2026

VISUAL IMPACT ASSESSMENT REPORT

VISUAL IMPACT ASSESSMENT FOR THE BBR ENERGY FACILITY (PHASE 2 GILIMBERG ENERGY CLUSTER) HYBRID SOLAR PV & BESS FACILITY AND ASSOCIATED INFRASTRUCTURE (up to 200MWac / 150MW-600MWh) IN CAPRICON DISTRICT (POLOKWANE LOCAL MUNICIPALITY) AND WATERBERG (MOGALAKWENA LOCAL MUNICIPALITY) LIMPOPO PROVINCE.

Prepared by:
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ACRONYMS, ABBREVIATIONS AND GLOSSARY

ACRONYMS & ABBREVIATIONS	
DEM	Digital Elevation Model
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
EGI	Electricity Grid Infrastructure
GIS	Geographical Information Systems
HA	Hectares
MAMSL	Metres Above Mean Sea Level
NEMA	National Environmental Management Act (Act 107 of 1998)
REDZ	Renewable Energy Development Zones
SEF	Solar Energy Facility
STC	Standard Testing Conditons
VAC	Visual Absorption Capacity
VIA	Visual Impact Assessment
ZVI	Zone of Visual Influence
GLOSSARY	
Aesthetic impact	Aesthetic impact occurs when there is a detrimental effect on the perceived beauty of a place or structure. Mere visibility, even startling visibility of a Project proposal, should not be a threshold for decision making. Instead, a Project, by its visibility, must clearly interfere with or reduce (i.e., visual impact) the public's enjoyment and/or appreciation of the appearance of a valued resource e.g., cooling tower blocks a view from a National Park overlook (after New York, Department of Environment 2000).
Aesthetically significant place	A formally designated place visited by recreationists and others for the express purpose of enjoying its beauty. For example, tens of thousands ofpeople visit Table Mountain on an annual basis. They come from around the country and even from around the world. By these measurements,one can make the case that Table Mountain (a designated National Park) is an aesthetic resource of national significance. Similarly, a resource thatis visited by large numbers who come from across the region probably has regional significance. A place visited primarily by people whose place of origin is local is generally of local significance. Unvisited places either have no significance or are "no trespass" places. (After New York, Department of Environment 2000).
Aesthetic Value	Aesthetic value is the emotional response derived from the experience of the environment with its natural and cultural attributes. The response can be either to visual or non-visual elements and can embrace sound, smell and any other factor having a strong impact on human thoughts, feelings, and attitudes (Ramsay, 1993). Thus, aesthetic value encompasses more than the seen view, visual quality, or scenery, and includes atmosphere, landscape character and sense of place (Schapper,

	1993).
Cumulative Effects	The summation of effects that result from changes caused by a development in conjunction with the other past, present, or reasonably foreseeable actions.
Landscape Character	The individual elements that make up the landscape, including prominent or eye-catching features such as hills, valleys, woods, trees, water bodies, buildings, and roads. They are generally quantifiable and can be easily described.
Landscape Impact	Landscape effects derive from changes in the physical landscape, whichmay give rise to changes in its character and how this is experienced (Institute of Environmental Assessment & The Landscape Institute 1996).
Project Footprint / Site	For the purposes of this report the Project *site* / *footprint* refers to the actual layout of the Project as described.
Sense of Place (genius loci)	Sense of place is the unique value that is allocated to a specific place or area through the cognitive experience of the user or viewer. *A genius locus literally means* 'spirit of the place'.
Sensitive Receptors	Sensitivity of visual receptors (viewers) to a proposed development.
Study area	For the purposes of this report this Project the study area refers to the proposed Project footprint / Project site as well as the 'zone of potential influence' (the area defined as the radius about the centre point of the Project beyond which the visual impact of the most visible features will be insignificant) which is a 5km radius surrounding the proposed Project footprint / site.
Viewshed analysis	The two-dimensional spatial pattern created by an analysis that defines areas, which contain all possible observation sites from which an object would be visible. The basic assumption for preparing a viewshed analysis is that the observer eye height is 1.8m above ground level.
Visibility	The area from which Project components would potentially be visible.Visibility depends upon general topography, aspect, tree cover or other visual obstruction, elevation, and distance.
Visual absorption capacity	Visual absorption capacity is defined as the landscape's ability to absorb physical changes without transformation in its visual character and quality. The landscape's ability to absorb change ranges from low- capacity areas, in which the location of an activity is likely to cause visual change in the character of the area, to high-capacity areas, in which the visual impact of development will be minimal (Amir & Gidalizon 1990).
Visual Exposure	Visibility and visual intrusion qualified with a distance rating to indicate the degree of intrusion and visual acuity, which is also influenced by weatherand light conditions.
Visual Impact	Visual effects relate to the changes that arise in the composition of available views because of changes to the landscape, to people's responses to the changes, and to the overall effects with respect to visual amenity available views because of changes to the landscape, to people's responses to the changes, and to the overall effects with respect to visualamenity.
Visual Intrusion	The nature of intrusion of an object on the visual quality of the environment resulting in its compatibility (absorbed into the landscape elements) or discord (contrasts with the landscape

	elements) with the landscape and surrounding land uses.
Worst-case Scenario	Principle applied where the environmental effects may vary, for example, seasonally or collectively to ensure the most severe potential effect isassessed.
Zone of Visual Influence	By determining the zone of visual influence, it is possible to identify the extent of potential visibility and views which could be affected by the proposed development. Its maximum extent is the radius around an object beyond which the visual impact of its most visible features will be insignificant primarily due to distance.

EXECUTIVE SUMMARY

Abantu Environmental Services (Pty) Ltd have been appointed by the developer as the independent environmental consultant to undertake all necessary procedures and processes required by the National Department of Forestry, Fisheries and the Environment (DFFE) and in terms of Chapter 5 of the National Environmental Management Act, 1998 (Act 107 of 1998) in order to obtain relevant environmental authorisation to proceed with the proposed development for the BBR energy facility (phase 2 Gilimberg energy cluster) hybrid solar PV & BESS facility and associated infrastructure (up to 200mwac / 150mw-600mwh) in Capricorn district (Polokwane local municipality) and Waterberg (Mogalakwena local municipality) Limpopo province.

Subsequent to this, Skyvision Geospatial Consulting (Pty) Ltd was appointed by Abantu Environmental Services (Pty) Ltd Consultants as a sub-consultant to undertake a Visual Impact Assessment (VIA) study, forming part of the Environmental Authorisation application process. The VIA is undertaken in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA) EIA Regulations (2014) to assess the potential visual impacts posed by the proposed BBR energy facility (phase 2 Gilimberg energy cluster) hybrid solar PV & BESS facility and associated infrastructure (up to 200mwac / 150mw-600mwh).

The BBR energy facility (phase 2 Gilimberg energy cluster) is a proposed hybrid renewable energy development that will comprise a large-scale Solar Photovoltaic (PV) facility integrated with a Battery Energy Storage System (BESS), covering an estimated development area of approximately 300 ha. The proposed facility is anticipated to accommodate a solar generation capacity of up to 200 MWac, complemented by a BESS installation with a capacity of up to 150 MW / 600 MWh. The development seeks to increase the contribution of renewable energy to the national electricity grid through the provision of stored and dispatch-able electricity, while strengthening grid stability and supporting South Africa's commitment to transitioning towards a lower-carbon energy future.

The proposed project site is situated approximately 46 km west of Polokwane, within Limpopo Province, across portions of the Capricorn and Waterberg District Municipalities, falling under the administrative jurisdiction of the Polokwane and Mogalakwena Local Municipalities, respectively. Electricity generated by the facility will be integrated into the national grid through a proposed 132 kV powerline (phase 1 component) connecting the development to the existing Eskom Borutho Substation.

In terms of land tenure and administration, the proposed development is situated on communal land comprising portions of two properties, namely Jupiter No. 717 LR and Mars No. 718 LR. These properties fall under the traditional custodianship and administrative jurisdiction of the Mashashane Traditional Council. The area is located within the Polokwane Plateau Bushveld vegetation on a gently flat landscape with an altitude of approximately 1220 - 1280 mamsl. The proposed development will consist of the following components

- Ground-mounted mono or bifacial solar PV modules installed on single-axis tracking systems designed to generate clean electricity using photovoltaic (PV) technology
- Battery Energy Storage System (BESS)
- Inverters/Transformer Stations
- On-site Substation and Switching Substation

- Operations and maintenance (O&M) building
- Access roads
- Temporary laydown areas
- Grid connection infrastructure for a 132 kV transmission line to Eskom Borutho substation (Phase 1 component)

The proposed development will comprise a utility-scale Solar Photovoltaic (PV) facility with a generation capacity of up to 200 MWac, extending over approximately **300 ha** and incorporating **294912** bifacial or monofacial PV modules mounted on single-axis tracking structures reaching heights of approximately **3.5m**. Energy storage will be facilitated through a lithium-ion Battery Energy Storage System (BESS) with a capacity of up to 150 MW / 600 MWh, occupying approximately 2 ha and reaching heights of up to **10 m**. Associated electrical infrastructure will include an on-site substation and switching substation complex, covering approximately 2 ha, with infrastructure heights of up to 10 m, switchgear portals of 15 m and lightning masts of up to **25 m**. Electricity will be evacuated via an approximately 4 km long 132 kV overhead transmission line connecting the facility to the Eskom Borutho Main Transmission Substation, supported by monopole and/or steel lattice pylons reaching approximately 32 m in height. The solar facility will further incorporate approximately 64 inverter/transformer stations, with heights of approximately **2 m**, and an internal 33 kV medium-voltage cable network installed primarily underground at depths of up to 1.5 m. Supporting infrastructure will include up to 5 km of access roads and 15 km of internal roads, auxiliary buildings with a cumulative footprint of approximately 5,000 m² and maximum heights of **10 m**, as well as a temporary construction laydown area of up to 4 ha. The facility perimeter will be secured by palisade, mesh and/or electric fencing reaching heights of up to **3 m**.

As part of the authorisation process for the phase 2 Solar Energy Facility (SEF), a Visual Impact Assessment (VIA) was conducted in accordance with the National Environmental Management Act (Act 107 of 1998) (NEMA) EIA Regulations (2014) for the proposed SEF development to determine the potential visual impacts that could arise from the development of the project on the surrounding environment. Skyvision Geospatial Consulting (Pty) Ltd has applied a series of quantitative modelling techniques to determine the potential magnitude and spatial distribution of the visual impacts. The approach adopted includes a characterisation of the project area in terms of its existing sense of place which is a critical factor in determining the relative influence that a PV solar development has on an area. Once the sense of place was established, the potential receptors within a 5-kilometre zone of influence were identified and categorised. Multiple viewsheds were then run to simulate and model the potential visibility of proposed infrastructure throughout the development area footprint within the project area boundary.

This VIA has determined that the visual character across much of the study area is of high conservation value, however, it has been disturbed by pre-existing transmission lines and nearby cultivated agricultural plots hence resulting in a “specialised commercial electrical corridor” sense of place. Thus the introduction of the proposed Phase 2 SEF, will result in significant visual intrusion or significantly alter the visual sense of place post-mitigation

in the study area. This takes into account the effect of the magnitude/footprint size of the phase 2 PV plant area (300ha) which will result in visual impacts that the proposed infrastructure will have in comparison to the pre-existing developments/disturbances within the study area.

