88kV single circuit overhead power line. The overhead power line will be approximately 2.5km in length and will be routed across several privately-owned properties from the onsite facility substation to the point of interconnection, north of the N4. The construction of the Project is aimed at diversifying the energy mix for the private off-taker and to reduce their reliance on Eskom supplied power. It is also a conscious effort for the off-taker to contribute to their sustainability targets and reduce their carbon footprint.

From a regional perspective, the North West Province, and particularly the area under investigation, is considered favourable for the development of a commercial Solar PV Energy Facility by virtue of prevailing climatic conditions, topography, the extent of the affected properties, the availability of a grid connection point and the availability of land on which the development can take place.

### **1.1 Requirement for an Environmental Impact Assessment 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.

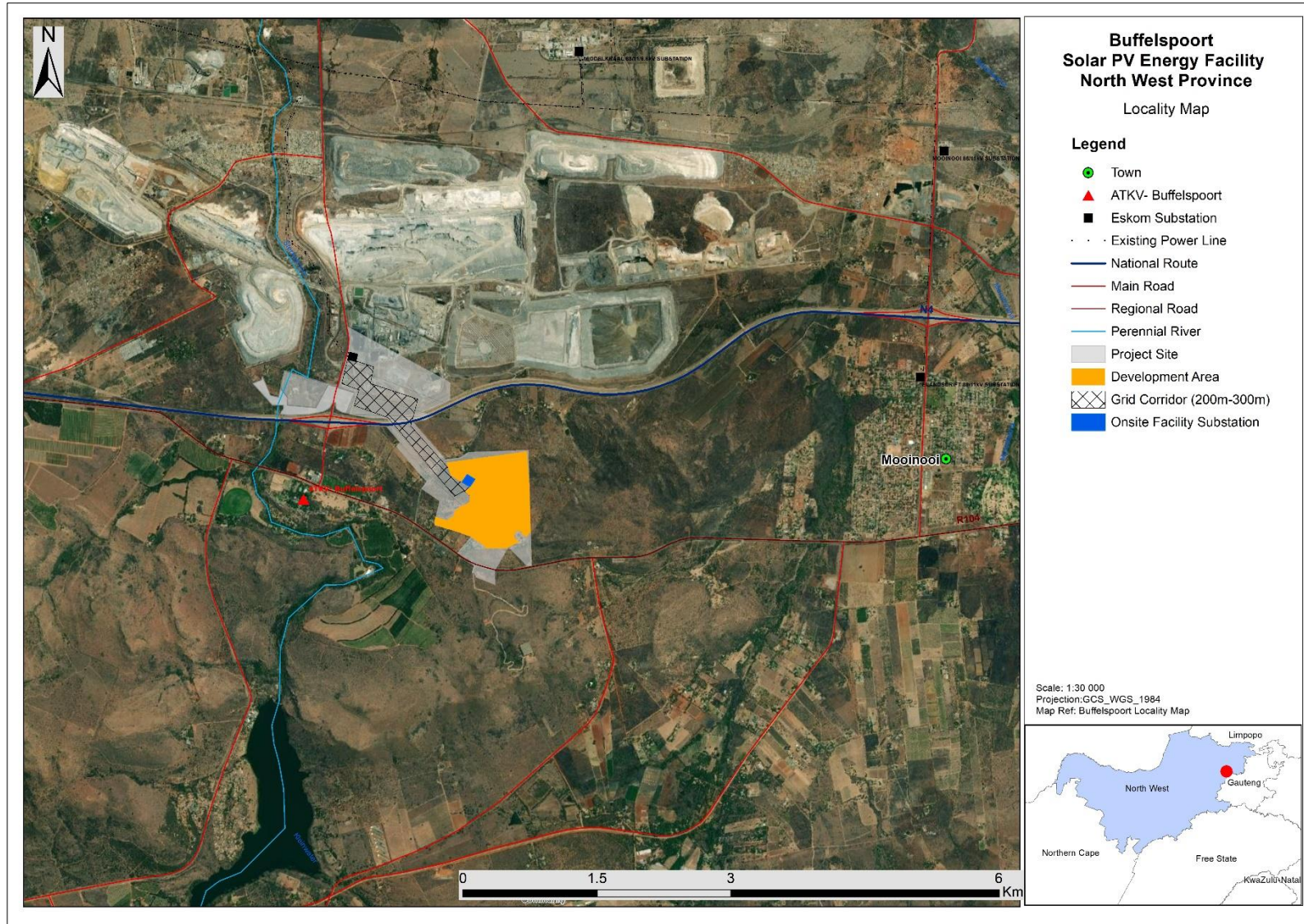
As the Project has the potential to impact on the environment, an EA is required subject to the completion of a full Scoping and Environmental Impact Assessment (S&EIA), as prescribed in Regulations 21 to 24 of the 2014 EIA Regulations, as amended (GNR 326). The need for EA subject to the completion of a full S&EIA is triggered by the inclusion of, amongst others, Activity 1 of Listing Notice 2 (GNR 325)<sup>6</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."*

According to the Explanatory Document for Government Notice No. 779 published in Government Gazette No. 40110 dated 01 July 2016, if the proponent will not, or does not, intend to participate in any of the Integrated Resource Plan programmes (IRP), the competent authority will be the Member of the Executive Council (MEC) responsible for environmental affairs in the respective province, unless another sub-section of section 24C of NEMA specifies the Minister to be the competent authority. Since the purpose of the Project is to generate power for exclusive use by a private off-taker, and since the Project will not be bid into the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) or a similar government programme, the North West Department: Economic Development, Environment, Conservation and Tourism (NWDEDECT) has been determined as the CA.

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<sup>6</sup> Refer to **Chapter 6** for a full list of applicable listed activities.



**Figure 1.1:** Locality map illustrating the location of the Buffelspoort Solar PV Energy Facility development area and grid connection corridor (refer to **Appendix I** for A3 map).

## 1.2 Legal Requirements as per the EIA Regulations, 2014 (as amended) for the undertaking of a Scoping Report

This Scoping 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 Scoping Report includes the following information required in terms of Appendix 2: Content of Scoping Report:

Requirement	Relevant Section
2(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 1.5</b> . The Curriculum vitae of the Savannah Environmental team have been included as <b>Appendix A</b> .
2(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> .
2(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 co-ordinates of the project site are included in <b>Table 1.1</b> .

This Scoping 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.
- » **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 Project.
- » **Chapter 5** outlines the process which was followed during the Scoping Phase of 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 identification and evaluation of the potential issues associated with the proposed Project.
- » **Chapter 8** presents the conclusions of the scoping evaluation for the Project.
- » **Chapter 9** describes the Plan of Study (PoS) for the EIA Phase.
- » **Chapter 10** provides references used to compile the Scoping Report.

## 1.3 Project Overview

A technically feasible project site<sup>7</sup>, with an extent of ~223ha has been identified by Buffelspoort Solar Project (Pty) Ltd as a technically suitable area for the development of the proposed Project. A

<sup>7</sup> The project site is the aerial extent of the affected properties (~223ha) within which the Buffelspoort Solar PV Energy Facility is proposed.



development area<sup>8</sup> of ~77ha has been identified within the project site by the project developer <sup>9</sup>for the development.

Infrastructure associated with the Solar PV Energy Facility and will include the following:

- » Solar PV arrays comprising PV panels and mounting structures.
- » Inverters and transformers.
- » Cabling between the arrays.
- » Onsite facility substation.
- » 88kV single circuit overhead power line for the distribution of the generated power, which will be connected to an existing 88kV Substation just north of the proposed project site.
- » Battery Energy Storage System (BESS)<sup>10</sup> – to be initiated at a later stage than the Solar PV Energy Facility.
- » Temporary laydown area.
- » Operations and Maintenance (O&M) building, which will include a site security office, warehouse, storage area and workshop.
- » Main access road (existing – to be upgraded with hard surface) and internal (new) gravel roads.
- » Fencing around the site, including an access gate.

A grid connection corridor, which varies in width from 200m to 300m and is up to 2.5km in length has been identified for assessment. The proposed grid connection infrastructure will be positioned within the confines of the assessed corridor. This corridor will allow for the consideration and avoidance of sensitive environmental features.

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

<b>Province</b>	<b>North West Province</b>
<b>District Municipality</b>	Bojanala Platinum District Municipality
<b>Local Municipality</b>	Rustenburg Local Municipality
<b>Ward Number (s)</b>	Ward 32
<b>Nearest town(s)</b>	Mooi-nooi (~6km east of the project site)
<b>Farm name(s) and number(s) of properties affected by the Project</b>	<p><u>Solar PV Energy Facility:</u></p> <ul style="list-style-type: none"> <li>» Portion 75 of Farm Buffelspoort 343JQ</li> <li>» Portion 134 of Farm Buffelspoort 343JQ</li> </ul> <p><u>Grid Connection Corridor:</u></p> <ul style="list-style-type: none"> <li>» Portion 75 of Farm Buffelspoort 343JQ</li> <li>» Portion 88 of Farm Buffelspoort 343JQ</li> <li>» Portion 89 of Farm Buffelspoort 343JQ</li> <li>» Portion 101 of Farm Buffelspoort 343JQ</li> <li>» Portion 119 of Farm Buffelspoort 343JQ</li> <li>» Portion 120 of Farm Buffelspoort 343JQ</li> </ul>

<sup>8</sup> The development area is that identified area (located within the project site) which has been assessed by specialists within this Scoping Report with the aim of identifying areas of sensitivity which should be avoided by the development footprint or facility layout. The development area is ~77ha in extent.

<sup>9</sup> The project developer, Buffelspoort Solar Project (Pty) Ltd will be the party responsible for the construction and day-to-day operation and maintenance of the proposed Solar PV Energy Facility.

<sup>10</sup> The BESS is included as part of the ESIA process albeit that the facility will only be installed after the Solar PV Energy Facility has come into operation. The total electricity requirements for the offtaker is currently under review and an energy master plan is being developed, which will only be finalised post implementation of the Solar PV Energy Facility to address all the electricity needs of the offtaker. The BESS has been included in this ESIA in order to ensure that should the energy master plan require this component to be included sooner than expected that it has already been authorized.

	<ul style="list-style-type: none"> <li>» Portion 101 of Farm Kafferskraal 342JQ</li> <li>» Portion 121 of Farm Kafferskraal 342JQ</li> <li>» Portion 122 of Farm Kafferskraal 342JQ</li> <li>» Portion 148 of Farm Kafferskraal 342JQ</li> <li>» Portion 236 of Farm Kafferskraal 342JQ</li> <li>» Portion 303 of Farm Kafferskraal 342JQ</li> <li>» Portion 374 of Farm Kafferskraal 342JQ</li> <li>» Portion 376 of Farm Kafferskraal 342JQ</li> </ul>
<b>SG 21 Digit Code (s)</b>	<ul style="list-style-type: none"> <li>» Portion 75 of Farm Buffelspoort 343JQ: T0JQ00000000034300075</li> <li>» Portion 88 of Farm Buffelspoort 343JQ: T0JQ00000000034300088</li> <li>» Portion 89 of Farm Buffelspoort 343JQ: T0JQ00000000034300089</li> <li>» Portion 101 of Farm Buffelspoort 343JQ: T0JQ00000000034300101</li> <li>» Portion 119 of Farm Buffelspoort 343JQ: T0JQ00000000034300119</li> <li>» Portion 120 of Farm Buffelspoort 343JQ: T0JQ00000000034300120</li> <li>» Portion 134 of Farm Buffelspoort 343JQ: T0JQ00000000034300134</li> <li>» Portion 101 of Farm Kafferskraal 342JQ: T0JQ00000000034200101</li> <li>» Portion 121 of Farm Kafferskraal 342JQ: T0JQ00000000034200121</li> <li>» Portion 122 of Farm Kafferskraal 342JQ: T0JQ00000000034200122</li> <li>» Portion 148 of Farm Kafferskraal 342JQ: T0JQ00000000034200148</li> <li>» Portion 236 of Farm Kafferskraal 342JQ: T0JQ00000000034200236</li> <li>» Portion 303 of Farm Kafferskraal 342JQ: T0JQ00000000034200303</li> <li>» Portion 374 of Farm Kafferskraal 342JQ: T0JQ00000000034200374</li> <li>» Portion 376 of Farm Kafferskraal 342JQ: T0JQ00000000034200376</li> </ul>
<b>Current Zoning</b>	Agricultural (currently being used as a leisure Game farm by the landowner)
<b>Site Coordinates (centre of project site)</b>	25°45'17.15"S 27°30'7.90"E

The key infrastructure components proposed as part of the Project are described in greater detail in Chapter 2 of this Scoping Report.

The overarching objective for the Project 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.

The full extent of the development area and the grid connection corridor (200-300m wide and ~2.5km long) have been considered within this Scoping Report with the aim of determining the suitability from an environmental and social perspective and identifying areas that should be avoided in development planning. Within this identified development area, a development footprint<sup>11</sup> or facility layout will be defined for assessment in the EIA Phase. The development area is larger than the area required for the development footprint of a 40MWp Solar PV Energy Facility and therefore provides the opportunity for the optimal placement of infrastructure, ensuring avoidance of major identified environmental sensitivities or constraints identified through this S&EIA process.

<sup>11</sup> The development footprint is the defined area (located within the development area) where the Solar PV Energy Facility and other associated infrastructure for the Project is planned to be constructed. This is the actual footprint of the facility, and the area which would be disturbed.



The facility layout (to be confirmed during the EIA Phase) for the Project, including a BESS, and all associated infrastructure, will be informed by the environmental sensitivities or constraints identified through the scoping evaluation, ensuring avoidance of the identified environmental sensitivities or constraints through the appropriate placement of infrastructure within the development footprint and grid connection corridor.

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

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 project 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 development area 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 development area 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.

#### 1.5 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 project developer 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.

Neither Savannah Environmental nor any of its specialists are subsidiaries or are affiliated to the project developer. 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:

- » **Mmakoena Mmola** the principle Environmental Assessment Practitioner (EAP) for the project and author of this Scoping Report, holds a B.Sc. Honours in Geochemistry from the University of the Witwatersrand and over 4 years of experience in the environmental management field. Her key focus is on undertaking environmental impact assessments, environmental permitting and authorisations, compliance auditing, public participation, and environmental management programmes. She is registered as a Professional Natural Scientist with the South African Council for Natural Scientific Professions (SACNASP), Registration Number: 126748 and an EAP with the Environmental Assessment Practitioners Association of South Africa (EAPASA), Number: 2019/260.
- » **Jo-Anne Thomas** is a registered EAP with the Environmental Assessment Practitioners Association of South Africa (EAPASA - 2019/726) and is registered as a Professional Natural Scientist with the South African Council for Natural Scientific Professions (SACNASP). 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.
- » **Nondumiso Bulunga** is a Social, GIS and Stakeholder Engagement Specialist at Savannah Environmental. Nondumiso has eight (8) years working experience in project management and facilitation in various industries such as environmental services field including but not limited to recycling, industrial, energy, mining, and agriculture. Working for small and large organisations, Nondumiso has gained exposure in research, collection of data, critical analysis, GIS, and environmental solutions. Nondumiso has worked on projects in South Africa and Malawi. Nondumiso is very well versed in the IFC Environmental and Social Performance Standards (including IFC PS 2012) and the associated Equator Principles, which have informed the approach and standard for projects regarding ESIA. Nondumiso is skilled at organising and driving effective project teams at a scale relevant to the project's requirements. She has technical experience and can quickly identify the most pertinent issues of a particular project whilst focussing on driving project success by rigorously implementing project management tools.

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

Specialist	Area of Expertise
Jan Jacobs and Andrew Husted of The Biodiversity Company	Terrestrial Ecology (including flora, fauna and avifauna), Freshwater and soils
Nondumiso Bulunga of Savannah Environmental (Pty) Ltd and peer reviewed by Dr Neville Bews of Dr Neville Bews & Associates	Social

Lourens du Plessis of LoGIS	Visual
Wouter Fourie and Michelle Sachse of PGS Heritage	Heritage including archaeology and palaeontology)

**Appendix A** includes the curricula vitae for the Savannah Environmental team CVs of the specialist consultants are included in **Appendix H**.

## CHAPTER 2 : PROJECT DESCRIPTION

This Chapter provides an overview of the Project 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 S&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 a Scoping Report

This chapter of the Scoping Report includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
2(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.	The location of the proposed Project is detailed in <b>Chapter 1, Table 1.1</b> , as well as <b>section 2.2.1</b> below.
2(1)(d)(ii) a description of the scope of the proposed activity, including a description of the activities to be undertaken including associated structures and infrastructure	A description of the activities to be undertaken with the development of the Project is included in <b>Table 2.1</b> and <b>Table 2.2</b> .

### 2.2 Nature and Extent of the Buffelspoort Solar PV Energy Facility

Buffelspoort Solar Project (Pty) Ltd is proposing to develop a Solar PV Energy Facility and associated infrastructure to generate electricity for use by a private off-taker. The construction of the Solar PV Energy Facility is aimed at diversifying the energy mix for the private off-taker and to reduce their reliance on Eskom supplied power. It is also a conscious effort for the off-taker to contribute to their sustainability targets and reduce their carbon footprint. The Project will be developed in a single phase (with the exception of the BESS which will be phased in at a later stage) and will have a contracted capacity of up to 40MWp. The Project will make use of fixed-tilt or single-axis tracking PV technology and bifacial panels.

The Project will comprise solar panels which, once installed, will stand up to 3m above ground level. The solar panels will include string inverters mounted above ground.

#### 2.2.1 Project Overview

The Project is to be developed on a site located approximately 6km west of Mooinooi. The development area and grid connection corridor fall within the Rustenburg Local Municipality of the Bojanala Platinum District Municipality in the North West Province. The full extent of the development area (~77ha) and the grid connection corridor (200-300m wide and ~2.5km long) have been considered within this Scoping

Phase of the S&EIA process, within which the development footprint will be appropriately located from a technical and environmental sensitivity perspective. The development area and grid connection corridor on the following affected properties:

Solar PV Energy Facility:

- » Portion 75 of Farm Buffelspoort 343JQ
- » Portion 134 of Farm Buffelspoort 343JQ

Grid Connection Corridor:

- » Portion 75 of Farm Buffelspoort 343JQ
- » Portion 88 of Farm Buffelspoort 343JQ
- » Portion 89 of Farm Buffelspoort 343JQ
- » Portion 101 of Farm Buffelspoort 343JQ
- » Portion 119 of Farm Buffelspoort 343JQ
- » Portion 120 of Farm Buffelspoort 343JQ
- » Portion 101 of Farm Kafferskraal 342JQ
- » Portion 121 of Farm Kafferskraal 342JQ
- » Portion 122 of Farm Kafferskraal 342JQ
- » Portion 148 of Farm Kafferskraal 342JQ
- » Portion 236 of Farm Kafferskraal 342JQ
- » Portion 303 of Farm Kafferskraal 342JQ
- » Portion 374 of Farm Kafferskraal 342JQ
- » Portion 376 of Farm Kafferskraal 342JQ

The project site (i.e., the affected properties) within which the Project is proposed is situated north of the R104 provincial road, which will provide access to the project site, south of the N4 national road and west of Marikana Road (refer to **Figure 2.1**).



**Figure 2.1:** Location of the R104, N4 and Marikana Road in relation to the Project.

## 2.2.2 Components of the Buffelspoort Solar PV Energy Facility

Infrastructure associated with the Solar PV Energy Facility will include:

- » Solar PV arrays comprising PV panels and mounting structures.
- » Inverters and transformers.
- » Cabling between the arrays.
- » Onsite facility substation.
- » 88kV single circuit overhead power line for the distribution of the generated power, which will be connected to an existing 88kV Substation just north of the proposed project site.
- » Battery Energy Storage System (BESS)<sup>12</sup> – to be initiated at a later stage than the Solar PV Energy Facility.
- » Temporary laydown area.
- » Operations and Maintenance (O&M) building, which will include a site security office, warehouse, storage area and workshop.
- » Main access road (existing – to be upgraded with hard surface) and internal (new) gravel roads.
- » Fencing around the site, including an access gate.

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 or infrastructures proposed as part of the Project. Specific details to be confirmed in the EIA phase.

Infrastructure	Footprint and dimensions
Number of Modules	Up to 75 000 modules (560Wp modules for the generation of up to 40MWp)
Contracted Capacity	Up to 40MWp
Area occupied by the solar array	up to 30ha
Panel Height	Up to 3m
Technology	The Project will make use of fixed-tilt or single-axis tracking PV technology and bifacial panels
Inverters	<ul style="list-style-type: none"> <li>» Up to 160 inverters</li> <li>» Height: 660mm</li> </ul>
BESS	<ul style="list-style-type: none"> <li>» Proposed technology: Lithium - Ion or Lithium-iron-phosphate or Redox Vanadium battery technology</li> <li>» Footprint: up to 2ha</li> <li>» Height: Up to 3m</li> <li>» Proposed capacity of battery storage: 30MW / 4 hours of usable energy at Beginning of Life</li> <li>»</li> </ul>
Other infrastructures	<ul style="list-style-type: none"> <li>» Fencing: 3m high around 4 400m</li> <li>» O&amp;M building (including site security office, warehouse, storage area and workshop): 500m<sup>2</sup>, 3m high</li> </ul>

<sup>12</sup> The BESS is included as part of the ESIA process albeit that the facility will only be installed after the Solar PV Energy Facility has come into operation. The total electricity requirements for the off-taker is currently under review and an energy master plan is being developed, which will only be finalised post implementation of the Solar PV Energy Facility to address all the electricity needs of the off-taker. The BESS has been included in this ESIA in order to ensure that should the energy master plan require this component to be included sooner than expected that it has already been authorized.

Infrastructure	Footprint and dimensions
Area occupied by temporary laydown area	100m x 100m
Area occupied by the onsite facility substation	1ha
Capacity of onsite facility substation	88kV
Access and internal roads associated with the facility	An existing access road, which may be upgraded with hard surface, will be used to access the facility (up to 6m wide). Newly proposed internal gravel roads will be established between the arrays (3.5 m wide) and around the boundary of the site (2.5 m wide).
Grid connection	<p>A grid connection corridor, which is up to 200-300m wide and 2.5 km long to allow for avoidance of environmental sensitivities, and suitable placement of the overhead power line within the corridor has been identified and assessed as part of the S&amp;EIA process. The dimensions of newly proposed overhead power line are provided below:</p> <ul style="list-style-type: none"> <li>» Capacity and circuit of the power line: 88kV (single circuit)</li> <li>» Power line servitude width: 32m</li> <li>» Height of the power line towers (pylons): 16-24m</li> </ul> <p>During construction, a permanent access road along the length of the power line corridor between 4 – 8m wide will be established to allow for large crane movement. This track will then be utilised for maintenance during operation.</p>
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 operational phase.

**Table 2.2** provides details regarding the requirements and the activities to be undertaken during the Project development phases (i.e., construction phase, operation phase and decommissioning phase). **Section 2.3** provides details of the technology considered for the Project.



### 2.2.3 Project Development Phases Associated with the Buffelspoort Solar PV Energy Facility

**Table 2.2:** Details of the 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 NWDEDECT.</li> <li>» Expected to be up to 12 months.</li> <li>» Create direct construction employment opportunities. The number of employment opportunities to be created during the construction phase will be derived as the Project modelling progresses during the EIA Phase.</li> <li>» No on-site labour camps are planned to be established during the construction phase. Workers will be sourced from the neighbouring towns and will be transported to site daily.</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 sourced from the off-taker. The off-taker is in the process of executing an electrical reticulation project which will entail upgrading all electrical supply and reticulation at the off-taker's quarantine facility.</li> <li>» Water required for the construction phase will be sourced from the onsite boreholes (x3) and stored in storage tanks.</li> <li>» Sewage due to the presence of personnel on-site will be produced during the construction phase. Mobile chemical toilets will be used, and these will be emptied and maintained regularly.</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, topographical survey and hydrological survey; site survey and confirmation of the panel micro-siting footprint and micro-siting of the pylons of the power line; and survey of the onsite facility substation site to determine and confirm the locations of all associated infrastructure.</li> </ul>
Undertake site preparation	<ul style="list-style-type: none"> <li>» Including the clearance of vegetation at the footprint of PV panel supports, onsite substation, power line tower positions, establishment of the laydown area, 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 to 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 access roads to the site and internal roads	<ul style="list-style-type: none"> <li>» Internal gravel access roads between the arrays (3.5 m wide) and around the boundary of the site (2.5 m wide) will be established at the commencement of construction.</li> <li>» An existing access road, which might possibly be upgraded with hard surface, will be used to access the facility (up to 6 m wide).</li> <li>» During construction, a permanent access road along the length of the power line corridor between 4 - 8m wide will be established to allow for large crane movement.</li> </ul>
Establishment of	<ul style="list-style-type: none"> <li>» A laydown area for the storage of PV panels, project components and civil engineering construction equipment.</li> </ul>



<p>laydown area and temporary concrete batching plant</p>	<ul style="list-style-type: none"> <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 25m x 25m in extent to facilitate the concrete requirements for foundations, if required.</li> </ul>
<p>Construct foundation</p>	<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> <li>» Ramming of the piles or predrilling with concrete filling with be considered if the ground is found to be hard.</li> </ul>
<p>Transport of components and equipment to and within the site</p>	<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>
<p>Erect PV Panels and Construct Substation, Invertors and BESS</p>	<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 Alternate Current (AC) and Direct Current (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 onsite AC electrical infrastructure and ultimately the Project's onsite substation. This process also involves the installation of the BESS facility.</li> </ul> <p>The following simplified sequence is conducted for the construction of the substation:</p> <ul style="list-style-type: none"> <li>» Step 1: Conduct geotechnical investigations to determine founding conditions;</li> <li>» Step 2: Conduct site survey;</li> <li>» Step 3: Vegetation clearance and construction of access road;</li> <li>» Step 4: Site grading and levelling;</li> <li>» Step 5: Construction of foundations;</li> <li>» Step 6: Import of collector substation components;</li> <li>» Step 7: Construction of collector substation;</li> </ul>

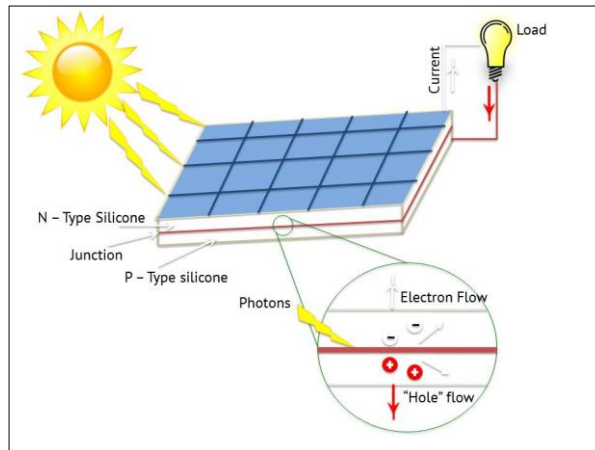
	<ul style="list-style-type: none"> <li>» Step 8: Rehabilitation of disturbed area and protection of erosion sensitive areas; and</li> <li>» Step 9: Testing (including quality control) and commissioning (in consultation with the switching specialist).</li> </ul>
Connection of PV panels to the onsite substation	<ul style="list-style-type: none"> <li>» PV arrays to be connected to the onsite substation via underground electrical cables.</li> <li>» Excavation of trenches is required for the installation of the cables. Trenches will be approximately 1.5 m 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>
Construction overhead power line to connect the onsite facility substation to the existing 88kV substation	<p>An 88kV single circuit overhead power line will be constructed to connect the onsite facility substation to an existing 88kV substation. Overhead power lines are constructed in the following simplified sequence:</p> <ul style="list-style-type: none"> <li>» Step 1: Surveying of the development corridor and negotiating with affected landowner (i.e., the off-taker);</li> <li>» Step 2: Final design and micro-siting of the infrastructure based on geo-technical, topographical conditions and potential environmental sensitivities; obtain required environmental permits (such as biodiversity permits, heritage permits &amp; WUL/GA);</li> <li>» Step 3: Vegetation clearance and construction of access roads/tracks (where required);</li> <li>» Step 4: Construction of tower foundations;</li> <li>» Step 5: Assembly and erection of infrastructure within and along the corridor;</li> <li>» Step 6: Stringing of conductors;</li> <li>» Step 7: Rehabilitation of disturbed areas; and</li> <li>» Step 8: Continued maintenance.</li> </ul>
Establishment of ancillary infrastructure	<ul style="list-style-type: none"> <li>» An O&amp;M building, which will include a site security office, warehouse, storage area and workshop will be required.</li> <li>» Establishment of ancillary infrastructure will require the clearing of vegetation, levelling, and the excavation of foundations prior to construction.</li> </ul>
Undertake site rehabilitation	<ul style="list-style-type: none"> <li>» Commence with rehabilitation efforts once construction is 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 up to 15 years or as required by the off-taker (with the possibility to extend should it be required).</li> <li>» Requirements for security and maintenance of the project.</li> <li>» Employment opportunities relating mainly to operation activities and maintenance. The number of employment opportunities to be created during the operation phase will be derived as the Project modelling progresses during the EIA Phase.</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>» During the operational phase, water will mostly be required for the cleaning of panels and will be sourced from the onsite boreholes (x3) where it will be stored in storage tanks.</li> <li>» Sewage due to the presence of maintenance personnel on-site will be produced during the operation phase. There are Sewage Lines installed at all the off-taker's buildings at all facilities (Quarantine (old Bosveld Paradys), and Conference facility). Septic Tanks and French drains are installed to catch up all dirt and sewage water. These are emptied, when necessary, by the service provider – DEONAK. Therefore, during the</li> </ul>

	operation phase, the toilets at the off-taker's facilities will be used by maintenance personnel.
<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 more than twice a year during operation using clean water with no cleaning products or using non-hazardous biodegradable cleaning products. The exact number of cleaning cycles will be confirmed once more knowledge on the soiling on site is acquired.</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 Project 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 15 years (with maintenance) or as required by the off-taker before decommissioning is required.</li> <li>» A decommissioning Environmental Management Programme (EMPr) will be drafted and complied with at that decommissioning stage of the project lifecycle.</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 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>

It is expected that the area affected by the facility (development footprint) will revert back to its original land-use once the Project 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

The Project will have a contracted capacity of up to 40MWp and will make use of PV technology. Solar energy facilities use 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, therefore placing the electrons into a higher state of energy to create electricity refer to **Figure 2.3**).



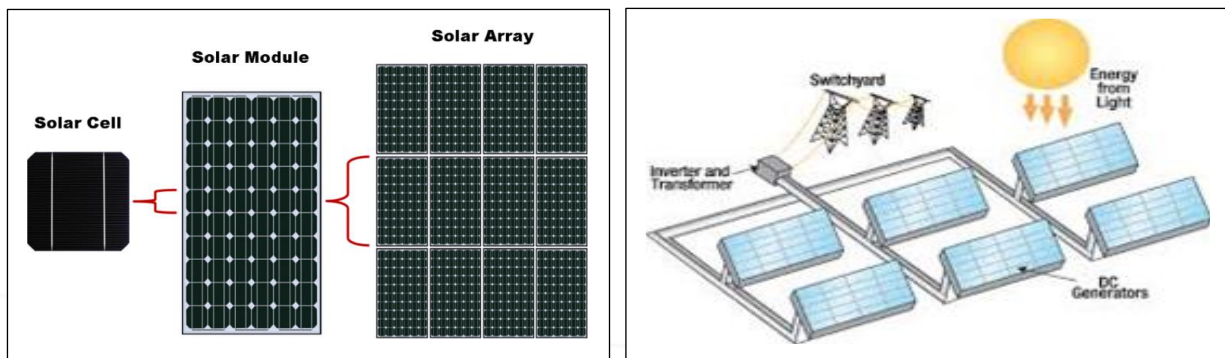
**Figure 2.3:** Diagram illustrating the Photovoltaic Effect (Source: Centre for Sustainable Energy).

The solar field of the PV facility will comprise the following components:

#### PV Cells, Modules and Arrays:

A PV cell is made of silicon that acts as a semiconductor used to produce the photovoltaic effect. PV cells are arranged in multiples / arrays and placed behind a protective glass sheet to form a PV module (Solar Panel). 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)). A solar PV module is made up of individual solar PV cells connected together, whereas a solar PV array is a system made up of a group of individual solar PV modules electrically wired together to form a much larger PV installation.

PV modules are designed to operate continuously for more than 20 years, mostly unattended and with low maintenance.



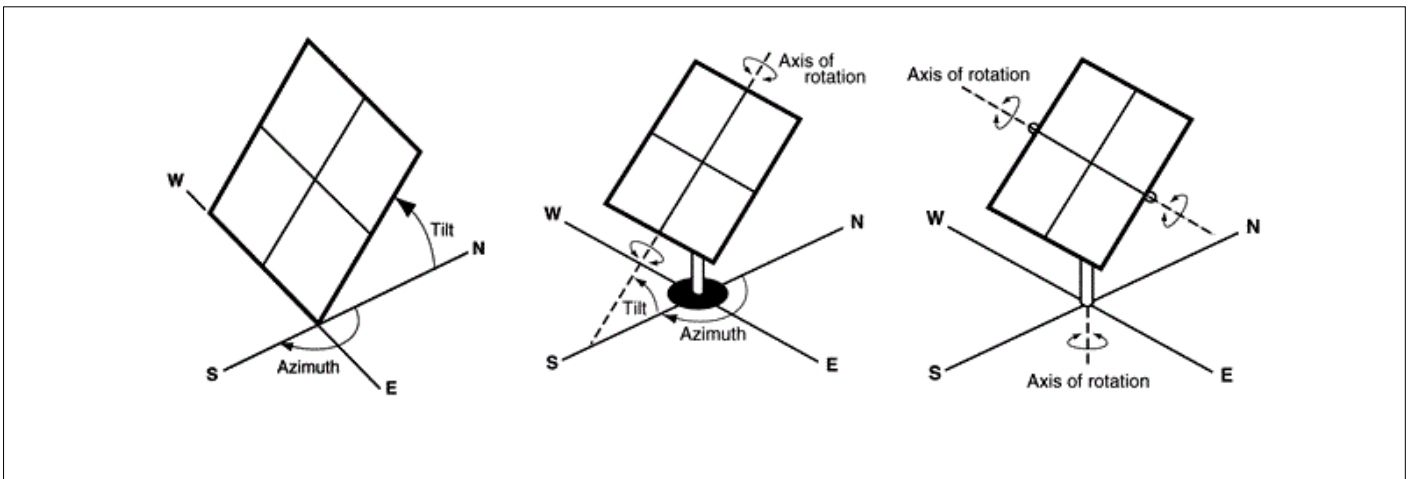
**Figure 2.4:** Overview of a PV cell, module, and array (Source: pveducation.com).

## Inverters

Inverters are used to convert the electricity produced by the PV cells from DC into Alternating Current (AC) to enable the distribution of the electricity generated to the private off-taker's electricity point of interconnection. Numerous inverters will be arranged in several arrays to collect and convert power produced by the Solar PV Energy Facility.

## Support Structures

The PV panels will be fixed to support structures to maximise exposure to the sun. They can either utilise fixed / static support structures or alternatively single or double axis tracking support structures. PV panels that utilise fixed / static support structures are set at an angle (fixed-tilt PV system), 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 Project and may be adjusted to optimise for summer and winter solar radiation characteristics. PV panels that utilise tracking support structures track the movement of the sun throughout the day, to receive the maximum amount of solar irradiation.

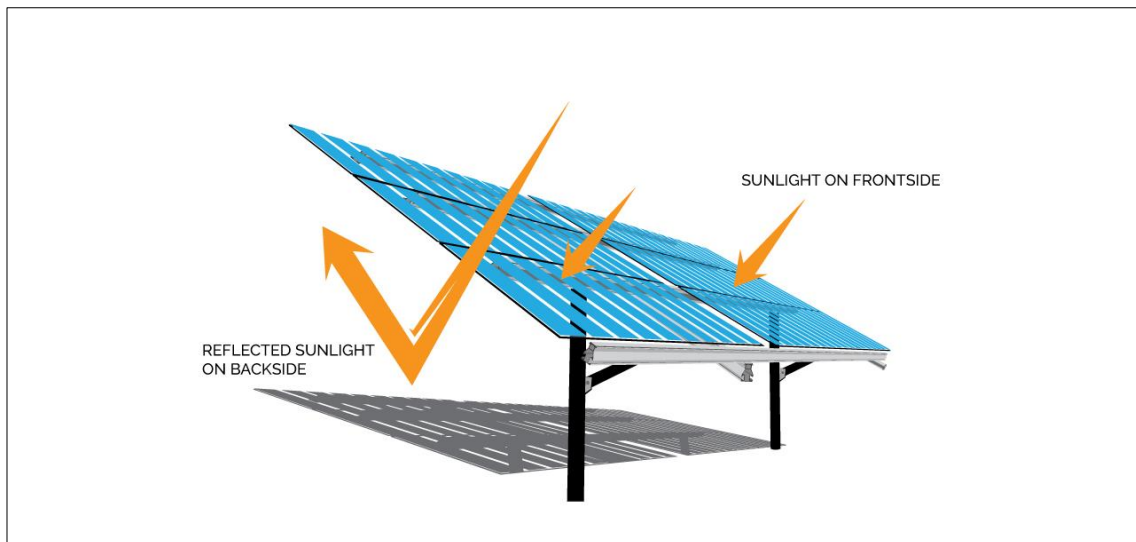


**Figure 2.5:** Overview of different PV tracking systems (from left to right: fixed-tilt, single-axis tracking, and double-axis tracking (Source: pveducation.com)).

## Bifacial Solar Panel Technology

Buffelspoort Solar Project (Pty) Ltd 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**

The need for a BESS stems from the fact that electricity is only produced by the Solar PV Energy Facility while the solar resource is available, while the peak demand may not necessarily occur during the daytime or as the resource is available. 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 Energy Facility into the mine distribution system.
- » This will assist with the objective to generate electricity by means of renewable energy to feed into the mine distribution system.
- » Proposed footprint of battery storage area: up to 2ha.
- » Proposed capacity of battery storage: 30MW / 4h of usable energy at Beginning of Life.

The BESS is included as part of the ESIA process albeit that the facility will only be installed after the Solar PV Energy Facility has come into operation. The total electricity requirements for the off-taker is currently under review and an energy master plan is being developed, which will only be finalised post implementation of the Solar PV Energy Facility to address all the electricity needs of the off-taker. The BESS has been included in this ESIA in order to ensure that should the energy master plan require this component to be included sooner than expected that it has already been authorized.

The type of battery storage will only be determined at a later stage and will be based solely on the technological advancements made in the battery technology field. The storage solution will remain a containerised solution.



**Table 2.3:** Photographs of the construction phase of a solar facility similar to the Buffelspoort Solar PV Energy Facility (Source: <https://medium.com/@solar.dao/how-to-build-pv-solar-plant-6c9f6a01020f>; <https://www.shutterstock.com/video/clip-1028794-workers-mounting-panels-on-solar-power-plant-construction>; <https://www.esi-africa.com/renewable-energy/kenya-construction-solar-farm-gets-green-light/>).





## CHAPTER 3: CONSIDERATION OF ALTERNATIVES

This Chapter provides an overview of the site selection process and various alternatives considered for the Project as part of the S&EIA Process.