In this VIA, the assessment has concluded that the proposed development would be of High significance in visual impact during the construction phases of the project, with a Moderate significance post mitigation. While the potential visual impact would be of Moderate significance during the operational phase of the project, with a Moderate significance post mitigation. The decommissioning phase would be of Low significance post mitigation.

Considering the location of the proposed development, the introduction of the Phase 2 SEF, will result in significant visual intrusion or significantly alter the visual sense of place post-mitigation in the study area. This takes into account the effect of the magnitude/footprint size of the phase 2 PV plant area (300ha) which will result in visual impacts that the proposed infrastructure will have in comparison to the pre-existing developments/disturbances within the study area. Considering this, cumulative impacts post mitigation have been rated as Moderate during the construction and operational phases of the project, and Low during the decommissioning phase.

The proposed phase 2 development will result in moderate alteration the current visual character of the landscape, hence authorisation approval is recommended with adherence to the following management and mitigation measures in the EMPr.

- Retain and maintain natural vegetation (if present) immediately adjacent to the development footprint.
- Ensure that vegetation cover adjacent to the development footprint (if present) is not unnecessarily removed during the construction phase, where possible.
- Restrict the activities and movement of construction workers and vehicles to the immediate development footprint and existing access roads.
- Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed regularly at licensed waste facilities.
- Screen the construction camp and laydown area yards by enclosing the entire area with a dark green or black cloth of no less than 2m height.
- Where possible, utilize existing screening features such as dense vegetation and topographical features to place the construction camps and lay-down yards out of the view of the R31 and R380 thoroughfare visual receptors.
- Reduce and control construction dust using approved dust suppression techniques as and when required (i.e., whenever dust becomes apparent).
- Reduce the construction period by ensuring that adequate resources are mobilised for the construction phase.

- Rehabilitate all disturbed areas (if present / if required) immediately after the completion of construction works.

- Limit the construction phase duration to a short term and in accordance with the project schedule.

APPENDIX 6: REQUIREMENTS FOR SPECIALIST STUDIES

The EIA Regulations, 2014 (R982 of 2014, as amended by R326 of 2017 and R517 of 2021), prescribes the required contents of a specialist report prepared in terms of the EIA regulations, 2014 (as amended). These requirements, and the sections of this VIA in which they are addressed is summarised in Table A-1

Table A-1: Required content of a specialist report

App 6	Item	Section
(a)(i)	Details of the specialist who prepared the report;	Page iv
(a) (ii)	Expertise of that specialist to compile a specialist report, including a curriculum vitae;	Page iv & Annexure D
(b)	A declaration that the specialist is independent in a form as may be specified by the competent authority;	Annexure C
(c)	An indication of the scope of, and the purpose for which, the report was prepared;	1.3
(cA)	An indication of the quality and age of base data used for the specialist report;	1.4
(cB)	A description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	4.3.4
(d)	The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	1.5
(e)	A description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	1.3; 4.2 & 4.3
(f)	Details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	4.3
(g)	An identification of any areas to be avoided, including buffers;	N/A
(h)	A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	N/A
(i)	A description of any assumptions made and any uncertainties or gaps in knowledge;	1.6
(j)	A description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	4
(k)	Any mitigation measures for inclusion in the EMPr;	4.3.1 - 4.3.3 & 5
(l)	Any conditions for inclusion in the environmental authorisation;	4.3.1 – 4.3.3
(m)	Any monitoring requirements for inclusion in the EMPr or environmental authorisation;	4.3.1 – 4.3.3
(n) (i)	A reasoned opinion whether the proposed activity or portions thereof should be authorised;	5
(n) (iA)	A reasoned opinion regarding the acceptability of the proposed activity or activities;	5
(n) (ii)	If the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	4.3.1 – 4.3.3

(o)	A description of any consultation process that was undertaken during the course of preparing the specialist report;	N/A
(p)	A summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	N/A
(q)	Any other information requested by the competent authority.	N/A

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DECLARATION OF INDEPENDENCE

I, **Sinenjongo Spamla**, in my capacity as a GIS & Remote Sensing and Visual Impact Assessment specialist, hereby declare that I:

- Acted as an independent specialist in this study.
- Undertook this study in an objective and professional manner and there were no circumstances which compromised my objectivity in performing such work.
- Do not have any personal, business or financial interests related to the approval of the proposed project.
- Undertake to disclose to the applicant and relevant authorities any information that has or may have the potential to influence any decision to be taken with respect to this report by the applicant and or relevant authorities.
- All particulars provided in this report are true and correct.



Sinenjongo Spamla (MSc Env Sc; Pr. Sci.Nat; GISSA) ***06 November 2026***

Findings, recommendations and conclusions are based on the best available scientific methods and the author's professional knowledge at the time of compilation. Additional information may become known or available at a later stage of the process for which no allowance could have been made at the time of this study. No form of this report may be altered in any manner or form for any purpose without the specific and written consent of the specialist as specified above. Any recommendations, statements or conclusions drawn from or based on this report must clearly cite or make reference to this report in its entirety.

1. INTRODUCTION

1.1. Project Overview and Background

The BBR Energy Facility (Phase 2 – Gilimberg Energy Cluster) is a proposed hybrid renewable energy development that will comprise a large-scale Solar Photovoltaic (PV) facility integrated with a Battery Energy Storage System (BESS), covering an estimated development area of approximately 300 ha. The proposed facility is anticipated to accommodate a solar generation capacity of up to 200 MWac, complemented by a BESS installation with a capacity of up to 150 MW / 600 MWh. The development seeks to increase the contribution of renewable energy to the national electricity grid through the provision of stored and dispatch-able electricity, while strengthening grid stability and supporting South Africa's commitment to transitioning towards a lower-carbon energy future. The area is located within the Polokwane Plateau Bushveld vegetation on a gently flat landscape with an altitude of approximately 1220 - 1280 mamsl.

The proposed development will consist of the following components;

- Ground-mounted mono or bifacial solar PV modules installed on single-axis tracking systems designed to generate clean electricity using photovoltaic (PV) technology
- Battery Energy Storage System (BESS)
- Inverters/Transformer Stations
- On-site Substation and Switching Substation
- Operations and maintenance (O&M) building
- Access roads
- Temporary laydown areas
- Grid connection infrastructure for a 132 kV transmission line to Eskom Borutho substation

As part of the authorisation process for the PV Solar Facility, a Visual Impact Assessment (VIA) was conducted in accordance with the National Environmental Management Act (Act 107 of 1998) (NEMA) EIA Regulations (2014) for the proposed SEF development to determine the potential visual impacts that could arise from the development of the project on the surrounding environment. Skyvision Geospatial Consulting (Pty) Ltd has applied a series of quantitative modelling techniques to determine the potential magnitude and spatial distribution of the visual impacts. The approach adopted includes a characterisation of the project area in terms of its existing sense of place which is a critical factor in determining the relative influence that a PV Solar facility an area. Once the sense of place was established, the potential receptors within a 5-kilometre zone of influence were identified and categorised. Multiple viewsheds were then run to simulate and model the potential visibility of proposed infrastructure throughout the development area footprint within the project area boundary.

This VIA has determined that the visual character across much of the study area is **of high conservation value**, however, it has been disturbed by pre-existing transmission lines and nearby cultivated agricultural plots hence

resulting in a “specialised commercial electrical corridor” sense of place. Thus the introduction of the proposed Phase 2 SEF, will result in significant visual intrusion or significantly alter the visual sense of place post-mitigation in the study area. This takes into account the effect of the magnitude/footprint size of the phase 2 PV plant area (300ha) which will result in visual impacts that the proposed infrastructure will have in comparison to the pre-existing developments/disturbances within the study area.

In this VIA, the assessment has concluded that the proposed development would be of **High significance** in visual impact during the construction phases of the project, with a **Moderate significance** post mitigation. While the potential visual impact would be of **Moderate significance** during the operational phase of the project, with a **Moderate significance** post mitigation. The decommissioning phase would be of **Low significance** post mitigation.

Considering the location of the proposed development, the introduction of the Phase 2 SEF, will result in significant visual intrusion or significantly alter the visual sense of place post-mitigation in the study area. This takes into account the effect of the magnitude/footprint size of the phase 2 PV plant area (300ha) which will result in visual impacts that the proposed infrastructure will have in comparison to the pre-existing developments/disturbances within the study area. Considering this, cumulative impacts post mitigation have been rated as **Moderate** during the construction and operational phases of the project, and **Low** during the decommissioning phase

This VIA focuses on a pre-defined footprint where the project will have the greatest impact. This area is defined as a Zone of Visual Influence (Figure 1).

1.2. Project Description

The BBR Energy Facility (Phase 2 – Gilimberg Energy Cluster) is a proposed hybrid renewable energy development that will comprise a large-scale Solar Photovoltaic (PV) facility integrated with a Battery Energy Storage System (BESS), covering an estimated development area of approximately 300 ha. The proposed facility is anticipated to accommodate a solar generation capacity of up to 200 MWac, complemented by a BESS installation with a capacity of up to 150 MW / 600 MWh. The development seeks to increase the contribution of renewable energy to the national electricity grid through the provision of stored and dispatch able electricity, while strengthening grid stability and supporting South Africa's commitment to transitioning towards a lower-carbon energy future. The area is located within the Polokwane Plateau Bushveld vegetation on a gently flat landscape with an altitude of approximately 1220 - 1280 mamsl.

The proposed development will consist of the following components;

- Ground-mounted mono or bifacial solar PV modules installed on single-axis tracking systems designed to generate clean electricity using photovoltaic (PV) technology
- Battery Energy Storage System (BESS)

- Inverters/Transformer Stations
- On-site Substation and Switching Substation
- Operations and maintenance (O&M) building
- Access roads
- Temporary laydown areas
- Grid connection infrastructure for a 132 kV transmission line to Eskom Borutho substation (Phase 1 component)

The proposed development will comprise a utility-scale Solar Photovoltaic (PV) facility with a generation capacity of up to 200 MWac, extending over approximately **300 ha** and incorporating **294,912** bifacial or monofacial PV modules mounted on single-axis tracking structures reaching heights of approximately **3.5m**. Energy storage will be facilitated through a lithium-ion Battery Energy Storage System (BESS) with a capacity of up to 150 MW / 600 MWh, occupying approximately 2 ha and reaching heights of up to **10 m**. Associated electrical infrastructure will include an on-site substation and switching substation complex, covering approximately 2 ha, with infrastructure heights of up to 10 m, switchgear portals of 15 m and lightning masts of up to **25 m**. Electricity will be evacuated via an approximately 4 km long 132 kV overhead transmission line connecting the facility to the Eskom Borutho Main Transmission Substation, supported by monopole and/or steel lattice pylons reaching approximately 32 m in height. The solar facility will further incorporate approximately 64 inverter/transformer stations, with heights of approximately **2 m**, and an internal 33 kV medium-voltage cable network installed primarily underground at depths of up to 1.5 m. Supporting infrastructure will include up to 5 km of access roads and 15 km of internal roads, auxiliary buildings with a cumulative footprint of approximately 5,000 m² and maximum heights of **10 m**, as well as a temporary construction laydown area of up to 4 ha. The facility perimeter will be secured by palisade, mesh and/or electric fencing reaching heights of up to **3 m**.