### 3.1 Legal Requirements as per the EIA Regulations, 2014 (as amended) for the undertaking of a Scoping Report

This chapter of the Scoping Report includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
2(1)(f) a motivation for the preferred site, activity, and technology alternative	The identification and motivation for the preferred project site, the development area within the project site, the proposed activity and the proposed technology is included in <b>sections 3.3.1, 3.3.3 and 3.3.4.</b>
2(1)(g)(i) details of the alternative considered	The details of all alternatives considered as part of the Project are included in <b>sections 3.3.1 – 3.3.5.</b>
2(1)(g)(ix) the outcome of the site selection matrix	The site selection process followed by the project developer in order to identify the preferred project site and development area is described in <b>section 3.3.1.</b>
2(1)(g)(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such	Where no alternatives have been considered, motivation has been included. This is included in <b>section 3.3.</b>

### 3.2 Alternatives Considered during the S&EIA Process

In accordance with the requirements of Appendix 2 of the 2014 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 Department of Forestry, Fisheries and the Environment (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:

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

In this instance, 'the Project' refers to the Buffelspoort Solar PV Energy Facility, a Solar PV Energy Facility with capacity of up to 40MWp and associated infrastructure proposed to be developed in order to generate electricity for use by a private off-taker. The construction of the Solar PV Energy Facility is aimed at diversifying the energy mix for the private off-taker and to reduce their reliance on Eskom supplied power. It is also a conscious effort for the off-taker to contribute to their sustainability targets and reduce their 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>13</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 Integrated Resource Plan (IRP) includes provision for distributed generation capacity for own use. The threshold for distributed generation was raised to 100MW 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 S&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.
- » The operational aspects of 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 Project. Where no alternative is being considered, a motivation has been provided as required by the EIA Regulations, 2014, as amended.

## **3.3 Project Alternatives under Consideration for the Buffelspoort Solar PV Energy Facility**

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

The project site is located ~6km west of the town of Moonooi in the North West Province. Originally, three (3) development area alternatives were identified, which were deemed to be suitable for the development of a Solar PV Energy Facility (refer to **Figure 3.1**). These sites were selected based on the following criteria:

- » Solar resource.

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<sup>13</sup> The Integrated Resource Plan (IRP) is legislated policy which regulates power generation planning.

- » Proximity to the private off-taker and point of interconnection.
- » Land availability and ownership.
- » Site topography.
- » Limited environmental sensitivities.
- » Access to infrastructure and utilities.



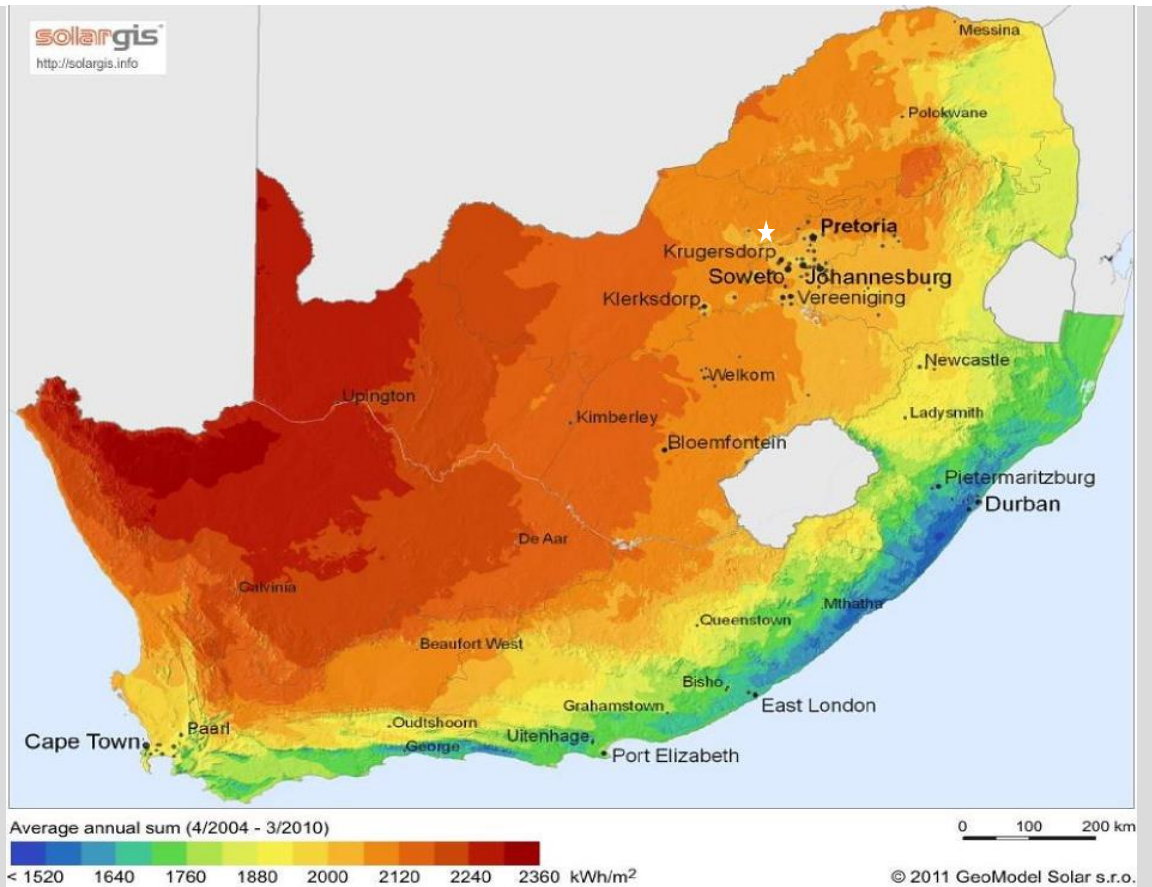
**Figure 3.1:** Prospective sites investigated prior to initiation of the S&EIA process.

The three (3) development area alternatives were subject to a desktop assessment prior to initiation of the S&EIA process. As part of the desktop assessment, the DFFE Screening Tool, along with the South African National Biodiversity Institute (SANBI) database and the Integrated Biodiversity Assessment tool were used. The results of the desktop assessment are detailed in **Table 3.1** below.

**Table 3.1:** Site selection determination

Assessment Criteria	Site Alternative 1	Site Alternative 2	Site Alternative 3
<b>Solar resource</b>	Solar resource is the first main driver of site selection and property viability when considering the development of Solar PV Energy Facilities. The economic viability of a Solar PV Energy 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 2 000 – 2 120 kWh/m <sup>2</sup> /annum (refer to <b>Figure 3.2</b> ). This is considered feasible for the development of a Solar PV Energy Facility.		





**Figure 3.2:** Solar irradiation map for South Africa; the proposed Project position is shown by the white star on the map (Source: adapted from GeoModel Solar, 2011).

<b>Property details</b>	<ul style="list-style-type: none"> <li>» Portion 75 of Buffelspoort 343 JQ</li> <li>» Portion 134 of Buffelspoort 343 JQ</li> <li>» Portion 94 of Elandsdrift 467 JQ</li> <li>» Portion 29 of Elandsdrift 467 JQ</li> <li>» Portion 178 of Elandsdrift 467 JQ</li> </ul>	<ul style="list-style-type: none"> <li>» Portion 62 of Elandsdrift 467 JQ</li> <li>» Portion 116 of Elandsdrift 467 JQ</li> <li>» Portion 25 of Elandsdrift 467 JQ</li> </ul>	<ul style="list-style-type: none"> <li>» Portion 333 of the Farm Rooikoppies 297 JQ</li> </ul>
<b>Property Size</b>	~226 ha	~149 ha	~188 ha
<b>Availability and Ownership</b>	Owned by the private off-taker	Privately-owned land	Sibanye Mine owned land
<b>Proximity to the private off-taker</b>	~3.5 km	~8 km	~3.1 km
<b>Land use</b>	<ul style="list-style-type: none"> <li>» Development area: game farming</li> <li>» Surrounding land use:                             <ul style="list-style-type: none"> <li>- mining operations,</li> <li>- agriculture and</li> <li>- small holdings</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>» Development area: small holding</li> <li>» Surrounding land use:                             <ul style="list-style-type: none"> <li>- mining operations,</li> <li>- agriculture</li> <li>- informal settlements</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>» Development area: small holding</li> <li>» Surrounding land use:                             <ul style="list-style-type: none"> <li>- mining operations,</li> <li>- agriculture</li> <li>- small holdings</li> </ul> </li> </ul>
<b>Topography</b>	Flat with rocky outcrops to the east, north and south of the site	The site is situated between two stream systems to the west and the east and flat.	Most of the site being flat and certain areas have been transformed
<b>Access to infrastructure and utilities</b>	<ul style="list-style-type: none"> <li>» Randwater pipeline transects the property to the east</li> <li>» Site is serviced by three</li> </ul>	<ul style="list-style-type: none"> <li>» Site is accessed via the N4 Bakwena Toll Road, Marikana offramp road</li> </ul>	<ul style="list-style-type: none"> <li>» In close proximity to N4 (700m)</li> <li>» Site is accessed via N4</li> </ul>

	<p>boreholes</p> <ul style="list-style-type: none"> <li>» Site is fenced</li> <li>» Site is accessed via the N4 Bakwena Toll Road, Marikana off ramp road and the R104</li> <li>» 11kV power line transects the site</li> <li>» Helipad has been constructed</li> </ul>		<p>Bakwena Toll road, Lonhro drive road and a gravel road that T's of from there</p>
<b>Interconnection:</b>	<ul style="list-style-type: none"> <li>» 11/88kV Switching station proposed on the north western boundary of Portion 75 of the Farm Buffelspoort 343 JQ</li> <li>» The facility will connect via a 2.5 km 88kV overhead power line to be constructed.</li> <li>- Overhead power line will be routed across properties owned by the off-taker, where possible.</li> </ul>	<ul style="list-style-type: none"> <li>» ~3 km 132kV overhead power line to be constructed within existing road servitude.</li> </ul>	<ul style="list-style-type: none"> <li>» 8-9km 132kV overhead power line to be constructed</li> <li>- Overhead power line will traverse natural area for a portion of the alignment</li> <li>- Remainder of overhead power line will be routed within existing servitudes adjacent existing infrastructure.</li> </ul>
<b>Environmental Constraints</b>	<p><u>Fauna:</u></p> <ul style="list-style-type: none"> <li>» Outside the 20 km radius for the Cape Vulture Restaurant</li> </ul> <p><u>Vegetation:</u></p> <ul style="list-style-type: none"> <li>» Marikana Thornveld</li> <li>» occurs as open Acacia karoo woodland,</li> <li>» Shrubs are denser along drainage lines, on termitaria and rocky outcrops</li> <li>» Part of an Ecological Support Area</li> <li>» Possible CBA2 fringe areas.</li> <li>» Site was previously transformed: more than 50%.</li> </ul> <p><u>Water features</u></p> <ul style="list-style-type: none"> <li>» 2 artificial dams are on site</li> </ul> <p><u>Heritage</u></p> <ul style="list-style-type: none"> <li>» Remnants of a graveyard was identified</li> </ul>	<p><u>Fauna:</u></p> <ul style="list-style-type: none"> <li>» Situated within 20 km of a known Cape Vulture Restaurant.</li> </ul> <p><u>Vegetation</u></p> <ul style="list-style-type: none"> <li>» Marikana Thornveld</li> <li>» occurs as open Acacia karoo woodland,</li> <li>» Shrubs are denser along drainage lines, on termitaria and rocky outcrops</li> <li>» Part of an Ecological Support Area</li> <li>» Possible CBA2 area</li> </ul> <p><u>Water features</u></p> <ul style="list-style-type: none"> <li>» There are wetlands within 500m from the site.</li> <li>» The area is also listed as an Aquatic CBA</li> </ul> <p><u>Heritage</u></p> <ul style="list-style-type: none"> <li>» None identified</li> </ul>	<p><u>Fauna:</u></p> <ul style="list-style-type: none"> <li>» Situated within 20 km of a known Cape Vulture Restaurant.</li> </ul> <p><u>Vegetation</u></p> <ul style="list-style-type: none"> <li>» Marikana Thornveld</li> <li>» occurs as open Acacia karoo woodland,</li> <li>» Shrubs are denser along drainage lines, on termitaria and rocky outcrops</li> <li>» Part of an Ecological Support Area</li> <li>» Possible CBA2 area</li> </ul> <p><u>Water features</u></p> <ul style="list-style-type: none"> <li>» Situated between two stream systems to the west and the east.</li> </ul> <p><u>Heritage</u></p> <ul style="list-style-type: none"> <li>» None identified</li> </ul>
<b>Other considerations</b>	N/A	<p>Site was in very close proximity to the town Mooi-nooi (500 m)</p>	<ul style="list-style-type: none"> <li>» Site in close proximity to the mining operations.</li> <li>- Increased soiling</li> <li>- Significant impact on generation capacity &amp; feasibility of project</li> </ul>

Based on the above considerations, site alternative 1 was identified as the preferred development area and a high-level environmental screening of the site was undertaken by BioBlue Environmental on 12 December 2021 to determine the environmental sensitivity of the preferred development area. The high-level screening report was supplemented with land-use permitting information, an infrastructure assessment and a secondary visit. Based on the findings of the site assessment and screening process, site alternative 1 was further defined and adjusted. Portions 94, 29 and 178 of Farm Elandsdrift 467JQ were

excluded from the preferred development area due to the topographical constraints and the Randwater Bulk Supply water pipeline that runs on the boundary of these properties. Access to this water pipeline is required by Samancor and Randwater for maintenance purposes and would have divided the site into two separate facilities that need to be contained.

The preferred development area of 226ha was reduced to 122ha, in order to ensure that the proposed Project is developed within one municipality and taking the topographical constraints into consideration. High-level environmental buffers were applied to the natural and artificial features identified on site as to reduce the potential impact the development will have on these. This further reduced the development area to 77ha. Only once the preferred development area was identified was the powerline corridor defined. The powerline corridor will run across properties owned by the private off-taker.

The preferred development area (77ha) (i.e., site alternative 1 as indicated in **Figure 3.1**) and grid corridor have been subject to further investigation by specialist consultants as part of the Scoping Phase of the S&EIA process. This included field investigations, as well as desktop consideration of environmental constraints. The purpose of this phase of the process was to identify sensitive and no-go areas, as well as to determine appropriate buffers to be considered within the development of the Project layout. The facility layout or development footprint will be determined based on the outcomes of the scoping study and will undergo further investigation during the EIA Phase.

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

The overall aim of the facility layout is to maximise electricity production through exposure to the solar resource, while minimising infrastructure, operation, and maintenance costs, and social and environmental impacts. The findings of the specialist scoping assessments will assist the project developer in selecting the optimum position for the PV arrays and associated infrastructure including, but not limited to, access roads, and laydown areas.

An overall environmental scoping sensitivity map has been provided in order to illustrate the sensitive environmental features located within the development area which need to be considered and, in some instances completely avoided by the project infrastructure or development footprint (refer to **Chapter 8**). Once more detailed information is available from an environmental and planning perspective for the broader site, a detailed micro-siting exercise will be undertaken to effectively 'design' the facility layout within the development footprint. Through the process of determining constraining factors and environmentally sensitive areas, the layout of the facility will be planned and adjusted, if necessary, to ensure the avoidance of no-go areas and mitigation of sensitive environmental features. A detailed facility layout will be developed and will be made available for assessment and ground-truthing by the independent specialists in the EIA Phase. Where further conflicts are predicted, a mitigation strategy will be developed to meet the objectives of the mitigation hierarchy (avoid, minimise, mitigate).

### **3.3.3. Activity Alternatives**

Only a renewable energy development, specifically a solar PV development, is being considered by the project developer, seeing as South Africa has some of the highest levels of solar radiation in the world with an average daily solar radiation that varies between 4.5 kilowatt hours per square metre per day (kWh/m<sup>2</sup>/day) and 6.5 kilowatt hours per square metre per day (kWh/m<sup>2</sup>/day). This, in comparison to about 3.6 kWh/m<sup>2</sup>/day for parts of the United States and about 2.5 kWh/m<sup>2</sup>/day for Europe and the United

Kingdom, reveals that South Africa has considerable solar resource potential which should be exploited (Energy, 2022).

In addition to a more stabilized supply, renewable energy facilities also have numerous environmental, social and economic benefits, which align with the off-taker's sustainability efforts.

Considering the available natural energy resource within the area (i.e., solar irradiation) and unsuitability of the site for wind generation, solar PV power generation is considered the preferred option within the development area. In addition, grid connection infrastructure to connect the Solar PV Energy Facility to the off-taker's existing substation is present on site, which will enable an easy and short connection. Considering the above, no activity alternatives are considered within this S&EIA process.

#### **3.3.4. Technology Alternatives**

Few technology options are available for Solar PV Energy 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.

#### **3.3.4 The 'Do-Nothing' Alternative**

The 'Do-Nothing' alternative is the option of not constructing the Project. 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 Energy Facility. This alternative will be assessed within the EIA Phase of the process.



## 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 PV Energy Facility such as the Buffelspoort Solar PV Energy 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 Buffelspoort Solar PV Energy Facility at the project site considered to be reasonable and feasible by the project developer. Permitting requirements in terms of environmental legislation are considered in Chapter 5 of this report.

### 4.1 Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of a Scoping Report

This chapter of the Scoping Report includes the following information required in terms of Appendix 2: Content of Scoping Reports:

Requirement	Relevant Section
2 (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 Project is proposed is included and considered within this chapter.
2 (1)(f) 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 Project is included and discussed as a whole within this chapter. The need and desirability for the development of the facility has been considered from a 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 Project are discussed in more detail in the following sections. Although the Solar PV Energy Facility is proposed for use by a private off-taker, 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.

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 the National Energy Regulator (NERSA). In terms of this schedule, the threshold for distributed generation was raised to 100MW on 10 June 2021. Project developers for projects up to 100MW 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. The DFFE is also responsible for issuing permits for impacts on protected trees.
- » **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:

- » **North West Department of Economic Development, Environment, Conservation and Tourism (NWDEDECT)** is the CA for the Project and is also responsible for issuing any biodiversity and conservation-related permits. The involvement relates specifically to sustainable resource management, conservation of protected species, and land care. According to the Explanatory Document for Government Notice No. 779 published in Government Gazette No. 40110 dated 01 July 2016, if the project developer will not, or does not, intend to participate in any of the Integrated Resource Plan programmes (IRP), the CA will be the Member of the Executive Council (MEC) responsible for environmental affairs in the respective province, unless another sub-section of section 24C of NEMA specifies the Minister to be the CA. Since the purpose of the Project is to generate power for use by a private off-taker, and since the Project will not be bid into the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) or a similar government programme, the NWDEDECT has been determined as the CA.
- » **North West Department of Public Works and Roads (NWDPR)** 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 (NWPHERA)** 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 (NWDCSTM)** 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 **Rustenburg 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.

### 4.3 International Policy and Planning Context

A brief review of the most international policies relevant to the establishment of the Project is provided below in **Table 4.1**. The Project 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 Project

Relevant policy	Relevance to the Buffelspoort Solar PV Energy 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 COP21 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 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>

Relevant policy	Relevance to the Buffelspoort Solar PV Energy Facility
<p>The Equator Principles IV (July 2020)</p>	<p>The policy provides support for the Project which will contribute to managing climate change impacts and assist in reducing GHG emissions in a sustainable manner.</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 proposed Project) 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 Project. 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 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) (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 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 project developer is required to manage them through its ESMS consistent with Performance Standard 1.</p> <p>Given the nature of the Project, 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> </ul> </div>

Relevant policy	Relevance to the Buffelspoort Solar PV Energy Facility
	<ul style="list-style-type: none"> <li>• Performance Standard 4: Community Health, Safety and Security</li> <li>• <del>Performance Standard 5: Land Acquisition and Involuntary Resettlement</del> – N/A</li> <li>• Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources</li> <li>• <del>Performance Standard 7: Indigenous Peoples</del> – N/A</li> <li>• Performance Standard 8: Cultural Heritage</li> </ul>

#### 4.4 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 Project 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 Project

Relevant legislation or policy	Relevance to the Buffelspoort Solar PV Energy Facility
Constitution of the Republic of South Africa, 1996	<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>
National Environmental Management Act (No. 107 of 1998) (NEMA)	<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> <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.</p>
White Paper on the Energy Policy of the Republic of South Africa (1998)	<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</p>

Relevant legislation or policy	Relevance to the Buffelspoort Solar PV Energy Facility
	<p>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 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 on 10 June 2021. Project developers proposing projects up to 100MW 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</p>



Relevant legislation or policy	Relevance to the Buffelspoort Solar PV Energy Facility
	<p>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 the Project 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 project site.</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 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</p>

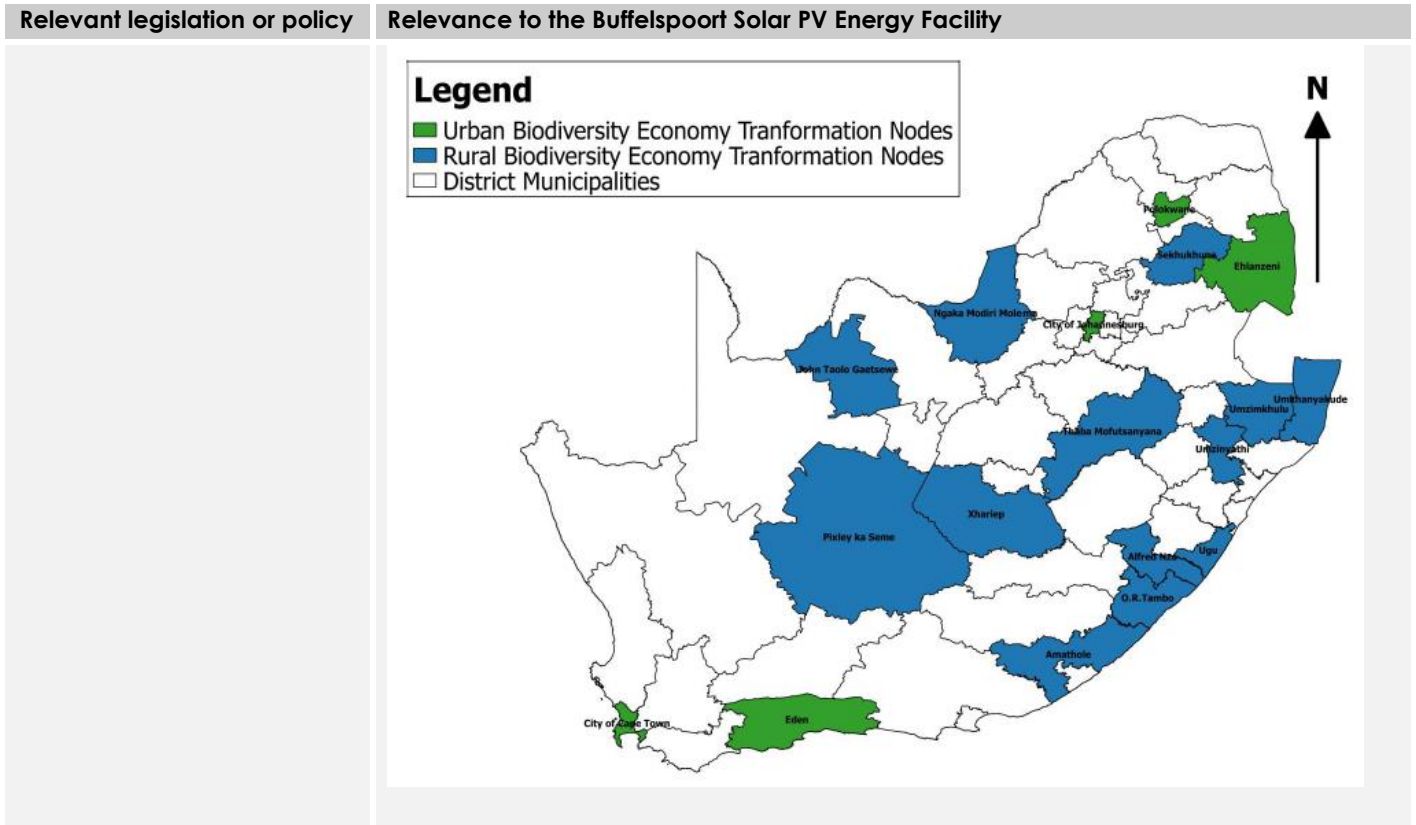


Relevant legislation or policy	Relevance to the Buffelspoort Solar PV Energy Facility
	<p>to other planning functions, including amongst others, economic development and funding, and environmental and social policy formulation.</p> <p>The promulgated IRP 2010–2030 identified the preferred generation 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> <p>According to the IPP Procurement Programme overview report (2021), as at 31 March 2021, a total of 6 422MW has been procured under the REIPPP Programme from 112 IPPs in seven bid rounds, with 5 078MW being currently operational and made available to the grid. IPPs have commissioned 1 005MW from two (2) Open Cycle Gas Turbines (OCGT) peaking plants.</p> <p>Under the Eskom Build Programme, 1 332MW has been procured from the Ingula Pumped Storage Project, 1 588MW and 800MW from the Medupi and Kusile power stations and 100MW from the Sere Wind Farm.</p> <p>Provision has been made for the following new capacity by 2030:</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 Project 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>

Relevant legislation or policy	Relevance to the Buffelspoort Solar PV Energy Facility
National Climate Change Bill, 2018	<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 Project is a renewable energy generation facility and would not result in the generation or release of emissions during its operation.</p>
National Climate Change Response Policy, 2011	<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 enhanced domestic manufacturing potential and the implementation of energy efficiency and renewable energy plans by local government.</p> <p>The development of the Project 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>
National Climate Change Response Strategy for South Africa, 2004	<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</li> </ul>

Relevant legislation or policy	Relevance to the Buffelspoort Solar PV Energy Facility
	<p>creation, rural development, foreign investment, human resource development and improved health, leading to sustainable economic growth.</p> <ul style="list-style-type: none"> <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 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</p>

Relevant legislation or policy	Relevance to the Buffelspoort Solar PV Energy Facility
	<p>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> <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 (BET), 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>



**4.5 Provincial Policy and Planning Context**

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

**Table 4.3:** Provincial legislation and policies relevant to the Project

Relevant legislation or policy	Relevance to Buffelspoort Solar PV Energy Facility
North West Provincial Development Plan (PDP), 2013 (updated 2017/2022)	<p>The North West Provincial Development Plan (PDP) 2013 (updated 2017/2022) states that the overarching objective of the Province 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>
North West Province Spatial Development Framework (SDF) (2016) – Published 2017	<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</p>

Relevant legislation or policy	Relevance to Buffelspoort Solar PV Energy Facility
	<p>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 the Apartheid-era policy are identified as a key issue and residents of the North West Province 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 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 Project 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 PSDF.</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 renewable energy sector. The Renewable Energy 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 renewable energy resources available, it is cognisant of the fact that the applicability of these renewable energy resources depends on a number of factors, and as a result are not equally viable for the North West Province. The renewable energy 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, biomass, and energy efficiency.</p>



Relevant legislation or policy	Relevance to Buffelspoort Solar PV Energy Facility
	<p>The advantages and benefits for the North West Province associated with the implementation and use of renewable energy 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> <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 renewable energy systems.</li> <li>» The development of a strong localised renewable energy industry within the North West Province holds substantial potential for Black Economic Empowerment (BEE) and job creation within the Province.</li> <li>» The establishment of a strong renewable energy 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 renewable energy sources having considerable potential for increasing security of supply by diversifying the energy supply portfolio and contributing towards a long-term sustainable energy future. In terms of environmental impacts, renewable energy results in the emission of less GHGs than fossil fuels, as well as fewer airborne particulates, and other pollutants. Furthermore, renewable energy generation technologies save on water consumption in comparison with coal-fired power plants.</p>
<p>North West Environmental Implementation plan (EIP)</p>	<p>The EIP describes Departmental policies, plans, and programmes that may impact on the environment and how these will comply with NEMA principles and national environmental norms and standards, with the aim of ensuring that government integrates environmental considerations into its core mandate, functions, and activities. Many of the activities undertaken by government departments, at the national, provincial, district and local level, have impacts on the environment. The EIP aims to co-ordinate and harmonize the environmental policies, plans, programmes and decisions of the various departments that exercise functions that may affect the environment or are entrusted with powers and duties aimed at the achievement, promotion, and protection of a sustainable environment and of provincial and local spheres of government, in order to minimize the duplication of procedures and functions; and to promote consistency in the exercise of functions that may affect the environment. The Province has championed and been in the forefront at national landscape with regard to promoting integrated planning and co-operative governance. Implementation of this plan will also help government to realize the objectives of the "Setsokotsane" which is an all-inclusive radical</p>



Relevant legislation or policy	Relevance to Buffelspoort Solar PV Energy Facility
	<p>interventionist program by the Premier of North West, working together with all MEC's and people in the province to respond to the triple challenges of poverty, unemployment, and inequality. The "Scam werk, saam trek" philosophy also creates a platform for harmonization of the provincial policies, plans and programs. The plan will be implemented in the next five years and in terms of section 16(1)(b) of NEMA (as amended), every organ of state must report annually within four months of the end of the financial year on the implementation of its adopted EIP to the Director-General of Environmental Affairs.</p>

#### 4.6 Local Policy and Planning Context

The local tiers of government relevant to Project are the Rustenburg Local Municipality and the Bojanala Platinum District Municipality. Instruments and/or policies at both the district and local level contain objectives which align with the proposed Project. These include, economic growth, job creation, community upliftment and poverty alleviation.

**Table 4.3:** Relevant district and local legislation and policies for Project

Relevant policy	Relevance to Buffelspoort Solar PV Energy facility
<p>Bojanala Platinum District Municipality Climate Changes Response Plan (2016)</p>	<p>Bojanala Platinum District Municipality acknowledges that climate change poses a threat to the environment, its residents, and future development. Actions are required to reduce carbon emissions (mitigation) and prepare for the changes that are projected to take place (adaptation) in the district. Bojanala Platinum District Municipality has therefore prioritised the development of a Climate Change Vulnerability Assessment and Climate Change Response Plan. The plan was developed through the Local Government Climate Change Support (LGCCS) program, with support from the DFFE and the Deutsche Gesellschaft für Internationale GIZ).</p> <p>Through this program, key climate change vulnerability indicators were identified. These are indicators where Bojanala Platinum District Municipality may be at risk to the impacts of climate change.</p>
<p>Rustenburg Municipality Spatial Development Framework (SDF) - Draft (2018).</p>	<p>The Draft SDF (2018) notes that the development of the of the urban landscape has also been driven by the development of the municipality's mobility routes linking the North West province with Gauteng province. Development within the municipality has grown along the N4 transit corridor. The development of the mining industry within the municipality has also played a key role in terms of the evolution of the spatial development patterns. In this regard the development of Rustenburg over the past 20 – 25 years is closely linked with the development of platinum mining in the region. The Rustenburg Local Municipality benefitted significantly from the increase in platinum output between 1994 and 2009, which grew by 67%. This resulted in Rustenburg having the third fastest growing economy of metropolitan cities in South Africa prior to 2012, outperformed only by Johannesburg and Ekurhuleni.</p> <p>Section 4, spatial proposals, outlines the land use proposals for the Rustenburg Local Municipality. Mining related land uses are of relevance to the proposed Project. The SDF notes that mining in the Rustenburg Local Municipality predominantly occurs in a belt which runs north of and parallel to the Magaliesberg and extends from Pilanesberg in the north, past Rustenburg towards Marikana. These mining activities are not only the corner stone of the local economy of Rustenburg, but also largely within the North West Province.</p> <p>The SDF notes that it is important that the necessary infrastructure is created and maintained to ensure the continued optimal operation of these mining activities. This would include energy</p>

Relevant policy	Relevance to Buffelspoort Solar PV Energy facility
<p>Rustenburg Municipality Integrated Development Plan (IDP) (2021/22)</p>	<p>related infrastructure, such as the proposed Project. The SDF also notes that mining activities and infrastructure can have a significant impact on the current and future spatial structure of the urban area through the physical constraints it poses. These negative potential interactions between the mining activities and proposed future urban development should therefore be minimised as far as possible.</p> <p>The vision for the Rustenburg Local Municipality (RLM) is “A world class city where all communities enjoy a high quality of life and diversity”. The mission statement associated with the vision is “To continuously improve the quality of life. Economic growth and eradicate poverty through best practice, sustainability and inclusive governance”.</p> <p>The IDP lists seven strategic priorities, namely:</p> <ul style="list-style-type: none"> <li>» Ensure a sustainable municipal financial viability and management.</li> <li>» Efficient provision of quality basic services and Infrastructure within a well-planned spatial structure.</li> <li>» Drive diversified economic growth and job creation.</li> <li>» Maintain, a clean, green, safe, and healthy environment for all.</li> <li>» Transform and maintain vibrant and sustainable rural development.</li> <li>» Uphold good governance and public participation principles.</li> <li>» Drive optimal municipal institutional development, transformation, and capacity building.</li> </ul> <p>Diversified growth, job creation and the promotion of clean and green environment are of specific relevance to the proposed development. The strategic priorities are underpinned by eleven municipal goals, of which the following are relevant to the proposed development:</p> <ul style="list-style-type: none"> <li>» Goal 3: A well designed, habitable, clean, and green city</li> <li>» Goal 5: A new post mining world city.</li> <li>» Goal 6: A smart prosperous city.</li> <li>» Goal 7: A vibrant, creative, and innovative city.</li> <li>» Goal 11: City of sustainable and efficient resource management.</li> </ul> <p>The IDP also identifies five strategic local economic development goals. The following are relevant to the proposed development:</p> <ul style="list-style-type: none"> <li>» An enabling and conducive business environment to enhance RLM competitiveness as a destination of choice for tourism, investment, and trade.</li> <li>» Accelerated and shared economic growth through skills development and enterprise development to promote an entrepreneurial culture that will contribute towards improving the livelihoods of the RLM communities.</li> </ul> <p>Section 3.3.4.3, Greenhouse gasses and climate change, refers to the risks posed to the RLM by climate change. The initiatives identified to address the risks that are relevant to the development include:</p> <ul style="list-style-type: none"> <li>» Decarbonization of Electricity –transition from coal powered electricity to renewable energy.</li> <li>» Dercarbonization of Economy-transition to Green Economy projects (LED).</li> </ul> <p>A Strength, Weakness, Opportunity, and Threat (SWOT) analysis was undertaken as part of the IDP process. The following are relevant:</p> <p><b>Strengths</b></p>

Relevant policy	Relevance to Buffelspoort Solar PV Energy facility
	<ul style="list-style-type: none"> <li>» Mining Town</li> <li>»</li> <li><b>Weaknesses</b></li> <li>» Limited access to strategically located land</li> <li>» High rate of losses in water and electricity</li>   <li><b>Opportunities</b></li> <li>» Opportunities for green energy/alternative sources</li> <li>» Municipality strategically located along the N4 corridor</li> <li>» Potential for agricultural, tourism and mining related sectors.</li>   <li><b>Threats</b></li> <li>» Declining mining economy</li> <li>» Ageing and failing Infrastructure.</li> <li>» Low levels of skills and education.</li> <li>» High dependency rate (Growing indigent register)</li> <li>» Undiversified economy</li> <li>» High unemployment rate</li> <li>» Low level of household income</li> <li>» Influx of migrant workers</li> <li>» Vandalism and theft from infrastructure network</li> </ul>

#### 4.7 Need and Desirability of the Proposed Development

Appendix 2 of the 2014 EIA Regulations (GNR 326), as amended requires that a Scoping 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 Buffelspoort Solar PV Energy Facility

South Africa has experienced 15 years of intermittent black-outs and in the recent months, the country has yet again faced a considerable shortage in the availability and stability of electricity supply. This has taken its toll on industries that are electricity intensive and has prompted these industries to consider not only the diversification of their energy mix, but also to change their reliance on State-provided electricity.

In 2021, the South African government acknowledged that aging state-owned electricity infrastructure and a demand far surpassing supply, is hampering the country and economy's growth. On 10 June 2021, President Ramaphosa announced the government's approval of an increase in the generation license exemption threshold for embedded generation facilities from 1MW to 100MW. This allows industry to not only generate electricity for self-consumption but allows them to develop facilities with a more realistic capacity response to their demand requirements without the need to obtain a Generation License from NERSA. This in turn aims to reduce generation demands on the national grid and to alleviate residential, commercial, and industrial electricity supply constraints.

The need for alternative renewable sources of energy has become very apparent, in the local and international context. South Africa is fast becoming an integral part of this global transition towards using

renewable sources for electricity generation. This evolution has been largely prompted by South Africa's carbon footprint, considering that South Africa is the largest emitter of greenhouse gases in Africa, accounting for as much as 42 % of the continent's total emissions. South Africa is furthermore estimated to rank amongst the top 20 largest emitters of greenhouse gases in the world. The South African economy is a very energy-intensive economy with a high dependence on coal-based electricity generation. Considering this and the impact the country has, the South African government committed to supplementing the existing generation capacity of thermal and nuclear power plants with renewable energy power generation. This has created a framework and a more conducive environment for industry to steadily incorporate alternative renewable energy sources as part of their energy mix.

In addition to a more stabilized supply, renewable energy facilities also have numerous environmental, social and economic benefits, which align with the private off-taker's sustainability efforts. In line with South Africa's approach of moving towards more sustainable green economy and reducing its carbon footprint on the world, the off-taker has also set goals in order to contribute to meeting these global carbon reduction targets. They have illustrated their committed to reducing their carbon emissions by 30% by 2030 (from a 2020 financial year baseline that uses 2019 data). In addition to this goal, the off-taker is currently developing a roadmap to be net carbon neutral by 2050 (decarbonisation targets) (Bell, 2019).

The purpose of the proposed Project is thus to enable the off-taker to diversify their energy mix and to reduce their reliance on Eskom supplied power and is a conscious effort for the off-taker to contribute to their sustainability targets and reduce their carbon footprint.

Lastly, when assessing the regional context of the proposed Project it is clear that the North West Province provincial development plan aims to align the vision, objectives and priorities of the Province with that of the broader South Africa. The Province has chosen twelve Provincial Priority Areas with which it aims to align to the NDP. Priority Area 2, Economic Infrastructure, highlights the Province's need to expand renewable energy with special reference to solar power.

Considering the South African initiatives implemented on a national, provincial and regional level, it can be concluded that the proposed Project does align with the national energy planning efforts, with renewable energy having links to climate change, environmental impact and electricity supply security, stability and flexibility considerations. In addition to this, the concept of a solar energy project is broadly supported in local economic planning documents. Considering the development planning initiatives, goals and objectives of the North West Province, the district and the Rustenburg Local Municipality, it can be concluded that the concept of the proposed Project is broadly supported. Lastly, when reviewing the environmental and social benefits that a project of this nature has there is a clear alignment with not only South African sustainability initiatives but also that of the off-taker.

#### **4.7.2 Receptiveness of and desirability of the site to the development of the Buffelspoort Solar PV Energy Facility**

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

- » **Solar resource:** The project developer has selected Solar PV technology for its facility, due to the fact that South Africa has some of the highest levels of solar radiation in the world, with an average daily solar radiation that varies between 4.5 kilowatt hours per square metre per day (kWh/m<sup>2</sup>/day) and 6.5 kilowatt hours per square metre per day (kWh/m<sup>2</sup>/day). This, in comparison to about 3.6 kWh/m<sup>2</sup>/day for parts of the United States and about 2.5 kWh/m<sup>2</sup>/day for Europe and the United Kingdom, reveals that South Africa has considerable solar resource potential which should be exploited. The Global Horizon Irradiation (GHI) for the study area is in the region of 2 000 – 2 120 kWh/m<sup>2</sup>/annum, which is considered feasible for the development of a Solar PV Energy Facility.
- » **Proximity to the private off-taker and point of interconnection:** The development area is located in close proximity to the private off-taker, and is therefore preferred for development of the proposed Solar PV Energy Facility. Furthermore, there is an existing available 88kV substation situated north of the development area that is considered as a feasible grid connection point in order enable the evacuation of the generated power from the Solar PV Energy Facility to the private off-taker.
- » **Geographical and Topographical Consideration:** The terrain elevation within the study area<sup>14</sup> ranges from approximately 1 140m above sea level in the north and 1 560m to the south at the top of the mountains. These mountains are the northern foothills of the Magaliesberg Mountains, located further south of the project site. The development area is predominantly characterised by a slope percentage between 0 and 10% with some irregularities in areas with slopes reaching 45%. This indicates a non-uniform topography with occurrence of some steep sloping areas being present. These areas within a slope percentage between 0 and 10% are feasible for the development of a PV facility. 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 Energy Facility, and the proposed development area fits this criterion.
- » **Land Availability and Suitability** – In order to develop the Project with a contracted capacity of up to 40MWp, 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 was determined to be available for development of the Solar PV Energy Facility through agreement with the landowner. The properties that make up the project site are privately-owned properties and are up to ~223ha in extent, which was considered by the project developer as sufficient for the development of the Solar PV Energy Facility and associated grid connection infrastructure. A development area of ~77ha has been demarcated within this larger project site for the location of the facility. A facility layout showing the placement of infrastructure within the development footprint will be designed considering the sensitivities or constraints identified as part of the Scoping Phase and assessed as part of the EIA Phase.