Each project component and activity will affect the receiving environment differently and is therefore discussed separately. The following project components are anticipated to occur during the construction and operational phases of the project and are identified as elements that may cause a potential landscape and/or visual impact:

1.2.1. Construction Methodology

- Site Clearance
- Construction/maintenance of access roads
- Pegging and Erection of plant area structures (PV modules, Tracking Mounts, etc.)
- Construction of laydown areas and O&M buildings

Table 1-1: Proposed project components

Infrastructure/Activity	Dimensions
PV Array Area	300 ha (3.5m)
Battery Energy Storage System (BESS)	2 ha (10m)

IPP Substation & Switching Station	2 ha (up to 25m)
132Kv OHPL	4 Km (32m)
Inverter/Transformer Stations	Up to 2m
Internal Roads	15Km (up to 15m width)
Auxiliary Buildings	5 ha (up to 10m)
Access roads	5Km (up to 15m width)
Temporary Laydown Areas	Up to 4ha
Perimeter Fencing (Palisade/Mesh/electric)	Up to 3m

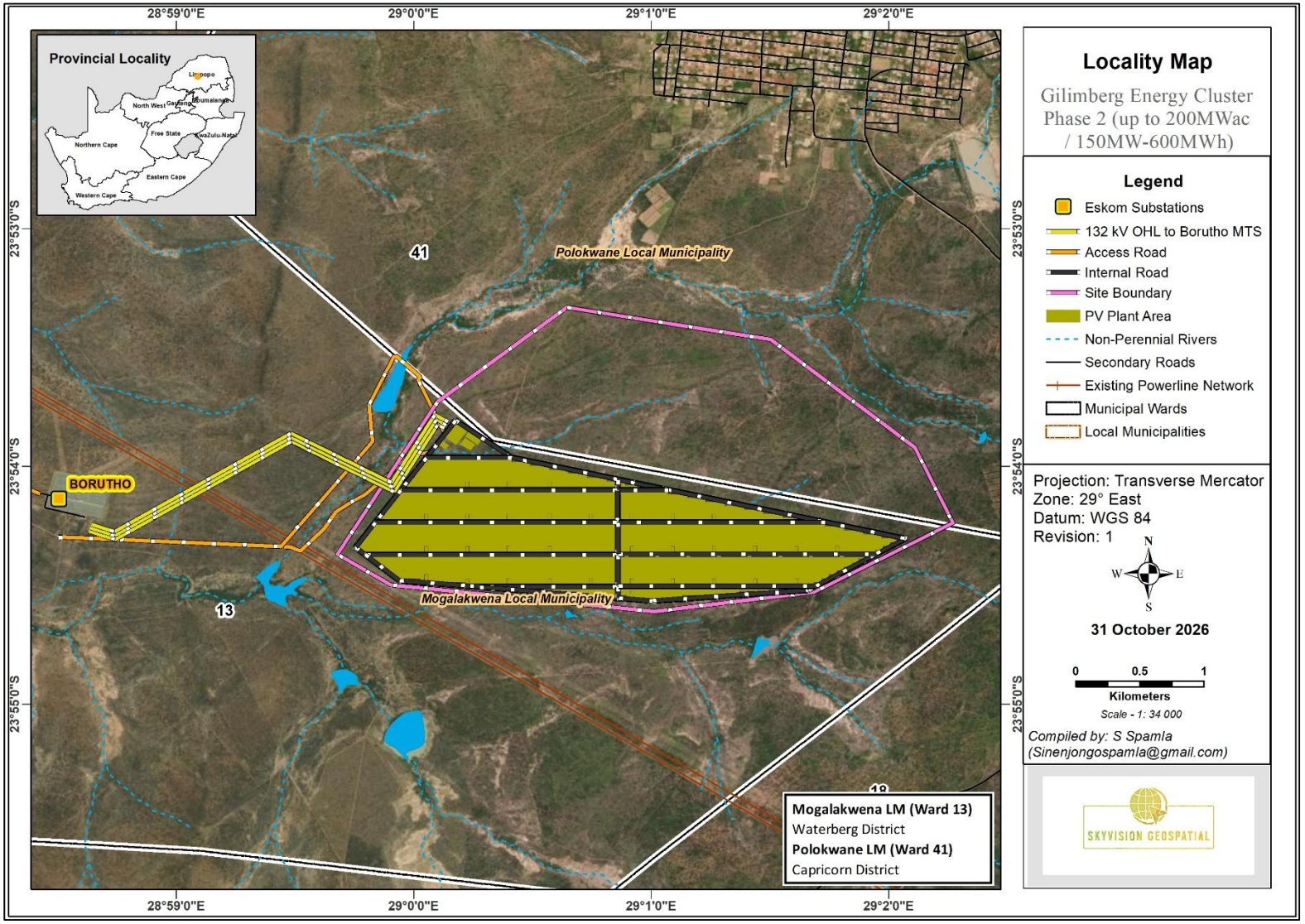


Figure 1: Regional Locality Map

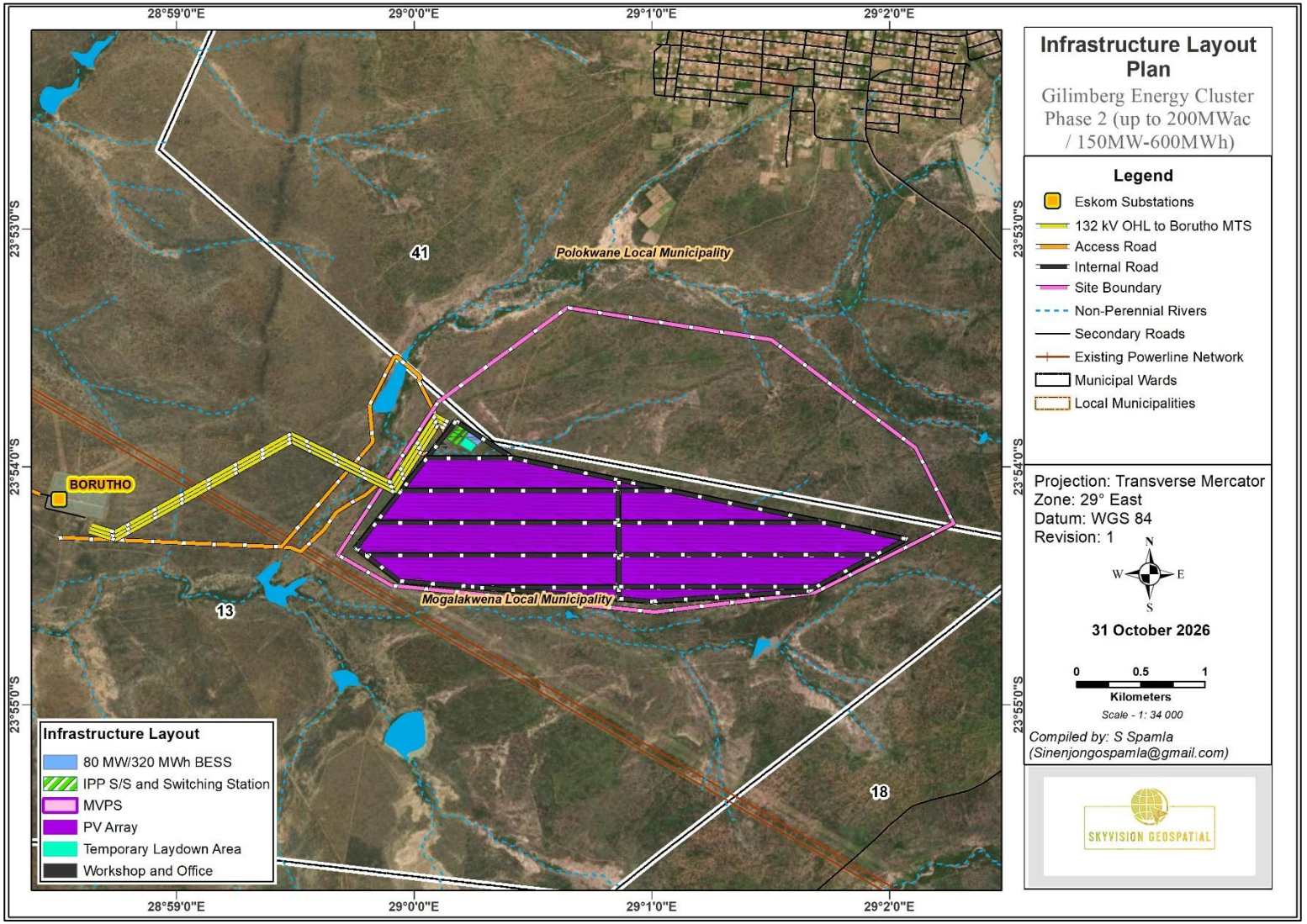


Figure 2: Phase 2 Infrastructure Layout Plan

1.3. Assessment Methodology

This VIA is being undertaken as part of the EIA process. The aim of the VIA is to identify potential visual impacts associated with the development of the proposed solar energy facility, as well as to determine the potential extent of the visual impacts. This will be achieved by determining the character of the visual environment and identifying areas of potential visual sensitivity that may be subject to visual impacts. The visual assessment focuses on the potentially sensitive visual receptor locations and provides an assessment of the magnitude and significance of the visual impacts associated with the project.

The above will be achieved through the following scope and objectives:

- Description of the visual baseline, providing the landscape character of the study area;
- Identification of visual receptor locations and routes that are sensitive and/or potentially sensitive to the visual intrusion of the proposed project;
- Fieldwork assessment to conduct a photographic survey of the study area; and to verify the landscape character and the sensitivity of the identified visual receptors;
- Assess visual sensitivity of the project by determining the potential visibility (viewshed analysis) of the different elements of the project;
- Determine the potential extent and rate the significance of the visual impacts;
- Assess the cumulative visual impacts in relation to other existing and proposed grid connection projects in the area.

1.4. Data & Sources of Information

The datasets used in this assessment are listed in Table 1-2 below.

Table 1-2: Data Sources

Data Type	Source	Date Published
Elevation Data	ALOS Global Digital Surface Model (World 3D – 30m)	2021
Project Description	Client Provided	2025
Land Cover	South African National Land Cover (SANLC)	2022
Protected Areas	South African Protected Areas Database (SAPAD)	Incremental Release (Q1, 2024)
Vegetation	Mucina & Rutherford: Vegetation Map of South Africa, Lesotho and Swaziland.	2018

1.5. Fieldwork and Photographic Review

A site visit was undertaken on 30 October 2026. The weather conditions for the site visit were clear. The weather and atmospheric conditions were suitable for the collection of sufficient photographs and the necessary visual observations.