The study area is currently primarily used for mining purposes and the development area is being used as a leisure game farm by the off-taker. The development of the Solar PV Energy Facility on this property will ensure the continuation of an economically viable land use.

- » **Site access:** The development area is bordered to the north by the N4, to the south by the R104 (Old Rustenburg Road) and to the west by Marikana Road. The site is therefore easily accessible for both construction and operation.

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<sup>14</sup> The study area is the broader geographic area within which the Project is proposed

» **Proximity to Towns with a Need for Socio-Economic Upliftment:** The proposed Project is located within the Rustenburg Local municipality falling under the Bojanala Platinum District Municipality and near the town of Mooiwool. As per the Integrated Development Planning detailed in Section 4.6, the local and district municipalities experience high levels of unemployment, poverty, and inequality mainly amongst the youth, women, and people with disabilities. With the development of the Project, 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 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.

#### **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 Project 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 Buffelspoort Solar PV Energy 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.

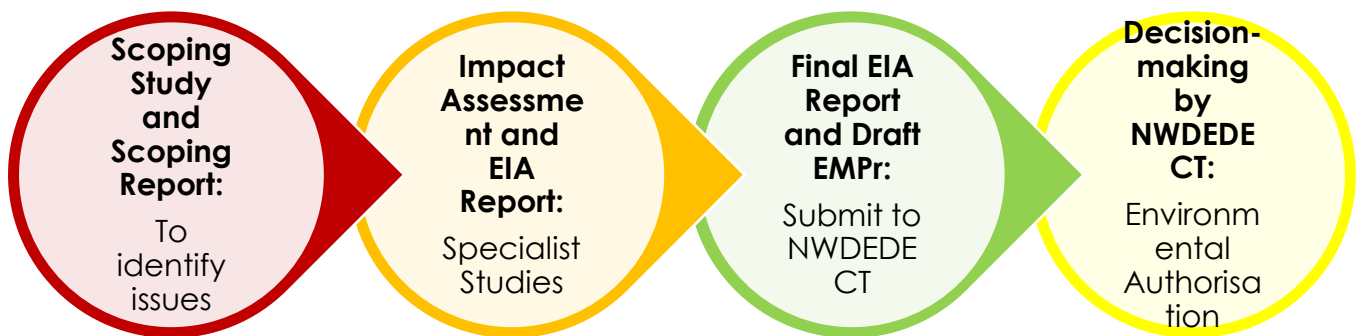
**Support to a new industry sector:** The development of renewable energy offers the opportunity to establish a new industry within the South African economy, which will create jobs and skill local communities which have potential for further renewable energy projects.

**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 PHASE

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 the Project is a listed activity requiring Environmental Authorisation (EA). The application for EA is required to be supported by a Scoping & Environmental Impact Assessment (EIA) (S&EIA) process based on the contracted capacity of the facility being up to 40MWp 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 a Scoping Report

This chapter includes the following information required in terms of Appendix 2: Content of a Scoping report:

Requirement	Relevant Section
2(1)(d)(i) 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> .
2(1)(g)(ii) details of the public participation process undertaken in terms of Regulation 41 of the Regulations,	The public participation process followed throughout the S&EIA process of the Project is included in <b>Section 5.5.2</b>

Requirement	Relevant Section
including copies of the supporting documents and inputs.	and copies of the supporting documents and inputs are included in <b>Appendix C</b> .
(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> .
(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 is included in <b>Section 5.6.1</b> .

## 5.2 Relevant legislative permitting requirements

The legislative permitting requirements applicable to Project, as identified at this stage in the process and considered within this S&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 CA (the decision-maker) charged by NEMA with granting of the relevant EA. According to the Explanatory Document for Government Notice No. 779 published in Government Gazette No. 40110 dated 01 July 2016, if the project developer will not, or does not, intend to participate in any of the Integrated Resource Plan programmes (IRP), the competent authority will be the Member of the Executive Council (MEC) responsible for environmental affairs in the respective province, unless another sub-section of section 24C of NEMA specifies the Minister to be the competent authority. Since the purpose of the Project is to generate power for use by a private off-taker, and since the Project will not be bid into the REIPPPP or a similar government programme, the NWDEDECT has been determined as the CA.

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 CA with sufficient information in order for an informed decision to be taken regarding the Application for EA.

The EIA process being conducted for the Project 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 CA. 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 CA subject to the completion of an EIA (either a Basic Assessment (BA) or full S&EIA).

**Table 5.1** details the listed activities in terms of the EIA Regulations, 2014 (as amended) that apply to the Project, and for which an application for EA has been submitted to the NWDEDECT. 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).

Notice Number	Activity Number	Description of listed activity
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>Internal electrical infrastructure required to connect the PV facility to the existing 88kV substation will consist of an 88kV onsite substation and an 88kV single-circuit overhead power line.</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>Wetlands have been identified within the development area and grid connection corridor. The construction of the Solar PV Energy Facility and associated infrastructure will therefore occur within the wetlands as well as within 32m of the wetlands. The Solar PV Energy Facility will have a physical footprint exceeding 100m<sup>2</sup>, and pylon placement could occur within 32m of these wetlands.</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>The development of the Solar PV Energy Facility 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 onsite substation and PV trackers where such storage will occur inside containers with a combined capacity exceeding 80 cubic meters but not exceeding 500 cubic meters.</b>
Listing Notice 1 (GNR 327) 08 December 2014 (as amended)	19 (ii)	The infilling or depositing of any material of more than 10 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles, or rock of more than 10 cubic meters from a (i)watercourse.  <b>Wetlands have been identified within the development area and grid connection corridor. The construction of the Solar PV Energy Facility and associated grid connection infrastructure could require the removal of approximately 10 cubic metres of soil and rock from the wetlands.</b>

Notice Number	Activity Number	Description of listed activity
Listing Notice 1 (GNR 327) 08 December 2014 (as amended)	28 (ii)	Residential, mixed, retail, commercial, industrial, or institutional developments where such land was used for agriculture, game farming, equestrian purposes, or afforestation on or after 01 April 1998 and where such development:  (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.  <b>The Solar PV Energy Facility will have a physical footprint exceeding 1ha and occurs outside an urban area and within an area currently zoned for agriculture.</b>
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>The Solar PV Energy Facility will generate electricity from a renewable resource (i.e., solar) and will have a generating capacity of up to 40MWp.</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>15</sup> .  <b>The Solar PV Energy Facility will result in the clearance of indigenous vegetation within an area in excess of 20ha for the development infrastructure.</b>
Listing Notice 3 (GNR 324) 08 December 2014 (as amended)	4(h)(iii)(iv)	The development of a road wider than 4 metres with a reserve less than 13,5 metres.  h. North West  iii. Sites or areas identified in terms of an international convention. iv. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.  <b>During construction, a permanent access road along the length of the power line corridor between 4 - 8m wide will be established to allow for large crane movement. This track will then be utilised for maintenance during operation. The development area and grid connection corridor overlap with a Critical Biodiversity Area (CBA2) and with the Magaliesberg Biosphere Reserve, which is a United Nations Educational, Scientific and Cultural Organization (UNESCO) site, with the development area encroaching into areas designated as a Buffer Zone and also the grid corridor extending into a Transition Area.</b>
Listing Notice 3 (GNR 324) 08 December 2014 (as amended)	10(h)(i)(iv)(vi)	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  h. North West

<sup>15</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>i. World Heritage Sites; core of biosphere reserve; or sites or areas identified in terms of an international convention.</p> <p>iv. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.</p> <p>vi. Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.</p> <p><b>The development of the Solar PV Energy Facility 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 onsite substation where such storage will occur inside containers with a combined capacity of 30 cubic meters but not exceeding 80 cubic meters. The development area and grid connection corridor overlap with a Critical Biodiversity Area (CBA2) and with the Magaliesberg Biosphere Reserve, which is a United Nations Educational, Scientific and Cultural Organization (UNESCO) site, with the development area encroaching into areas designated as a Buffer Zone and also the grid corridor extending into a Transition Area. Wetlands have been identified within the development area and grid connection corridor..</b></p>
<p>Listing Notice 3 (GNR 324) 08 December 2014 (as amended)</p>	<p>12(h)(i)(iv)(vi)</p>	<p>The clearance of an area of 300 square metres or more of indigenous vegetation</p> <p>h. North West</p> <p>i. World Heritage Sites; core of biosphere reserve; or sites or areas identified in terms of an international convention.</p> <p>iv. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority.</p> <p>vi. Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.</p> <p><b>The Solar PV Energy Facility will have a physical footprint of exceeding 300m<sup>2</sup>. The development area and grid connection corridor overlap with a Critical Biodiversity Area (CBA2) and with the Magaliesberg Biosphere Reserve, which is a United Nations Educational, Scientific and Cultural Organization (UNESCO) site, with the development area encroaching into areas designated as a Buffer Zone and also the grid corridor extending into a Transition Area. Wetlands have been identified within the development area and grid connection corridor.</b></p>
<p>Listing Notice 3 (GNR 324) 08 December 2014 (as amended)</p>	<p>14(ii)(a)(c)(h)(i)(iv)</p>	<p>The development of—</p> <p>(ii) infrastructure or structures with a physical footprint of 10 square meters or more.</p> <p>where such development occurs—</p> <p>(a) within a watercourse.</p> <p>(c) within 32 meters of a watercourse, measured from the edge of a watercourse.</p> <p>h. North West</p>



Notice Number	Activity Number	Description of listed activity
		<p>i. World Heritage Sites; core of biosphere reserve; or sites or areas identified in terms of an international convention.</p> <p>iv. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority.</p> <p><b>The Solar PV Energy Facility will have a physical footprint exceeding 10m<sup>2</sup>. The development area and grid connection corridor overlap with a Critical Biodiversity Area (CBA2) and with the Magaliesberg Biosphere Reserve, which is a United Nations Educational, Scientific and Cultural Organization (UNESCO) site, with the development footprint encroaching into areas designated as a Buffer Zone and also the grid corridor extending into a Transition Area. Wetlands have been identified within the development area and grid connection corridor. The construction of the PV facility and associated infrastructure will therefore occur within the wetlands as well as within 32m of the wetlands, and pylon placement will occur within 32m of these wetlands.</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 CA (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.

**Table 5.2** 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 (a)	<p>Taking water from a water resource.</p> <p><b>Groundwater from existing boreholes will be abstracted for use during the construction and operation phases for the Solar PV Energy Facility.</b></p>
NWA (No. 36 of 1998)	Section 21 (c)	<p>Impeding or diverting the flow of water in a watercourse</p> <p><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></p>
NWA (No. 36 of 1998)	Section 21 (i)	<p><b>Wetlands have been identified within the development area and grid connection corridor. Activities pertaining to the establishment of the infrastructure might alter the bed, banks,</b></p>

Notice No.	Activity No.	Description of Water Use
		<b>course or characteristics of the watercourses.</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.*

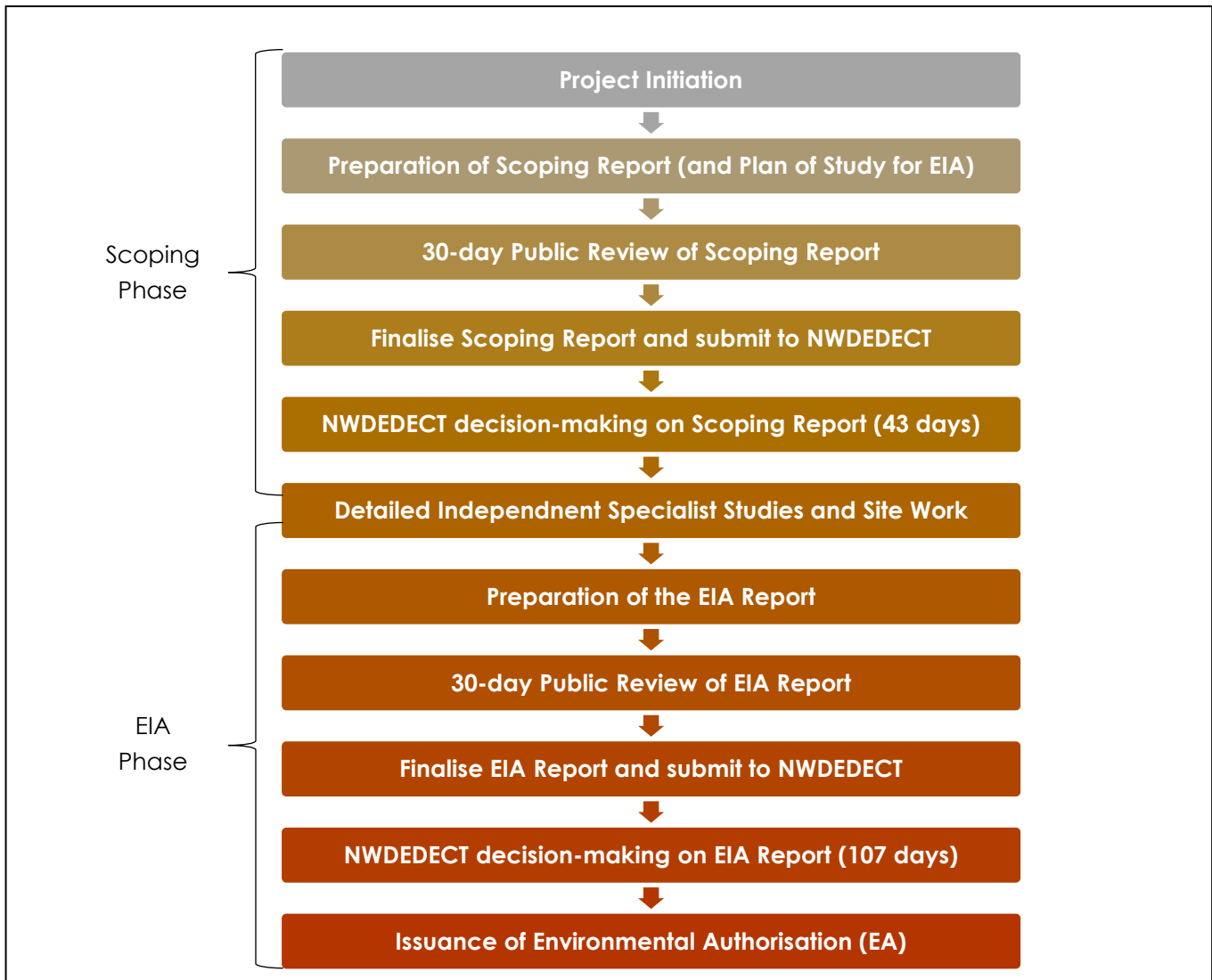
In terms of Section 38(8), approval from the heritage authority is not required if an evaluation of the impact of such development on heritage resources is required in terms of any other legislation (such as NEMA), provided that the consenting authority ensures that the evaluation of impacts fulfils 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 Project, 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 Buffelspoort Solar PV Energy Facility

In terms of NEMA the 2014 EIA Regulations (GNR 326), and the Listing Notices (Listing Notice 1 (GNR 327), Listing Notice 2 (GNR 325) and Listing Notice 3 (GNR324)), the development of the Project requires EA from NWDEDECT 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 is considered within this process. Through this study, areas of sensitivity within the development area 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 NWDEDECT for its consideration. Following its receipt of the Final Scoping Report, NWDEDECT has 43 days within which to either accept the Scoping Report, and advise the project developer 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).
- » 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 NWDEDECT for its consideration. Following its receipt of the Final EIA Report and EMPr, NWDEDECT has 107 days within which to either grant or refuse the EA.



**Figure 5.2:** Regulated timeframe of a S&EIA Process

#### 5.4 Objectives of the Scoping Phase

This Scoping Report documents the evaluation of potential environmental impacts of the Project and forms part of the S&EIA process being conducted in support of an application for EA for the Project. The Scoping Phase has been conducted in accordance with the requirements of the 2014 EIA Regulations (GNR 326), and therefore aims to:

- » Identify and evaluate potential environmental (biophysical and social) impacts and benefits of all phases of the proposed development (including design, construction, operation and decommissioning) within the development area through a review of existing baseline data, including specialist studies which were undertaken within the development area.
- » Identify potentially sensitive environmental features and areas within the development area in order to inform the location of the development footprint within the development area and the preliminary design process of the facility.
- » Define the scope of studies to be undertaken within the EIA Phase.

- » Provide the authorities with sufficient information in order to make a decision regarding the scope of issues to be addressed in the EIA Phase, as well as regarding the scope and extent of specialist studies that will be required to be undertaken.

The following objectives of the Scoping Phase (in accordance with Appendix 2 of the 2014 EIA Regulations (GNR 326)) have been met, through the undertaking of a consultative process.

- » The identification of relevant policies and legislation regarding the activities to be undertaken have been identified and considered within this Scoping Report.
- » Activities to be undertaken for the Project have been identified and motivated in terms of the need and desirability for the activities to take place.
- » Potential impacts associated with the undertaking of the identified activities and technology have been identified and described.
- » Identification of areas of high sensitivity to be avoided by the facility layout or development footprint.
- » Preferred areas within the development area, which are areas associated with low to medium environmental sensitivity, have been identified through a desktop level impact assessment process and on-going consultative process. Areas of high sensitivity which should be avoided by the facility layout or development footprint have also been identified. The sensitive features identified within the Scoping Phase will be used to inform the design of the layout, which will be assessed within the EIA Phase.
- » Key issues associated with the Project to be addressed during the EIA Phase for further detailed study and ground-truthing have been identified and listed within this Scoping Report.
- » The level of assessment, expertise and the extent of further consultation to be undertaken in the EIA Phase of the process, with the aim of determining the extent of impacts associated with the activities through the life cycle of the Project (i.e., construction, operation and decommissioning), have been identified and included within this Scoping Report.

## 5.5 Overview of the Scoping Phase

Key tasks undertaken within the Scoping Phase include:

- » Consultation with relevant decision-making and regulating authorities (at National, Provincial and Local levels).
- » Submission of the completed application for EA to the CA (NWDEDECT) in terms of Regulations 5 and 16 of the 2014 EIA Regulations (GNR 326).
- » 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 a Scoping Report and Plan of Study for EIA in accordance with the requirements of Appendix 2 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 Scoping Phase.

- » Submission of a Final Scoping Report, including a Plan of Study for the EIA, 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 is intended for self-generation of electricity from a renewable resource which will not be fed into the national grid, the NWDEDECT is the CA for the Project. Consultation with this authority is being undertaken throughout the S&EIA process. To date, this consultation has included the following:

- » Holding a pre-application meeting with NWDEDECT on 04 May 2022.
- » Submission of the application for EA to the NWDEDECT via hard copy submission.
- » 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.

A record of all authority correspondence undertaken as part of the S&EIA process to date is included in **Appendix B**.

### **5.5.2 Public Participation Process**

Public participation is an essential and regulatory requirement for an EA 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 sharing of information forms the basis of the Public Participation Process and offers the opportunity for I&APs to become actively involved in the S&EIA 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 S&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.
  - \* 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.
  - \* 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.
  - \* Attend Focus Group Meetings to be conducted for the Project.
- » During the **decision-making phase**:
- \* To advise I&APs of the outcome of the CA'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).
- » 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 and the project developer, 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 database during the Public Participation Process for the Project

<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)
<b>Government Bodies and State-Owned Companies</b>
Air Traffic Navigation Services (ATNS)
Co-Operative Governance & Traditional Affairs
Eskom Holdings SOC Limited
National Energy Regulator of South Africa (NERSA)
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 (NWDEDCT)
North West Department of Public Works and Roads (NWDPR)
North West Department of Agriculture
North West Provincial Heritage Resources Agency ((NWPHRA) – provincial Heritage Authority
<b>Local Government</b>
Bonjala Platinum District Municipality
Rustenburg Local Municipality

### Commenting Stakeholders

Agri North West (AgriSA)

BirdLife South Africa

Endangered Wildlife Trust (EWT)

Wildlife and Environment Society of South Africa (WESSA)

### Landowners

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 Guideline has also been followed. The register of I&APs contains the names<sup>16</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.
- » All persons who submitted written comments.

I&APs have been encouraged to register their interest in the S&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 S&EIA process. The database of I&APs will be updated throughout the S&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;

<sup>16</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).

- 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 S&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 S&EIA process. The BID and the process notification letter announcing the S&EIA process, notifying Organs of State, potentially affected and neighbouring landowners, as well as registered stakeholders/I&APs, and inviting I&APs to register on the Project's database were distributed via email on **09 June 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 S&EIA process at visible points along the boundary of the affected properties, in accordance with the requirements of the EIA Regulations on **27 May 2022**. Photographs and the GPS co-ordinates of the site notices are contained in **Appendix C2** of the Scoping Report.
- » Placement of advertisement announcing the S&EIA process and the availability of the Scoping Report for view by I&APs for a 30-day review and comment period in the Rustenburg Herald Newspaper on **10 June 2022**. 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 has been made available for review by I&APs for a 30-day review and comment period from **Tuesday, 14 June 2022 – Friday, 15 July 2022**. The full Scoping Report is available on the Savannah Environmental website. The evidence of distribution of the Scoping Report will be included in the Final Scoping Report, which will be submitted to the NWDEDECT for acceptance.

### 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 are being consulted through the following means:

**Table 5.4:** Public involvement for the Project

Activity	Date
Distribution of the BID, process notification letter and stakeholder reply form announcing the S&EIA process and inviting I&APs to register on the Project database.	09 June 2022

Activity	Date
The BID and electronic reply form was also made available on the online stakeholder engagement platform.	
Placement of site notices at the within the affected properties	27 May 2022
Placement of an advertisement in the Rustenburg Herald announcing the S&EIA process and 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.	10 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.	14 June 2022
30-day review and comment period of the Scoping Report.	Tuesday, 14 June 2022 – Friday, 15 July 2022
<p>Virtual meetings through the use of virtual platforms as determined through discussions with the relevant stakeholder group:</p> <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>	To be held during the 30-day review and comment period
On-going consultation (i.e. telephone liaison; e-mail communication) with all I&APs.	Throughout the S&EIA process

**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 Scoping Report for a 30-day review and comment period, invited to provide comment on the Scoping 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 copies to I&APs. Hard copies can be made available on request where sanitary conditions can be maintained. The Scoping Report has also been made available on the Savannah Environmental website (<http://www.savannahsa.com/public-documents/energy-generation/>). The notification letter was distributed at the commencement of the 30-day review and comment period, on **14 June 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 C6** and **Appendix C7** of the Scoping Report.

#### **v. Identification and Recording of Comments**

Comments raised by I&APs over the duration of the S&EIA process will be synthesised into a Comments and Responses (C&R) Report which will be included in **Appendix C8** of the Final Scoping Report. These will include comments raised through the use of the Savannah Environmental online stakeholder engagement platform and any other written comments received. The C&R Report will include 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.

Meeting notes of all the telephonic discussions and virtual meetings conducted during the 30-day review and comment period of the Scoping Report will be included in **Appendix C7**.

### **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 (included as **Appendix J** of the Scoping Report) for the Project is applicable as it triggers Regulation 19 of the EIA Regulations, 2014, as amended. **Table 5.5** provides a summary of the environmental themes and/or specialist assessments identified in terms of the screening tool and responses to each theme and/or assessment from the project team considering the development footprint under consideration.



**Table 5.5:** Sensitivity ratings from the DFFE’s web-based online Screening Tool associated with the development of the Project

Theme/Specialist Assessment	Sensitivity Rating as per the Screening Tool (relating to the need for the study)	Project Team Response
<b>Agriculture Theme/Agricultural Impact Assessment</b>	High	<p>The Soils and Agricultural Potential Assessment is included in this Scoping Report as Appendix D.</p> <p>Various soil forms are expected throughout the development area, of which some are commonly associated with higher land capabilities. Even though the soil depth, texture and permeability of these soils ensure high land capability, the climatic capability of the area often reduces the land potential considerably. The harsh climatic conditions are associated with low annual rainfall and high evapotranspiration potential demands of the area. The area is not favourable for most cropping practices, which corresponds to the current mining activities in the area.</p> <p>The proposed Project can result in the loss of land capability. The disturbances could further also result in the infestation and establishment of alien vegetation, which in turn can have a detrimental impact on soil resources. The development of the area could also result in compaction and/or erosion. Further to this, these activities could also cause leaks and/or spillages resulting in contamination of soil resources, which could affect the salinity or pH of the soil, which can render the fertility of the soil unable to provide nutrition to plants</p> <p>Impacts on soils and the agricultural potential will be assessed further in the EIA Phase.</p>
Landscape (Solar) Theme/Visual Impact Assessment	Very high	<p>The Visual Assessment is included in this Scoping Report as <b>Appendix F</b>.</p> <p>The fact that some components of the proposed Project and associated infrastructure may be visible does not necessarily imply a high visual impact. Sensitive visual receptors within (but not restricted to) a 3km buffer zone from the facility need to be identified and the severity of the visual impact assessed within the EIA Phase of the Project. Visual impacts will be assessed further in the EIA Phase.</p>
Archaeological and Cultural Heritage Theme/Heritage Impact Assessment	Low	<p>A Heritage Assessment is included in this Scoping Report as <b>Appendix E</b>. The Heritage Assessment identified various heritage resources within the development area and grid connection corridor, including archaeological resources and burial grounds and graves, which are rated as having a high heritage significance and will require further mitigation work before the Project can commence.</p> <p>Heritage impacts will be assessed further during the EIA Phase.</p>
Palaeontology Theme/Heritage Impact Assessment	Medium	<p>A Heritage Assessment is included in this Scoping Report as <b>Appendix E</b>. The Heritage Assessment identified various heritage resources within the development area and grid connection corridor, including archaeological resources and burial grounds</p>

		<p>and graves, which are rated as having a high heritage significance and will require further mitigation work before the Project can commence.</p> <p>A full palaeontological impact assessment was not recommended for the EIA Phase given the insignificant palaeontological sensitivity of the development area and grid connection corridor.</p>
Terrestrial Biodiversity Theme/ Terrestrial Ecology Impact Assessment	Very high	<p>A Terrestrial Ecology Assessment (including flora and fauna) has been undertaken for the Project and is included as <b>Appendix D</b> of the Scoping Report.</p> <p>Based on the desktop assessment it can be said that the project area is sensitive with a moderate to high likelihood of species of conservation concern occurring. This assumption is based on the development area and grid connection corridor overlapping with a CBA2, ESA1, ESA2, the Magaliesberg Biosphere Reserve, NPAES Priority Focus Area, the Magaliesberg IBA, CR river and five unclassified NFEPA wetlands.</p> <p>A detailed assessment will be undertaken in the EIA Phase of the process.</p>
Aquatic Biodiversity Theme/Freshwater Impact Assessment	Very high	<p>A Freshwater Assessment has been undertaken for the Project and is included as <b>Appendix D</b> of the Scoping Report.</p> <p>A key consideration for the impact assessment is the presence of the identified water resources in relation to the development footprint. The available data also suggests the presence of features in proximity to the development area, with wetlands system expected for the 500m regulation regulated area.</p> <p>Construction could result in the encroachment into water resources and result in the loss or degradation of these systems, most of which are functional and provide ecological services. These disturbances could also result in the infestation and establishment of alien vegetation which would affect the functioning of the systems. Leaks and/or spillages could result in contamination of the receiving water resources. Contaminated water resources are likely to have an effect on the associated biota. An increase in stormwater runoff could result in physical changes to the receiving systems caused by erosion, run-off and also sedimentation, and the functional changes could result in changes to the vegetative structure of the systems</p> <p>A detailed assessment will be undertaken in the EIA Phase of the process.</p>
Civil Aviation Theme	Low	The Civil Aviation Authority (CAA) and Air Traffic Navigation Services (ATNS) will be consulted throughout the S&EIA process to obtain input.
Civil Aviation Theme	Low	There is no military base located within close proximity to the proposed Project.
Defence Theme	Low	There is no military base located within close proximity to the proposed Project.
RFI Theme	Low	The project site under consideration for the development of the

			Project is located within an area that as classified as having low sensitivity for telecommunication. Telkom will however be consulted during the 30-day review and comment period of the Scoping Report to provide written comment on the proposed Project.
Avian theme/Avifauna Impact Assessment	Very high		<p>A Terrestrial Ecology Assessment (including avifauna) has been undertaken and is included in the Scoping Report as <b>Appendix D</b>.</p> <p>The Southern African Bird Atlas Project (SABAP2) data lists 366 avifauna species that could be expected to occur within the area (The full list will be provided in the final assessment). Twenty of these expected species are regarded as threatened. Two of the species have a low likelihood of occurrence due to lack of suitable habitat and food sources in the area.</p> <p>A detailed assessment will be undertaken in the EIA Phase of the process.</p>
Plant Species Assessment	Low		A Terrestrial Ecology Assessment has been undertaken for the Project and is included as <b>Appendix D</b> of the Scoping Report.
Animal Species Assessment	Medium		Based on the outcomes of the desktop study and available data, it has been indicated that the development area falls within the areas identified as Low to Medium-Low Sensitivity. The impacts will be further assessed during the EIA phase.
Social Impact Assessment	The screening report does not indicate a rating for this theme.		A Social Scoping Assessment has been undertaken and is included in the Scoping Report as <b>Appendix G</b> . A detailed assessment will be undertaken in the EIA Phase of the process.

### 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 Project development footprint.

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 Scoping Report**

The final stage of the Scoping Phase entails the recording and capturing of comments received from stakeholders and I&APs on the Scoping Report in order to finalise the Scoping Report for submission to NWDEDECT for decision-making. All written comments received will be addressed within the C&R Report (**Appendix C8**).

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

The following assumptions and limitations are applicable to the S&EIA process being undertaken for the Project:

- » 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 Energy Facility identified by the project developer represents a technically suitable site for the establishment of the Project 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 Solar PV Energy 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 development footprint for the Project.

## **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 Scoping 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 Project

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 Project (i.e., contracted capacity of 40MWp) and the triggering of Activity 1 of Listing Notice 2 (GNR 325) a full S&amp;EIA process is required</p>	NWDEDECT – Competent Authority	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 NWDEDECT for review and decision-making.



Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	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 developer to consider a project holistically, and to consider the cumulative effect of a variety of impacts.</p>	NWDEDECT	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>NWDEDECT</p> <p>Rustenburg Municipality</p> <p>Local</p>	Noise impacts are expected to be associated with the construction phase of the Project. Considering the location of the development footprint 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. Noisy activities will however need to comply with the provisions of the Noise Control Regulations.
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 a GA, or if a responsible authority waives the need for a	Regional Department of Water and Sanitation	Wetlands have been identified within the development area and grid corridor ( <b>Appendix D</b> ). As a result, a water use authorisation for the Project may be required

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>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>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>DMRE</p>	<p>Any person who wishes to apply for a mining permit in accordance with Section 27(6) must simultaneously apply for an EA 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. This application requires the final EIA Report to be submitted as supporting documentation and</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>NWDEDECT / Bojanala Platinum District</p>	<p>can thus only commence once the Project development has reached this stage of the process.</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</p>	<p>South African Heritage Resources Agency (SAHRA)</p> <p>North West Provincial Heritage Resources Agency (NWPHRA)</p>	<p>A full Heritage Impact Assessment will be undertaken for the Project as per the requirements of Section 38 of the NHRA. The Heritage Impact Assessment will be made available in the EIA Phase.</p> <p>Should a heritage resource be impacted upon, a permit may be required from SAHRA or NWPHRA in accordance with of Section 48 of the NHRA, and the SAHRA Permit Regulations (GN R668).</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>developers or any person who intends to undertake a listed activity to notify the responsible heritage resources authority and furnish 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 NEDEDECT</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> <p>A Terrestrial Ecology Impact Assessment will be undertaken as part of the EIA Phase to identify the presence of any listed protected species present on site which may require a permit in terms of the NEM:BA.</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 NWDEDECT</p>	<p>A Terrestrial Ecology Impact Assessment will be undertaken as part of the EIA Phase to identify the presence of any alien and invasive species present on site.</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> <li>» Any other method of treatment</li> </ul>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
			<p>recognised by the executive officer that has as its object the control of plants concerned, subject to the provisions of sub-regulation 4.</p> <p>» 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.</p>
<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>DFFE</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 the relevant authority prior to the disturbance of these individuals.</p> <p>A Terrestrial Ecology Impact Assessment will be undertaken as part of the EIA Phase to identify the presence of any protected trees present on site which will require a permit.</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 veldfire from spreading to or from neighbouring land, it does</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 Solar PV Energy Facility, in terms of the preparation and maintenance of firebreaks, and the need to provide appropriate equipment and trained personnel for firefighting purposes.</p>



Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>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>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>National Environmental Management: Waste Act (No. 59 of 2008) (NEM:WA)</p>	<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>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</p> <p>NWDEDECT – General Waste</p>	<p>No waste listed activities are triggered by the Project; 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>
<p>National Road Traffic Act (No. 93</p>	<p>The technical recommendations for highways (TRH 11): "Draft</p>	<p>South African National</p>	<p>An abnormal load / vehicle permit may be</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
of 1996) (NRTA)	<p>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>Roads Agency (SANRAL) – national roads</p> <p>North West Department of Community Safety and Transport Management (NW DCSTM):</p>	<p>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 22 m. 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>

**Provincial Policies / Legislation**

<p>Bophuthatswana Nature Conservation Act. No. 3 of 1973.</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>NWDEDECT</p>	<p>A collection/destruction permit must be obtained from NWDEDECT for the removal of any protected plant or animal species found on site.</p> <p>Should these species be confirmed within the development footprint during any phase of the Project, permits will be required.</p> <p>A Terrestrial Ecology Impact Assessment will be undertaken as part of the EIA Phase to identify the presence of any listed species present on</p>
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Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	Aquatic habitats may not be destroyed or damaged; 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; The Act provides lists of protected species for the Province.		site which will require a permit.

### 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. A single season survey (Regime 1) will be conducted as the area was found to be void of any species of conservation or specialist species during the site visit undertaken as part of the Scoping Phase. Further to this, three surveys on nearby sites conducted by The Biodiversity Company (i.e., the appointed avifauna specialist) in April 2022 found similar results. Therefore, a regime 1 assessment was found to be adequate.

Furthermore, the animal sensitivity theme as per the DFFE screening report came out as medium with just the Secretary bird regarded as having a medium sensitivity. The field results were mainly (with the exception of the water sources) rated Moderate - Very Low as large parts of the development area and grid connection corridor have been degraded, which disputed the moderate classification of the whole area.

### **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. consulting 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 Project 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 S&EIA process is being conducted.

### 6.1 Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of a Scoping Report

This chapter includes the following information required in terms of Appendix 2: Content of a Scoping Report:

Requirement	Relevant Section
2(1)(g)(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.	<p>The environmental attributes associated with the development of the Project area included as a whole within this chapter. The environmental attributes that are assessed within this chapter include the following:</p> <ul style="list-style-type: none"> <li>» The regional setting of the broader study area indicates the geographical aspects associated with the Project. This is included in <b>Section 6.2</b>.</li> <li>» The climatic conditions for the 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 and palaeontology) has been included in <b>Section 6.5</b>.</li> <li>» The social and socio-economic characteristics associated with the broader study area and the project site has been included in <b>Section 6.6</b></li> <li>» The visual quality, land-use and settlement patterns of the affected environment is 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 Scoping Reports contained within **Appendices D - G**.

### 6.2. Regional Setting

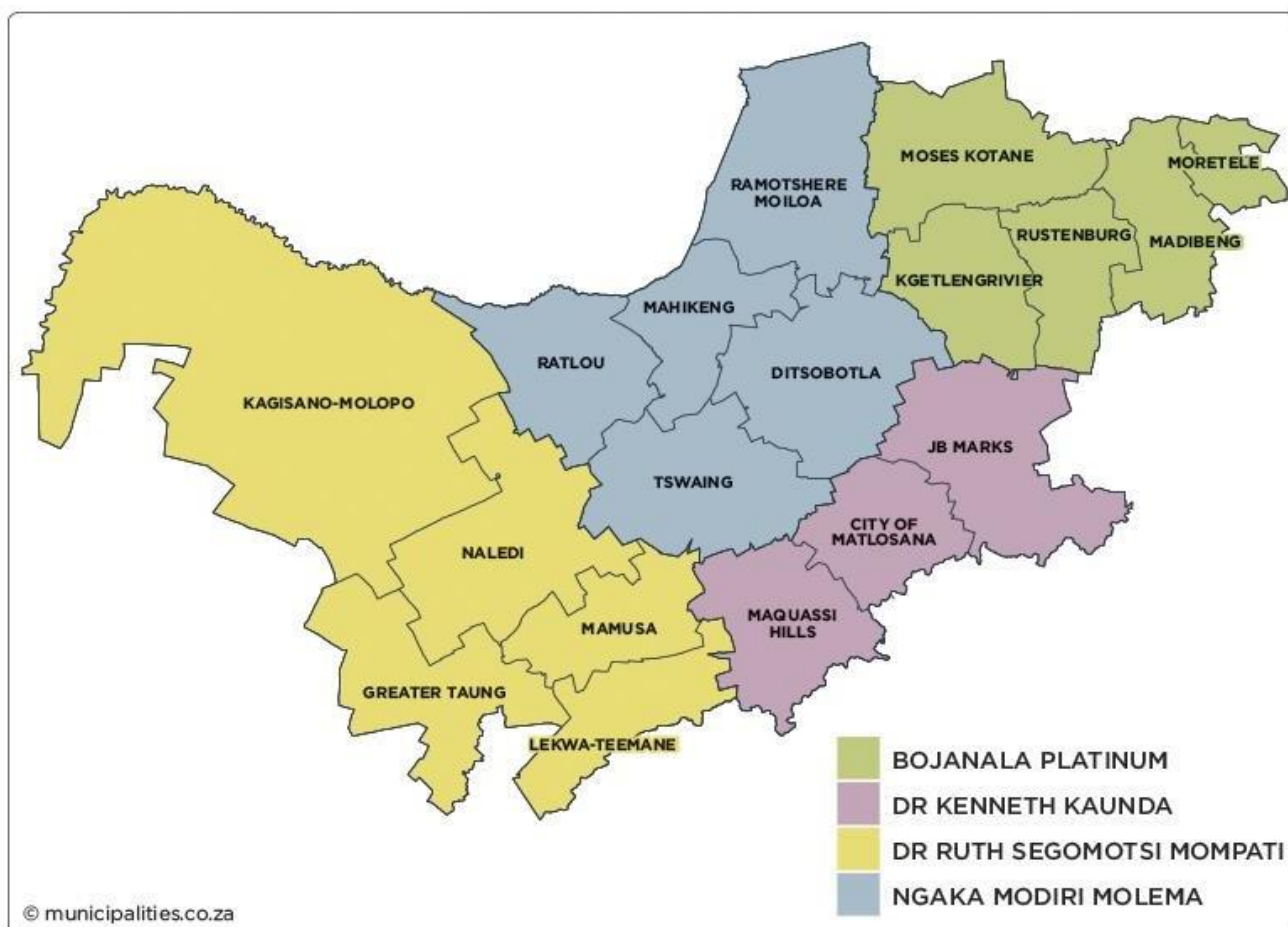
The proposed Project is located within the jurisdiction of the Rustenburg Local Municipality and the Bojanala Platinum District Municipality, approximately 6km west of Mooinooi in the North West Province

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 104 882 km<sup>2</sup> in extent, making it South Africa's 6<sup>th</sup> largest in terms of area; and has a population of 3 509 953 (2011) and a population density of 33/km<sup>2</sup> (2011), making it South Africa's 7<sup>th</sup> most densely populated Province.

The North West Province is characterised by altitudes ranging from 920 – 1 782 metres above mean sea level (mamsl), 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 four (4) Districts, namely Bojanala Platinum, Ngaka Modiri Molema, Dr Ruth Segomotsi Mompati, and Dr Kenneth Kaunda (refer to **Figure 6.1**).



**Figure 6.1:** Districts under the North West Province (Source: Municipalities of South Africa).

The Bojanala Platinum District Municipality is a Category C municipality situated in the North West Province. The Bojanala Platinum District Municipality (BPDM) is the home of the cradle of humankind and

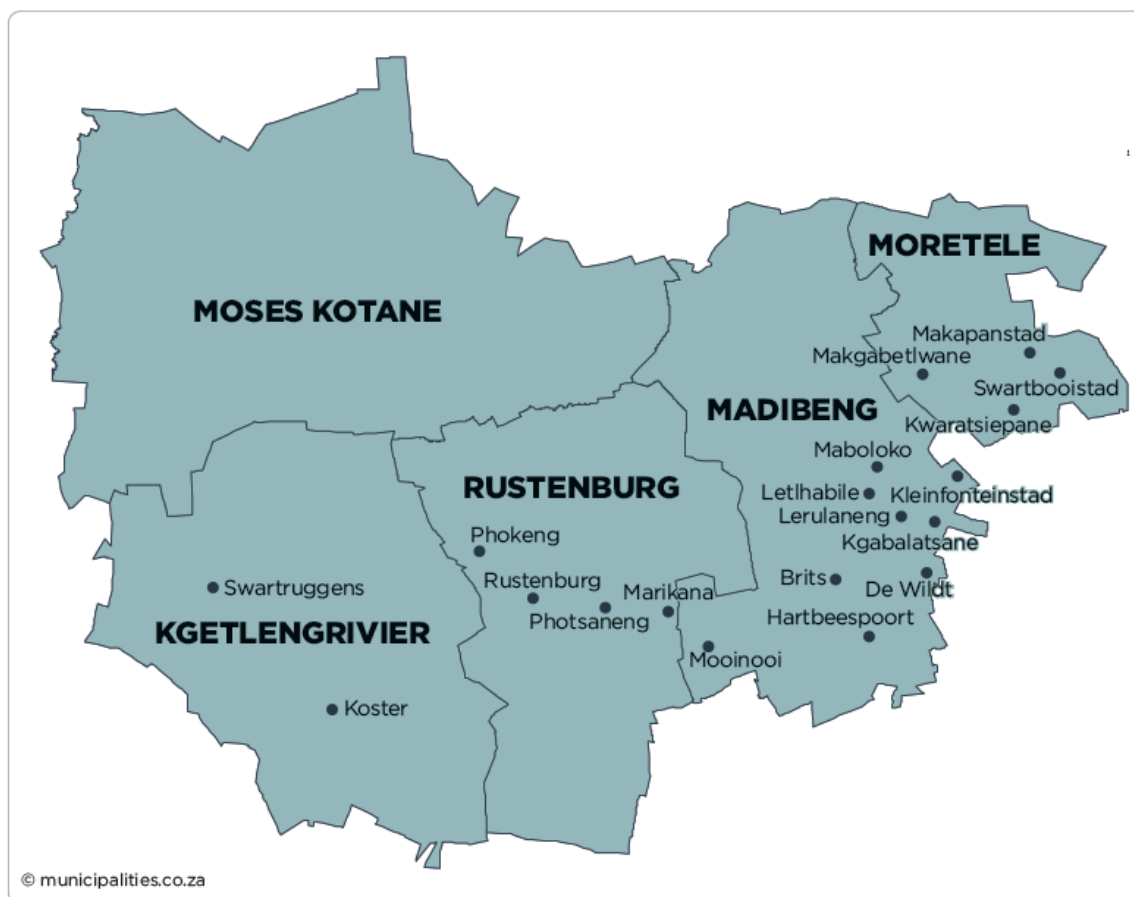
is strategically located on the 'platinum belt' of the north-eastern side of the North West province. To the north the BPDM is surrounded by Waterberg District Municipality (Limpopo Province), Tshwane Metropolitan Municipality (Gauteng Province), West Rand District Municipality (Gauteng Province) to the Southeast. To its south is Dr Kenneth Kaunda District Municipality and the Ngaka Modiri Molema District Municipality to the west. The seat of Bojanala Platinum is Rustenburg (Source: Municipalities of South Africa).

The Bojanala Platinum District Municipality accounts for a total population of 1.81 million, or 44.5% of the total population in the North-West Province, which is the most populous District in the North-West Province for 2018. The ranking in terms of the size of Bojanala Platinum compared to the other District remained the same between 2008 and 2018. The Bojanala District spans over 18 333 km<sup>2</sup>, and has five (5) local municipalities (Kgetleng River, Madibeng, Moses Kotane, Moretele and Rustenburg) with a total of 139 wards.

The District is amongst the least deprived in the North West Province, with only eight (8) wards that can be deemed as vulnerable. The least vulnerable people live in the Rustenburg Local Municipality. The main economic sectors are mining (30-35%), community services (15-20%), finance (10-15%), trade (10-15%), transport (5-10%), and manufacturing (5-10%). The District consists of rural municipalities, the rural development will require more resources (Financial, Infrastructure etc.) to curb the deficiencies. It should be noted that the villages are scattered apart, the distances from main supplier pipes require more money and infrastructure. The backlog for development of internal roads, or provincial roads is affected also by the distances. Electricity is also a challenge that needs to be addresses. The unemployment amongst the youth needs attention, whereby industrialisation should be funded to improve skills amongst the youth (Source: Municipalities of South Africa).

The Bojanala District Municipality is spread over former homeland areas, commercial farms, towns, and semi –urban areas, with large areas of land under the custodianship of traditional authorities. According to the BPDM IDP, 32% of the total land area of the district is under the control of traditional authorities. There are 31 senior traditional leaders and 21 headman/headwomen within the District.

Approximately 63% of the total economic activity of North West is concentrated into the four (4) local economies of Madibeng, Rustenburg, Mahikeng and Matlosana Municipalities. These municipalities represent approximately 50% of the North West population and 58% of the North West labour force. The mining sector is the largest within Bojanala Platinum District Municipality accounting for R 71.5 billion or 52.1% of the total Gross Value Added (GVA) in the district municipality's economy. The District holds the largest Platinum Group Metal reserves in the country and the country holds 80% of the world's reserves. Consequently, it contributes by over 20% to the national mining economy.



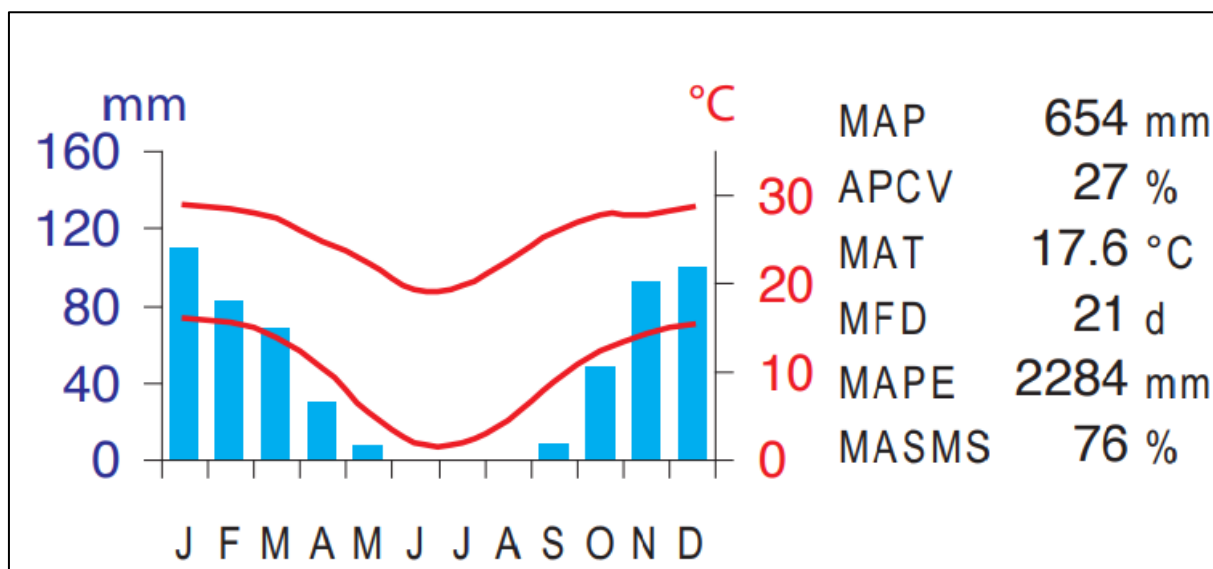
**Figure 6.2:** Map showing the Bonjana Platinum District and local municipalities within the District (Source: Municipalities of South Africa)

The primary economic sector in this District is Mining, which generates more than half of the District's Gross Domestic Product (GDP). The district also produces Platinum, Chrome, Diamond, Slate and Silica. In the context of the Bojanala District, the bulk of platinum mining activity is located in the Rustenburg Local Municipal area. The platinum mining belt runs parallel to the north of the Magalies Mountain which extends from the Pilanesberg right up to the City of Tshwane to the Far East. Also evident is the concentration of informal settlements along the mining belt. Secondly, Agriculture is the most prominent land use in the BPDM particularly in the Madibeng and Kgetleng River municipal areas. The District has a dualistic agricultural economy, which is comprised of a well-developed commercial sector and a predominantly subsistence sector in communal/rural areas. Agriculture contributes to approximately 2,6% to the total GDP and 19% to formal employment within the District. Some of the largest cattle herds are to be found in the area thus the nickname "Texas of South Africa", with the area around Rustenburg and Brits being fertile for mixed-crop farming. From a labour-intensive growth perspective, the sector remains strategic to the growth of the District.

The Rustenburg Local Municipality is a Category B municipality situated within the Bojanala Platinum District in the North West Province that covers an aerial extent of 3 416 km<sup>2</sup>. Major towns or cities in the municipality are Hartbeesfontein-A, Marikana, Phatsima, Rustenburg, Tlhabane, with the town of Rustenburg being the seat of the municipality. Mining and trade are the main economic sectors in the municipality.

### 6.3. Climatic Conditions

The study area is characterised by summer rainfall with a Mean Annual Precipitation (MAP) that ranges between 600 mm and 700 mm (refer to **Figure 6.3**). The winter season is dry, and frost is fairly frequent.



**Figure 6.3:** Climate for the study area

### 6.4. Biophysical Characteristics

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-G**) undertaken as part of the S&EIA process.

#### 6.4.1. Topography and Terrain

The topography of the study area is divided into two (2) distinct classes, where the northern parts are described as plains and undulating plains, and the southern parts consist of mountains and tall hills. The terrain elevation ranges from approximately 1 140m above sea level in the north and 1 560m to the south at the top of the mountains. These mountains are the northern foothills of the Magaliesberg Mountains, located further south of the project site.

The slope percentage of the development area has been calculated and is illustrated in **Figure 6.4**. Most of the regulated area is characterised by a slope percentage between 0 and 10%, with some irregularities in areas with slopes reaching 45%. This illustration indicates a non-uniform topography with occurrence of some steep sloping areas being present.



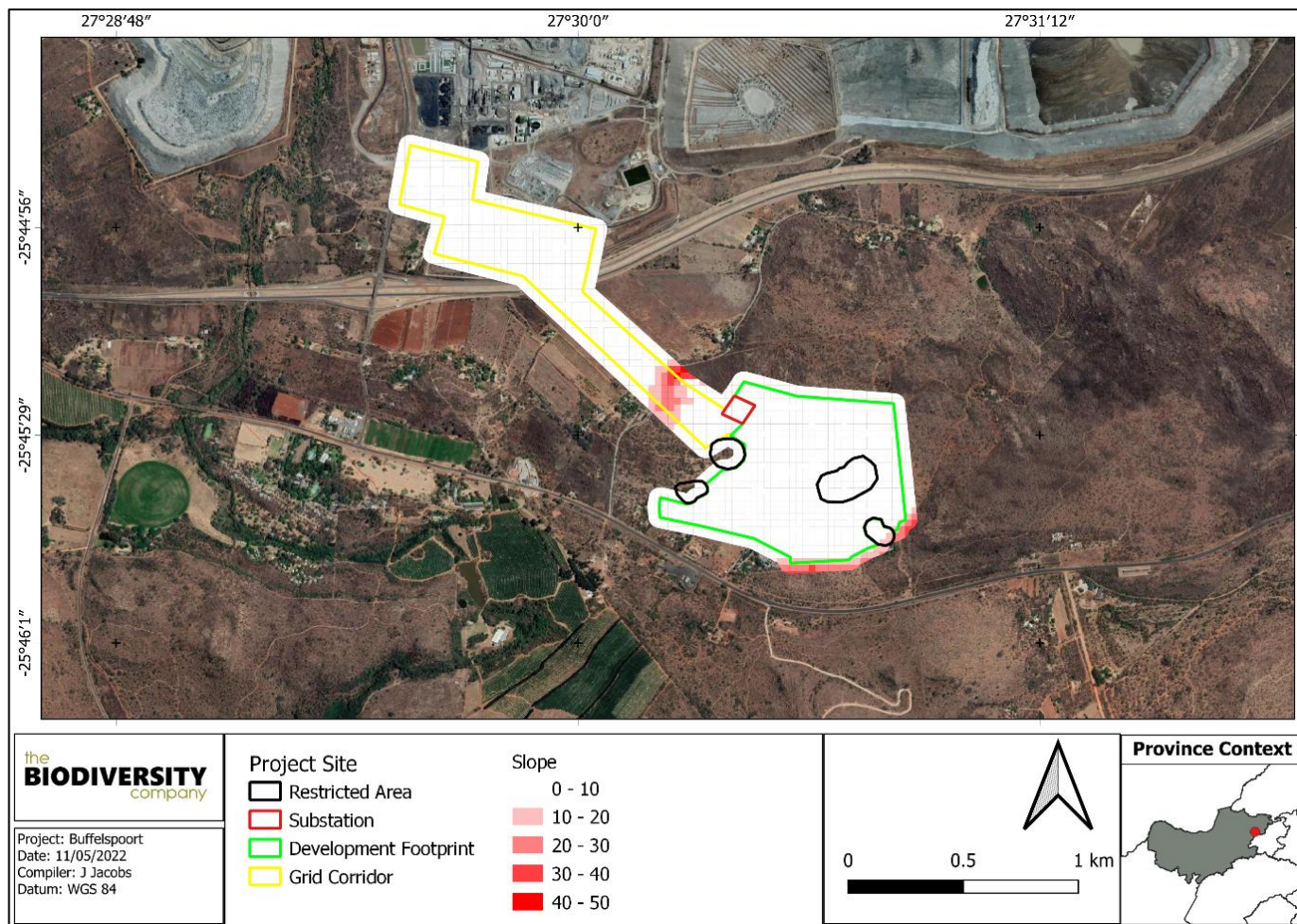


Figure 6.4: Slope percentage for the development area

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

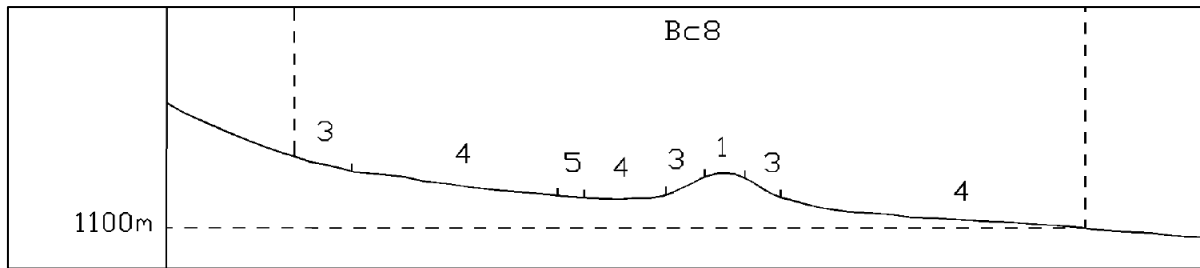
#### Geological Setting of the Development Area

Most of the development area and grid connection corridor is underlain by mafic intrusive rocks of the Rustenburg Layered Suite of the Bushveld Igneous Complex. Rocks include gabbro, norite, pyroxenite and anorthosite. The shales and quartzites of the Pretoria Group (Transvaal Supergroup) also contribute to the geology.

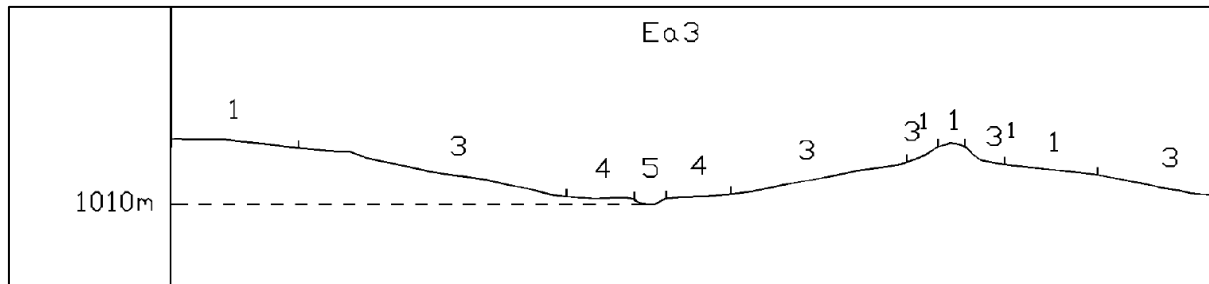
#### Soil and Land Types

According to the land type database, the development area and grid connection corridor fall within the Bc 8 and Ea 3 land types. The Bc 8 and Ea 3 land types mostly consist of Rensburg, Dundee, Arcadia, Hutton, and/Oakleaf soil forms according to the South African soil classification working group (1990), with the possibility of other soils occurring throughout. The Bc 8 land type terrain units and expected soils are illustrated in **Figure 6.5** and **Table 6.1**, respectively. The Ea 3 land type terrain units and expected soils are illustrated in **Figure 6.6** and **Table 6.2**, respectively.





**Figure 6.5:** Illustration of land type Bc 8 terrain units (Land Type Survey Staff, 1972 – 2006)



**Figure 6.6:** Illustration of land type Ea 3 terrain units (Land Type Survey Staff, 1972 – 2006)

**Table 6.1:** Soils expected at the respective terrain units within the Bc 8 land type (Land Type Survey Staff, 1972 - 2006)

Terrain units							
1 (2%)		3 (8%)		4 (85%)		5 (5%)	
Bare Rocks	50%	Mispah	50%	Hutton	40%	Rensburg, Dundee	60%
Mispah	50%	Bare Rocks	44%	Avalon	18%	Mispah	10%
		Hutton	6%	Clovelly	7%	Katspruit	10%
				Shortlands	6%	Arcadia	10%
				Bare Rocks	6%	Shortlands	6%
				Katspruit	5%	Bare Rocks	4%
				Arcadia	1%		

**Table 6.2:** Soils expected at the respective terrain units within the Ea 3 land type (Land Type Survey Staff, 1972 - 2006)

Terrain Units											
1 (30%)		1 (1) (0.5)		3 (44.5%)		3(1) (1%)		4 (15%)		5 (9%)	
Arcadia	70%	Bare Rocks	80%	Arcadia	76%	Bare Rocks	70%	Arcadia	89%	Oakleaf	67%
Bare Rocks	14%	Mispah	9%	Bare Rocks	10%	Mispah	30%	Hutton	3%	Arcadia	22%
Mispah	9%			Mispah	6%			Shortlands	3%	Shortlands	6%
Hutton	4%			Hutton	4%			Swartland	3%	Hutton	5%
Shortlands	3%			Shortlands	3%						
				Glenrosa	4%						
				Swartland	1%						

## Agricultural Potential

Land capability is divided into eight (8) classes, and these may be divided into three (3) capability groups, namely, arable land, grazing land and wildlife. **Table 6.3** shows how the land classes and groups are arranged in order of decreasing capability and ranges of use. The risk of use and sensitivity increases from class I to class VIII (Smith, 2006).

**Table 6.3:** Land capability class and intensity of use (Smith, 2006)

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

The land potential classes are determined by combining the land capability results and the climate capability of a region as shown in **Table 6.4**. The final land potential results are then described in **Table 6.5**. 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.

**Table 6.4:** 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 6.5:** The land potential classes

<b>LC</b>	<b>Very high potential: No limitations. Appropriate contour protection must be implemented and inspected.</b>
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

A description of the land capability and land potential of the development area and grid connection corridor will be provided once in-field assessments of the development footprint and grid connection corridor have been undertaken as part of the EIA Phase of the process.

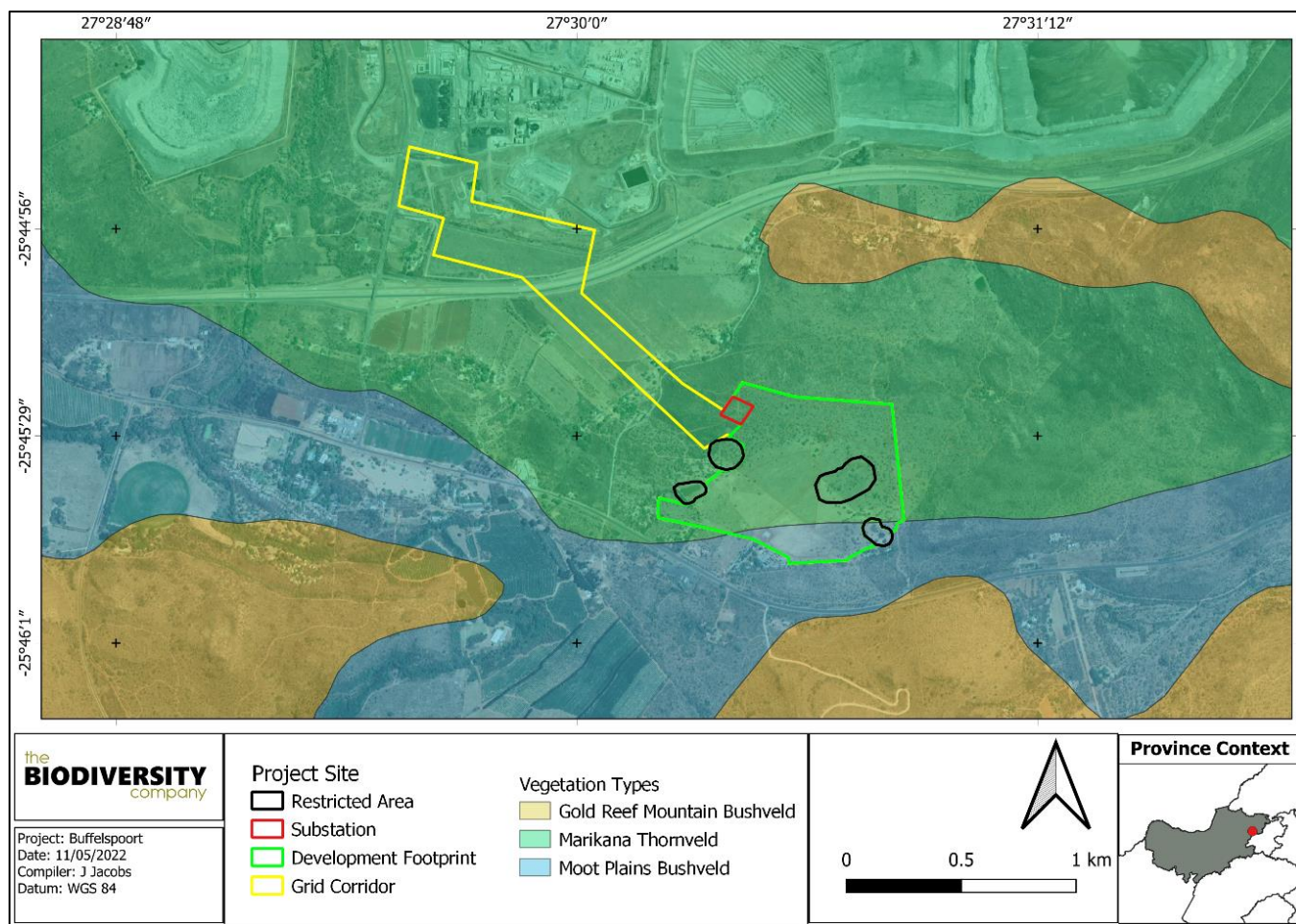
#### **6.4.3. Land Use**

The most prominent (and visible) land use within the study area is the mining activities, mining infrastructure and waste rock dumps. Interspersed with these mining activities are agricultural land uses, ranging from irrigated agriculture, dryland agriculture and citrus farming (orchards) predominantly to the south. Agricultural activities include the production of maize, wheat and sunflower crops, as well as cattle farming. The farmers working these fields predominantly reside at homesteads or farm residences scattered throughout the study area. Homesteads located in closer proximity to the proposed project site include, Mizpah, Maakiesaakie, Dassieklip and Elandsdrif.

#### **6.4.4. Ecological Profile**

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

The development area and grid connection corridor overlap with the Marikana Thornveld and Moot Plains Bushveld vegetation types (refer to **Figure 6.7**).



**Figure 6.7:** Map illustrating the vegetation types associated with the development area and grid connection corridor

### Marikana Thornveld

Marikana Thornveld extends on the broad plains from Rustenburg in the West, through Marikana and Brits, and towards Pretoria in the East. It is characterised by open *Vachellia* karroo woodland, which occurs in valleys and on undulating plains and hills. Fire-protected habitats, such as drainage lines, rocky outcrops and termitaria are typically dominated by denser, shrub-dominated vegetation.

### Important Plant Taxa in the Marikana 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. They note the following species are important taxa in the Marikana Thornveld vegetation type:

- » **Tall Tree:** *Senegalia burkei*.
- » **Small Trees:** *Senegalia caffra*, *Vachellia gerrardii*, *Vachellia karroo*, *Combretum molle*, *Searsia lancea*, *Ziziphus mucronata*, *Vachellia nilotica*, *Vachellia tortilis* subsp. *heteracantha*, *Celtis africana*, *Dombeya rotundifolia*, *Pappea capensis*, *Peltophorum africanum*, *Terminalia sericea*.

- » **Tall Shrubs:** *Euclea crispa* subsp. *crispa*, *Olea europaea* subsp. *africana*, *Searsia pyroides* var. *pyroides*, *Diospyros lycioides* subsp. *guerkei*, *Ehretia rigida* subsp. *rigida*, *Euclea undulata*, *Grewia flava*, *Pavetta gardeniifolia*.
- » **Low Shrubs:** *Asparagus cooperi*, *Rhynchosia nitens*, *Indigofera zeyheri*, *Justicia flava*.
- » **Woody Climbers:** *Clematis brachiata*, *Helinus integrifolius*.
- » **Herbaceous Climbers:** *Pentarrhinum insipidum*, *Cyphostemma cirrhosum*.
- » **Graminoids:** *Elionurus muticus*, *Eragrostis lehmanniana*, *Setaria sphacelata*, *Themeda triandra*, *Aristida scabrivalvis* subsp. *scabrivalvis*, *Fingerhuthia africana*, *Heteropogon contortus*, *Hyperthelia dissoluta*, *Melinis nerviglumis*, *Pogonarthria squarrosa*.
- » **Herbs:** *Hermannia depressa*, *Ipomoea obscura*, *Barleria macrostegia*, *Dianthus mooiensis* subsp. *mooiensis*, *Ipomoea oblongata*, *Vernonia oligocephala*.
- » **Geophytic Herbs:** *Ledebouria revoluta*, *Ornithogalum tenuifolium*, *Sansevieria aethiopica*.

### Conservation Status of the Marikana Thornveld

According to Mucina and Rutherford (2006), the Marikana Thornveld is classified as Endangered, with its national conservation target being 19%. Over 48% has already been transformed by urban expansion and cultivation, and alien invasive plants occur in high densities, especially along drainage lines (Mucina & Rutherford, 2006). Erosion is very low to moderate (Mucina & Rutherford, 2006). Less than 1% is conserved in the Magaliesberg Nature Area, De Onderstepoort Nature Reserve and other reserves.

### Moot Plains Bushveld

The main belt of the Moot Plains Bushveld extends from the Selons River Valley south of the Magaliesberg, through Maanhaarand and the valley bottom of the Magalies River, east of the Hartebeestpoort Dam between the Magaliesberg and Daspoort mountain ranges and to Pretoria (Mucina & Rutherford, 2006). It is characterised by low-lying savanna dominated by *Vachellia* species. occurring on the bottomlands and plains, or woodlands on the lower hillsides vary in height and density (Mucina & Rutherford, 2006). Grasses dominate the herbaceous layer (Mucina & Rutherford, 2006).

### Important Plant Taxa in the Moot Plains Bushveld

Mucina and Rutherford (2006) noted the following species as important taxa in the Moot Plains Bushveld:

- » **Small trees:** *Vachellia nilotica*, *Vachellia tortillis* subsp. *heteracantha*, *Searsia lancea*.
- » **Tall shrubs:** *Buddleja saligna*, *Euclea undulata*, *Olea europaea* subsp. *africana*, *Grewia occidentalis*, *Gymnosporia polyacantha*, *Mystroxydon aethiopicum* subsp. *burkeanum*.
- » **Low shrubs:** *Aptosimum elongatum*, *Felicia fascicularis*, *Lantana rugosa*, *Teucrium trifidum*.
- » **Succulent shrub:** *Kalanchoe paniculata*.
- » **Woody climber:** *Jasminum breviflorum*.
- » **Herbaceous climber:** *Lotononis bainesii*.
- » **Graminoids:** *Heteropogon contortus*, *Setaria sphacelata*, *Themeda triandra*, *Aristida congesta*, *Chloris virgata*, *Cynodon dactylon*, *Sporobolus nitens*, *Tragus racemosus*.
- » **Herbs:** *Achyroopsis avicularis*, *Corchorus asplenifolius*, *Evolvulus alsinoides*, *Helichrysum nudifolium*, *Helichrysum undulatum*, *Hermannia depressa*, *Osteospermum muricatum*, *Phyllanthus maderaspatensis*.



## **ii. Expected Flora Species**

The Plants of Southern Africa (POSA) database indicates that 508 species of indigenous plants are expected to occur within the development area and grid connection corridor. Three (3) flora species of conservation concern (SCC), based on their conservation status, could be expected to occur within the development area and grid connection corridor and are provided in **Table 6.6** below.

**Table 6.6:** Threatened flora species that may occur within the development area and grid connection corridor

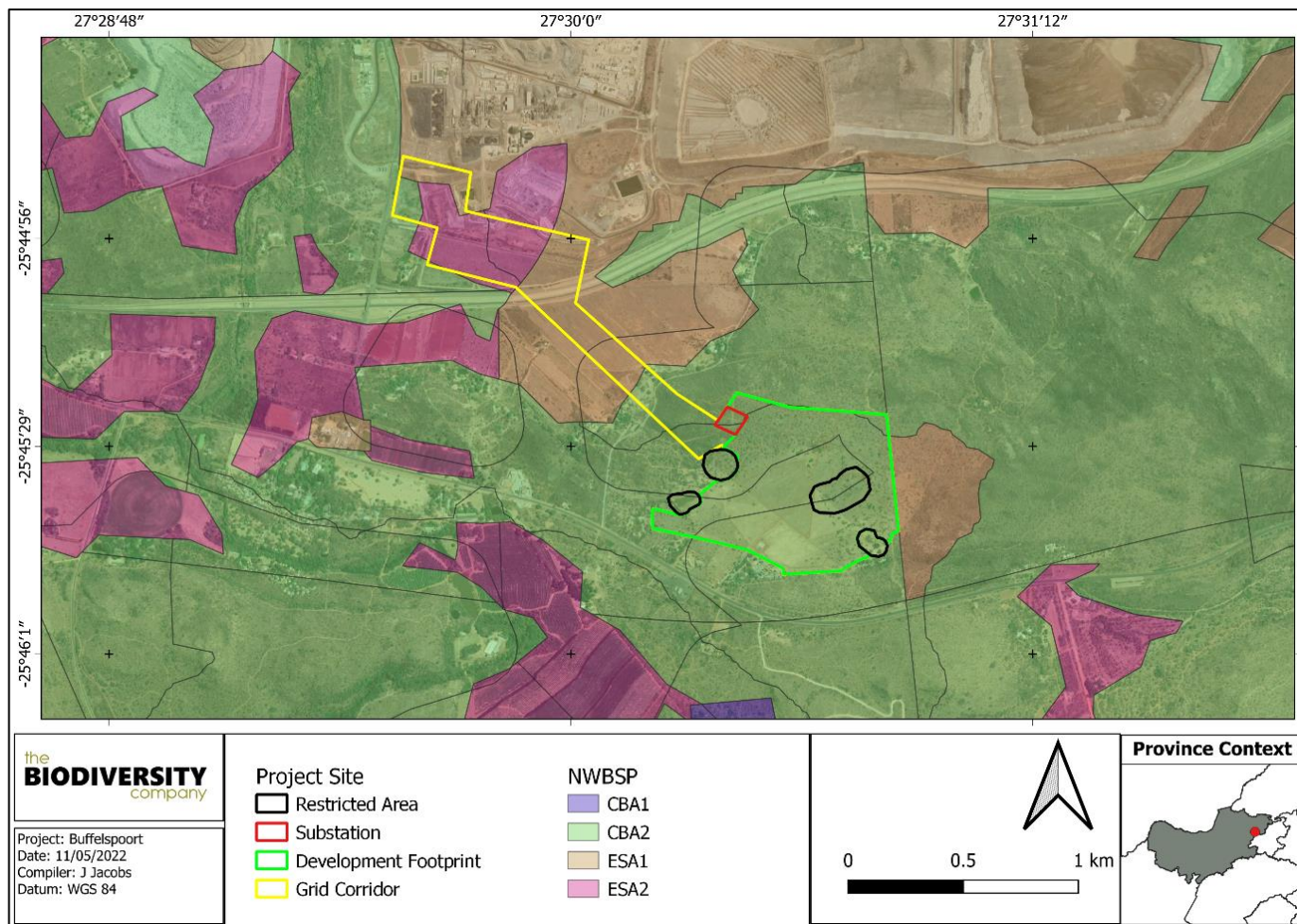
<b>Family</b>	<b>Taxon</b>	<b>Author</b>	<b>IUCN</b>	<b>Ecology</b>
Crassulaceae	<i>Adromischus umbraticola</i> subsp. <i>Umbraticola</i>	C.A.Sm.	NT	Indigenous; Endemic
Aizoaceae	<i>Delosperma leendertziae</i>	N.E.Br.	NT	Indigenous; Endemic
Apocynaceae	<i>Stenostelma umbelluliferum</i>	(Schltr.) Bester & Nicholas	NT	Indigenous; Endemic

## **iii. Critical Biodiversity Areas and Ecological Support Areas**

The conservation of CBAs is crucial, in that if these areas are not maintained in a natural or near-natural state, biodiversity conservation targets cannot be met. Maintaining an area in a natural state can include a variety of biodiversity compatible land uses and resource uses (SANBI-BGIS, 2017).

The purpose of the North-West Biodiversity Sector Plan (NWbsp) (2015) is to inform land-use planning and development on a provincial scale and to aid in natural resource management. One of the outputs is a map of Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs). These are classified into different categories, namely CBA1 areas, CBA2 areas, ESA1 areas and ESA2 areas based on biodiversity characteristics, spatial configuration, and requirements for meeting targets for both biodiversity patterns and ecological processes.

**Figure 6.8** shows the development area and grid connection corridor superimposed on the Terrestrial CBA maps. The development area and grid connection corridor overlap with a CBA2, an ESA1 and an ESA2.



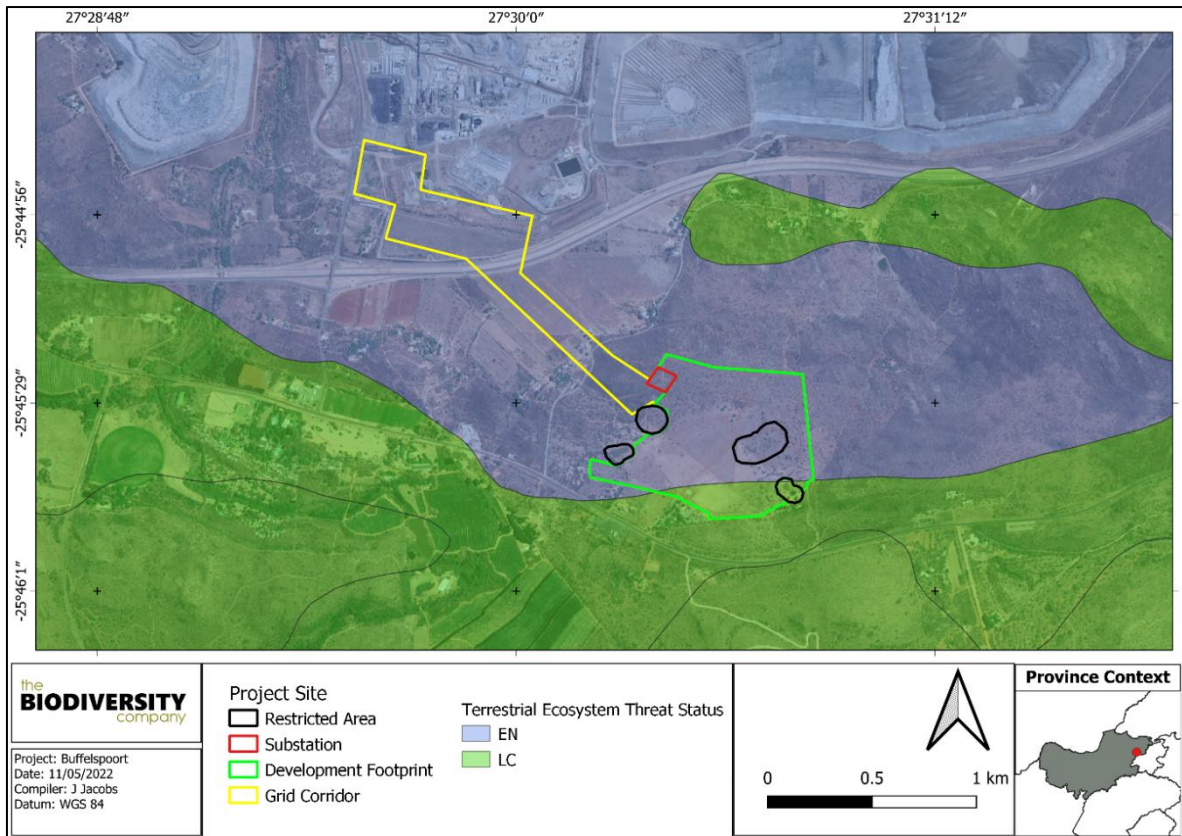
**Figure 6.8:** Map illustrating the locations of CBAs and ESAs within the development area and grid connection corridor

**iv. Ecosystem Threat Status and Protection Level**

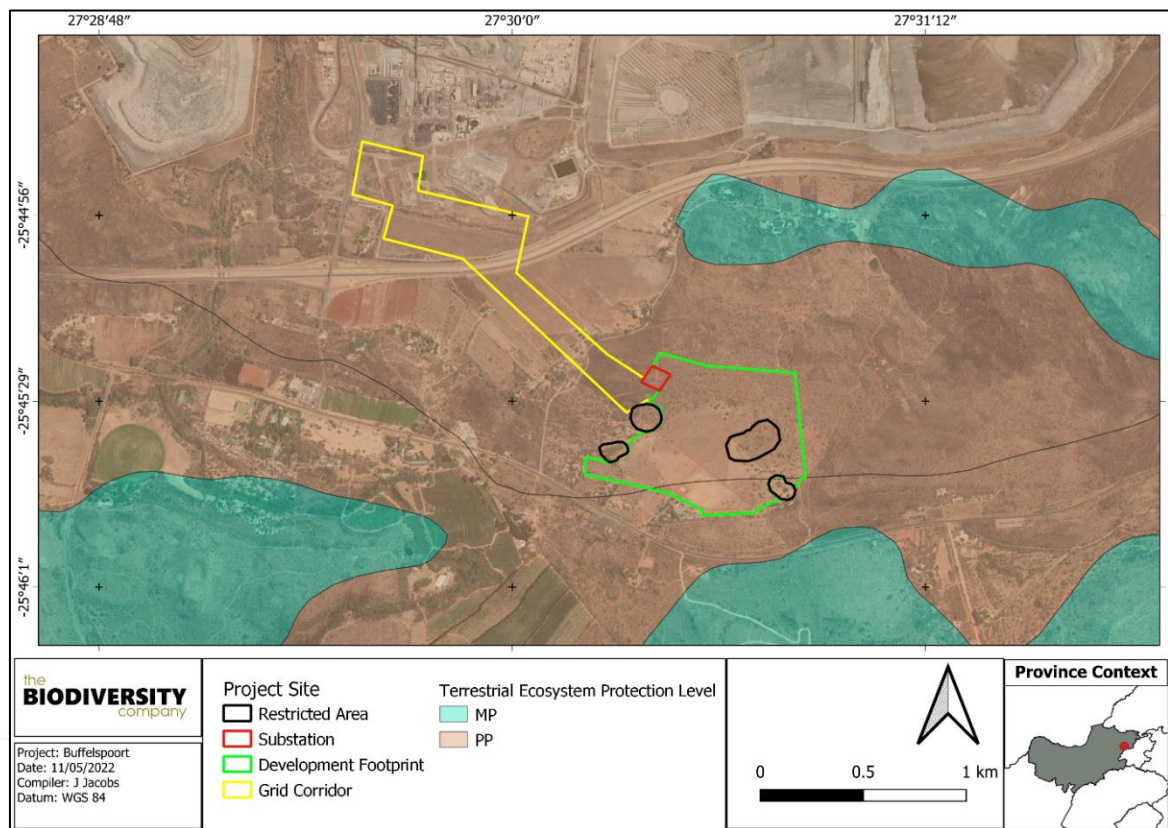
The Ecosystem Threat Status is an indicator of an ecosystem's wellbeing, based on the level of change in structure, function or composition. Ecosystem types are categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT) or Least Concern (LC), based on the proportion of the original extent of each ecosystem type that remains in good ecological condition. According to the spatial dataset the proposed Project overlaps mainly with an EN ecosystem, and marginally with a LC ecosystem (refer to **Figure 6.9**).