1.6. Assumptions and Limitations

- Given the nature of the receiving environment and the height of the proposed development infrastructure, the study area is assumed to encompass an area of 5 km from the route alignment. This limit on the visual assessment zone relates to the fact that visual impact decreases exponentially over distance. Thus, although the SEF development may still be visible beyond 5 km, the degree of visual impact will diminish considerably. As such, the need to assess the impact on potential receptors beyond this distance would not be warranted.
- It should be noted that the fieldwork for this study was undertaken in October 2026, a period which is characterised by pleasantly warm and sunny weather conditions.
- Terrain data and Digital Elevation Model (DEM) used to generate the viewshed(s) and visibility analysis conducted in respect of the solar energy facility, is derived from the ALOS Global Digital Surface Model (AW3D30) data which is fairly coarse, may be inconsistent and outdated in some places.
- The viewshed / visibility analysis does not consider any existing vegetation cover or built infrastructure which may screen views of the PV plant along with the evacuation line and its pylons. This analysis should therefore be seen as a conceptual representation or a worst-case scenario.

2. RELEVANT LEGISLATION, STANDARDS AND GUIDELINES

2.1. National Legislation and Guidelines

At National level, the following legislative documents apply to the visual assessment protocol.

National Environmental Management Act (Act 107 of 1998), EIA Regulations

The specialist report is in accordance with the specification on conducting specialist studies as per Government Gazette (GN) R 982 of the NEMA Act 107 of 1998. The mitigation measures as stipulated in the specialist report can be used as part of the Environmental Management Programme (EMPr) and will be in support of the EIA and Appendix 6 of the EIA Regulations 2014.

Western Cape Department of Environmental Affairs & Development Planning: Guideline for Involving Visual and Aesthetic Specialists in EIA Processes Edition 1 (CSIR, 2005)

The guidelines provide guidance that is appropriate for any EIA process. The Guideline document also seeks to clarify instances when a visual specialist should get involved in the EIA process.

3. BASELINE DESCRIPTION OF THE RECEIVING ENVIRONMENT

3.1. Determining the Baseline Environment

The determination of the baseline environment is critical in characterising the existing sense of place for the study area. The sense of place comprises of the landscape's topography, vegetation and the land use & land cover of the environment.

3.1.1. Topography

The general landscape of the surrounding area is characterised by a relatively flat terrain with slightly undulating slopes which are dominated by the Polokwane Plateau Bushveld vegetation. The elevation in the vicinity ranges between approximately 1 220 – 1 280m. Slopes across the study area relatively flat with gradual undulations, resulting in the landscape having a flat shrubland landscape characteristic. Maps showing the topography and slopes in the study area are provided in Figure 4 and Figure 5.



Figure 3: Typical characteristic of the landscape

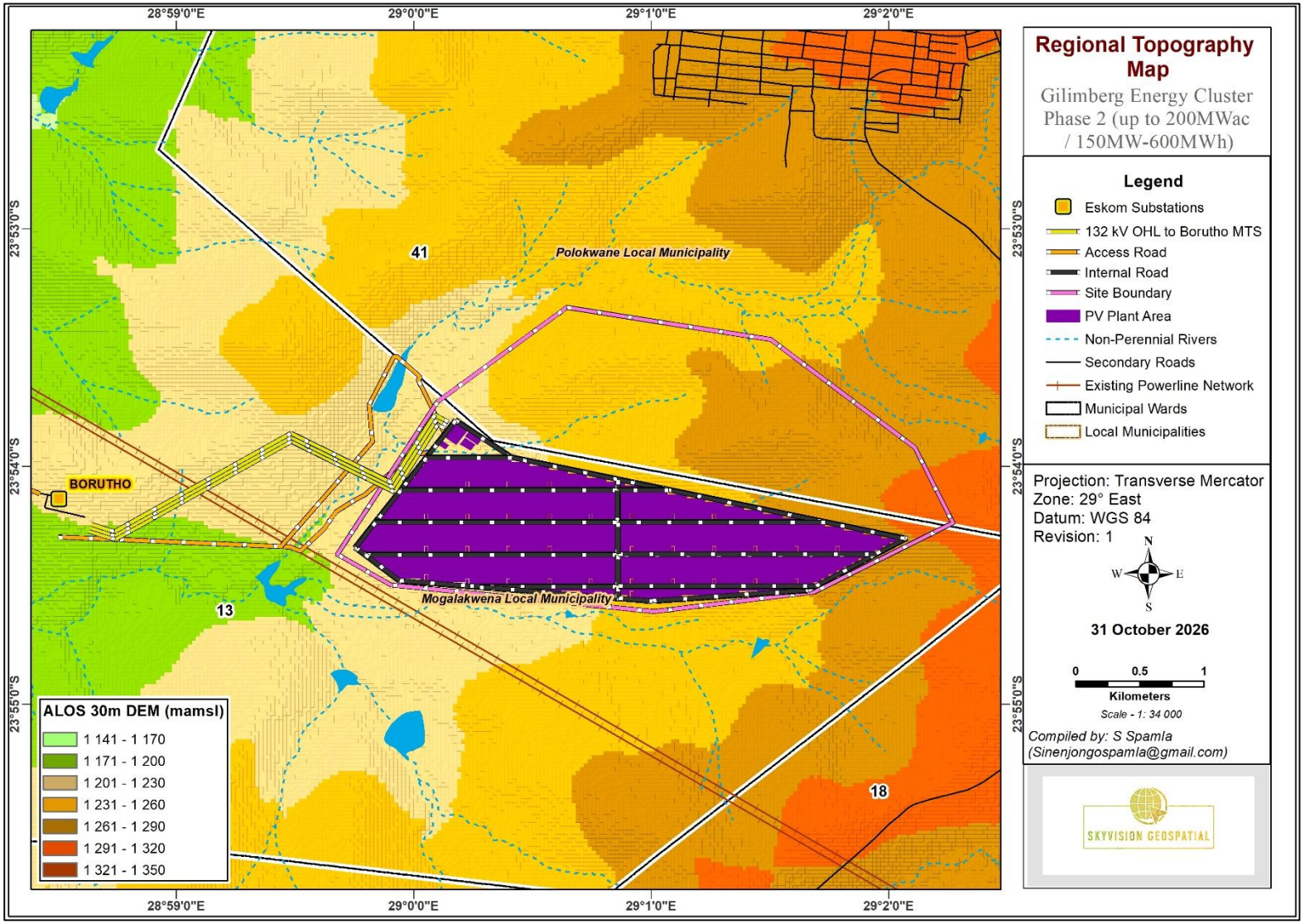


Figure 4: regional topography across the landscape

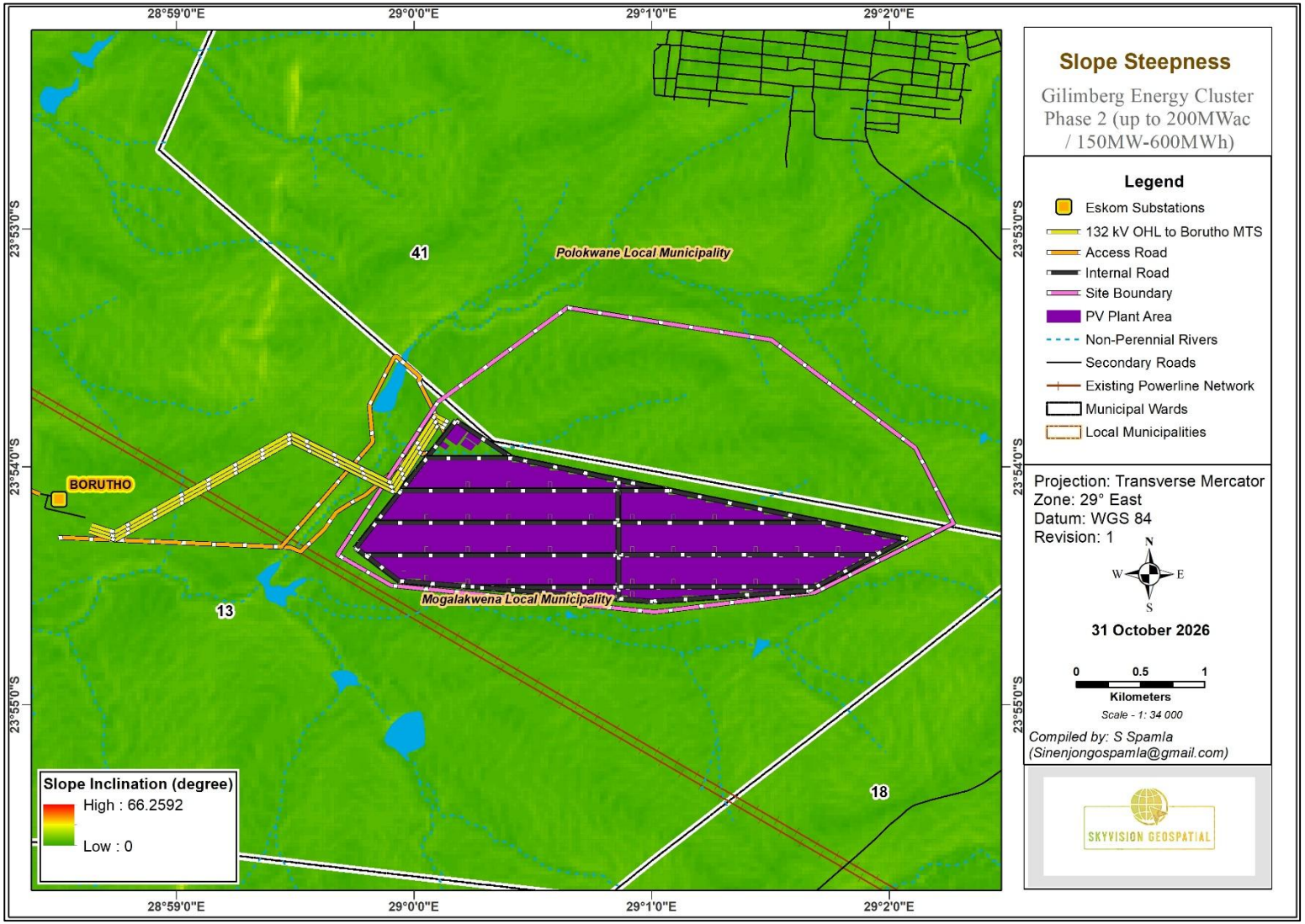


Figure 5: Slope Steepness across the landscape

3.1.2. Vegetation

According to Mucina and Rutherford (2018), the project area is predominantly covered by Polokwane Plateau Bushveld vegetation type (Figure 7). This hereby gives the area a shrubland aesthetic which comprises of a combination of shrubs and grassland vegetation cover. The shrubs are well distributed across much of the study area.



Figure 6: Typical vegetation cover across the study area

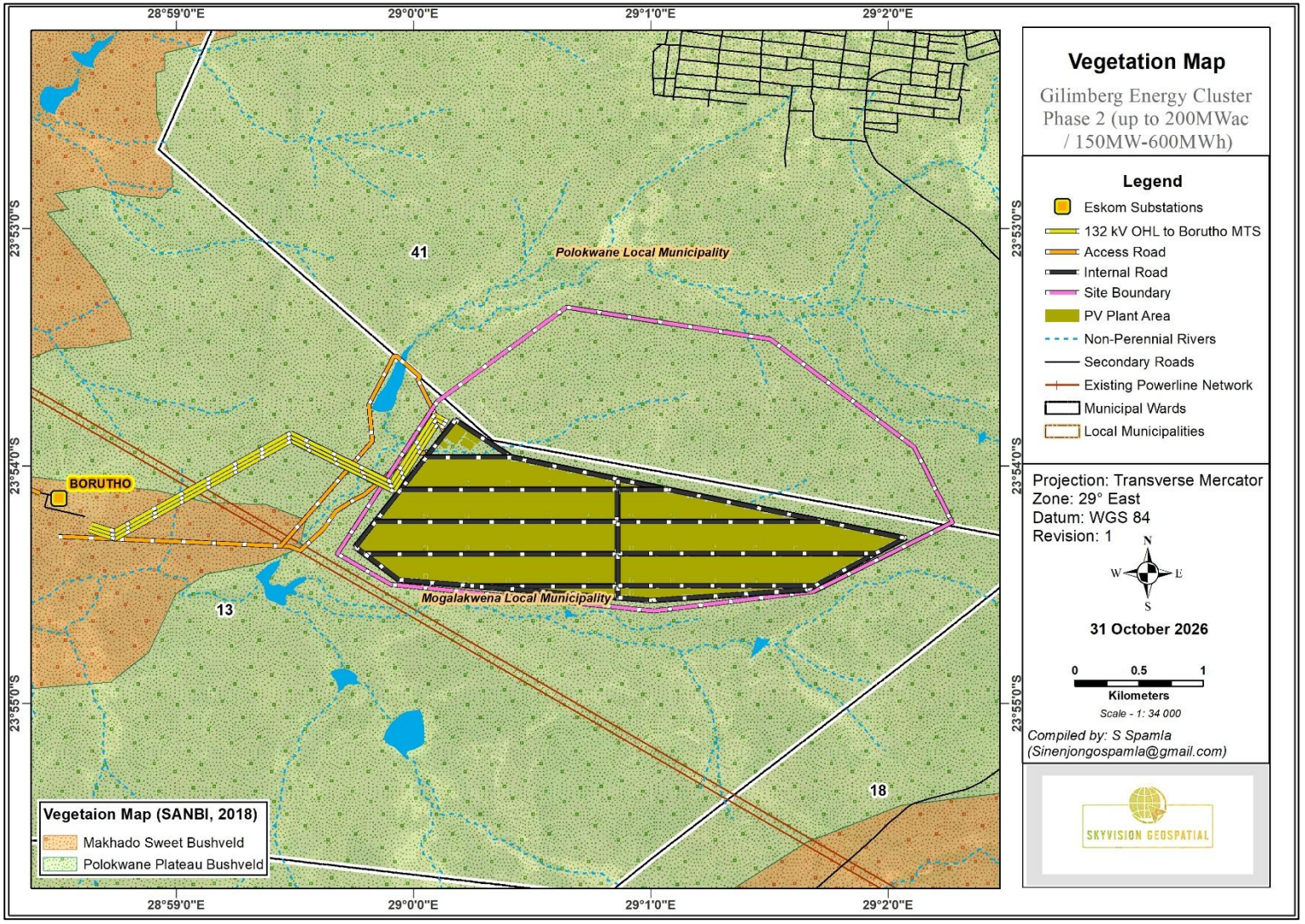


Figure 7: Vegetation Type Classification

3.1.3. Land Use/Land Cover

According to the South African National Land Cover (SANLC) 2022 dataset, the study area is dominated by a combination of open natural grassland vegetation and plots of cultivated land (Figure 9). Observable anthropogenic land uses consist of dirt/gravel roads, grazing pastures and a heavy presence of a number of transmission lines connected to the nearby Borutho substation. Very few settlements were observed within the designated zone of visual influence (ZVI). These existing anthropogenic land-uses have significantly altered the scenic/visual aesthetic value of the area (Figure 8). Thus, the area has a strong commercial electrical corridor characterisation. All of the above mentioned human influences have an impact on the level of transformation on the visual character of the area.



Figure 8: Observed land uses within the surrounding environment

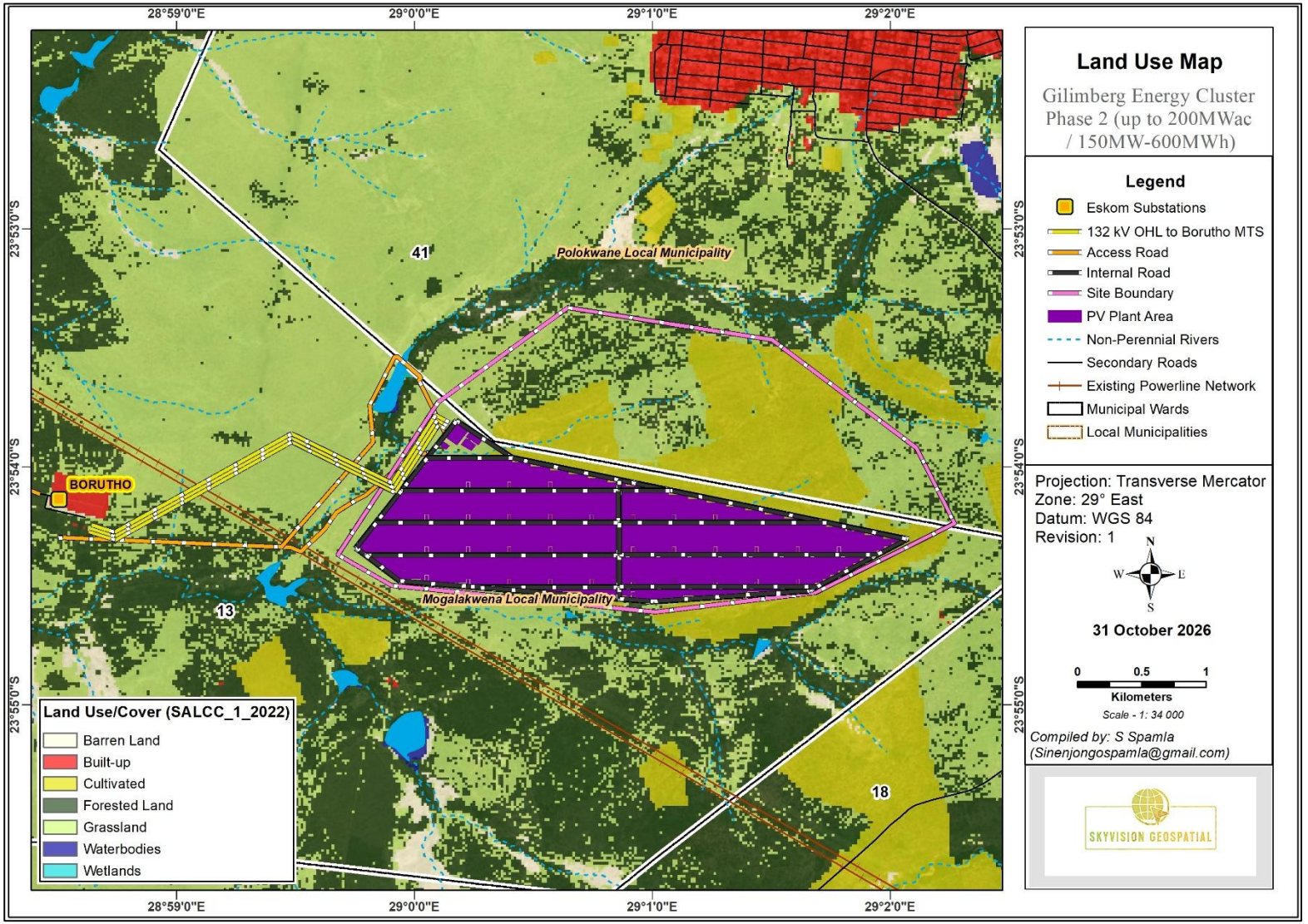


Figure 9: Land Cover Classification

3.2. Visual/Landscape Character

The baseline environment of the study area as described above contribute to its overall visual character. Visual character largely depends on the level of change or transformation from a natural baseline in which there is little evidence of human transformation of the landscape. Visual character is also influenced by the presence of built infrastructure including buildings, roads, and other objects such as telephone or electrical infrastructure. The visual character of an area largely determines the sense of place relevant to the area. This is the unique quality or character of a place, whether natural, rural, or urban which results in a uniqueness, distinctiveness, or strong identity.



Figure 10: Existing transmission powerlines leading to the Borutho Substation

The landscape character of the area is generally uniform across the surrounding environment. The wider setting is influenced by scattered mountains, whilst the localized setting is characterized by slight gradual undulations with a network of non-perennial river system and a few waterbodies (dams/lakes).

The drastic contrast in elevation between the flat bushveld terrain and the elevated mountains gives the area a predominantly scenic characteristic particularly along the N11 route. Even-though this section of the N11 thoroughfare is heavily disturbed with pre-existing mining developments along the route, it is still considered an important thoroughfare corridor for tourists visiting the nearby Bellevue Nature Reserve and the Witvinger Nature Reserves. The anthropogenic land use features (roads, settlements, cultivated land and transmission powerlines) in the area have to an extent, transformed/disturbed the natural visual aesthetic of the landscape, thereby influencing the visual character and overall sense of place of the study area. The existing transformation

of the landscape is an important factor in this context, as the introduction of the proposed Solar Energy Facility and associated infrastructure will have to be assessed in relation to the broader landscape system, including landform, settlement patterns, scenic roads and the visual relationship between the proposed development and surrounding terrain across the ZVI.



Figure 11: General landscape view

3.3. Visual Absorption Capacity

Visual Absorption Capacity (VAC) is the ability of the landscape to absorb a new development without any significant change in the visual character and quality of the landscape. The level of absorption capacity is largely based on the physical characteristics of the landscape (topography and vegetation cover) and the level of transformation present in the landscape.

The topography of the study area is defined by low topographic variation with slightly rolling/undulating slopes and drainage valleys. Lower slopes and gently rolling/undulating terrain on the other hand offer a better opportunity for visual integration/absorption. These features can either expose development over long distances or provide effective visual containment. The gently undulating nature of the site area terrain coupled with the bushveld vegetation type, limits the terrain screening and visual containment capacity of the landscape. This is taking into consideration that the proposed development is anticipated to introduce a range of engineered infrastructure elements into the existing landscape, potentially altering its visual character and overall scenic quality. The solar PV arrays, covering approximately 300 ha, will constitute the most extensive

visual component of the development. Their repetitive geometric arrangement, reflective surfaces and relatively uniform appearance are likely to contrast with the natural and rural characteristics of the receiving environment, particularly where the surrounding landscape is characterised by open agricultural land, natural vegetation and undeveloped areas. Although the PV modules are relatively low-profile structures (approximately 3.5 m high), their extensive horizontal spread may result in a noticeable transformation of the landscape. The powerlines on the other hand will result in cumulative skyline intrusion and visual clutter. The visual absorption capacity in the study area is therefore rated as **Low.**

3.4. Sensitive Receptor Identification

The visual impact of a proposed development is determined by the number of observers, their perceptions, cultural backgrounds, regularity of sighting and if they are residents or visitors to the area. The Zone of Visual Influence (ZVI) is defined by the Scottish Natural Heritage Report (2006), as the extent (distance and area) in which a development structure can theoretically be seen by humans. Additionally, the visibility of an object or development structure decreases exponentially as the observation distance between the receptor and the object increases (Hull and Bishop, 1988). This hereby determines that the visual impact of an object is confined to a particular ZVI depending on its extent and the presence/existence of other anthropogenic objects/developments associated with the receiving environment. Where buildings and other infrastructure already exist, the visual scene may be considered to have been already altered from a natural context, thus the introduction of a new development may be considered to effect less of a visual impact to the area.