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 PP ecosystem (refer to **Figure 6.10**).





**Figure 6.9:** Map illustrating the ecosystem threat status associated with the development area and grid connection corridor

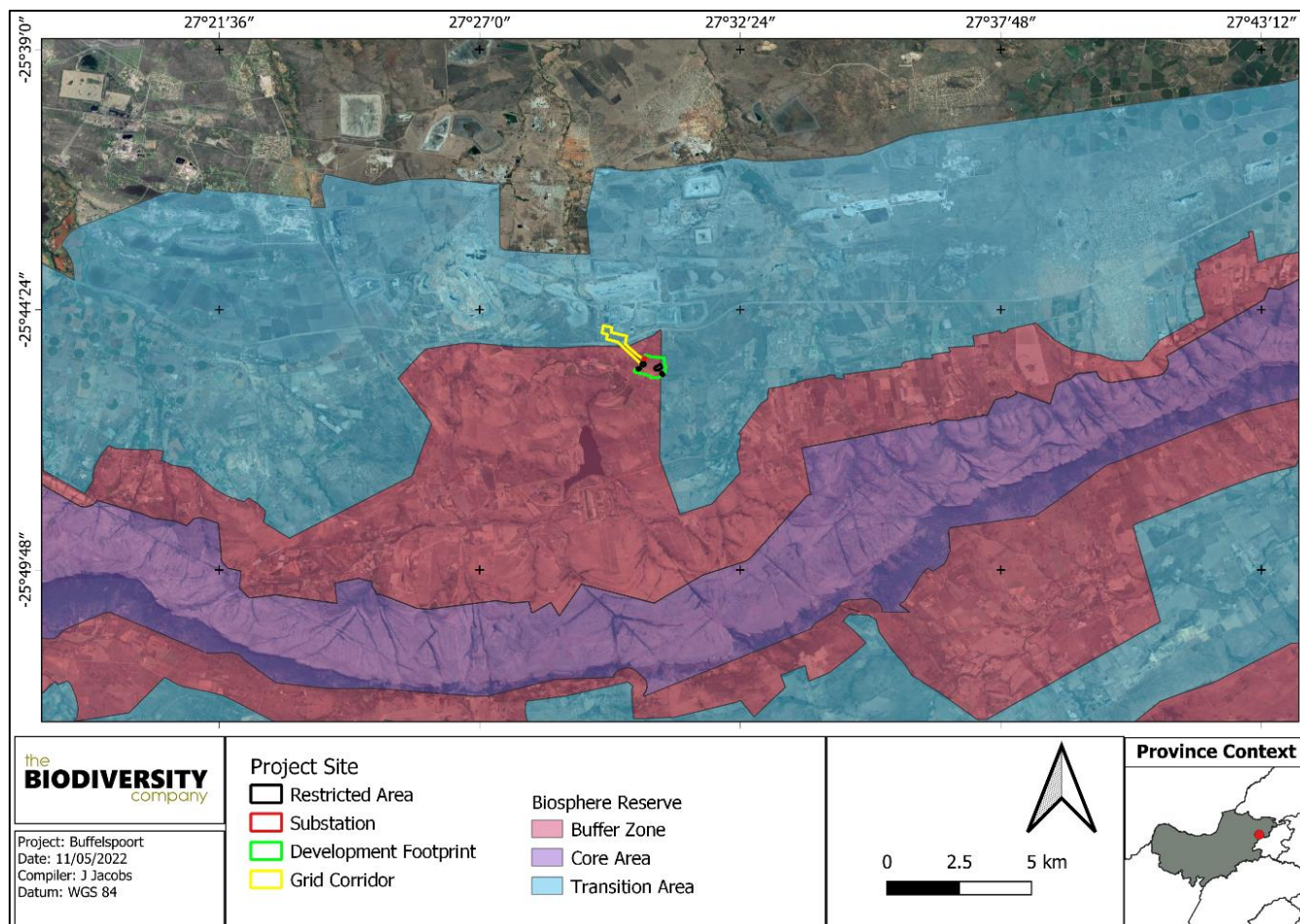


**Figure 6.10:** Map illustrating the ecosystem protection level associated with the development area and grid connection corridor



**v. Protected Areas and National Protected Areas Expansion Strategy Focus Areas**

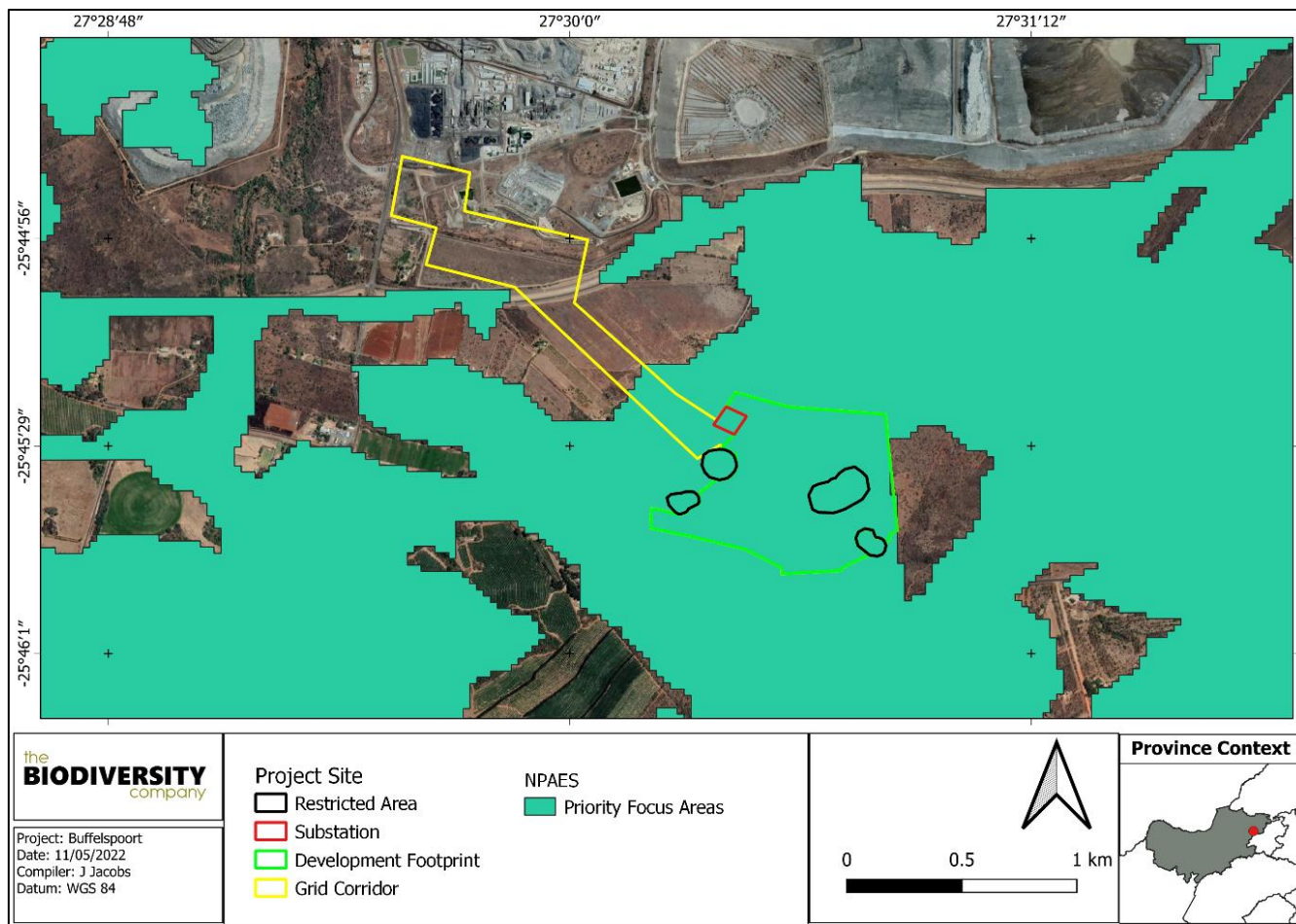
According to the protected area spatial datasets from the South African Protected Areas Database SAPAD (2021) and SACAD (2021), the proposed Project overlaps with the Magaliesberg Biosphere Reserve (refer to **Figure 6.11**), with the development area encroaching into areas designated as a Buffer Zone and the grid connection corridor extending into a Transition Area. The development area (at the closest point) is located approximately 12km from the core of the Biosphere.



**Figure 6.11:** The Project in relation to protected areas

National Protected Area Expansion Strategy 2016 (NPAES) focus 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 development area and grid connection corridor overlap with a NPAES Priority Focus Area (refer to **Figure 6.12**).



**Figure 6.12:** The development area and grid connection corridor in relation of the NPAES Priority Focus Areas

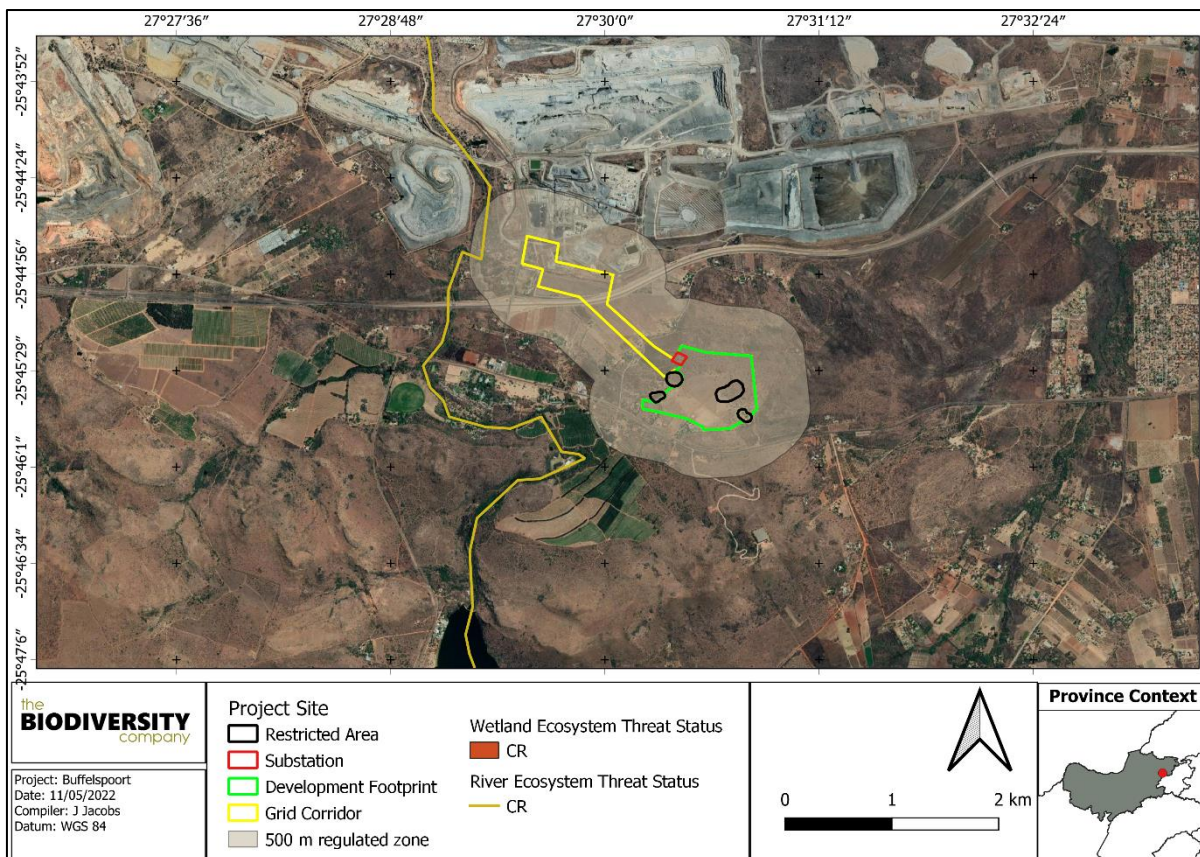
## vi. Hydrological Setting

The South African Inventory of Inland Aquatic Ecosystems (SAIIAE) was released with the 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 Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or Least Threatened (LT), with CR, EN and VU ecosystem types collectively referred to as 'threatened'. The 500 m regulated area around the grid corridor overlaps with a CR river (refer to **Figure 6.13**).

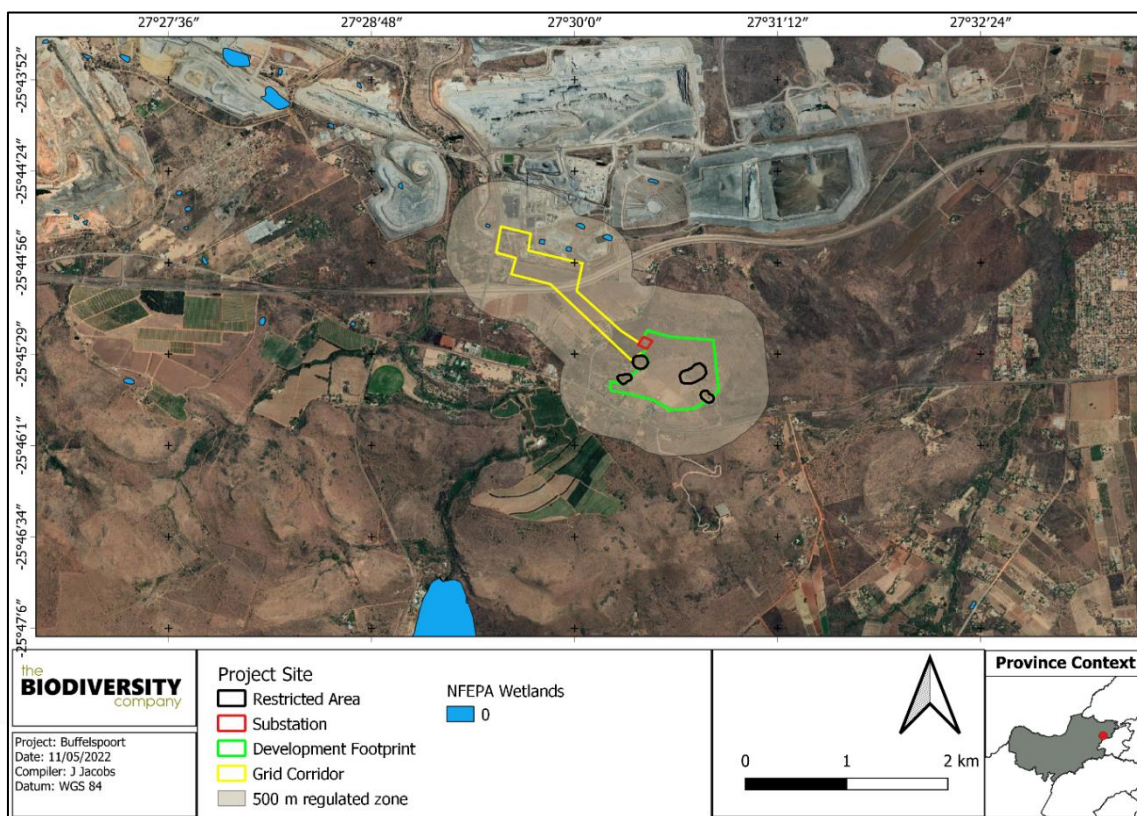
In an attempt to better conserve aquatic ecosystems, South Africa has categorised its river systems according to set ecological criteria (i.e., ecosystem representation, water yield, connectivity, unique features, and threatened taxa) to identify Freshwater Ecosystem Priority Areas (FEPAs). The FEPAs 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 6.14** shows that the 500m regulated area of the grid connection corridor overlaps with five unclassified NFEPA wetlands.





**Figure 6.13:** Map illustrating ecosystem threat status of rivers and wetland ecosystems in within the 500m regulated area of the development area and grid connection corridor and broader site



**Figure 6.14:** Map illustrating National Freshwater Ecosystem Priority Areas within the 500 m regulated area of the development area and grid connection corridor and broader site

## vii. Terrestrial Fauna Communities

### Mammals

The International Union for Conservation of Nature (IUCN) Red List Spatial Data lists 86 mammal species that could be expected to occur within the development area. This list excludes large mammal species that are normally restricted to protected areas. Thirteen (13) of these expected species are regarded as threatened (refer to **Table 6.7**). Of these 13 SCCs, nine (9) have a low likelihood of occurrence based on the lack of suitable habitat in the development area.

**Table 6.7:** Threatened mammal species that are expected to occur within the development area

Species	Common Name	Conservation Status		Likelihood of occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
<i>Aonyx capensis</i>	Cape Clawless Otter	NT	NT	Low
<i>Atelerix frontalis</i>	South African Hedgehog	NT	LC	Moderate
<i>Cloeotis percivali</i>	Short-eared Trident Bat	EN	LC	Low
<i>Crocidura mariquensis</i>	Swamp Musk Shrew	NT	LC	Low
<i>Eidolon helvum</i>	African Straw-colored Fruit Bat	LC	NT	Low
<i>Felis nigripes</i>	Black-footed Cat	VU	VU	Moderate
<i>Hydrictis maculicollis</i>	Spotted-necked Otter	VU	NT	Low
<i>Mystromys albicaudatus</i>	White-tailed Rat	VU	EN	Low
<i>Ourebia ourebi</i>	Oribi	EN	LC	Low
<i>Panthera pardus</i>	Leopard	VU	VU	High
<i>Parahyaena brunnea</i>	Brown Hyaena	NT	NT	Moderate
<i>Pelea capreolus</i>	Grey Rhebok	NT	LC	Low
<i>Redunca fulvorufula</i>	Mountain Reedbuck	EN	LC	Low

### Amphibians

Based on the International Union for Conservation of Nature (IUCN) Red List Spatial Data and FrogMap, 22 amphibian species are expected to occur within the development area. No amphibian SCCs are expected to occur within the development area.

### Reptiles

Based on the IUCN Red List Spatial Data and the ReptileMAP database, 66 reptile species are expected to occur within the development area. One (1) species is regarded as threatened (refer to **Table 6.8**).

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

Species	Common Name	Conservation Status		Likelihood of Occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
<i>Kinixys lobatsiana</i>	Lobatse Hinged Tortoise	VU	VU	Moderate

## **viii. Avifauna**

### **Important Bird and Biodiversity Areas**

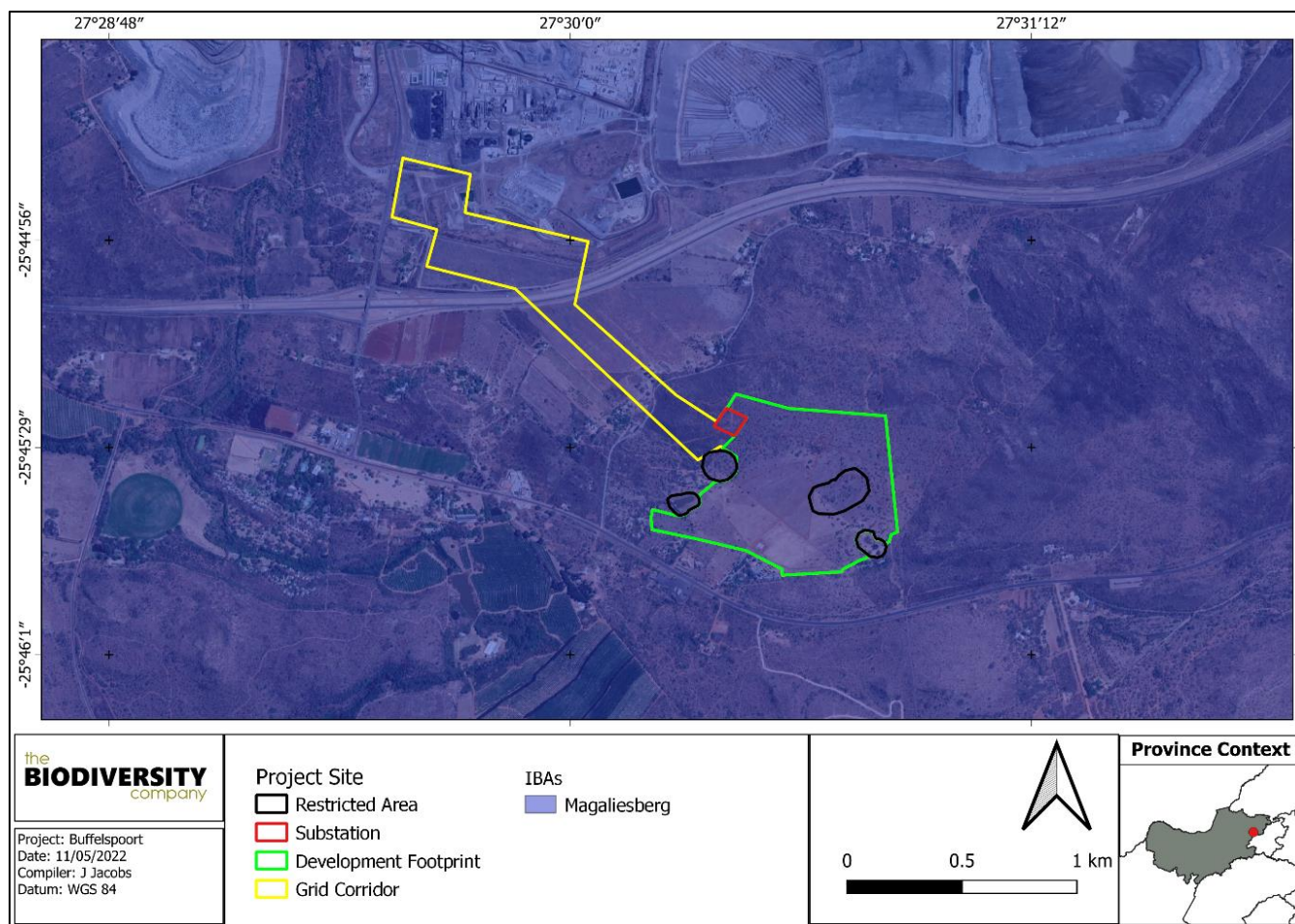
Important Bird & Biodiversity Areas (IBAs) are sites of international significance for the conservation of the world's birds and other conservation significant species as identified by BirdLife International. These sites are also all Key Biodiversity Areas; sites that contribute significantly to the global persistence of biodiversity.

According to Birdlife South Africa (2017), the selection of IBAs is achieved through the application of quantitative ornithological criteria, grounded in up-to-date knowledge of the sizes and trends of bird populations. The criteria ensure that the sites selected as IBAs have true significance for the international conservation of bird populations and provide a common currency that all IBAs adhere to, thus creating consistency among, and enabling comparability between, sites at national, continental and global levels. **Figure 6.15** shows that the development area and grid connection corridor overlap with the Magaliesberg IBA.

The Magaliesberg IBA was previously known as the Magaliesberg and Witwatersberg IBA and consists mainly of the Magaliesberg range which extends from the North-West of Rustenburg in the West to the N1 in the East near Pretoria (Birdlife South Africa, 2015). Several large rivers have their headwaters in these mountains, such as the Crocodile, Sterkstroom, Magalies and Skeerpoort rivers (Birdlife South Africa, 2015). Three major impoundments have been built along the Magaliesberg, namely the Hartbeespoort Dam in the East, Buffelspoort Dam in the centre and Olifantsnek Dam about 7km south of Rustenburg (Birdlife South Africa, 2015).

IBA trigger species in the Magaliesberg IBA include two globally threatened species, namely Cape Vulture (*Gyps coprotheres*) and Secretarybird (*Sagittarius serpentarius*), of which the former is considered to be the most important (Birdlife South Africa, 2015). Regionally threatened species include the Lanner Falcon (*Falco biarmicus*), Half-collared Kingfisher (*Alcedo semitorquata*), African Grass Owl (*Tyto capensis*), African Finfoot (*Podica senegalensis*) and Verreaux's Eagle (*Aquila verreauxii*) (Birdlife South Africa, 2015). Biome-restricted species include the White-bellied Sunbird (*Cinnyris talatala*), Kurrichane Thrush (*Turdus libonyanus*), White-throated Robin-chat (*Cossypha humeralis*), Kalahari Scrub Robin (*Erythropygia paena*) and Barred Wren-Warbler (*Calamonastes fasciolatus*) (Birdlife South Africa, 2015).





**Figure 6.15:** The development area and grid connection corridor in relation to the Magaliesburg IBA

### Avifauna Species Expected to Occur within the area

The Southern African Bird Atlas Project 2 (SABAP2) data lists 366 avifauna species that could be expected to occur within the development area. Twenty (20) of these expected species are regarded as threatened (refer to **Table 6.9**). Two (2) of the species have a low likelihood of occurrence due to lack of suitable habitat and food sources in the development area.

**Table 6.9:** Threatened avifauna species that are expected to occur within the development area

Species	Common Name	Conservation Status		Likelihood of occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
<i>Alcedo semitorquata</i>	Half-collared Kingfisher	NT	LC	Moderate
<i>Calidris ferruginea</i>	Curlew Sandpiper	LC	NT	Low
<i>Ciconia ciconia</i>	White Stork	NT	LC	Moderate
<i>Ciconia nigra</i>	Black Stork	VU	LC	Moderate
<i>Coracias garrulus</i>	European Roller	NT	LC	Moderate
<i>Eupodotis senegalensis</i>	White-bellied Bustard	VU	LC	Moderate
<i>Falco biarmicus</i>	Lanner Falcon	VU	LC	High
<i>Falco vespertinus</i>	Red-footed Falcon	NT	VU	Moderate
<i>Gorsachius leuconotus</i>	White-backed Night Heron	VU	LC	High
<i>Gyps africanus</i>	White-backed Vulture	CR	CR	Moderate



Species	Common Name	Conservation Status		Likelihood of occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
<i>Gyps coprotheres</i>	Cape Vulture	EN	EN	High
<i>Mycteria ibis</i>	Yellow-billed Stork	EN	LC	High
<i>Oxyura maccoa</i>	Maccoa Duck	NT	EN	Moderate
<i>Phoeniconaias minor</i>	Lesser Flamingo	NT	NT	Low
<i>Podica senegalensis</i>	African Finfoot	VU	LC	Moderate
<i>Polemaetus bellicosus</i>	Martial Eagle	EN	EN	High
<i>Pterocles gutturalis</i>	Yellow-throated Sandgrouse	NT	LC	High
<i>Sagittarius serpentarius</i>	Secretarybird	VU	EN	High
<i>Torgos tracheliotos</i>	Lappet-faced Vulture	EN	EN	High
<i>Tyto capensis</i>	African Grass Owl	VU	LC	High

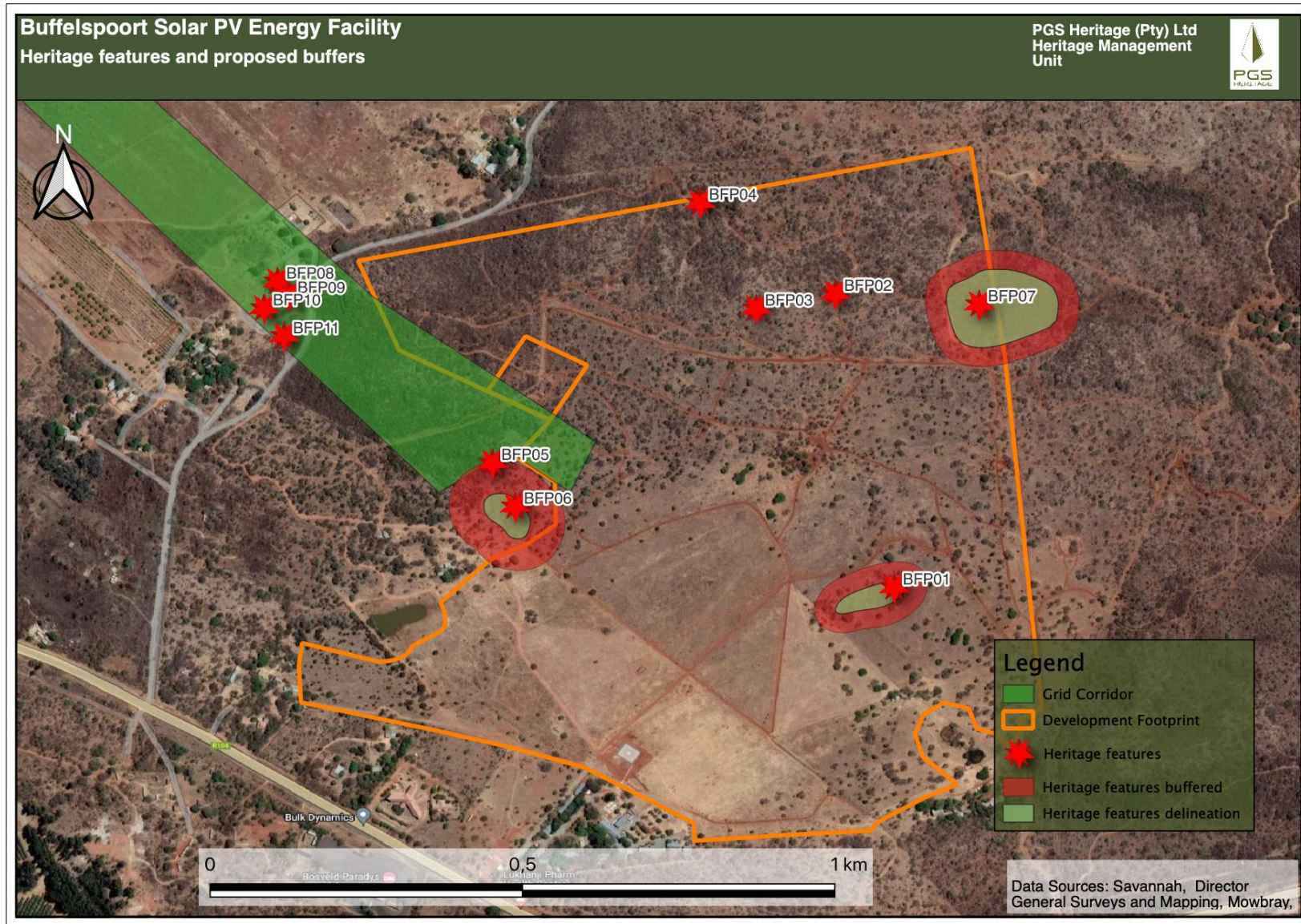
## 6.5. Heritage (including Archaeology and Palaeontology)

Fieldwork was conducted as part of the Heritage Scoping Assessment on 28 April, 06 May, and 26 May 2022 by a field team from PGS Heritage. The fieldwork component of the study was aimed at identifying tangible remains of archaeological, historical and heritage significance. The fieldwork was undertaken by way of intensive walkthroughs of the proposed development area and grid connection corridor.

### 6.5.1. Identified Heritage Resources

During the fieldwork, a total of eleven (11) heritage features and resources were identified. These consist of one (1) burial ground with approximately 100 graves (BFP-06), three (3) localities with recent historic structures (BFP-08, BFP-10 and BFP-11), and one (1) kraal (BFP-09), as well as six (6) low to moderate significance archaeological sites (BFP-01, BFP-02, BFP-03, BFP-04, BFP-05 and BFP-07).

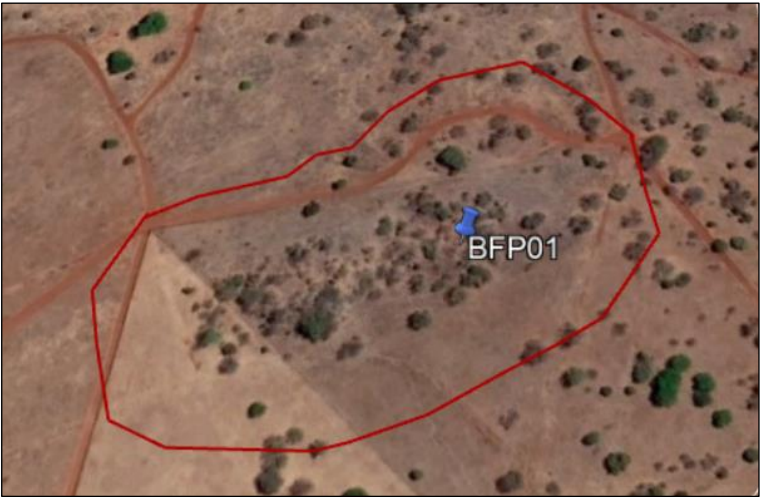

The locations of the heritage resources identified during the field survey are shown in **Figure 6.16**, and the descriptions of each individual site, including pictures of the sites, are provided in **Table 6.10**.







**Figure 6.16:** Identified heritage resources within the development area and grid connection corridor




**Table 6.10:** Sites identified during the heritage survey



Site No.	Lat	Long	Description	Heritage Significance	Heritage Rating
BFP-01	S -25.759900°	E 27.512075°	<p>A continuous stone wall (dry walling) is located on a small outcrop within the proposed development area. It runs across the centre of the small, raised outcrop. No other material of cultural significance was identified within the development area.</p> <p><b>Site extent:</b> Approximately 60m x 30m.</p> <p>The site is of low heritage significance and is rated as IIIC. It is recommended that:</p> <ul style="list-style-type: none"> <li>» • Keep stone walling intact with 30 meter buffer</li> </ul>	LOW	IIIC
					
BFP-02	S 25.755680°	E 27.511230°	<p>A small open area with a low surface scatter of ceramics, all undecorated. No other cultural material or stone walling was identified within the vicinity of the site.</p> <p><b>Site extent:</b> Approximately 5m x 5m.</p> <p>The site is of low heritage significance and is rated as IIIC. It is recommended that:</p> <ul style="list-style-type: none"> <li>» No mitigation is required.</li> </ul>	LOW	IIIC




Site No.	Lat	Long	Description	Heritage Significance	Heritage Rating
					
BFP-03	S 25.755891°	E 27.510092°	<p>A few areas were identified with low stone walling. The stone walling wasn't very well preserved and, in some areas, appeared to be rocks pushed to one side to create space for an old road. No other cultural material was identified at the site.</p> <p><b>Site extent:</b> Approximately 10m x 10m.</p> <p>It is recommended that: » No mitigation is required.</p>	No research potential or other cultural significance	NCW
					
BFP-04	S -25.754371°	E	A very overgrown area with a slight raised area. A low-density surface scatter of ceramics, with	LOW	IIIC




Site No.	Lat	Long	Description	Heritage Significance	Heritage Rating
		27.509287°	<p>one rim and decorated sherd was found in the dirt road. The ceramic was possible washed down. No other material could be identified in the development area.</p> <p><b>Site extent:</b> Approximately 5m x 5m.</p> <p>The site is of low heritage significance and is rated as IIIC. It is recommended that: » No mitigation is required</p>		
					
BFP-05	S -25.758110°	E 27.506302°	<p>Two area with stone walling was identified. One stone walling had a clear square shape with a defined entrance. The other stone walling had fallen over, and it is difficult to distinguish a shape. No other cultural material was identified at the site.</p> <p><b>Site extent:</b> Approximately 10m x 5m.</p> <p>It is recommended that: » No mitigation is required.</p>	No research potential or other cultural significance	NCW



Site No.	Lat	Long	Description	Heritage Significance	Heritage Rating
					
BFP-06	S -25.758738°	E 27.506627°	<p>An informal cemetery with approximately 100 graves is located at the site. The graves are in a field that is very overgrown and as such, some of the graves can easily be missed.</p> <p>Most of the graves have a stone-packed and/or stone-lined dressing, whereas others have concrete or granite dressing.</p> <p><b>Site extent:</b> Approximately 50m x 50m.</p> <p>Burial grounds and graves are protected under Section 36 of the NHRA 25 of 1999. Thus, the site is provisionally rated as having a high heritage significance with a heritage rating of IIIA. All graves have high levels of emotional, religious and in some cases historical significance. It is also important to understand that the identified graves could have significant heritage value to the relevant families.</p> <p>It is recommended that:</p> <ul style="list-style-type: none"> <li>» The sites should be demarcated and a 50m no-go-buffer zone must be enforced. The graves should be avoided and left in situ.</li> <li>» A Grave Management Plan should be developed for the graves, to be implemented during the construction and operation phases (which needs approval by SAHRA BGG).</li> <li>» If the site is going to be impacted directly and the graves need to be removed, a grave relocation process for these sites is recommended as a mitigation and management measure.</li> </ul>	HIGH	IIIA




Site No.	Lat	Long	Description	Heritage Significance	Heritage Rating
			This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with the SAHRA BGG under the NHRA and National Health Act regulations.		
					