As described above, the distance of the viewer / receptor location from the development is an important factor in the context of experiencing visual impacts which will have a strong bearing on mitigating the potential visual impact. A high impact rating has been assigned to receptor locations that are located within 500 m of the development. The visual impact of the proposed infrastructure will diminish beyond 5 km as the structures would appear to merge with the elements on the horizon. Any visual receptor locations beyond this distance limit have therefore not been assessed as they fall outside of the ZVI and would not be visually influenced by the proposed development.

At this stage, the ZVI for the proposed Phase 2 SEF has been delineated according to distance from the combined grid infrastructure assessment corridor (5 km radius). Based on the height and scale of the project, the distance intervals chosen for the zones of visual impact, as shown in Figure 12 are as follows:

- 0 – 500 m (high impact zone)
- 500 m – 2 km (moderate impact zone)
- 2 km – 5 km (low impact zone)

Visual impacts can be experienced by different types of receptors, such as people driving along roads, or people living / working in the area in which the structural feature is visible. The receptor type in turn affects the nature of the typical view of a potential source of visual impact, with views being permanent in the case of a residence

or other place of human habitation, or temporary in the case of vehicles moving along a road. The nature of the view experienced affects the intensity of the visual impact experienced.

The identified potential receptors within the project ZVI are:

- **Regional Roads -** The roads along which people travel, are regarded as sensitive receptors. The **N11** as well as have been identified as the primary thoroughfares of the proposed development.
- **Settlements –** The surrounding communities has been identified as potential sensitive receptors due to their proximity and their elevated landscape in comparison to the development area. The following settlements were identified as receptors;
    1. Jupiter/Malopeng
    2. Mars
    3. Diana
    4. Ga-Sekhaolelo

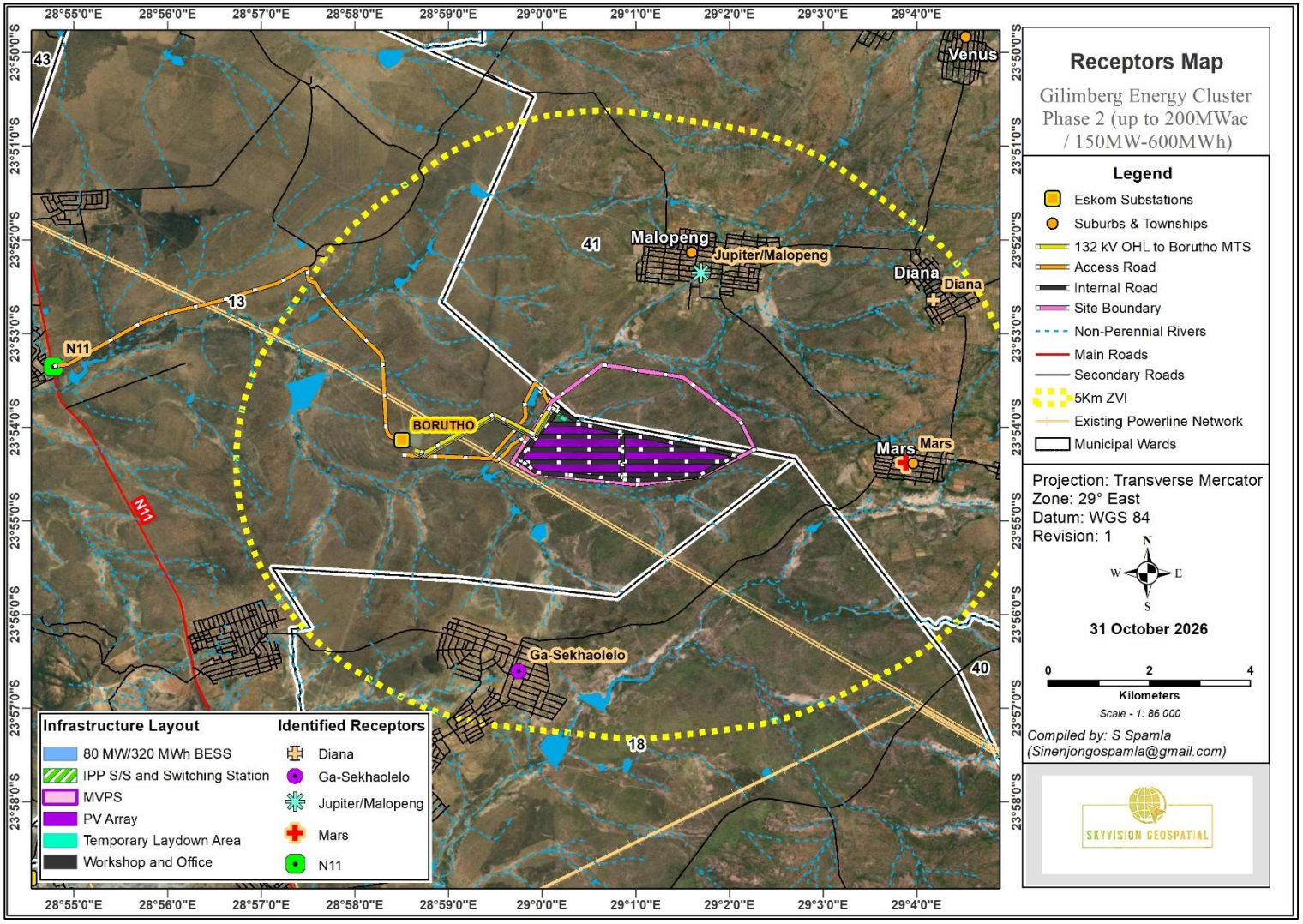


Figure 12: Identified receptor locations within 5km radius of the proposed phase 2 development

4. RESULTS AND DISCUSSION

4.1. Characterisation of Visual Impacts

The expected visual impact of the Project was categorised based on the type of receiving environment and the type of development as detailed in Table 4-1 (Oberholzer, 2005). The table provides an indication of the visual impacts that can be expected for different types of developments in relation to the nature of the receiving environment. Following this classification system, the proposed project is classed as a **"Category 5 development"**. The vicinity of the receiving environment can be described as an area of high scenic, cultural or historical significance as discussed in Section 3.1.3. It is expected that the proposed project will potentially have a very high visual impact on the receiving environment as illustrated in Table 4-2.

Table 4-1: Categorisation of Developments (adopted from Oberholzer, 2005)

Type of Development	Examples of Development
Category 1	Nature reserves, nature related recreation, camping, picnicking, trails and minimal visitor facilities.
Category 2	Low-key recreation/resort/residential type development, small-scale agriculture/nurseries, narrow roads and small-scale infrastructure.
Category 3	Low density resort/residential type development, golf or polo estates, low to medium-scale infrastructure.
Category 4	Medium density residential development, sports facilities, small-scale commercial facilities/office parks, one-stop petrol stations, light industry, **medium-scale infrastructure**.
Category 5	High density township/residential development, retail and office complexes, industrial facilities, refineries, treatment plants, power stations, wind energy farms, power lines, freeways, toll roads, large-scale infrastructure generally. Large-scale development of agricultural land and commercial tree plantations. Quarrying and mining activities with related processing plants.

Table 4-2: Categorisation of Expected Visual Impacts (adopted from Oberholzer, 2005)

Type of Environment	Type of Development (Low to High Intensity)				
	Category 1 Development	Category 2 Development	Category 3 Development	Category 4 Development	Category 5 Development
Protected/wild areas of international, national or regional significance	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected	Very high visual impact expected
Areas or routes of high, scenic, cultural or historical significance	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected
Areas or routes of medium scenic, cultural or historical significance	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	High visual impact expected
Areas or routes of low scenic, cultural or historical significance	Little or no visual impact expected. Possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected
Disturbed or degraded sites/run down urban areas/wasteland	Little or no visual impact expected. Possible benefits	Little or no visual impact expected. Possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected

4.1.1. Typical Visual Impacts Associated with Small Solar PV facilities

The proposed phase 2 BBR Energy Facility is anticipated to introduce a range of engineered infrastructure elements into the existing landscape, potentially altering its visual character and overall scenic quality. The solar PV arrays, covering approximately 300 ha, will constitute the most extensive visual component of the development. Their repetitive geometric arrangement, reflective surfaces and relatively uniform appearance are likely to contrast with the natural and rural characteristics of the receiving environment, particularly where the surrounding landscape is characterised by open agricultural land, natural vegetation and undeveloped areas. Although the PV modules are relatively low-profile structures (approximately 3.5 m high), their extensive horizontal spread may result in a noticeable transformation of the landscape.

The BESS containers, substations, inverter/transformer stations and associated auxiliary buildings will introduce more concentrated industrial elements into the landscape. These structures are generally characterised by

functional, modular designs, with predominantly rectangular forms and neutral industrial colours such as white, light grey and muted metallic finishes. The substation infrastructure, particularly the steel switchgear portals (up to 15 m) and lightning masts (up to 25 m), will introduce prominent vertical elements that may contrast with the generally horizontal character of the surrounding landscape.

The visual appearance of the development will further be influenced by the materials, finishes and colours of the infrastructure. The dark blue or black surfaces of the PV modules, metallic tracking structures and galvanised fencing may create noticeable colour and textural contrasts against the surrounding vegetation, agricultural fields and natural earth tones. The linear arrangement of access roads, internal roads, fencing and transmission infrastructure may also introduce additional geometric patterns and artificial edges into the landscape.

Overall, the proposed development has the potential to introduce a distinctly industrial and technological character into the receiving environment, with the magnitude of the visual impact likely to vary according to viewing distance, topography, vegetation cover, and the visibility of the infrastructure from surrounding roads, settlements and other sensitive visual receptors. Avoidance should be the primary mitigation principle. Vegetation screening alone is unlikely to be sufficient in an open bushveld landscape; careful micro-siting and terrain integration are more important.

It is anticipated that visual impacts will result from the activities and infrastructure in all Project phases i.e., construction, operational, and closure. Activities associated with the project will be visible, to varying degrees from varying distances around the project site. During the establishment phase, the project's visibility will be influenced due to the preparatory activities, primarily earthworks and infrastructure establishment. During the operation phase, the visibility of the project will be the result of landscape scarring, powerlines and prominent structures of the PV arrays and tall structure within the plant area.

Typical visual impact issues associated with Solar Energy Facilities are:

- **Landscape scarring** – Large PV arrays and congested tall infrastructures (Poles, Pylons and Masts) create prominent scars on the natural landscape.
- **Removal of vegetation** – Clearing of trees, shrubs, and grasslands reduces natural visual screening and changes the character of the area.
- **Reduced scenic quality** – Industrial activity diminishes the aesthetic appeal of natural or rural landscapes.
- **Cumulative visual impacts on sensitive receptors** – Multiple disturbances such as an increase in transmission lines and transport corridors within a region can collectively transform the regional landscape and amplify visual intrusion.