BFP-07	S -25.755832°	E 27.513298°	<p>A large stone walled site is located here but it appears that it has already been disturbed by activities. The area is currently being used as a feeding ground for the game located on the property.</p> <p>Some of the stone walling appears to be in its original state, whereas other have been pushed over and heaps created to clear a space for the game. At the centre of one stone enclosure a modern braai area has been built with bricks.</p> <p>No other cultural material was identified at the site.</p> <p><b>Site extent:</b> Approximately 30m x 30m.</p> <p>It is recommended that:</p> <ul style="list-style-type: none"> <li>» A 30 metre buffer should be implemented from the outer edge of the archaeological site.</li> <li>» If the preservation of the site is not possible mitigation before destruction will be required.</li> <li>» Phase 2 archaeological mitigation process must be implemented. This will include, surface collections, test excavations and analysis of recovered material. A permit issued under s35 of the NHRA will be required to conduct such work.</li> </ul>	LOW	IIC



Site No.	Lat	Long	Description	Heritage Significance	Heritage Rating
			<ul style="list-style-type: none"> <li>» On completion of the mitigation work the developer can apply for a destruction permit with the backing of the mitigation report.</li> <li>» This work will need to be done as part of the EMPr implementation prior to construction</li> <li>»</li> </ul>		
					
BFP-08	S -25.755504°	E 27.503211°	<p>Large abandoned and broken-down structure located in an open field. Along with the large structure there is a small broken-down red-brick building located to the left of the structure and a small square concrete and a possible reservoir located to the right of the structure.</p> <p>The large structure consists of bricks and concrete and had wooden window frames along with a corrugated iron roof. The structure has multiple rooms and probably served the purpose of a residential space.</p> <p>The structure appears to be relatively modern as it does not yet appear on the first edition topographical maps that date to 1968.</p> <p><b>Site extent:</b> Approximately 25m x 25m.</p> <p>It is recommended that:</p> <ul style="list-style-type: none"> <li>» No mitigation is required.</li> </ul>	NCW	No research potential or other cultural significance



Site No.	Lat	Long	Description	Heritage Significance	Heritage Rating
					
BFP-09	S -25.755708°	E 27.503372°	<p>A kraal that possibly once served the purpose to keep animals, like domestic stock. The kraal could also be associated with the large residential structure at site BFP-08.</p> <p><b>Site extent:</b> Approximately 10m x 10m.</p> <p>It is recommended that:</p> <ul style="list-style-type: none"> <li>» No mitigation is required.</li> </ul>	NCW	No research potential or other cultural significance
					
BFP-10	S -25.755888°	E 27.503019°	<p>Large abandoned and broken-down structure located in an open field. The structure consists of brick and concrete. There is no evidence left of a roof. At the corner of the building there is a</p>	NCW	No research



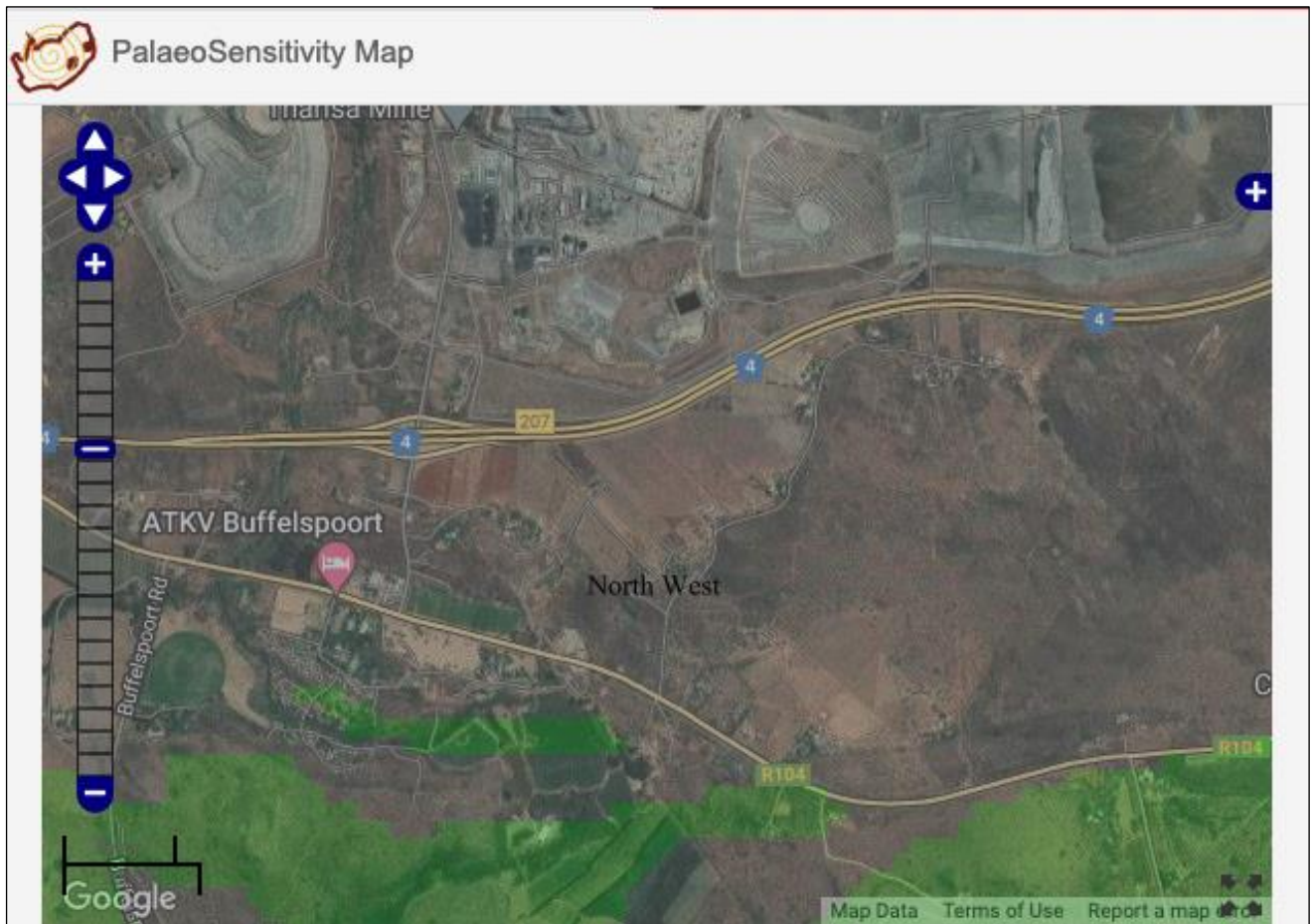
Site No.	Lat	Long	Description	Heritage Significance	Heritage Rating
			<p>space that resembles an entryway and the remains of a few stairs.</p> <p>This building could probably have been a storage unit of some sort.</p> <p>The structure appears to be relatively modern as it does not yet appear on the first edition topographical maps that date to 1968.</p> <p><b>Site extent:</b> Approximately 10m x 10m.</p> <p>It is recommended that:</p> <ul style="list-style-type: none"> <li>» No mitigation is required.</li> </ul>		potential or other cultural significance
					
BFP-11	S -25.756290°	E 27.503308°	<p>An abandoned and broken-down structure located behind site BFP-10. It appears to be the same building materials, bricks, and concrete. The structure has no remains of a roof, or doors and windows.</p> <p>The structure appears to be relatively modern as it does not yet appear on the first edition topographical maps that date to 1968.</p> <p><b>Site extent:</b> Approximately 5m x 5m.</p> <p>It is recommended that:</p>	NCW	No research potential or other cultural significance

Site No.	Lat	Long	Description	Heritage Significance	Heritage Rating
			» No mitigation is required.		
					



### 6.5.2. Palaeontology

According to the SAHRIS PalaeoMap, the palaeontological sensitivity of the development area and grid connection corridor is zero or insignificant. No paleontological studies are required (**Error! Reference source not found.**refer to **Figure 6.17**).



**Figure 6.17:** Palaeontological Heritage Sensitivity map. As can be viewed, most of the area has no sensitivity indicated by the white/clear background (Retrieved from SAHRIS).

### 6.6 Visual Quality

The largest residential area, or town, near the project site is the mining town of Mooinooi (population 4 733), located approximately 6km east of the proposed project site.

The N4 national road provides motorised access to the region and is the main connecting route in between the Gauteng Province (Pretoria) and Rustenburg. The proposed site easily accessible from the N4 via the R104 arterial road.

Besides the large number of mines and mining infrastructure within the area, there are numerous power lines and substations, predominantly associated with the mines. Some of these include: Bighorn / Pluto 1 275kV, Lonmin Eastern Platinum Mine Middelkraal M/P 1, Middelkraal / Spruitfontein 1 88kV, Middelkraal / Tharisa 1 88kV, Tharisa / Spruitfontein 1 88kV, Tharisa / Tharissa Minerals MP1 88kV, Bighorn / CCT Smelters 1



and 2 88kV, Bighorn / Middelkraal 1 88kV, Middelkraal / Modderspruit 88kV, and Middelkraal / Wonderkop 1 88kV.

There are no airports or airfields within the study area. There are also no other identified existing or authorised solar energy facilities, although there is one EIA application for a 1MW PV facility at the Lonmin Western Platinum Limited mine, to the north-east of the study area.

The area is not considered to be an “end destination” tourist attraction, but does provide a thoroughfare to tourist attractions to the west of the province, e.g. Sun City. However, one holiday resort, the Afrikaanse Taal en Kultuur Vereniging (ATKV) Buffelspoort holiday resort, was identified approximately 2 km west of the project site. Another facility, the Bosveld Paradys Bed and Breakfast, is located on the farm earmarked for the Project. Other than these facilities, there are no formally protected or conservation areas within the study area and no additional tourist attractions were identified in closer proximity to the project site.



**Figure 6.18:** Photographs showing the general environment within the area.

**6.6.1 Identified Visual Receptors**

Possible visual receptors within the landscape that may be sensitive to landscape change resulting from the construction and operation of the proposed Project include observers travelling along the N4 national road and R104 arterial roads, as well as farm residences within a 1 – 3 km radius of the development area.

## 6.7 Social Profile

**Table 6.11** provides a baseline summary of the socio-economic profile of the Rustenburg Local Municipality (RLM) within which the proposed Project is located. In order to provide context against which the Local Municipality's socio-economic profile can be compared, the socio-economic profiles of the Bojanala District Municipality, North West Province, and South Africa as a whole have also been considered. The data presented in this section has been derived from the 2011 Census, the Local Government Handbook South Africa 2019, the North West Provincial Spatial Development Framework (PSDF), and the Bojanala District Municipality and Rustenburg Local Municipality IDPs.

**Table 6.11:** Baseline description of the socio-economic characteristics of the area within which the Project is proposed

Location characteristics
<ul style="list-style-type: none"> <li>» The project is proposed within the North West Province, which is South Africa's largest, but least populated Province.</li> <li>» The project is proposed within the Rustenburg Local Municipality of the Bojanala District Municipality.</li> <li>» The Rustenburg Local Municipality is approximately 3 422.8km<sup>2</sup> in extent.</li> </ul>
Population characteristics
<ul style="list-style-type: none"> <li>» In 2016, the Rustenburg Local Municipality had a population of 626 522 people which is about two-fifths of the figure in Bojanala (1 657 149).</li> <li>» In terms of race groups, Black Africans made up 93.1% of the population on the Rustenburg Local Municipality, followed by Whites, 6.1% and Coloureds, 0.6%. The main first language spoken in the Rustenburg Local Municipality and was Setswana, 63.9% followed by Isixhosa (10.1%) and Afrikaans (5.6%).</li> </ul>
Economic, education and household characteristics
<ul style="list-style-type: none"> <li>» The dependency ratios for the Rustenburg Local Municipality in 2016 was 58.7%.</li> <li>» The relatively low dependency ratio compared to other local municipalities reflects the employment and economic opportunities associated with the mining sector in the area.</li> <li>» The GDP of the Rustenburg Local Municipality was R 72.9 billion in 2020 (up from R 37.4 billion in 2010). This made up 47.04% of the total GDP of the Bojanala District Municipality in 2020, an increase from 43.74% in 2010.</li> <li>» In terms of the North West economy, the Rustenburg Local Municipality contributed 24.65% to the GDP of North-West Province in 2020.</li> <li>» The Rustenburg Local Municipality is therefore a key contributor to both the district and provincial economy.</li> <li>» The primary sector, specifically mining, contributed 77.2% towards the GVA of the Rustenburg Local Municipality in 2020</li> <li>» Based on the data from the 2011 Census, 17.6% of the households in the Rustenburg Local Municipality had no formal income, 2.8% earned less than R 4 800, 4.2% earned between R 5 000 and R 10 000 per annum, 11.2% between R 10 000 and R 20 000 per annum and 17.4% between R 20 000 and R 40 000 per annum.</li> <li>» The official unemployment rate in the Rustenburg Local Municipality in 2016 was 17.7%, while 49.2% were employed, and 30.3% were regarded as not economically active.</li> <li>» The unemployment rates for the Rustenburg Local Municipality are lower than the Provincial rate of 17.1% and the District rate of 18.8%.</li> <li>» In terms of education levels, the percentage of the population over 20 years of age in the Rustenburg Local Municipality with no schooling was 4.8% (2016), compared to 8.7% and 5.5% for the North West Province and Bojanala District Municipality in 2016 respectively.</li> </ul>
Services
<ul style="list-style-type: none"> <li>» Based on 2016 survey, 84.6% of households in the RLM had access to electricity, while 11.2% had no access to electricity. Of the households that had access to electricity, 76.7% had in house pre-paid meters, and 7.9% had conventional meters.</li> </ul>

- » Based on the 2016 survey information, 95.2% of households in the RLM were supplied by a local or regional service provider, while 4.8% relied on their own sources.
- » Of the households supplied by service providers, 54.5% had piped water in their yards and 31% had piped water in their houses, while 9.3% relied on community stands or taps.
- » The relatively low number of households with piped water in their houses reflects the high percentage of shacks (29%) in the RLM.
- » 59.3% of the households in the Rustenburg Local Municipality had access to flush toilets (2016), while 36.1% relied on pit toilets and 1.9% did not have access to formal sanitation.
- » 72.6% of the households in the RLM had access to regular refuse removal service, while 12.2% disposed of their waste at their own dump and 4.4% had no access to refuse services (2016).

## CHAPTER 7: SCOPING OF POTENTIAL ISSUES

This chapter serves to describe environmental issues and potential impacts (direct, indirect, and cumulative impacts) that have been identified to be associated with the development of the Project, and to make recommendations for further studies required to be undertaken in the EIA Phase. The scoping process has involved the review of existing information (including previous detailed studies undertaken in the area), limited field work, input from the project developer and specialist consultants.

Environmental issues associated with construction, operation and decommissioning activities of the Project may include, among others, destruction, fragmentation and degradation of habitats and ecosystems; disturbance to faunal species; degradation and contamination of water resources; loss of land capability; potential destruction of burial grounds and loss of archaeological resources; visual impacts associated with the construction and operation of the facility; direct and indirect employment opportunities; safety and security concerns; and nuisance impacts (including noise and dust).

The development area considered for the proposed Project includes Portions 75 and 134 of the Farm Buffelspoort 343JQ and has an aerial extent of approximately 77ha. The grid connection infrastructure is located within an assessment corridor that varies in width from 200m to 300m and is up to 2.5km in length and traverses Portions 75, 88, 89, 101, 119 and 120 of the Farm Buffelspoort 343JQ and Portions 101, 121, 122, 148, 236, 303, 374 and 376 of the Farm Kafferskraal 342JQ. The scoping study has considered the full extent of the development area and grid connection corridor to determine the environmental suitability. This will provide an indication of the areas of sensitivity that the project developer would need to take into consideration in the planning of the location of the development footprint or facility layout within the development area and the placement of the grid connection infrastructure within the corridor.

**Section 7.2** provides a summary of the findings of the desktop scoping study undertaken for the construction, operation and decommissioning phases of the Project. Impacts associated with construction phase can also be expected to be associated with the decommissioning phase (however, to a lesser extent as the development footprint would have previously undergone transformation and disturbance during construction). More detail regarding potential impacts is included in the specialist scoping reports included in Appendix **D-G**.

A summary of the potential cumulative impacts that may be associated with the Project is provided in **Section 7.3**. These impacts are associated with the scale of the Project when considered together with other similar developments within the region and will be confirmed and assessed within the EIA Phase of the process.

### 7.1 Legal Requirements as per the EIA Regulations, 2014 (as amended) for the undertaking of a Scoping Report

This chapter serves to identify the potential environmental impacts associated with the development of the Project from a desktop level. This chapter includes the following information required in terms of the EIA Regulations, 2014 - Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
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Requirement	Relevant Section
<p>2(1)(g)(v) the impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified impacts, including the degree to which these impacts (aa) can be reversed (bb) may cause irreplaceable loss of resources and (cc) can be avoided, managed or mitigated.</p>	<p>The impacts and risks identified to be associated with the construction and operation phases of the Project have been included in <b>Section 7.2</b>. Impact tables have been included for each field of study which considers the nature, significance, consequence, extent, duration and probability of the impacts, as well the reversibility of the impacts, the loss of resources and avoidance, management or mitigation, as expected at this stage in the S&amp;EIA process.</p>
<p>2(1)(g)(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.</p>	<p>The positive and negative impacts associated with the Project have been included in <b>Section 7.2</b>.</p>
<p>2(1)(g)(viii) the possible mitigation measures that could be applied and level of residual risk</p>	<p>Possible mitigation (specifically relating to the avoidance of sensitive areas) has been included in <b>Section 7.2</b> where possible to provide such recommendations at this stage in the S&amp;EIA process.</p>



## 7.2 Evaluation of Potential Impacts associated with the Construction Phase, Operation and Decommissioning phases

### 7.2.1 Impacts on ecology (including flora, fauna and avifauna)

The terrestrial habitat expected in the development area and grid connection corridor consists of Marikana Thornveld (Endangered) and Moot Plains Bushveld (Vulnerable), which based on the desktop scoping assessment is expected to host three (3) flora SCC, namely *Adromischus umbraticola subsp. umbraticola*, *Delosperma leendertziae* and *Stenostelma umbelluliferum*. Portions of the development area and grid connection corridor are classified as CBA2, ESA1 and ESA2. The 500 m regulated zone around the development area and grid connection corridor also overlaps with a CR river and unclassified NFEPA wetlands. A total of ten (10) fauna SCC were given a high likelihood of occurrence, while a further thirteen (13) were given a moderate likelihood of occurrence. The SABAP2 Data lists 366 avifauna species that could be expected to occur within the proposed development area. Twenty (20) of these expected species are regarded as threatened (Table 5.5). Two (2) of the species have a low likelihood of occurrence due to lack of suitable habitat and food sources in the proposed development area. Details on the impacts to avifauna due to the proposed Project will be included as part of the Avifauna Impact Assessment during the EIA Phase of the process.

The development of the Project could result in the loss or degradation of the habitat and vegetation, most of which is still in a natural condition and is expected to support a number of fauna species. The construction of the facility could also lead to the displacement/mortalities of the fauna and more specifically SCC fauna species. The operation of the facility could result in the disruption of ecological life cycles. This could be as a result of a number of things, but mainly due to dust, noise, light pollution and heat radiation. The disturbance of the soil/vegetation layer will allow for the establishment of flora alien invasive species. In turn, the new infrastructure will provide refuge for invasive/feral fauna species. Erosion is another possible impact that could result from the disturbance of the topsoil and vegetation cover. A number of machines, vehicles and equipment will be required, aided by chemicals and concrete mixes for the Project. Leaks, spillages or breakages from any of these could result in contamination of the receiving water resources. Contaminated water resources are likely to have an effect on the associated biota.

#### Sensitivity Analysis of the Site

Based on the desktop assessment information, it can be said that the majority of the site will have a high sensitivity rating. This assumption is based on the development area and grid connection corridor overlapping with a CBA2, ESA1, ESA2, the Magaliesberg Biosphere Reserve, NPAES Priority Focus Area, the Magaliesberg IBA, a CR river and five (5) unclassified NFEPA wetlands around the site. The development area and grid connection corridor comprise four (4) habitats which range in sensitivity from very low to high (refer to **Figure 8.1, Chapter 8**). None of the habitats identified within the development area and grid connection corridor are regarded as no-go areas from an ecological perspective. A 35m pre-cautionary buffer has been recommended around the rocky ridge identified within the development area.

Issue	Nature of Impact	Extent of Impact	No-Go Areas
Destruction, fragmentation and degradation of habitats and ecosystems	<u>Direct impacts:</u> » Disturbance / degradation / loss to vegetation and habitats » Ecological corridors are disrupted » Habitat fragmentation <u>Indirect impacts:</u>	Regional	None identified at this stage.

	<ul style="list-style-type: none"> <li>» Erosion risk increases</li> <li>» Fire risk increases</li> <li>» Increase in invasive alien species</li> </ul>		
Spread and/or establishment of alien and/or invasive species	<p><u>Direct impacts:</u></p> <ul style="list-style-type: none"> <li>» Loss of vegetation and habitat due to increase in alien species</li> </ul> <p><u>Indirect impacts:</u></p> <ul style="list-style-type: none"> <li>» Creation of infrastructure suitable for breeding activities of alien and/or invasive species</li> <li>» Spreading of potentially dangerous diseases due to invasive and pest species</li> </ul>	Regional	None identified at this stage.
Direct mortality of fauna	<p><u>Direct impacts:</u></p> <ul style="list-style-type: none"> <li>» Loss of SCC species</li> <li>» Loss of fauna diversity</li> </ul> <p><u>Indirect impacts:</u></p> <ul style="list-style-type: none"> <li>» Loss of diversity and species composition in the area.</li> <li>» Possible impact on the food chain</li> </ul>	Regional/International	None identified at this stage.
Reduced dispersal/migration of fauna	<p><u>Direct impacts:</u></p> <ul style="list-style-type: none"> <li>» Loss of genetic diversity</li> <li>» Isolation of species and groups leading to inbreeding</li> </ul> <p><u>Indirect impacts:</u></p> <ul style="list-style-type: none"> <li>» Reduced seed dispersal</li> <li>» Loss of ecosystem services</li> </ul>	Regional/National	None identified at this stage.
Environmental pollution due to water runoff, spills from vehicles and erosion	<p><u>Direct impacts:</u></p> <ul style="list-style-type: none"> <li>» Pollution in waterbodies and the surrounding environment</li> <li>» Faunal mortality (direct and indirectly)</li> </ul> <p><u>Indirect impacts:</u></p> <ul style="list-style-type: none"> <li>» Ground water pollution</li> <li>» Loss of ecosystem services</li> </ul>	Regional	None identified at this stage.
Disruption/alteration of ecological life cycles (breeding, migration, feeding) due to noise, dust, heat radiation and light pollution.	<p><u>Direct impacts:</u></p> <ul style="list-style-type: none"> <li>» Disruption/alteration of ecological life cycles due to noise</li> <li>» Reduced pollination and growth of vegetation due to dust</li> <li>» Faunal mortality due to light pollution (nocturnal species becoming more visible to predators)</li> <li>» Heat radiation could lead to the displacement of species</li> </ul>	Regional	None identified at this stage.

	<p><u>Indirect impacts:</u></p> <ul style="list-style-type: none"> <li>» Loss of ecosystem services</li> </ul>		
Staff and others interacting directly with fauna (potentially dangerous) or poaching of animals	<p><u>Direct impacts:</u></p> <ul style="list-style-type: none"> <li>» Loss of SCCs or TOPS species</li> </ul> <p><u>Indirect impacts:</u></p> <ul style="list-style-type: none"> <li>» Loss of ecosystem service</li> <li>» Loss of genetic diversity</li> </ul>	Regional	None identified at this stage.
<p><b>Description of expected significance of impact</b></p> <ul style="list-style-type: none"> <li>» The expected post-mitigation risk significance for the Project in is expected to be medium.</li> </ul>			
<p><b>Gaps in knowledge &amp; recommendations for further study</b></p> <ul style="list-style-type: none"> <li>» This study is completed at a desktop level.</li> <li>» Identification and description of habitats.</li> <li>» Identification of the Site Ecological Importance.</li> <li>» Location and identification of plant SCC as well as the location of nests/dens in the case of fauna and avifauna species.</li> <li>» Determine a suitable buffer width for the identified features.</li> </ul> <p><b>Recommendations for further study</b></p> <ul style="list-style-type: none"> <li>» Field surveys to prioritise the development area and grid connection corridor, but also consider the 500 m project area of influence (PAOI).</li> <li>» Fieldwork to be undertaken during the wet season period.</li> <li>» Avifauna assessment field work to be conducted over one season to ensure migratory species are considered.</li> </ul>			

### 7.2.2 Impacts on Freshwater Features

#### Impacts on Freshwater features

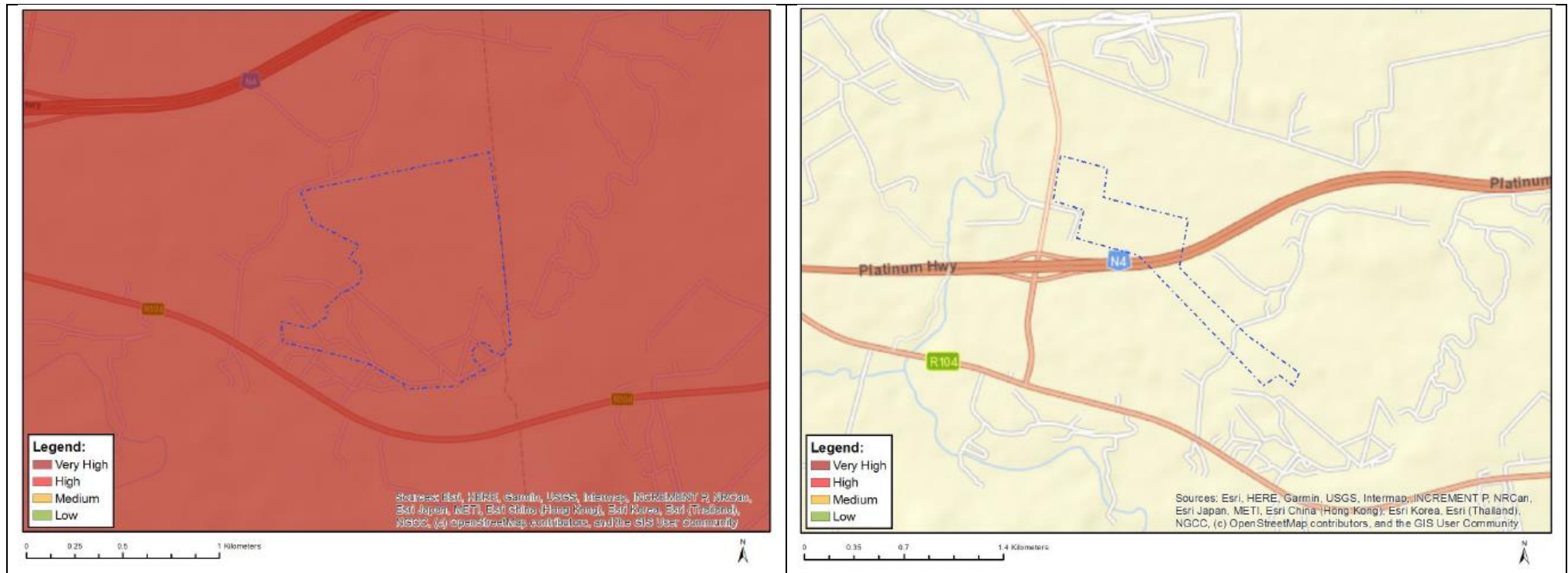
A key consideration for the scoping level impact assessment is the presence of the water resources delineated in proximity to the development area and grid connection corridor. The available data also suggests the presence of drainage features and wetlands within proximity to the site. A Zone of Regulation (ZoR) of 500m is applicable for any wetland system that is present beyond the Project boundary.

The development of the Project could result in the encroachment into water resources and result in the loss or degradation of these systems. Water resources are also likely to be traversed by linear infrastructure, but these systems can be avoided by spanning infrastructure. These disturbances could also result in the infestation and establishment of alien vegetation which would in turn affect the functioning of the systems. Earthworks will expose and mobilise earth materials which could result in sedimentation of the receiving systems. A number of machines, vehicles and equipment will be required, aided by chemicals and concrete mixes for the Project. Leaks, spillages or breakages from any of these could result in contamination of the receiving water resources. Contaminated water resources are likely to influence the associated biota. It is anticipated

to increase stormwater runoff due to the hardened surfaces and the crossings will result in an increase in run-off volume and velocities, resulting in altered flow regimes. The changes could result in physical changes to the receiving systems caused by erosion, run-off and also sedimentation, and the functional changes could result in changes to the vegetative structure of the systems. The reporting of surface run-off to the systems could also result in the contamination of the systems, transporting (in addition to sediment) diesel, hydrocarbons and soil from the operational areas.

### Sensitivity Analysis of the Site

The aquatic biodiversity theme sensitivity as indicated in the DFFE screening report indicates a very high sensitivity (**Figure 7.1**). This is attributed to the presence of aquatic CBAs near the site.



**Figure 7.1:** The aquatic biodiversity theme sensitivity classification for the Project

Desktop information suggests the presence of a CR river to the west of the project site which overlaps with the 500m regulated area around the grid corridor and the presence of five unclassified NFEPA wetlands within the 500m regulated area of the grid corridor. There are natural and artificial wetland features and dams within the grid corridor and the development area, as well as drainage features within the immediate surrounds (refer to **Figure 8.1, Chapter 8**). The artificial wetland and dams are

regarded to be of very low sensitivity and the drainage features are regarded to be of moderate to high sensitivity. The wetlands range in sensitivity from moderate low to moderate high. A 15m no-go buffer has been recommended around the wetland features.

Issue	Nature of Impact	Extent of Impact	No-Go Areas
Disturbance / degradation / loss to wetland soils or vegetation due to the construction of the facility and associated infrastructure, such as crossings	<u>Direct impacts:</u> » Disturbance / degradation / loss to wetland soils or vegetation <u>Indirect impacts:</u> » Loss of ecosystem services	Regional	Natural wetland features and their associated 15m no-go buffer.
Increased erosion and sedimentation and contamination of resources	<u>Direct impacts:</u> » Erosion and structural changes to the systems <u>Indirect impacts:</u> » Sedimentation & contamination of downstream reaches	Regional	Natural wetland features and their associated 15m no-go buffer.

**Description of expected significance of impact**  
 » Field assessment will determine the significance of the impacts. Impacts can be minimised through the implementation of appropriate mitigation measures.

**Gaps in knowledge & recommendations for further study**  
 » This study is completed at a desktop level only.  
 » Identification, delineation and characterisation of water resources.  
 » Undertake a functional assessment of systems, where applicable.  
 » Determine a suitable buffer width for the resources.

**Recommendations with regards to general field surveys**  
 » Field surveys to prioritise the development area and grid connection corridor, but also consider the 500 m regulated area.  
 » Beneficial to undertake fieldwork during the wet season period.

### 7.2.3 Impacts on Soils and Agricultural Potential

Various soil forms are expected throughout the development area and grid connection corridor, of which some are commonly associated with high land capabilities. Even though the soil depth, texture and permeability of these soils ensure high land capability, the climatic capability of the area often reduces the land potential considerably. The harsh climatic conditions are associated with low annual rainfall and high evapotranspiration potential demands of the area. The area is not favourable for most cropping practices, which corresponds to the current mining activities in the area.

The proposed Project could result in the loss of land capability. The disturbances could further also result in the infestation and establishment of alien vegetation, which in turn can have a detrimental impact on soil resources. The development of the Project could also result in compaction and/or erosion. Further to this, construction activities could also cause leaks and/or spillages resulting in contamination of soil resources, which could affect the salinity or pH of the soil, which can render the fertility of the soil unable to



provide nutrition to plants.

#### Sensitivity Analysis of the Site

The agriculture theme sensitivity as indicated in the DFFE screening report predominantly indicates medium sensitivity, with patches of low, moderate and high sensitivity occurring within the development footprint and grid connection corridor (refer to **Figure 7.2**). The sensitivity ratings generated by the screening tool can be attributed to the following features:

Sensitivity	Feature(s)
High	Land capability 09: Moderate-High/10. Moderate-High
Medium	Land capability 06: Low-Moderate/07. Low-Moderate/08. Moderate
Low	Land capability 01: Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low

Based on the infield assessment, the development area and grid connection corridor predominantly comprise areas of medium land capability sensitivity, with patches of low and high land capability sensitivity (refer to **Figure 8.1, Chapter 8**). Field crop boundaries have been identified along the grid corridor. Since field crop boundaries have been identified along the grid corridor, it is important to take note of the protocol for the specialist assessment and minimum report content requirements of environmental impacts on agricultural resources by onshore wind and/or solar photovoltaic energy generation facilities gazetted on 20 March 2022, which identifies allowable development limits for renewable energy developments generating electricity of 20 MW or more.

There are no areas identified within the development area and the grid connection corridor which are regarded as no-go areas from a soils and agricultural potential perspective.



**Figure 7.2:** The agriculture theme sensitivity classification for the Project

Issue	Nature of Impact	Extent of Impact	No-Go Areas
Compaction/soil stripping/transformation of land use which leads to loss of land capability	<u>Direct impacts:</u> » Loss of soil / land capability <u>Indirect impacts:</u> » Loss of land capability	Local	None identified at this stage.
Erosion and loss of soil resources	<u>Direct impacts:</u> » Erosion and loss of soil resources <u>Indirect impacts:</u> Changes to topography and cultivated areas	Local	None identified at this stage.
<b>Description of expected significance of impact</b>			
» Field assessment will determine the significance of the impacts. Impacts can be minimised through the implementation of appropriate mitigation measures.			
<b>Gaps in knowledge &amp; recommendations for further study</b>			

- » This study is completed at a desktop level only.
- » Identification and delineation of soil forms.
- » Determination of soil sensitivity.

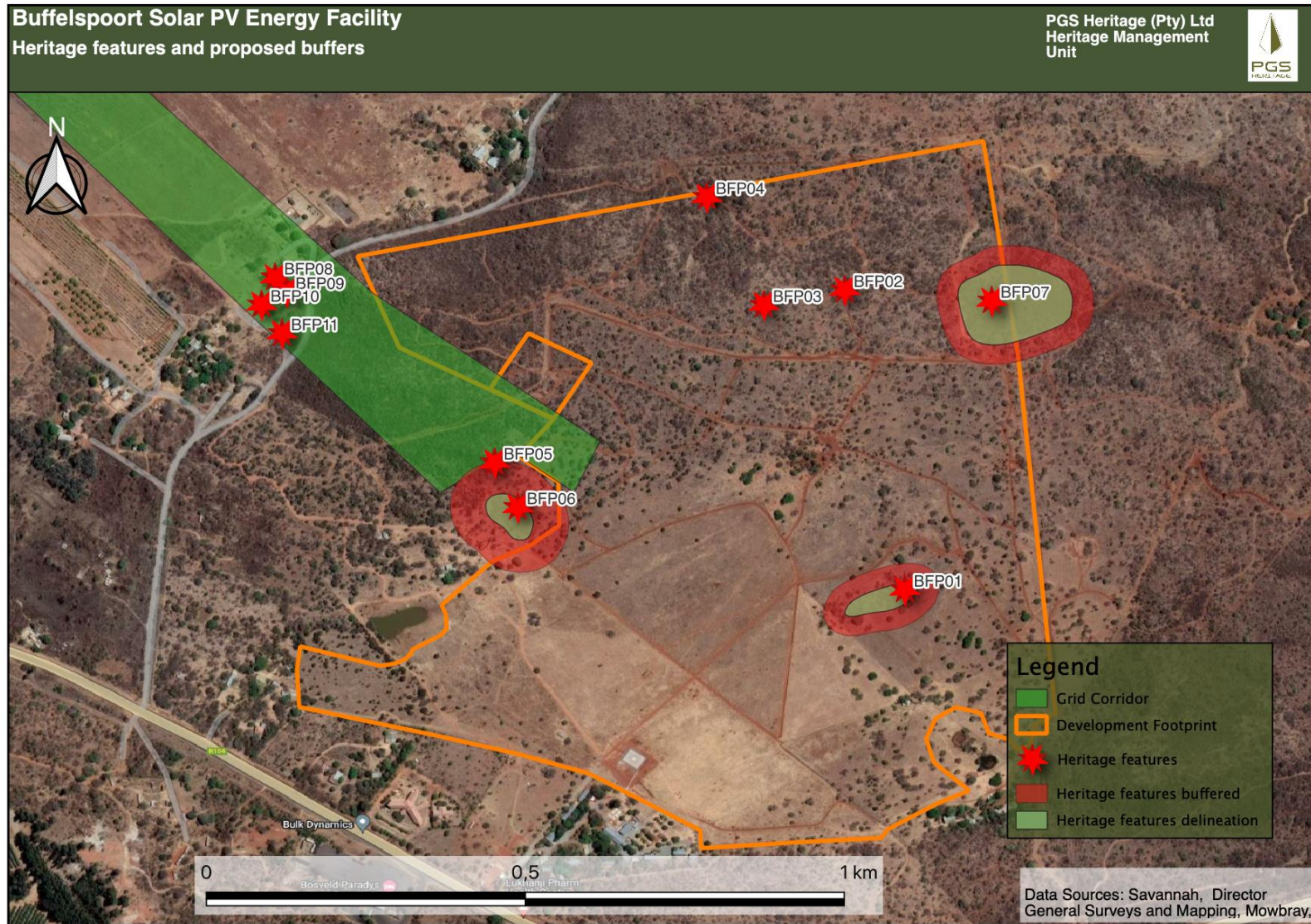
**Recommendations with regards to general field surveys**

- » Field surveys to prioritise the development area and grid connection corridor.

**7.2.4 Impacts on Heritage (Archaeology and Palaeontology)**

A total of eleven (11) heritage features and resources were identified within the development area and grid connection corridor. These consist of one (1) burial ground with approximately 100 graves (**BFP-06**), three (3) localities with recent historic structures (**BFP-08, BFP-10 and BFP-11**), and one (1) kraal (**BFP-09**), as well as six (6) low to moderate significance archaeological sites (**BFP-01, BFP-02, BFP-03, BFP-04, BFP-05 and BFP-07**) (refer to **Figure 7.3**).





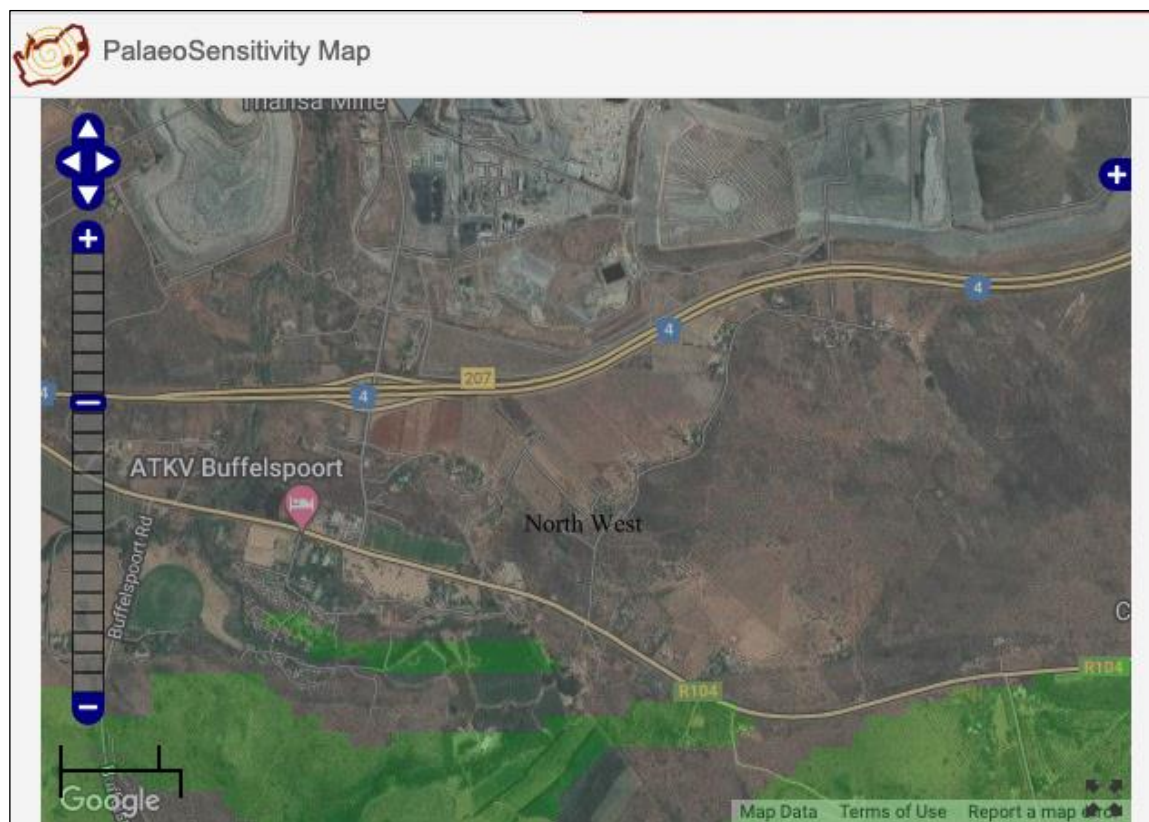
**Figure 7.3:** Identified heritage resources within the development area and grid connection corridor

Potential impacts on heritage resources include:

- » Potential destruction of burial ground (**BFP-06**)
- » Potential loss of archaeological resources (**BFP-01** and **BFPO-07**)

#### Sensitivity Analysis of the Site

The informal cemetery comprising approximately 100 graves (**BFP-06**) is regarded to be of high sensitivity and a 50m no-go buffer has been recommended around this site (refer to **Figure 7.3**). The continuous stone walls (BFP-01 and BFP-07) are also regarded to be of high sensitivity and a 30m no-go buffer has been recommended around these sites. According to the SAHRIS PalaeoMap of, the Palaeontological Sensitivity of the area is zero or insignificant (refer to **Figure 7.4**).



**Figure 7.4:** Palaeontological Heritage Sensitivity map. As can be viewed, most of the area has no sensitivity indicated by the white/clear background (Retrieved from SAHRIS).



Issue	Nature of Impact	Extent of Impact	No-Go Areas
Potential destruction of burial ground <b>(BFP-06)</b>	<u>Direct impacts:</u> » Destruction of burial ground and its graves <u>Indirect impacts:</u> » Potential impact on communities due to the destruction of the burial ground	Regional	If included in Project layout, a 50m buffer is required.  A full grave relocation process must be completed if the graves are to be relocated.
Potential loss of archaeological resources <b>(BFP-01 and BFP-07)</b>	<u>Direct impacts:</u> » Destruction of archaeological resources <u>Indirect impacts:</u> » None	Local	Mitigation measures will negate the need for a no-go option at these two sites
<b>Description of expected significance of impact</b> » The burial ground <b>(BFP-06)</b> is of high heritage significance and given a Grade 3A grading. Destruction of the burial ground will have a high to very high impact significance. Implementation of mitigation measures (refer to <b>Section 6.5.1, Chapter 6</b> ) could reduce the impact significance to low. » The potential impact on the archaeological sites <b>(BFP-07 and BFP-01)</b> rated as having a 3C grading can potentially be a medium impact significance. The implementation of the proposed buffers or mitigation measures (refer to <b>Section 6.5.1, Chapter 6</b> ) can potentially reduce the impact to a low rating.			
<b>Gaps in knowledge &amp; recommendations for further study</b> » Re-evaluation of impacts on heritage resources during the EIA Phase when the proposed layout is provided. » Mitigation measures dependent on layout for the Project. <b>Recommendations with regards to general field surveys</b> » None			

### 7.2.5 Impacts on the Visual Quality of the Area

The result of the viewshed analysis for the proposed Project is shown in **Figure 7.5**. The viewshed analysis was undertaken from a representative number of vantage points within the development footprint at an offset of 5 m above ground level. This was done in order to determine the general visual exposure (visibility) of the area under investigation, simulating the maximum height of the proposed structures (PV panels, inverters and BESS) associated with the facility.

The viewshed analysis will be further refined once a preliminary and/or final layout is completed and will be regenerated for the actual position of the infrastructure on the site and actual proposed infrastructure during the EIA Phase of the Project. **Figure 7.5** also indicates proximity radii from the development footprint in order to show the viewing distance (scale of observation) of the facility in relation to its surrounds.

The results of the viewshed analysis are as follows:

**0 – 1km**

The PV facility may be highly visible within a 1 km radius of the proposed site. This zone predominantly falls within vacant open space, but does contain farm residences (especially to the west and north) and sections of the N4 and R104. It is expected that the Solar PV Energy Facility and ancillary infrastructure would be highly visible unless the observer is shielded by vegetation cover.

**1 – 3km**

Visual exposure within this zone includes farm residences and sections of the N4 and R104 roads to the west. Visual exposure to the north falls within mining land with existing visual clutter and disturbances. The ATKV Buffelspoort holiday resort falls within this zone and may theoretically be exposed to the PV facility infrastructure. It should once again be noted that visual exposure may only occur where the natural or planted vegetation cover is removed.

**3 – 6km**

Within a 3 – 6 km radius, the visual exposure, predominantly to the north and west, is scattered and interrupted due to the undulating nature of the topography. Most of the visual exposure will be within mining or vacant agricultural land.

**> 6km**

At distances exceeding 6km, the intensity of visual exposure is expected to be very low and highly unlikely due to the distance between the object (PV facility) and the observer, and the developed nature of the area surrounding the site.

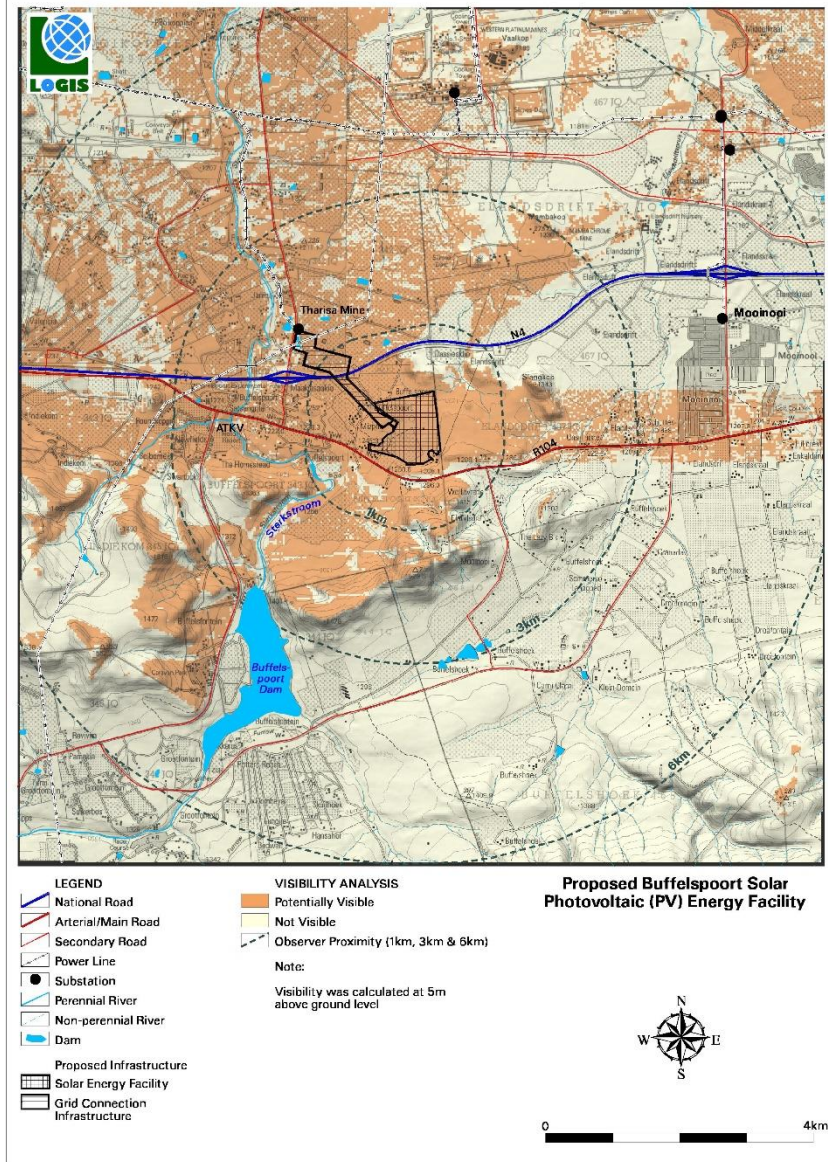


Figure 7.5: Map indicating the potential (preliminary) visual exposure of the proposed Project

Anticipated issues related to the potential visual impact of the proposed Project include the following:

- » The visibility of the facility to, and potential visual impact on, observers travelling along the N4 national and R104 arterial roads in closer proximity to the proposed infrastructure.
- » The visibility of the facility to, and potential visual impact on residents of dwellings within the study area, with specific reference to the farm residences (to the west and north) in closer proximity to the proposed development.
- » The potential visual impact of the facility on the visual character or sense of place of the region.
- » The potential visual impact of the facility on tourist routes or tourist destinations/facilities (e.g., the ATKV holiday resort and the Bosveld Paradys Bed and Breakfast).
- » The potential visual impact of the construction of ancillary infrastructure (i.e., internal access roads, buildings, power line, etc.) on observers in close proximity to the facility.
- » The visual absorption capacity of the natural vegetation or built structures/mining infrastructure (if applicable).
- » Potential cumulative visual impacts (or consolidation of visual impacts), with specific reference to the placement of the facility within a predominantly mining area.
- » The potential visual impact of operational, safety and security lighting of the facility at night on observers residing in close proximity of the facility.
- » Potential visual impact of solar glint and glare as a visual distraction and possible air/road travel hazard.
- » Potential visual impact of solar glint and glare on static ground-based receptors (residents of homesteads) in close proximity to the facility.
- » Potential visual impacts associated with the construction phase.

Issue	Nature of Impact	Extent of Impact	No-Go Areas
The viewing of the Solar PV Energy Facility infrastructure and activities.	The potential negative experience of viewing the infrastructure and activities.	Primarily observers situated within a 1 km (and potentially up to 3 km) radius of the facility	N.A.

**Description of expected significance of impact**

Extent: Local  
 Duration: Long term  
 Magnitude: Moderate  
 Probability: Probable  
 Significance: Moderate  
 Status (positive, neutral or negative): Negative  
 Reversibility: Recoverable  
 Irreplaceable loss of resources: No  
 Can impacts be mitigated: Yes

**Gaps in knowledge & recommendations for further study**

A finalised layout of the facility and ancillary infrastructure is required for further analysis. This includes the provision of the dimensions of the proposed structures and ancillary

equipment.

Additional spatial analyses are required in order to create a visual impact index that will include the following criteria:

- » Visual exposure
- » Visual distance/observer proximity to the structures/activities
- » Viewer incidence/viewer perception (sensitive visual receptors)
- » Visual absorption capacity of the environment surrounding the infrastructure and activities

Additional activities:

- » Identify potential cumulative visual impacts
- » Undertake a site visit
- » Recommend mitigation measures and/or infrastructure placement alternatives

**Recommendations with regards to general field surveys**

- » None

## **7.2.6 Social Impacts**

### **Social Impacts during the 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 (~12 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

<b>Impact</b> Creation of direct and indirect employment opportunities and skills development			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
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.	Positive – the creation of employment opportunities will assist to an extent in alleviating unemployment levels within the area.	The impact will occur at a local, regional and national level.	N/A
<b>Description of expected significance of impact</b> At its peak, the construction is likely to result in the creation of approximately 150 employment opportunities (at peak of construction). Of those employment opportunities available, approximately 60% will comprise opportunities for low skilled workers, 25% for semi-skilled workers, and 15% for skilled workers. Skills developed through experience in the construction of the facility will be retained by the community members involved. The impact is likely to be positive, local to national in extent, short-term, and of medium significance			
<b>Gaps in knowledge &amp; recommendations for further study</b> <ul style="list-style-type: none"> <li>» Collection of information on exact direct and indirect employment opportunities and skills development opportunities.</li> <li>» Collection of information on local hospitality and services sector.</li> </ul> <b>Recommendations with regards to general field surveys</b> <ul style="list-style-type: none"> <li>» Site visit and interviews with representatives from the local municipality, and the hospitality and services sector.</li> <li>» Site visit and interviews with the local chamber of commerce and minerals council.</li> </ul>			

<b>Impact</b> Economic multiplier effects			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Economic multiplier effects from the use of local goods and services during the construction phase.	Positive – There are likely to be opportunities for local businesses to provide goods and services during the construction phase.	The impact will occur at a local and regional scale.	N/A
<b>Description of expected significance of impact</b>			

Economic multiplier effects from the use of local goods and services include, but are not limited to, the provision of construction materials and equipment, and workforce essentials such as services, safety equipment, ablution, accommodation, transportation and other goods. The increase in demand for goods and services may stimulate local business and local economic development (however locally sourced materials and services may be limited due to availability). There is likely to be a direct increase in industry and indirect increase in secondary businesses. The impact is likely to be positive, local to regional in extent, short-term, and of medium significance.

**Gaps in knowledge & recommendations for further study**

- » Collection of information on exact direct and indirect employment opportunities and skills development opportunities.
- » Collection of information on local hospitality and services sector

**Recommendations with regards to general field surveys**

- » Site visit and interviews with representatives from the local municipality, and the hospitality and services sector.
- » Site visit and interviews with the local chamber of commerce.

**Impact**  
Influx of jobseekers and change in population

Issue	Nature of Impact	Extent of Impact	No-Go Areas
Increased pressure on infrastructure and basic services, and social conflicts during construction as a result of in-migration of people.	Negative – The in-migration of job seekers to the area could result in increased pressure being placed on infrastructure and basic services, and a rise in social conflicts.	The impact will occur at a local level.	N/A

**Description of expected significance of impact**

An influx of people looking for employment or other economic opportunities could result in increased pressure being placed on economic and social infrastructure, and a change in the local population. Population change refers to the size, structure, density as well as demographic profile of the local community.

An influx of jobseekers into an area, could lead to a temporary increase in the level of crime, cause social disruption and put pressure on basic services. It could also potentially create conflict between locals and outsiders due to potential differences in racial, cultural and ethnic composition. A further negative impact that could result due to an influx of jobseekers into an area is an increase in unemployment levels due to an oversupply of available workforce, particularly with respect to semi- and unskilled workers.

**Gaps in knowledge & recommendations for further study**

- » Collection of information on existing community challenges and needs.

**Recommendations with regards to general field surveys**

- » Site visit and interviews with representatives from the local municipality and community representatives.

<b>Impact</b> Safety and security impacts			
<b>Issue</b>	<b>Nature of Impact</b>	<b>Extent of Impact</b>	<b>No-Go Areas</b>
Temporary increase in safety and security concerns associated with the influx of people during the construction phase.	Negative – The in-migration of job seekers to the area could be perceived to result in increased criminal activity.	The impact will occur at a local level.	N/A
<b>Description of expected significance of impact</b> The commencement of construction activities can be associated with an increase in crime within an area. The perceived loss of security during the construction phase of a Project due to an influx of workers and / or outsiders to the area (as in-migration of newcomers, construction workers or jobseekers are usually associated with an increase in crime), may have indirect effects such as increased safety and security concerns for neighbouring properties, damage to property, increased risk of veld fire, stock theft, poaching, crime and so forth.  The labour force will not permanently reside within the construction site.			
<b>Gaps in knowledge &amp; recommendations for further study</b> » Information on existing crime levels within the area. » Mechanisms for employment of local labour and minimisation of in-migration.			
<b>Recommendations with regards to general field surveys</b> » Site visit and interviews with local farmers and representatives from local farming associations etc.			

<b>Impact</b> Impacts on daily living and movement patterns			
<b>Issue</b>	<b>Nature of Impact</b>	<b>Extent of Impact</b>	<b>No-Go Areas</b>
Temporary increase in traffic disruptions and movement patterns during construction.	Negative – An increase in traffic due to construction vehicles and heavy vehicles could create short-term disruptions and safety hazards for current road users.	The impact will occur at a local level.	N/A
<b>Description of expected significance of impact</b> Increased traffic due to construction vehicles and heavy vehicles could cause disruptions to road users and increase safety hazards. The use of local roads and transport systems may cause road deterioration and congestion. The impact is likely to be negative, local in extent, short-term, and of low significance given the proximity of the Project to existing mining operations within the area			
<b>Gaps in knowledge &amp; recommendations for further study</b>			

» Number of vehicle trips anticipated during construction.
<b>Recommendations with regards to general field surveys</b>
» Site visit and interviews with local farmers and representatives from local farming associations etc.

<b>Impact</b> Nuisance impacts (noise and dust)			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Nuisance impacts in terms of temporary increase in noise and dust, and wear and tear on access roads to the site.	Negative – The impact will negatively impact sensitive receptors and could cause disruptions for neighbouring properties.	The impact will occur at a local level.	N/A
<b>Description of expected significance of impact</b> Nuisance impacts associated with construction related activities include noise, dust, and possible disruption to adjacent properties. Site clearing activities increase the risk of dust and noise being generated, which can in turn negatively impact on adjacent properties. The movement of heavy construction vehicles and construction activities and equipment also have the potential to create noise, as well as impacts on travellers travelling along the R104 arterial road, and gravel access roads. The primary sources of noise during construction would be from construction equipment, vehicle and truck traffic. Noise levels can be audible over a large distance although are generally short in duration. Dust would be generated from construction activities as well as trucks / vehicles driving on gravel access roads. This impact will negatively impact sensitive receptors. The impact of noise and dust on sensitive receptors can be reduced through the application of appropriate mitigation measures.			
<b>Gaps in knowledge &amp; recommendations for further study</b> » Impact of noise and dust on surrounding landowners.			
<b>Recommendations with regards to general field surveys</b> » Site visit and interviews with local farmers and representatives from local farming associations etc.			

<b>Impact</b> Visual and sense of place impacts			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Intrusion impacts from construction activities will have an impact on the area's "sense of place".	Negative – The Project could alter the area's sense of place which could negatively impact on sensitive receptors.	The impact will occur at a local level.	N/A
<b>Description of expected significance of impact</b> Intrusion impacts such as aesthetic pollution (i.e., building materials, construction vehicles, etc.), noise and light pollution will impact the "sense of place" for the local community. Construction related activities have the potential to negatively impact a local area's "sense of place". Such an impact is likely to be present during the			

construction phase. It is however expected that the power line will only affect areas and receptors that have already been exposed to other existing grid connection infrastructure (i.e., power lines and substations) and other industrial infrastructure, specifically mining related infrastructure (i.e., for which the sense of place has already been altered).

**Gaps in knowledge & recommendations for further study**

- » Collection of information on location of existing farming and hospitality operations and activities.

**Recommendations with regards to general field surveys**

- » Site visit and interviews with local farmers and representatives from the local municipality and farming and hospitality association etc.

**Social Impacts during the Operation Phase**

It is anticipated that the Buffelspoort Solar PV Energy Facility will operate for approximately 15 years, with the option to extend its operation should the offtaker require it.

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.
- » Visual impact and sense of place impacts.

<b>Impact</b>			
Direct and indirect employment opportunities and skills development			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Creation of direct and indirect employment and skills development opportunities and skills development as a result of the operation of the Project.	Positive – The creation of employment opportunities and skills development will assist to an extent in alleviating unemployment levels within the area.	The impact will occur at a local, regional and national level.	N/A
<b>Description of expected significance of impact</b>			
During operation, a number of direct and indirect employment opportunities will be created. Of the direct employment opportunities created, approximately 70% will comprise opportunities for low-skilled workers, 25% will comprise opportunities for semi-skilled workers, and approximately 5% will comprise opportunities for skilled workers. Employment opportunities include safety and security staff, operation and maintenance crew. Maintenance activities will be carried out throughout the lifespan of the proposed Project, and will include washing of solar panels, vegetation control, and general maintenance around the Solar PV Energy Facility. The impact is likely to be positive, local to national in extent, long-term, and of medium significance.			
<b>Gaps in knowledge &amp; recommendations for further study</b>			



<p>» Information on the exact direct and indirect employment opportunities and skills development opportunities likely to be created during the operational phase.</p> <p><b>Recommendations with regards to general field surveys</b></p> <p>» None</p>
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<p><b>Impact</b> Visual and sense of place impacts</p>			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Sense of place impacts from a social perspective associated with the operation phase of the solar energy facility and associated infrastructure.	Negative – The proposed Project could alter the area's sense of place which could negatively impact on sensitive receptors.	The impact will occur at a local level.	N/A
<p><b>Description of expected significance of impact</b> An area's sense of place is created through the interaction of various characteristics of the environment, including atmosphere, visual resources, aesthetics, climate, lifestyle, culture, and heritage. An area's sense of place is however subjective and largely dependent on the demographics of the population residing within the area and their perceptions regarding trade-offs. For example, while some individuals may prefer not to see any form of infrastructure development, others may be interested in large-scale infrastructure, or engineering projects and consider the impact to be less significant. Such a scenario may be true given that one of the main economic sectors within the area is mining which has altered the landscape from natural to industrial.</p>			
<p><b>Gaps in knowledge &amp; recommendations for further study</b></p> <p><u><b>Gaps in Knowledge</b></u></p> <p>» Potential sensitive visual receptors need to be identified.</p> <p>» Visual Impact Assessment to inform impact on sense of place.</p>			
<p><b>Recommendations with regards to general field surveys</b></p> <p>» Site visit and interviews with local farmers and representatives from the local municipality and farming and hospitality associations etc.</p>			

### 7.3 Evaluation of Potential Cumulative Impacts Associated with the Buffelspoort Solar PV Energy Facility

Impacts of a cumulative nature place the direct and indirect impacts of the proposed Project into a regional and national context, particularly in view of similar or resultant developments and activities in the region. Potential cumulative impacts associated with the Project are described below and will be assessed in detail as part of the subsequent EIA Phase to be conducted for the Project.

Cumulative impacts, in relation to an activity, refer to the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area. For cumulative effects analysis to help the decision-maker and inform interested parties, it must be limited to effects that can be evaluated meaningfully (DEAT, 2004). It is important to explore the potential for cumulative impacts as this will lead to a better understanding of these impacts and the potential for mitigation that may be required. The scale at which the cumulative impacts are assessed is important. For example, the significance of the cumulative impact on the regional or national economy will be influenced by Solar PV Energy Facilities throughout South Africa, while the significance of the cumulative impact on the visual amenity may only be influenced by Solar PV Energy Facilities that are in closer proximity to each other. For practical purposes, a sub-regional scale of 30 km is considered for the evaluation of the cumulative impact of Solar PV Energy Facilities.

The cumulative impacts associated with the Project have been viewed from two perspectives within this Scoping Report:

- » Cumulative impacts associated with the scale of the Project (one 40 MWp Solar PV Energy Facility within the development footprint).
- » Cumulative impacts associated with other relevant planned, approved or existing solar developments within a 30 km radius of the Project (multiple Solar PV Energy Facilities in the proximity of the site).

Cumulative effects are commonly understood as the impacts which combine from different projects, and which result in significant change, which is larger than the sum of all the impacts (DEAT, 2004). The complicating factor is that the projects that need to be considered are from past, present, and reasonably foreseeable future development. Cumulative effects can be characterised according to the pathway they follow. One pathway could be the persistent additions from one process. Another pathway could be the compounding effect from one or more processes. Cumulative effects can therefore occur when impacts are:

- » Additive (incremental).
- » Interactive.
- » Sequential.
- » Synergistic.

Canter and Sadler (1997) describe the following process for addressing cumulative effects in an EIA:

- » Delineating potential sources of cumulative change (i.e., GIS to map the relevant renewable energy facilities in close proximity to one another).
- » Identifying the pathways of possible change (direct impacts).
- » Indirect, non-linear or synergistic processes.
- » Classification of resultant cumulative changes.

The site for the proposed development is located within 30km from several other authorised and operational Solar PV Energy Facilities. These projects include the following (refer to **Figure 7.6**):

Project Name	Contracted Capacity	Project Status
RustMo 1 PV Plant	7MW	Operational
Lonmin Western Platinum Limited PV Plant	1MW	Operational
Avelar Solar Panel Project	12MW	Approved

The cumulative impacts that have the potential to be compounded through the development of the solar PV facility 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 test if such impacts are relevant to the Project within the development footprint being considered for the development:

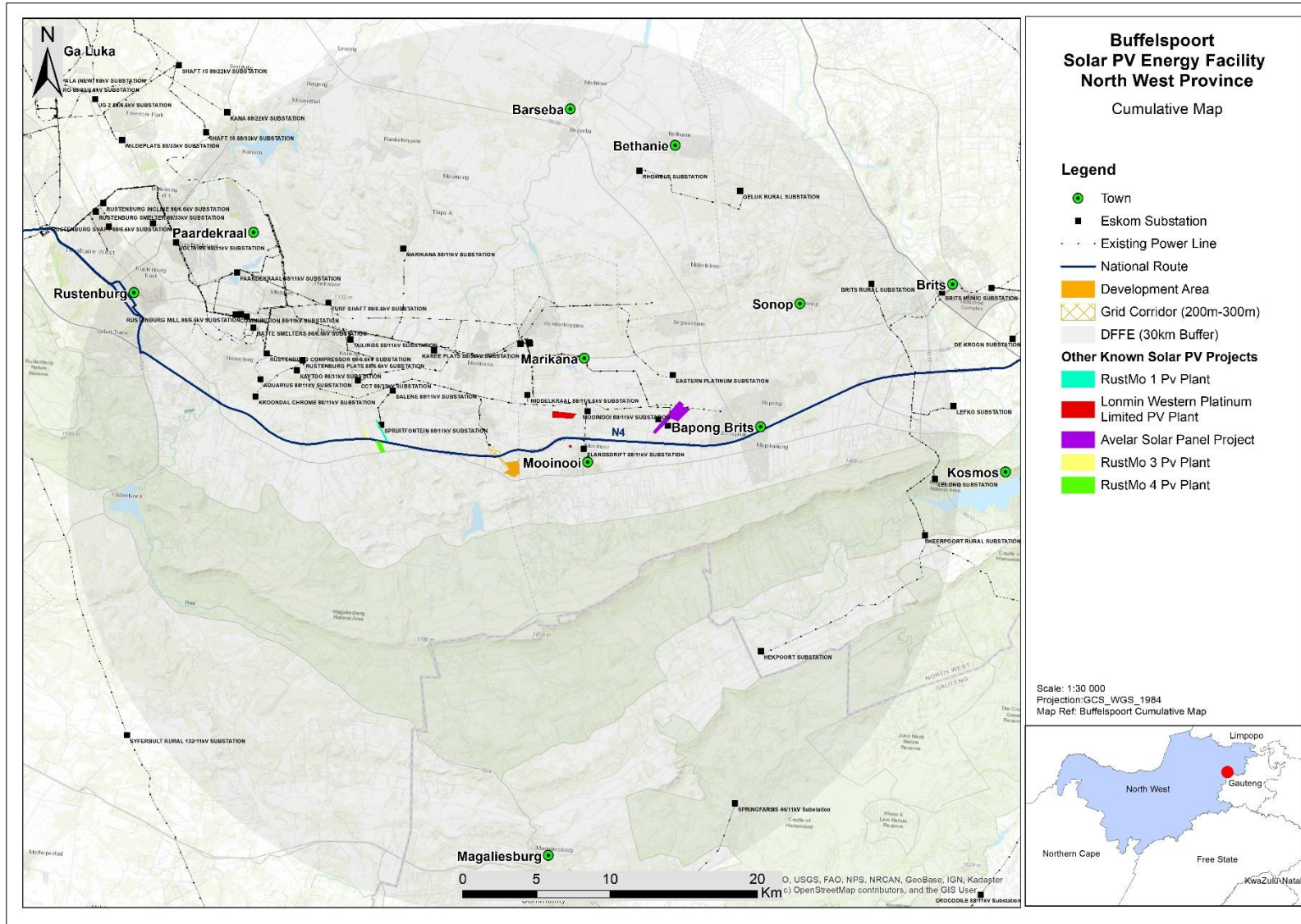
- » Unacceptable loss of threatened or protected vegetation types, habitat or species through clearing, resulting in an impact on the conservation status of such flora, fauna or ecological functioning.
- » Unacceptable risk to freshwater features through disturbance associated with construction activities and increased runoff and erosion during the operation phase.
- » Unacceptable risk to avifauna through habitat loss, displacement and collision with PV panels.
- » 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).
- » Complete or whole-scale change in the sense of place and character of an area and unacceptable visual intrusion.
- » Unacceptable impact to social factors and components.

**Summary of the nature, significance, consequence, extent, duration and probability of the impacts**

- » The above-mentioned impacts are considered to be probable, although it is anticipated that the extent, duration, and magnitude of these impacts can be minimised to levels where this impact can be regarded as having low significance through the implementation of appropriate mitigation measures.
- » The operational lifespan of the Project and other Solar Energy Facilities within the surrounding areas is expected to be long-term (i.e., a minimum of 15 years, with the option to extend its operation should the offtaker require it) and subsequently the impact is also expected to be long-term.
- » The impact associated with the proposed Project is expected to be local, affecting mainly the immediate environment and surrounding areas, as well as other Solar Energy Facilities within the vicinity.

**Gaps in knowledge & recommendations for further study:**

- » Each specialist study will consider and assess the cumulative impacts of proposed, approved and authorised renewable projects in the area.
- » Cumulative impacts will be fully assessed and considered in the EIA Phase.



**Figure 7.6:** Cumulative map illustrating other approved and/or constructed Solar Energy Facilities located within a 30km radius of the proposed Project (refer to **Appendix I** for A3 Map).

## CHAPTER 8: CONCLUSIONS

This Scoping Report is aimed at detailing the nature and extent of the proposed Project, identifying and describing potential issues associated with developing the Project on the identified site, potential environmental fatal flaws and/or areas of sensitivity, and defining the extent of studies required to be undertaken as part of the detailed EIA Phase. This was achieved through an evaluation of the proposed Project, involving the project developer, and specialist consultants. This Scoping Report has been compiled in terms of the 2014 EIA Regulations (GNR 326) published in terms of Section 24(5) of NEMA.

A summary of the conclusions of the evaluation of the potential impacts identified to be associated with the Project is provided in **Section 8.2**. Recommendations regarding investigations required to be undertaken within the detailed EIA Phase are provided within the Plan of Study for EIA (Chapter 9).

### 8.1 Legal Requirements as per the EIA Regulations, 2014 (as amended) for the undertaking of a Scoping Report

This chapter of the Scoping Report includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
2(1)(g)(xi) a concluding statement indicating the preferred alternatives, including the preferred location of the activity.	An overall conclusion and fatal flaw analysis regarding the Project is included within this chapter as a whole.

### 8.2 Overview of the Buffelspoort Solar PV Energy Facility

This Scoping Report documents the procedure for determining the extent of, and approach to, the EIA Phase. The Scoping Phase included the following key tasks:

- » Involvement of relevant authorities and I&APs through the Public Participation Process.
- » Consideration of feasible alternatives to be assessed during the EIA Phase.
- » Identification of potential impacts (positive and negative) associated with feasible Project alternatives to be assessed during the EIA Phase.
- » Defining Terms of Reference for any specialist studies required to inform the EIA Phase (Plan of Study (PoS) for the EIA Report.

The Project is proposed on a site located approximately 6 km west of the town of Mooinooi. The site falls within Ward 32 of the Rustenburg Local Municipality within the Bojanala Platinum District Municipality in the North West Province on the following affected properties:

#### Solar PV Energy Facility:

- » Portion 75 of Farm Buffelspoort 343JQ
- » Portion 134 of Farm Buffelspoort 343JQ

#### Grid Connection Corridor:

- » Portion 75 of Farm Buffelspoort 343JQ



- » Portion 88 of Farm Buffelspoort 343JQ
- » Portion 89 of Farm Buffelspoort 343JQ
- » Portion 101 of Farm Buffelspoort 343JQ
- » Portion 119 of Farm Buffelspoort 343JQ
- » Portion 120 of Farm Buffelspoort 343JQ
- » Portion 101 of Farm Kafferskraal 342JQ
- » Portion 121 of Farm Kafferskraal 342JQ
- » Portion 122 of Farm Kafferskraal 342JQ
- » Portion 148 of Farm Kafferskraal 342JQ
- » Portion 236 of Farm Kafferskraal 342JQ
- » Portion 303 of Farm Kafferskraal 342JQ
- » Portion 374 of Farm Kafferskraal 342JQ
- » Portion 376 of Farm Kafferskraal 342JQ

The development footprint (once defined) and grid connection corridor area are proposed to accommodate the following infrastructure which will enable the Solar PV Energy Facility to supply a contracted capacity of up to 40MWp:

- » Solar PV arrays comprising PV panels and mounting structures.
- » Inverters and transformers.
- » Cabling between the arrays.
- » Onsite facility substation.
- » 88kV single circuit overhead power line for the distribution of the generated power, which will be connected to an existing 88kV Substation just north of the proposed project site.
- » Battery Energy Storage System (BESS) – to be initiated at a later stage than the Solar PV Energy Facility.<sup>17</sup>
- » Temporary laydown area.
- » Operations and Maintenance (O&M) building, which will include a site security office, warehouse, storage area and workshop.
- » Main access road (existing – to be upgraded with hard surface) and internal (new) gravel roads.
- » Fencing around the site, including an access gate.

The scoping study included the identification of potential impacts associated with the Project through specialist inputs and consultation with affected parties and key stakeholders. A preliminary evaluation of the extent and expected significance of potential impacts associated with the development of the Project have been detailed in Chapter 7. These will be assessed in detail through the EIA Phase assessment, which will include independent specialist assessments.

This scoping study has identified sensitive areas within the development area and grid connection corridor to assist in focussing the location of the development footprint in order to minimise the potential for environmental impact. The extent of the project site for the Solar PV Energy Facility and associated infrastructure is ~223 ha. An area of ~77 ha was demarcated for the development area within the Project

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<sup>17</sup> The BESS is included as part of the ESIA process albeit that the facility will only be installed after the Solar PV Energy Facility has come into operation. The total electricity requirements for the off-taker is currently under review and an energy master plan is being developed, which will only be finalised post implementation of the Solar PV Energy Facility to address all the electricity needs of the off-taker. The BESS has been included in this ESIA in order to ensure that should the energy master plan require this component to be included sooner than expected that it has already been authorized.

site, and a grid connection corridor which varies in width from 200 m to 300 m and is up to 2.5 km in length was identified for consideration in the scoping study. The development footprint within the development area will be confirmed in the EIA Phase once the facility layout, which will be informed by the sensitive areas identified during the Scoping Phase, is available for assessment.

The majority of potential impacts identified to be associated with the construction of the Project are anticipated to be localised and restricted to the development footprint itself, while operation phase impacts/benefits range from local to regional. No environmental fatal flaws were identified to be associated with the development area and grid connection corridor.

The potentially significant issues related to the construction and operation of the Project include:

- » Destruction, fragmentation and degradation of habitats and ecosystems.
- » Disturbance to faunal species.
- » Displacement of avifaunal community (Including several SCC) due to disturbance such as noise, light, dust, and vibration.
- » Collision of bird species with PV panels, associated powerlines and connection lines and fences.
- » Degradation and contamination of water resources.
- » Loss of land capability.
- » Potential destruction of burial grounds and loss of archaeological resources.
- » Visual impacts associated with the construction and operation of the facility.
- » Social impacts, both positive and negative (job creation and business opportunities, safety and security concerns, and nuisance impacts (including noise and dust)).

### **8.3 Sensitivity Analysis for the Buffelspoort Solar PV Energy Facility**

This section considers the sensitive features located within the development area and grid connection corridor, as identified by the independent specialists within each respective field.

The potentially sensitive areas which have been identified through the environmental scoping study are listed below and illustrated in **Figure 8.1**. The detail is based on the desktop review of available baseline information for the site, as well as the sensitivity data from specialist studies undertaken during the Scoping Phase, which included field surveys. During the site and desktop surveys, the development area was investigated in sufficient detail in order to provide definitive insight into the potential for constraining factors on the site. The sensitivity map must be used as a tool by the project developer to avoid any areas flagged to be of higher risk or sensitivity and inform the development footprint within the development area and the placement of the grid connection infrastructure within the grid connection corridor. The development footprint/facility layout will be assessed in the EIA Phase, in order to provide an assessment of its environmental acceptability and suitability.

#### **8.3.1 Ecological Sensitive Features (including flora, fauna and avifauna)**

Based on the desktop assessment information, it can be said that the majority of the site will have a high sensitivity rating. This assumption is based on the development area and grid connection corridor overlapping with a CBA2, ESA1, ESA2, the Magaliesberg Biosphere Reserve, NPAES Priority Focus Area, the Magaliesberg IBA, a CR river and five unclassified NFEPA wetlands around the site. **Figure 8.1** shows the development area and grid connection corridor as comprising four (4) habitats which range in sensitivity

from very low to high. None of the habitats identified within the development area and grid connection corridor are regarded as no-go areas from an ecological perspective. A 35m pre-cautionary buffer has been recommended around the rocky ridge identified within the development area (refer to **Figure 8.1**).

### 8.3.2 Freshwater Sensitive Features

As per the DFFE screening report, the aquatic biodiversity theme sensitivity indicates a high sensitivity. This is attributed to the presence of aquatic CBAs within the site. Desktop information suggests the presence of a CR river to the west of the site which overlaps with the 500 m regulated area around the grid connection corridor and the presence of five unclassified NFEPA wetlands within the 500 m regulated area of the grid connection corridor. **Figure 8.1** shows the presence of natural and artificial wetland features and dams within the grid connection corridor and the development area, as well as drainage features within the immediate surrounds. The artificial wetland and dams are regarded to be of very low sensitivity and the drainage features are regarded to be of moderate to high sensitivity. The wetlands range in sensitivity from moderate low to moderate high. A 15m no-go buffer has been recommended around the wetland features.

### 8.3.3 Soils and Agricultural Potential Sensitive Features

Various soil forms are expected throughout the development area and grid connection corridor, of which some are commonly associated with high land capabilities. Even though the soil depth, texture and permeability of these soils ensure high land capability, the climatic capability of the area often reduces the land potential considerably.

The agriculture theme sensitivity as indicated in the screening report indicates predominantly medium sensitivity, with patches of low and high occurring within the development area and grid connection corridor. The sensitivity ratings generated by the screening tool can be attributed to the following features:

**Table 8.1:** Sensitive features as generated by the DFFE Screening Tool Report

Sensitivity	Feature(s)
High	Land capability 09: Moderate-High/10. Moderate-High
Medium	Land capability 06: Low-Moderate/07. Low-Moderate/08. Moderate
Low	Land capability 01: Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low

**Figure 8.1** shows the development area and grid connection corridor as predominantly comprising areas of medium land capability sensitivity, with patches of low and high land capability sensitivity. Field crop boundaries have been identified along the grid connection corridor.

Since field crop boundaries have been identified along the grid connection corridor, it is important to take note of the protocol for the specialist assessment and minimum report content requirements of environmental impacts on agricultural resources by onshore wind and/or solar photovoltaic energy generation facilities gazetted on 20 March 2022, which identifies allowable development limits for renewable energy developments generating electricity of 20MW or more (refer to **Table 8.2**). Allowable development units refer to the area of a particular land capability that can be directly impacted (i.e., taken by the physical footprint) by a renewable energy development. Physical footprint in this context is the area that is directly occupied by all infrastructure, including roads, hard standing areas, buildings,

substations, etc. that is associated with the renewable energy generation facility during its operation phase, and that result in the exclusion of that land from potential cultivation or grazing.

**Table 8.1:** Allowable development units for renewable energy generation developments generating electricity of 20MW or more

Criteria (land capability evaluation value and category of crop boundary)	Allowable development limits in hectares per MW of installed generation capacity (with sensitivity ratings from the national web based environmental screening tool shown in brackets)	
	Within field crop boundaries	Outside field crop boundaries
Land capability evaluation value of 11 - 15; Irrigation, horticulture/viticulture, shade net; high value agricultural areas with a priority rating A and/or B	0 (Very High Sensitivity)	0 (Very High Sensitivity)
Land capability evaluation value of 8 - 10; all cultivated areas including sugarcane; high value agricultural areas with a priority rating C and/or D	0.20 (High Sensitivity)	0.35 (Medium)
Land capability evaluation value of 6 - 7	0.25 (High Sensitivity)	2.50 (Low Sensitivity)
Land capability evaluation value of 1 - 5	0.30 (High Sensitivity)	2.50 (Low Sensitivity)

There are no areas identified within the development area and the grid connection corridor which are regarded as no-go areas (i.e., very high sensitivity) from a soils and agricultural potential perspective.

### 8.3.4 Heritage sensitive features (incl. archaeology and palaeontology)

A total of eleven (11) heritage features and resources were identified within the development area and grid connection corridor. These consist of one (1) burial ground with approximately 100 graves (**BFP-06**), three (3) localities with recent historic structures (**BFP-08, BFP-10 and BFP-11**), and one (1) kraal (**BFP-09**), as well as six (6) low to moderate significance archaeological sites (**BFP-01, BFP-02, BFP-03, BFP-04, BFP-05 and BFP-07**) (refer to **Figure 8.1**).