Sensitivity to visual impacts is typically most pronounced in areas set aside for conservation of the natural environment (such as protected natural areas or conservancies), or in areas in where the natural character or scenic beauty of the area attracts visitors (tourists).

Conversely, the presence of other anthropogenic objects associated with the built environment may "degrade" the visual environment and thus the introduction of the proposed SEF into this setting may be considered to be

less of a visual impact than if there was no existing built infrastructure (Substation and transmission lines) visible. Other factors, as listed below, can also affect the nature and intensity of a potential visual impact associated with the proposed development:

- The location of the development in the landform setting – i.e., in a valley bottom or on a ridge top. In the latter example the development would be much more visible and would "break" the horizon;
- The presence of macro- or micro-topographical features, built form or vegetation that would screen views of the development from a receptor location;
- The presence of existing, similar features in the area and their alignment in relation to the proposed new development; and
- Temporary factors such as weather conditions (presence of haze, rainfall or heavy mist) which would affect visibility.

4.2. Visibility Analysis

Geospatial modelling techniques were used to undertake viewshed / visibility analysis for the proposed solar energy facility. A viewshed is a geographical area, defined by the topography, within which a particular feature will be visible (Oberholzer, 2005). The topography denotes whether a development will be visible from a receptor. The model is based on the principle of visual line of site and depicts the visibility coverage area(s) from which the proposed development will be potentially visible by the observer/receptor depending on topographic variations.

The resultant viewshed analysis for the proposed development components are shown in Figure 13 and it indicates that elements of the proposed phase 2 SEF would be visible from much of the 5 km ZVI and from all identified viewpoints/receptors. The visibility analysis is based entirely on regional topography and does not consider any existing vegetation cover or built infrastructure which may screen views of the proposed development. This analysis should therefore be seen as a conceptual representation or a worst case scenario.

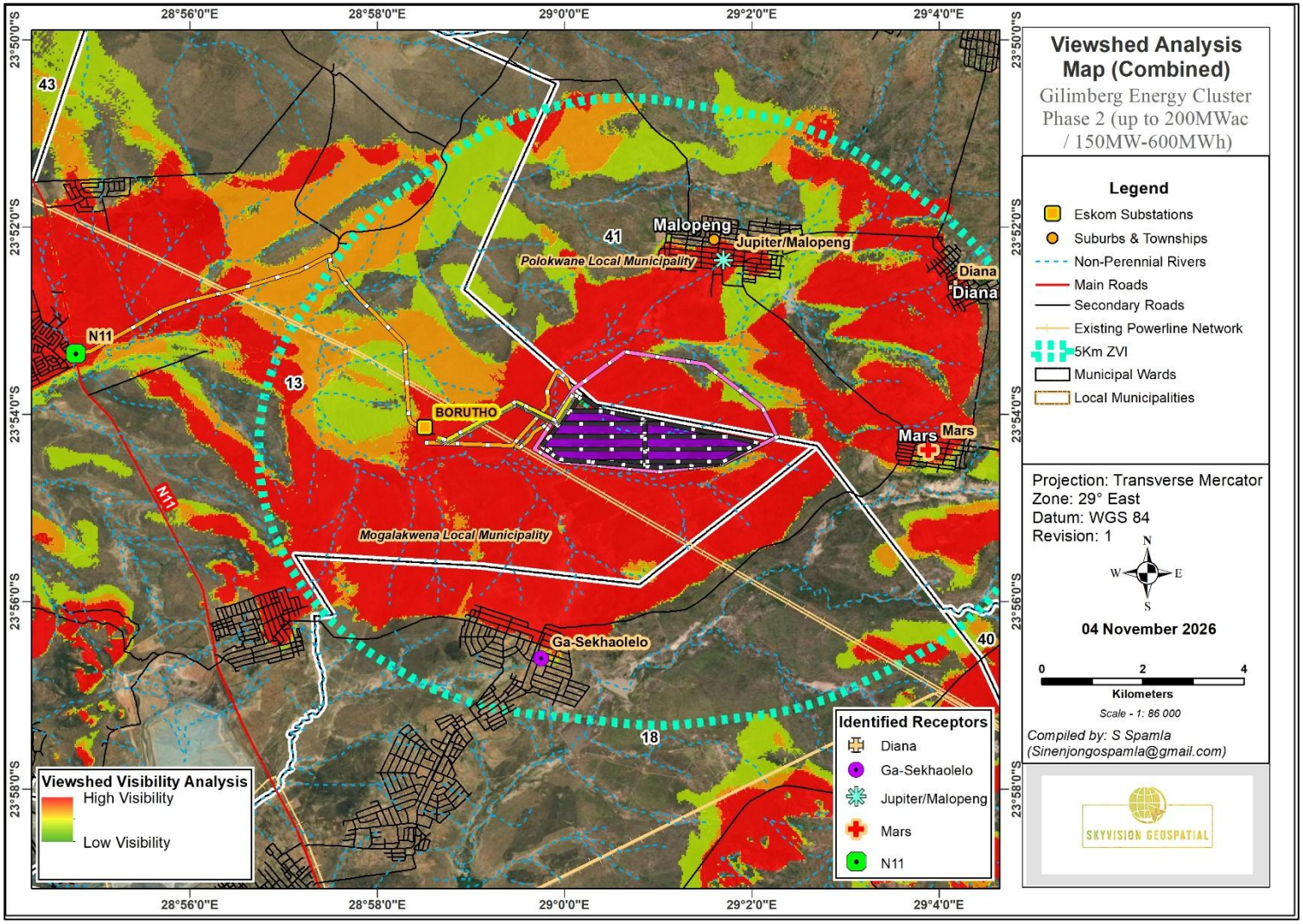


Figure 13: Potential Visibility of the Phase 2 Infrastructure Footprint

4.3. Visual Impact Assessment

The EIA Regulations, 2014 require that an overall rating for visual impact is provided to allow the visual impact to be assessed alongside other environmental parameters. The impact matrices for visual impacts associated with the proposed construction, operation and decommissioning of the proposed solar energy facility are presented below together with recommended mitigation measures. The mitigation measures have been determined based on best practice and literature reviews.

The project activities were rated according to the visual impact they will have on the receiving environment, i.e. the environment before potential development. Negative visual impacts decrease the visual character of the pre-development environment. Neutral visual impacts assist to minimise the negative visual impacts of a development but do not result in a positive visual impact. A positive visual impact only occurs when an area is rehabilitated to a state that is better than the state of the pre-development environment, e.g. an infrastructure project area on previously agricultural land is rehabilitated to an area of natural vegetation and all visible signs of agriculture and infrastructure are removed. Positive visual impacts may only occur during the decommissioning and closure phase. Refer to Annexure A for an explanation of the impact rating methodology.

4.3.1. Construction Phase

During the construction phase, unsightly views may be created by the presence of the construction camp and the lay-down yards. This has potential to alter the visual character or sense of place and pose visual impact on receptors in the study area. The uncertainty pertaining to the number, location and size of the construction camps, relates to **a Moderate level of confidence** in the assessment of the visual impact.

The temporary duration of the construction phase is not expected to cause major visual impacts. The location, number and size of the construction camps and lay-down yards will be crucial in regulating the impact. The earthworks associated with the site preparation will potentially cause noticeable impacts due to dust generation and increased traffic. Detail information is not available, and it is anticipated that the visual impact will occur localised and that a small number of tourists will be adversely affected by these project components during construction.

The potential visual impact on tourists during the construction phase of the proposed project can be mitigated with adequate efforts. The greatest factor to consider is the location of the construction camp out of potential views that may be experienced from scenic routes/thoroughfares.

Table 4-3: Impact Rating for the Proposed SEF during the Construction Phase

	Rating	Significance
Prior to Mitigation		
Duration	Project Life (5)	**High (negative) -84**
Extent	Local (3)	
Intensity	Moderate (-4)	
Probability	Definite (7)	
Mitigation/Enhancement Measures		

- If practically possible, locate construction camps in areas that are already disturbed or where it isn't necessary to remove established vegetation like for example, naturally bare areas;
- Keep the construction sites and camps neat, clean and organised in order to portray a tidy appearance;
- Screen the construction camp and lay-down yards by enclosing the entire area with a dark green or black shade cloth of no less than 2 m height;
- Make use of existing access roads where possible;
- Where new access roads are required, the disturbance area should be kept as small as possible. A two-track dirt road will be the most preferred option;
- Locate access routes so as to limit modification to the topography and to avoid the removal of established vegetation;
- Access routes should be located on the perimeter of disturbed areas such as cultivated/fallow lands as not to fragment intact vegetated areas;
- If it is necessary to clear vegetation for a road, avoid doing so in a continuous straight line. Alternatively, curve the road in order to reduce the visible extent of the cleared corridor; and
- Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads.

Post Mitigation/Enhancement Measures		
Duration	Project Life (5)	**Moderate (negative) - 44**
Extent	Local (3)	
Intensity	Minor (-3)	
Probability	Probable (4)	

Cumulative Impacts

- Visual impacts from construction activities for the proposed solar facility combined with the activities from the existing transmission lines could further alter the sense of place and visual character of the area; and
- Visual impacts from construction activities for the proposed solar facility combined with additional pending Renewable Energy Projects could potentially exacerbate visual impacts on receptors despite the area having a substantial terrain screening and visual containment.

Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	High	**Moderate**

4.3.2. Operational Phase

Receptors may experience varying intensity of visual intrusion depending on their location within the surrounding environment and by their usage of thoroughfare roads traversing towards the proposed phase 2 development footprint. These residents are within the 5 km ZVI of the proposed alignment where this is considered the zone of highest visibility in which the highest degree of visual intrusion can be expected.

The VAC of the different landscape types plays a major role in the visibility of the proposed transmission line. As discussed above, the vegetation cover and topographically varied terrain does have the ability to decrease the severity of visual impact (Bishop et al, 1985) by providing screening.

Table 4-4: Impact Rating for the Proposed Solar Facility During the Operational Phase

	Rating	Significance
Prior to Mitigation		
Duration	Project Life (5)	**Moderate (negative) - 44**
Extent	Local (3)	
Intensity	Moderate (-3)	
Probability	Probable (4)	
Mitigation/Enhancement Measures		
• Restrict vegetation clearance to the proposed infrastructure footprint area only. • Reduce and control dust using approved dust suppression techniques as and when required (i.e., whenever dust becomes apparent). • As far as possible, limit the amount of security and operational lighting present on site. • Lighting fixtures should make use of minimum lumen or wattage. • Mounting heights of lighting fixtures should be limited, or alternatively, foot-light or bollard level lights should be used.		
Post Mitigation/Enhancement Measures		
Duration	Project Life (5)	**Moderate (negative) - 36**
Extent	Limited (2)	
Intensity	Minor (-2)	
Probability	Highly Probable (4)	
Cumulative Impacts		
• The proposed Solar Facility in conjunction with the existing Transmission powerlines will cumulatively alter the natural character of the study area towards a more congested mining town and industrial setting. • The night-time visual environment could be altered as a result of increased operational lighting resulting from the introduction of lights.		
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	Moderate	**Moderate**

4.3.3. Decommissioning Phase

During the decommissioning phase, unsightly views may be created by the presence of the vehicles and demolition equipment and may result in surface disturbance, dust emissions and plumes from the increased traffic and decommissioning activities. This has potential to be an unwelcome visual intrusion and may alter the visual character or sense of place and pose visual impact on receptors in the study area.