The informal cemetery comprising approximately 100 graves (**BFP-06**) is regarded to be of high sensitivity and a 50m no-go buffer has been recommended around this site (refer to **Figure 8.1**). The continuous stone walls (**BFP-01** and **BFP-07**) are also regarded to be of high sensitivity and a 30 m no-go buffer has been recommended around these sites.

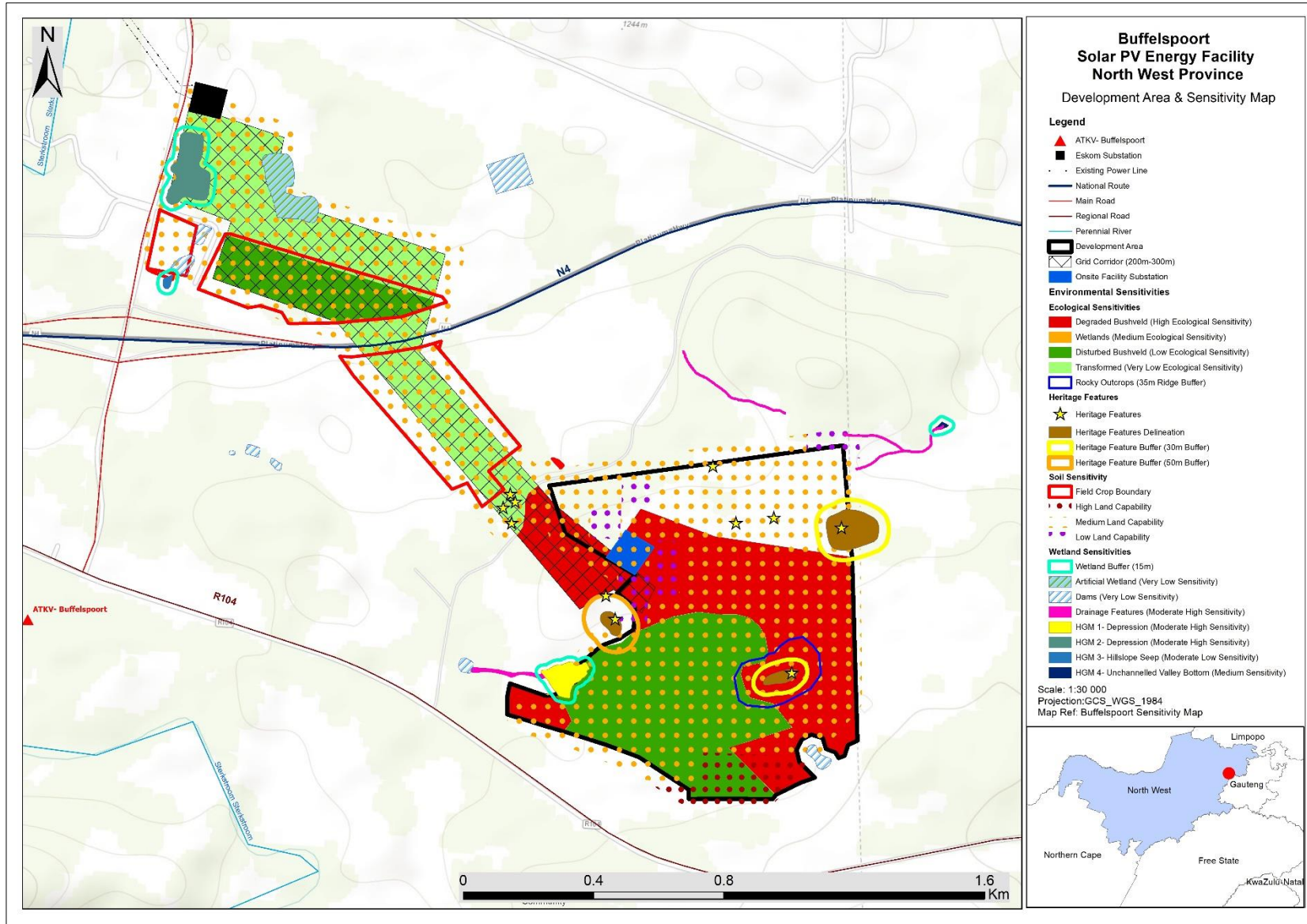
## 8.4 Overall Conclusion and Fatal Flaw Analysis

The findings of the desktop and in-field scoping study indicate that no environmental fatal flaws are associated with the development area and grid connection corridor. While some impacts of potential significance do exist, it is anticipated that the implementation of appropriate mitigation measures would assist in reducing the significance of such impacts to acceptable levels. It is however recommended that the location of the development footprint within the development area be considered outside of the potential sensitive areas as far as possible in order to ensure that the Project does not have a detrimental impact on the environment. This forms part of the 'funnel-down approach' for the identification of an appropriate footprint within the development area.

With an understanding of which areas within the development area and grid connection corridor are considered sensitive to the development of the proposed facility and associated infrastructure, the project

developer can prepare the detailed infrastructure layout for consideration within the EIA Phase. During the EIA Phase, more detailed environmental studies will be conducted in line with the Plan of Study for EIA contained in Chapter 9 of this Scoping Report. These studies will consider the detailed layout produced by the project developer and make recommendations for the implementation of avoidance strategies (if required), and mitigation and management measures to ensure that the final assessed layout retains an environmental impact within acceptable limits. The sensitivity map will be further refined in the EIA Phase on the basis of these specialist studies, in order to provide an assessment of environmental acceptability of the final design of the facility.





**Figure 8.1:** Environmental sensitivity map from the results of the scoping evaluation for the proposed Project (refer to **Appendix I** for A3 Map)

## CHAPTER 9: PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESSMENT

One of the key objectives of the Scoping Phase is to determine the level of assessment to be undertaken within the EIA Phase of the process. This will include the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken. This is to determine the impacts and risks a particular activity will impose on a preferred site through the life of the activity (including the nature, significance, consequence, extent, duration and probability of the impacts) to inform the location of the development footprint within the development area.

This chapter contains the Plan of Study for the EIA for the Project, which describes how the EIA Phase will proceed, and includes details of the independent specialist studies required to be undertaken to assess the significance of those impacts identified within the scoping study to be of potential significance.

### 9.1 Legal Requirements as per the EIA Regulations, 2014 (as amended) for the Undertaking of a Scoping Report

This chapter of the Scoping Report includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
2(1)(h) a plan of study for undertaking the environmental impact assessment process to be undertaken, including - (i) a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity; (ii) a description of the aspects to be assessed as part of the environmental impact assessment process; (iii) aspects to be assessed by specialists; (iv) a description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists; (v) a description of the proposed method of assessing duration and significance; (vi) an indication of the stages at which the competent authority will be consulted; (vii) particulars of the public participation process that will be conducted during the environmental impact assessment process; and (viii) a description of the tasks that will be undertaken as part of the environmental impact assessment process; (ix) identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	A Plan of Study for the undertaking of the EIA Phase for the Project is included within this chapter as a whole.

## 9.2 Objectives of the EIA Phase

The EIA Phase to be undertaken for the Project will aim to achieve the following:

- » Provide an overall description and detailed assessment of the social and biophysical environment affected by the development of the Project.
- » Assess potentially significant impacts (direct, indirect, and cumulative, where required) associated with the Project.
- » Identify and recommend appropriate avoidance strategies and mitigation measures for potentially significant environmental impacts.
- » Undertake a fully inclusive public involvement process to ensure that I&APs are afforded the opportunity to participate, and that their comments are recorded.

The EIA Report will aim to provide the CA with sufficient information to make an informed decision regarding the proposed development. The site layout being proposed for the Project will be assessed through detailed independent specialist studies. As required in terms of the 2014 EIA Regulations (GNR 326), as amended, the assessment will include consideration of the 'do nothing' alternative.

## 9.3 Consideration of Alternatives

The following project alternatives will be investigated in the EIA:

Nature of Alternatives Considered	Description of the Alternatives relating to the Buffelspoort Solar PV Energy Facility
Site-specific and Layout Alternatives	One preferred project site (i.e., the affected properties) has been identified for the development of the Project due to site specific characteristics such as the solar resource, land availability, topographical considerations, proximity to a viable grid connection and environmental features. The properties that make up the project site are privately-owned properties and are up to ~223 ha in extent, which was considered by the project developer as sufficient for the development of the Solar PV Energy Facility with a contracted capacity of up to 40MWp and associated grid connection infrastructure. A development area of up to ~77 ha has been identified by the project developer within the project site for the development. A facility layout/development footprint within this development area will be provided by the project developer for consideration in the EIA Phase studies.
Activity Alternatives	<p>Only a renewable energy development, specifically a solar PV development, is being considered by the project developer, seeing as South Africa has some of the highest levels of solar radiation in the world with an average daily solar radiation that varies between 4.5 kilowatt hours per square metre per day (kWh/m<sup>2</sup>/day) and 6.5 kilowatt hours per square metre per day (kWh/m<sup>2</sup>/day). This, in comparison to about 3.6 kWh/m<sup>2</sup>/day for parts of the United States and about 2.5 kWh/m<sup>2</sup>/day for Europe and the United Kingdom, reveals that South Africa has considerable solar resource potential which should be exploited (Energy, 2022). In addition to a more stabilized supply, renewable energy facilities also have numerous environmental, social and economic benefits, which align with the off-taker's sustainability efforts.</p> <p>Considering the available natural energy resource within the area (i.e., solar irradiation) and unsuitability of the site for wind generation, solar PV power generation is considered the preferred option within the Project area. In addition, grid connection infrastructure to</p>

Nature of Alternatives Considered	Description of the Alternatives relating to the Buffelspoort Solar PV Energy Facility
	connect the Solar PV Energy Facility to the off-taker's existing substation is present on site, which will enable an easy and short connection.
Technology Alternatives	Only the development of a Solar PV Energy Facility is considered due to the characteristics of the site, including the solar resource available. The use of solar PV for the generation of electricity is considered to be the most efficient technology for the Project site. Use of fixed-tilt or single-axis tracking PV technology and bifacial panels is being considered.
'Do-nothing' Alternative	This is the option to not construct the proposed Project. No impacts (positive or negative) are expected to occur on the social and environmental sensitive features or aspects located within the Project site or the surrounds with the implementation of this option. The opportunities associated with the development of the Project for the affected area and other surrounding towns in the area will not be made available.

## 9.4 Description of Project to be assessed during the EIA Phase

### 9.4.1 Project description

The aspects or nature and extent of the Project to be assessed as part of the EIA Report are detailed in **Table 9.1** below. A more detailed description of the activities associated with the construction and operation of the Project is included in Chapter 2 of this Scoping Report.

**Table 9.1:** Activities and associated infrastructure to be assessed in the EIA Report

Infrastructure	Footprint and dimensions
Number of Modules	Up to 75 000 modules (560Wp modules for the generation of up to 40MWp)
Contracted Capacity	Up to 40MWp
Area occupied by the solar array	up to 30ha
Panel Height	Up to 3m
Technology	The Project will make use of fixed-tilt or single-axis tracking PV technology and bifacial panels
Inverters	<ul style="list-style-type: none"> <li>» Up to 160 inverters</li> <li>» Height: 660mm</li> </ul>
BESS	<ul style="list-style-type: none"> <li>» Proposed technology: Lithium - Ion or Lithium-iron-phosphate or Redox Vanadium battery technology</li> <li>» Footprint: up to 2ha</li> <li>» Height: Up to 3m</li> <li>» Proposed capacity of battery storage: 30MW / 4 hours of usable energy at Beginning of Life</li> </ul> <p>The type of battery storage will only be determined at a later stage and will be based solely on the technological advancements made in the battery technology field. The storage solution will remain a containerised solution.</p>
Other infrastructures	<ul style="list-style-type: none"> <li>» Fencing: 3m high around 4 400m</li> <li>» O&amp;M building (including site security office, warehouse, storage area and</li> </ul>

Infrastructure	Footprint and dimensions
	workshop): 500m <sup>2</sup> , 3m high
Area occupied by temporary laydown area	100m x 100m
Area occupied by the onsite facility substation	1ha
Capacity of onsite facility substation	88kV
Access and internal roads associated with the facility	An existing access road, which may be upgraded with hard surface, will be used to access the facility (up to 6 m wide). Newly proposed internal gravel roads will be established between the arrays (3.5 m wide) and around the boundary of the site (2.5 m wide).
Grid connection	<p>A grid connection corridor, which is up to 200-300m wide and approximately 2.5k m long to allow for avoidance of environmental sensitivities, and suitable placement of the overhead power line within the corridor has been identified and assessed as part of the S&amp;EIA process. The dimensions of newly proposed overhead power line are provided below:</p> <ul style="list-style-type: none"> <li>» Capacity and circuit of the power line: 88kV (single circuit)</li> <li>» Power line servitude width: 32m</li> <li>» Height of the power line towers (pylons):16-24m</li> </ul> <p>During construction, a permanent access road along the length of the power line corridor between 4 – 8m wide will be established to allow for large crane movement. This track will then be utilised for maintenance during operation.</p>
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 operational phase.

#### 9.4.2. Scope of the EIA Phase and EIA Report

The EIA Report will be compiled in terms of the requirements of the EIA Regulations and include the information as required in Appendix 3 of GNR 326. The results of the specialist studies and other available information will be integrated, synthesised, and presented in the EIA Report by the Savannah Environmental project team. The EIA Report will assess the overall environmental impacts associated with the development, consider mitigation measures as may be required, and make recommendations regarding the best development alternative. The EIA Report will also identify mitigation measures and provide management recommendations to minimise negative impacts and enhance benefits. The EIA Report will include:

- » The details and expertise of the **EAP** who prepared the report.
- » The **location** of the development footprint of the activity and a locality map illustrating the location of the proposed activity.
- » A **description** of the scope of the proposed activity including all listed activities triggered and a description of associated structures and infrastructure.



- » The **policy and legislative** context within which the development is located and an explanation of how the development complies and responds to the legislation and policy context.
- » The **need and desirability** of the proposed development of the activity in the context of the preferred location.
- » A motivation for the **preferred development footprint** within the approved site as contemplated in the accepted scoping report.
- » A description of the **process** followed to reach the proposed development footprint within the approved site, including:
  - \* details of the development footprint considered;
  - \* details of the public participation process undertaken in terms of Regulation 41 of the 2014 EIA Regulations, including copies of supporting documents;
  - \* a summary of issues raised by interested and affected parties and the manner in which the issues were incorporated;
  - \* the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;
  - \* the impacts and risks identified including the nature, significance, consequence extent, duration and probability of the impacts, including the degree to which these impacts can be reversed, may cause irreplaceable loss of resources and can be avoided, managed or mitigated;
  - \* the methodology used for determining and ranking the nature, significance, consequence, extent, duration and probability of potential environmental impacts and risks;
  - \* positive and negative impacts that the activity and alternatives will have on the environment and the community;
  - \* possible mitigation measures to be applied and the level of residual risk;
  - \* a motivation for not considering alternative development locations;
  - \* a concluding statement indicating the location of the preferred alternative development location; and
  - \* a full description of the process followed to identify, assess and rank impacts of the activity and associated infrastructure on the preferred location including all environmental issues and risks that have been identified and an assessment of the significance of each issue and risk and the extent to which the issue/risk can be avoided or mitigated.
- » An **assessment** of the identified potentially significant impacts and risks.
- » A summary of the **findings and recommendations** of any specialist report and an indication as to how these findings and recommendations have been included.
- » An **environmental impact assessment** containing a summary of key findings, an environmental sensitivity map and a summary of the positive and negative impacts and risks of the proposed activity.
- » An **Environmental Management Programme** (EMPr), as per Appendix 4 of GNR326, containing the recommendations from specialists, the impact management **objectives**, and the impact management **outcomes**.
- » The final **alternatives** which respond to the impact management measures, avoidance and mitigation measures identified.
- » Any aspects which were **conditional** to the findings of the assessment.
- » Description of the assumptions, uncertainties and gaps in knowledge relating to the assessment and mitigation measures proposed.

- » An **opinion** as to whether the proposed activity should or should not be authorised and the conditions thereof.
- » An undertaking under **affirmation** by the EAP in relation to the correctness of the information, the inclusion of comments and inputs from stakeholders and interested and affected parties, the inclusion of inputs and recommendations from the specialists and any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties.

The EIA Report will be released to the public, registered I&APs, relevant stakeholders, Organs of State and Authorities for a 30-day review and comment period. Comments received will be captured within a Comments and Responses Report, which will be included within the Final EIA Report, for submission to NWDEDECT for review and decision-making.

## **9.5 Exclusion of specialist studies during the EIA Phase for the Buffelspoort Solar PV Energy Facility**

### ***Palaeontological Impact Assessment***

Based on the Heritage Scoping Assessment (refer to **Appendix F**), which included palaeontology, the area proposed for development is underlain by sediments of zero or insignificant palaeontological sensitivity. The heritage specialist has therefore recommended that no further paleontological studies be undertaken during the EIA Phase. This is subject to agreement by SAHRA.

## **9.6 Specialist Assessments to be undertaken during the EIA Phase**

A summary of the aspects which require further investigation within the EIA Phase through specialist studies, as well as the proposed activities to be undertaken in order to assess and ground truth the significance of the potential impacts is provided within **Table 9.2**. The specialists proposed to undertake detailed studies in the EIA Phase are also reflected within this table. These specialist studies will consider the facility layout, as well as feasible and reasonable alternatives identified for the Project.

**Table 9.2:** Aspects requiring further investigation by specialists during the EIA Phase and terms of reference to assess the significance of the potential impacts relevant to the Project

Aspect	Activities to be undertaken in order to assess significance of impacts	Specialist
<p><b>Ecology (including flora and fauna)</b></p>	<p>The EIA Phase will include the following activities:</p> <ul style="list-style-type: none"> <li>» Undertake of field work (flora and fauna survey), preferably during the wet season period.</li> <li>» Identify and describe habitats.</li> <li>» Identify Site Ecological Importance.</li> <li>» Locate and identify plant SCC as well as nests/dens in the case of fauna and avifauna species.</li> <li>» Determine a suitable buffer width for the identified features.</li> </ul> <p><u>Assessment of Impacts for the EIA</u></p> <p>The methodology described in <b>Section 9.6</b> assists in the evaluation of the overall effect of a proposed activity on the environment. It includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of criteria including extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).</p> <p>The nature of the impact will be defined and described. It will refer to the causes of the effect, what will be affected, and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p> <p><u>Environmental Management Programme</u></p> <p>For each overarching anticipated impact, management recommendations for the design, construction, and operational phase (where appropriate) will be drafted for inclusion in the Project EMPr.</p>	<p>Jan Jacobs, Lindi Steyn and Andrew Husted of The Biodiversity Company</p>
<p><b>Avifauna</b></p>	<p>The EIA Phase will include the following activities:</p> <ul style="list-style-type: none"> <li>» Avifauna assessment field work to be conducted over one season to ensure migratory species are considered.</li> <li>» Identify and describe habitats.</li> </ul> <p><b>Note:</b> A single season avifauna survey is proposed to be conducted during the EIA Phase as the area was found to be void of any SCC or specialist species during the site visit undertaken as part of the Scoping Phase. Further to this, three (3) surveys on nearby sites conducted by The Biodiversity Company in April 2022 found similar results. Therefore, a Regime 1 assessment was found to be adequate. Furthermore, the animal sensitivity came out as medium with just the Secretary bird regarded as having a medium sensitivity. The field results were mainly (with the exception of the water sources) rated Moderate - Very Low as large parts of the site have been degraded, which disputed the moderate classification of the whole area.</p>	<p>Lindi Steyn of The Biodiversity Company</p>

Aspect	Activities to be undertaken in order to assess significance of impacts	Specialist
	<p><u>Assessment of Impacts for the EIA</u> The methodology described in <b>Section 9.6</b> assists in the evaluation of the overall effect of a proposed activity on the environment. It includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of criteria including extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).</p> <p>The nature of the impact will be defined and described. It will refer to the causes of the effect, what will be affected, and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p> <p><u>Environmental Management Programme</u> For each overarching anticipated impact, management recommendations for the design, construction, and operational phase (where appropriate) will be drafted for inclusion in the Project EMPr.</p>	
<p><b>Freshwater resources (including all waterbodies and wetlands)</b></p>	<p><u>The EIA Phase will include the following activities:</u> Freshwater resources located within the development footprint will be further assessed during the EIA Phase in accordance with the protocols and procedures of GN 320 of 2020. The following activities will be undertaken:</p> <ul style="list-style-type: none"> <li>» Undertake fieldwork, preferable in the wet season period.</li> <li>» Identify, delineate and characterise water resources.</li> <li>» Undertake a functional assessment of systems, where applicable.</li> <li>» Determine a suitable buffer width for the water resources.</li> </ul> <p><u>Assessment of Impacts for the EIA:</u> The methodology described in <b>Section 9.6</b> assists in the evaluation of the overall effect of a proposed activity on the environment. It includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of criteria including extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).</p> <p>The nature of the impact will be defined and described. It will refer to the causes of the effect, what will be affected, and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p> <p><u>Environmental Management Programme:</u> For each overarching anticipated impact, management recommendations for the design, construction, and operational</p>	<p>Andrew Husted of The Biodiversity Company</p>

Aspect	Activities to be undertaken in order to assess significance of impacts	Specialist
<p><b>Soils and Agricultural Potential</b></p>	<p>phase (where appropriate) will be drafted for inclusion in the Project EMPr.</p> <p>The EIA Phase will include the following activities: The soils impact assessment will include the consideration of aspects related to agricultural aspects in accordance with the protocols and procedures of GN 320 of 2020. The assessment will also include:</p> <ul style="list-style-type: none"> <li>» Field survey.</li> <li>» Identify and delineate soils forms.</li> <li>» Determine soil sensitivity.</li> </ul> <p><u>Assessment of Impacts for the EIA:</u> The methodology described in <b>Section 9.6</b> assists in the evaluation of the overall effect of a proposed activity on the environment. It includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of criteria including extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).</p> <p>The nature of the impact will be defined and described. It will refer to the causes of the effect, what will be affected, and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p> <p><u>Environmental Management Programme:</u> For each overarching anticipated impact, management recommendations for the design, construction, and operational phase (where appropriate) will be drafted for inclusion in the Project EMPr.</p>	<p>Andrew Husted of the Biodiversity Company</p>
<p><b>Heritage (including archaeology)</b></p>	<p>The EIA Phase will include the following activities: As part of the EIA, it is necessary to undertake a Heritage and Archaeological Study to fulfil the SAHRA requirements in accordance with the National Heritage Resources Act (No. 25 of 1999). A Heritage Impact Assessment with specific focus on impacts to archaeological heritage will therefore be conducted. The following activities will be undertaken during the EIA Phase:</p> <ul style="list-style-type: none"> <li>» Re-evaluation of impacts on archaeological heritage resources during the EIA Phase when the proposed layout is provided and recommendation of mitigation measures.</li> </ul> <p><u>Assessment of Impacts for the EIA:</u> The methodology described in <b>Section 9.6</b> assists in the evaluation of the overall effect of a proposed activity on the environment. It includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of criteria including extent (scale), duration, magnitude (severity),</p>	<p>Wouter Fourie and Michelle Sachse of PGS Heritage</p>



Aspect	Activities to be undertaken in order to assess significance of impacts	Specialist
	<p>probability (certainty) and direction (negative, neutral or positive).</p> <p>The nature of the impact will be defined and described. It will refer to the causes of the effect, what will be affected, and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p> <p><u>Environmental Management Programme:</u>                      For each overarching anticipated impact, management recommendations for the design, construction, and operational phase (where appropriate) will be drafted for inclusion in the Project EMPr.</p>	
<p><b>Visual</b></p>	<p>The fact that some components of the proposed Buffelspoort Solar PV Energy Facility and associated infrastructure may be visible does not necessarily imply a high visual impact. Sensitive visual receptors within (but not restricted to) a 3km buffer zone from the facility need to be identified and the severity of the visual impact assessed within the EIA phase of the proposed Project.</p> <p>It is recommended that additional spatial analyses be undertaken in order to create a visual impact index that will further aid in determining potential areas of visual impact. This exercise should be undertaken for the core PV infrastructure (solar field) as well as for the ancillary infrastructure, as these structures (e.g. the BESS structures and power line) are envisaged to have varying levels of visual impact at a more localised scale. The site-specific issues (as mentioned earlier in the report) and potential sensitive visual receptors should be measured against this visual impact index and be addressed individually in terms of nature, extent, duration, probability, severity and significance of visual impact.</p> <p>This recommended work must be undertaken during the EIA Phase of reporting for this proposed project. In this respect, the Plan of Study for the EIA is as follows:</p> <p><b>Visual Impact Assessment (VIA)</b></p> <p>The VIA is determined according to the nature, extent, duration, intensity or magnitude, probability and significance of the potential visual impacts, and will propose management actions and/or monitoring programs and may include recommendations related to the solar energy facility layout.</p> <p>The visual impact is determined for the highest impact-operating scenario (worst-case scenario) and varying climatic conditions (i.e. different seasons, weather conditions, etc.) are not considered.</p>	<p>Lourens du Plessis of LOGIS</p>

Aspect	Activities to be undertaken in order to assess significance of impacts	Specialist
	<p>The VIA considers potential cumulative visual impacts, or alternatively the potential to concentrate visual exposure/impact within the region.</p> <p>The following VIA-specific tasks must be undertaken:</p> <p><b>Determine potential visual exposure</b></p> <ul style="list-style-type: none"> <li>» The visibility or visual exposure of any structure or activity is the point of departure for the visual impact assessment. It stands to reason that if (or where) the proposed Project and associated infrastructure were not visible, no impact would occur.</li> <li>» The viewshed analyses of the proposed Project and the related infrastructure are based on a detailed digital terrain model of the study area.</li> <li>» The first step in determining the visual impact of the proposed project is to identify the areas from which the structures would be visible. The type of structures, the dimensions, the extent of operations and their support infrastructure are taken into account.</li> </ul> <p><b>Determine visual distance/observer proximity to the proposed Project</b></p> <ul style="list-style-type: none"> <li>» In order to refine the visual exposure of the proposed Project on surrounding areas/receptors, the principle of reduced impact over distance is applied in order to determine the core area of visual influence for this type of structure.</li> <li>» Proximity radii for the proposed infrastructure are created in order to indicate the scale and viewing distance of the proposed Project and to determine the prominence of the structures in relation to their environment.</li> <li>» The visual distance theory and the observer's proximity to the facility are closely related, and especially relevant, when considered from areas with a high viewer incidence and a predominantly (anticipated) negative visual perception of the proposed facility.</li> </ul> <p><b>Determine viewer incidence/viewer perception (sensitive visual receptors)</b></p> <ul style="list-style-type: none"> <li>» The next layer of information is the identification of areas of high viewer incidence (i.e. main roads, residential areas, settlements, etc.) that may be exposed to the Project infrastructure.</li> <li>» This is done in order to focus attention on areas where the perceived visual impact of the proposed Project will be the highest and where the perception of affected observers will be negative.</li> </ul>	

Aspect	Activities to be undertaken in order to assess significance of impacts	Specialist
	<p>» Related to this data set, is a land use character map, that further aids in identifying sensitive areas and possible critical features (i.e. tourist facilities, protected areas, etc.), that should be addressed.</p> <p><b>Determine the visual absorption capacity (VAC) of the landscape</b></p> <p>» This is the capacity of the receiving environment to absorb the potential visual impact of the proposed Project. The VAC is primarily a function of the vegetation, and will be high if the vegetation is tall, dense and continuous. Conversely, low growing, sparse and patchy vegetation will have a low VAC.</p> <p>» The VAC would also be high where the environment can readily absorb the structure in terms of texture, colour, form and light / shade characteristics of the structure. On the other hand, the VAC for a structure contrasting markedly with one or more of the characteristics of the environment would be low.</p> <p>» The VAC also generally increases with distance, where discernible detail in visual characteristics of both environment and structure decreases.</p> <p><b>Calculate the visual impact index</b></p> <p>» The results of the above analyses are merged in order to determine the areas of likely visual impact and where the viewer perception would be negative. An area with short distance visual exposure to the proposed infrastructure, a high viewer incidence and a predominantly negative perception would therefore have a higher value (greater impact) on the index. This focusses the attention to the critical areas of potential impact and determines the potential magnitude of the visual impact.</p> <p>» Geographical Information Systems (GIS) software is used to perform all the analyses and to overlay relevant geographical data sets in order to generate a visual impact index.</p> <p><b>Determine impact significance</b></p> <p>» The potential visual impacts are quantified in their respective geographical locations in order to determine the significance of the anticipated impact on identified receptors. Significance is determined as a function of extent, duration, magnitude (derived from the visual impact index) and probability. Potential cumulative and residual visual impacts are also addressed. The results of this section are displayed in impact tables and summarised in an impact statement.</p> <p><b>Propose mitigation measures</b></p> <p>» The preferred alternative (or a possible permutation of the alternatives) will be based on its potential to reduce the</p>	

Aspect	Activities to be undertaken in order to assess significance of impacts	Specialist
	<p>visual impact. Additional general mitigation measures will be proposed in terms of the planning, construction, operation and decommissioning phases of the proposed Project.</p> <p><b>Reporting and map display</b></p> <ul style="list-style-type: none"> <li>» All the data categories, used to calculate the visual impact index, and the results of the analyses will be displayed as maps in the accompanying report. The methodology of the analyses, the results of the visual impact assessment and the conclusion of the assessment will be addressed in the VIA report.</li> </ul> <p><b>Site visit</b></p> <ul style="list-style-type: none"> <li>» Undertake a site visit in order to collect a photographic record of the affected environment, to verify the results of the spatial analyses and to identify any additional site-specific issues that may need to be addressed in the VIA report.</li> </ul>	
<b>Social</b>	<p><u>The EIA Phase will include the following activities:</u></p> <p>Based on the findings of the social impact assessment, the following approach to the EIA Phase studies is proposed:</p> <ul style="list-style-type: none"> <li>» Review comments pertaining to social impacts received from members of the public, key stakeholders, and any organ of state during the public review of the Scoping Report. Where applicable, comments received from the DEDECT on the Final Scoping Report (FSR), which may pertain to social impacts or have relevance to the SIA, will also be reviewed.</li> <li>» Collect primary data during a site visit. Interview directly affected and adjacent landowners, and key stakeholders to obtain primary information related to the Project Site, social environment, and to gain their inputs on the proposed Project and its perceived social impact (positive and /or negative).</li> <li>» Update the baseline information with information received during the site visit, as well as any additional information received from the project proponent or updates to the Project description.</li> <li>» Assess impacts identified for the Project in terms of their nature, extent, duration, magnitude, probability, status, and significance; as well as the degree to which the impact can be reversed, may cause irreplaceable loss of resources, and can be mitigated.</li> <li>» Identify mitigation measures with which to reduce negative impacts and enhance positive impacts for inclusion in the Environmental Management Programme (EMPr). As far as possible the mitigation hierarchy of "avoid, minimise, and reduce" will be followed in the mitigation of potential negative impacts.</li> <li>» Identify any conditions for inclusion in the Environmental Authorisation (EA).</li> </ul>	<p>Nondumiso Bulunga of Savannah Environmental and peer reviewed by Dr Neville Bews.</p>

Aspect	Activities to be undertaken in order to assess significance of impacts	Specialist
	<ul style="list-style-type: none"> <li>» Identify any monitoring requirements for inclusion in the EMP or EA.</li> <li>» Provide a reasoned opinion regarding the acceptability of the Project, and whether the proposed Project should be authorised.</li> <li>» Prepare a SIA Report for inclusion in the EIA Report to be prepared for the proposed Project.</li> <li>» Subject the SIA Report prepared for the proposed Project for inclusion in the EIA Report to external peer review.</li> </ul> <p><u>Assessment of Impacts for the EIA:</u> The methodology described in <b>Section 9.6</b> assists in the evaluation of the overall effect of a proposed activity on the environment. It includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of criteria including extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).</p> <p>The nature of the impact will be defined and described. It will refer to the causes of the effect, what will be affected, and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p> <p><u>Environmental Management Programme:</u> For each overarching anticipated impact, management recommendations for the design, construction, and operational phase (where appropriate) will be drafted for inclusion in the Project EMP.</p>	
<p><b>Cumulative Assessment</b></p>	<p>Assess the cumulative impacts associated with the construction and operation of more than one development (i.e., Solar PV Energy Facilities) within 30 km of the Project site on the ecological and freshwater, heritage, soil and agricultural potential, avifaunal, visual and social impacts of the area.</p> <p><u>The objective is to identify and focus on potentially significant cumulative impacts so these may be taken into consideration in the decision-making process. The following will be considered:</u></p> <ul style="list-style-type: none"> <li>» 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 or ecological functioning.</li> <li>» Unacceptable risk to freshwater features through disturbance associated with construction activities and increased runoff and erosion during the operation phase.</li> <li>» Unacceptable risk to avifauna through habitat loss, displacement, and collision with PV infrastructure.</li> <li>» Unacceptable loss of high agricultural potential areas presenting a risk to food security and increased soil erosion.</li> </ul>	<p>Considered by all specialists</p> <p>Overall assessment by Savannah Environmental</p>



Aspect	Activities to be undertaken in order to assess significance of impacts	Specialist
	<ul style="list-style-type: none"><li>» Unacceptable loss of heritage resources (including palaeontological and archaeological resources).</li><li>» Unacceptable impact to social factors and components.</li></ul>	

## 9.7 Methodology for the Assessment of Potential Impacts

Direct, indirect, and cumulative impacts of the above issues identified through this scoping study will be assessed in terms of the following criteria:

- » The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- » The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional:
  - \* local extending only as far as the development site area – assigned a score of 1;
  - \* limited to the site and its immediate surroundings (up to 10 km) – assigned a score of 2;
  - \* will have an impact on the region – assigned a score of 3;
  - \* will have an impact on a national scale – assigned a score of 4; or
  - \* will have an impact across international borders – assigned a score of 5.
- » The **duration**, wherein it will be indicated whether:
  - \* the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
  - \* the lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
  - \* medium-term (5–15 years) – assigned a score of 3;
  - \* long term (> 15 years) - assigned a score of 4; or
  - \* permanent - assigned a score of 5.
- » The **magnitude**, quantified on a scale from 0-10, where a score is assigned:
  - \* 0 is small and will have no effect on the environment;
  - \* 2 is minor and will not result in an impact on processes;
  - \* 4 is low and will cause a slight impact on processes;
  - \* 6 is moderate and will result in processes continuing but in a modified way;
  - \* 8 is high (processes are altered to the extent that they temporarily cease); and
  - \* 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- » The **probability of occurrence**, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale, and a score assigned:
  - \* Assigned a score of 1–5, where 1 is very improbable (probably will not happen);
  - \* Assigned a score of 2 is improbable (some possibility, but low likelihood);
  - \* Assigned a score of 3 is probable (distinct possibility);
  - \* Assigned a score of 4 is highly probable (most likely); and
  - \* Assigned a score of 5 is definite (impact will occur regardless of any prevention measures).
- » the **significance**, which shall be determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high.
- » the **status**, which will be described as either positive, negative or neutral.
- » the degree to which the impact can be reversed.
- » the degree to which the impact may cause irreplaceable loss of resources.
- » the degree to which the impact can be *mitigated*.

The **significance** is determined by combining the criteria in the following formula:

**S = (E+D+M) P**; where

S = Significance weighting  
E = Extent  
D = Duration  
M = Magnitude  
P = Probability

The **significance weightings** for each potential impact are as follows:

- » < 30 points: Low (i.e., where this impact would not have a direct influence on the decision to develop in the area),
- » 30-60 points: Medium (i.e., where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- » > 60 points: High (i.e., where the impact must have an influence on the decision process to develop in the area).

Other aspects to be taken into consideration in the specialist studies and EIA report are:

- » Impacts should be described in terms of before and after the proposed mitigation and management measures have been implemented.
- » All impacts should be evaluated for the full lifecycle of the proposed development, including construction, operation, and decommissioning.
- » The impact assessment should take into consideration the cumulative effects associated with this and other similar developments which are either developed or in the process of being developed in the region. The purpose of the cumulative assessment is to test if such impacts are relevant to the proposed Project in the proposed location (i.e., whether the addition of the proposed Project in the area will increase the impact). In this regard, specialist studies will consider whether the construction of the proposed development will result in:
  - Unacceptable risk
  - Unacceptable loss
  - Complete or whole-scale changes to the environment or sense of place
  - Unacceptable increase in impact

A conclusion regarding whether the proposed Project will result in any unacceptable loss or impact considering all the projects proposed in the area is included in the respective specialist reports.

As Buffelspoort Solar Project (Pty) Ltd has the responsibility to avoid and/or minimise impacts as well as plan for their management (in terms of the EIA Regulations), the mitigation of significant impacts will be discussed. Assessment of mitigated impacts will demonstrate the effectiveness of the proposed mitigation measures.

## 9.8 Authority Consultation

Consultation with the CA (i.e., NWDECT) has been undertaken in the Scoping Phase and will continue throughout the S&EIA process. On-going consultation will include the following:

- » Submission of a Final Scoping Report following a 30-day review period which will include all comments and issues raised during the review period as well as appropriate responses to the comments.
- » Submission of an EIA Report and EMPr for a 30-day review and comment period.
- » Submission of a Final EIA Report and EMPr following a 30-day review period which will include all comments and issues raised during the review period as well as appropriate responses to the comments received.
- » Consultation and an authority site visit (if required) in order to discuss the findings and conclusions of the EIA Report.

## **9.9 Public Participation Process**

A public participation process will be undertaken by Savannah Environmental during the EIA Phase. Through this consultation process, stakeholders and I&APs will be encouraged to verify that their issues were recorded in the Scoping Phase, identify additional issues of concern or highlight positive aspects of the proposed Project, and comment on the findings of the EIA Phase. In order to accommodate the varying needs of stakeholders and I&APs within the area, as well as capture their inputs, various opportunities will be provided for stakeholders and I&APs to be involved in the EIA Phase of the process, as follows:

- » Focus group meetings (pre-arranged and I&APs invited to attend) via the use of virtual platforms (Zoom or MS Teams). One-on-one consultation meetings (for example with directly affected and surrounding landowners) via telephone or virtual platforms.
- » Face-to-face meetings will be held, where required.
- » Telephonic consultation sessions (consultation with various parties from the EIA project team, including the public participation consultant, lead EIA consultant, as well as specialist consultants).
- » Written, faxed or e-mail correspondence.

The public participation process will include the following activities:

- » Placement of advertisements in a local newspaper (Rustenburg Herald, in English).
- » Maintenance and finalisation of the I&AP database.
- » Release of the EIA Report for a 30-day review and comment period.
- » Ongoing consultation with all registered I&APs regarding the progress of the S&EIA process and the outcomes or findings of the EIA Report through stakeholder consultation via notification letters, telephone calls, focus group meetings, depending on the specific needs of the stakeholders in the area.
- » Facilitate comments on the EIA Report.
- » Compile a Comments and Responses Report (C&RR) and evidence of the public participation process undertaken to be included in the final EIA Report for decision-making.

## **9.10 Key Milestones of the Programme for the EIA**

The envisaged key milestones of the programme for the EIA Phase are outlined in the following table (and include indicative dates):

<b>Key Milestone Activities</b>	<b>Proposed timeframe</b>
Make the Scoping Report available to the public, stakeholders, and authorities for 30 days	June 2022 – July 2022
Finalisation of Scoping Report, and submission of the Final Scoping Report to NWDEDECT	July 2022
Authority acceptance of the Final Scoping Report and Plan of Study to undertake the EIA	43 days from submission of the Final Scoping Report
Undertake specialist studies and public participation process	June 2022 – August 2022
Make Draft EIA Report and EMPr available to the public, stakeholders, and authorities	August 2022 – September 2022
Finalisation of EIA Report, and submission of the Final EIA Report to NWDEDECT	October 2022
Authority review period and decision-making (107 calendar days – excluding days of reckoning (15 December 2021 – 05 January 2023)	October 2022 – January 2023

## CHAPTER 10: REFERENCES

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All the aerial depictions and overlays used in this report are from Google Earth.

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