The temporary duration of the decommissioning phase is not expected to cause major visual impacts. Although detailed information is not available, it is anticipated that the visual impact will occur localised and that a small number of tourists and residents will be adversely affected by this project phase.

Table 4-5: Impact Rating for the Proposed Solar Facility During the Decommissioning Phase

	Rating	Significance
Prior to Mitigation		
Duration	Long term (4)	**Moderate (negative) - 36**
Extent	Limited (2)	
Intensity	Moderate (-3)	
Probability	Probable (4)	
Mitigation/Enhancement Measures		
• All infrastructure that is not required post-decommissioning should be removed; • Carefully plan to minimize the decommissioning period and avoid delays; • Maintain a neat decommissioning site by removing rubble and waste materials regularly; • Position storage / stockpile areas in unobtrusive positions in the landscape, where possible; • Ensure that dust suppression procedures are maintained on all gravel access roads throughout the decommissioning phase; and • All cleared and disturbed areas should be rehabilitated as soon as possible.		
Post Mitigation/Enhancement Measures		
Duration	Short Term (2)	**Low (negative) – 20**
Extent	Site Specific (1)	
Intensity	Moderate (-2)	
Probability	Probable (4)	
Cumulative Impacts		
• The project site would be returned to its original visual state and have a positive effect on potential cumulative impacts in the study area		
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	Moderate	**Low**

4.3.4. Cumulative Impacts in Relation to Project Developments

Value can be placed in a landscape in terms of its aesthetic quality, or in terms of its sense of identity with which it is associated. Therefore, the magnitude of the value in a landscapes aesthetic quality has a direct effect on the perception of visual impact should the landscape be visually altered. On the contrary new developments within a landscape may not necessarily be perceived negatively in the case whereby a proposed development is associated with progress or improvement of the livelihoods and status of desired development within the area. The perception of visual impacts is thus highly subjective and involves “value judgements” on behalf of the receptors.

The surrounding area is heavily disturbed by mining activities as well as a strong presence of national grid electrical infrastructure including the Borutho substation and its associated high voltage transmission powerlines. As a result, the introduction of the proposed phase 2 SEF following the introduction of phase 1, will increase negative visual impacts within the localised site extent, leading to significant visual clutter and intrusion to affected receptors within the visual line of site. However due to the reception of renewable energy as a “cleaner” energy alternative which will stabilise the supply of electricity in the region, the combined proposed developments (phase 1 and 2) may over a period of time be interpreted as being positive development considering the impact that renewable energy facilities have in strengthening the national grid generation as well as potential economic benefits through jobs that may arise from the development.

5. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusions

This VIA has been conducted to assess the magnitude and significance of the potential visual impacts associated with the BBR energy facility (phase 2 Gilimberg energy cluster) hybrid solar PV & BESS facility and associated infrastructure (up to 200mwac / 150mw-600mwh) in Capricorn district (Polokwane local municipality) and Waterberg (Mogalakwena local municipality) Limpopo province.

This VIA has determined that the visual character across much of the study area is **of high conservation value**, however, it has been disturbed by pre-existing transmission lines and nearby cultivated agricultural plots hence resulting in a "specialised commercial electrical corridor" sense of place. Thus the introduction of the proposed Phase 2 SEF, will result in significant visual intrusion or significantly alter the visual sense of place post-mitigation in the study area. This takes into account the effect of the magnitude/footprint size of the phase 2 PV plant area (300ha) which will result in visual impacts that the proposed infrastructure will have in comparison to the pre-existing developments/disturbances within the study area.

In this VIA, the assessment has concluded that the proposed development would be of **High significance** in visual impact during the construction phases of the project, with a **Moderate significance** post mitigation. While the potential visual impact would be of **Moderate significance** during the operational phase of the project, with a **Moderate significance** post mitigation. The decommissioning phase would be of **Low significance** post mitigation.

Considering the location of the proposed development, the introduction of the Phase 2 SEF, will result in significant visual intrusion or significantly alter the visual sense of place post-mitigation in the study area. This takes into account the effect of the magnitude/footprint size of the phase 2 PV plant area (300ha) which will result in visual impacts that the proposed infrastructure will have in comparison to the pre-existing developments/disturbances within the study area. Considering this, cumulative impacts post mitigation have been rated as **Moderate** during the construction and operational phases of the project, and **Low** during the decommissioning phase

5.2. Recommendations

The proposed phase 2 development will result in moderate alteration the current visual character of the landscape, hence authorisation approval is recommended with adherence to the following management and mitigation measures in the EMPr.

- Retain and maintain natural vegetation (if present) immediately adjacent to the development footprint.

- Ensure that vegetation cover adjacent to the development footprint (if present) is not unnecessarily removed during the construction phase, where possible.
- Restrict the activities and movement of construction workers and vehicles to the immediate development footprint and existing access roads.
- Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed regularly at licensed waste facilities.
- Screen the construction camp and laydown area yards by enclosing the entire area with a dark green or black cloth of no less than 2m height.
- Where possible, utilize existing screening features such as dense vegetation and topographical features to place the construction camps and lay-down yards out of the view of sensitive visual receptors.
- Reduce and control construction dust using approved dust suppression techniques as and when required (i.e., whenever dust becomes apparent).
- Reduce the construction period by ensuring that adequate resources are mobilised for the construction phase.
- Rehabilitate all disturbed areas (if present / if required) immediately after the completion of construction works.

- Limit the construction phase duration to a shortest term possible.

6. REFERENCES

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ANNEXURE A: IMPACT ASSESSMENT METHODOLOGY

Impact Assessment Methodology

The intensity of impact is assessed through a combination of visual intrusion, visibility, visual exposure, and viewer sensitivity criteria. Once the intensity of impact has been established this value is further qualified with spatial, duration and probability criteria to determine the significance of the visual impact. The probability of an impact is then determined by the frequency at which the activity takes place or is likely to take place and by how often the type of impact in question has taken place in similar circumstances. In assessing the intensity and significance of visual impact, the study assumes the worst-case scenario, which is, all housing units will be constructed simultaneously.

The significance rating process follows the following established impact and risk formula:

Significance** = **Consequence x Nature x Probability

Whereby,

***Consequence** = Intensity + Duration + Extent*

***Probability** = Likelihood of an impact occurring*

***Nature** = Positive or Negative Impact*

The matrix calculates the rating out of 147, whereby intensity, extent, duration and probability are each rated out of seven. The weight assigned to the various parameters is then multiplied by +1 for positive and -1 for negative impacts. Impacts are rated prior to mitigation and again after consideration of the mitigation has been applied; post-mitigation is referred to as the residual impact. The significance of an impact is determined and categorised into one of eight categories. It is important to note that the pre-mitigation rating takes into consideration the activity as proposed, (i.e., there may already be some mitigation included in the engineering design). Should the specialist determine that the potential impact is still high, additional mitigation measures maybe proposed.

Table A-1: Impact Assessment Parameter Ratings

Rating	Intensity/ Replaceability		Extent	Duration/Reversibility	Probability
	Negative Impacts (Nature = -1)	**Positive Impacts (Nature = +1)**			
7	Irreplaceable loss or damage to biological or physical resources or highly sensitive environments. Irreplaceable damage to highly sensitive cultural/social resources.	Noticeable, on-going natural and/or social benefits which have improved the overall conditions of the baseline.	International The effect will occur across international borders.	Permanent The impact is irreversible, even with management, and will remain after the life of the project.	Definite There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability
6	Irreplaceable loss or damage to biological or physical resources or moderate to highly sensitive environments. Irreplaceable damage to cultural/social resources of moderate to high sensitivity.	Great improvement to the overall conditions of a large percentage of the baseline.	National Will affect the entire country.	Beyond Project Life The impact will remain for some time after the life of the project and is potentially irreversible even with management.	Almost Certain/Highly Probable It is most likely that the impact will occur. < 80% probability

Rating	Intensity/ Replaceability		Extent	Duration/Reversibility	Probability
	Negative Impacts (Nature = -1)	**Positive Impacts (Nature = +1)**			
5	Serious loss and/or damage to biological or physical resources or highly sensitive environments, limiting ecosystem function. Very serious widespread social impacts. Irreparable damage to highly valued items.	On-going and widespread benefits to local communities and natural features of the landscape.	Province/Region Will affect the entire province of region.	Project Life (> 15 years) The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Likely The impact may occur. < 65% probability
4	Serious loss and/or damage to biological or physical resources or moderately sensitive environments, limiting ecosystem function. On-going serious social issues. Significant damage to structures/items of cultural significance.	Average to intense natural and/or social benefits to some elements of the baseline.	Municipal Area Will affect the whole municipal area.	Long Term 6-15 years and the impact can be reversed with management.	Probable Has occurred here or elsewhere and could therefore occur. < 50% probability

Rating	Intensity/ Replaceability		Extent	Duration/Reversibility	Probability
	Negative Impacts (Nature = -1)	**Positive Impacts (Nature = +1)**			
3	Moderate loss and/or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	Average, on-going positive benefits, not widespread but felt by some elements of the baseline.	Local Local extending only as far as the development site area.	Medium Term 1-5 years and the impact can be reversed with minimal management.	Unlikely Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur. < 25% probability
2	Minor loss and/or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	Low positive impacts experienced by a small percentage of the baseline.	Limited Limited to the site and its immediate surroundings.	Short Term Less than 1 year and is reversible.	Rare/Improbable Conceivable, but only in extreme circumstances. The possibility of the impact materializing is very low as a result of design, historic experience or implementation of adequate mitigation measures. < 10% probability

Rating	Intensity/ Replaceability		Extent	Duration/Reversibility	Probability
	Negative Impacts (Nature = -1)	**Positive Impacts (Nature = +1)**			
1	Minimal to no loss and/or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to common place structures.	Some low-level natural and/or social benefits felt by a very small percentage of the baseline.	Site Specific Limited to specific isolated parts of the site.	Immediate Less than 1 month and is completely reversible without management.	Highly Unlikely/None Expected never to happen. < 1% probability

Table A-2: Probability and Consequence Matrix

Probability	Significance																																						
7	-147	-140	-133	-126	-119	-112	-105	-98	-91	-84	-77	-70	-63	-56	-49	-42	-35	-28	-21	21	28	35	42	49	56	63	70	77	84	91	98	105	112	119	126	133	140	147
6	-126	-120	-114	-108	-102	-96	-90	-84	-78	-72	-66	-60	-54	-48	-42	-36	-30	-24	-18	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126
5	-105	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105
4	-84	-80	-76	-72	-68	-64	-60	-56	-52	-48	-44	-40	-36	-32	-28	-24	-20	-16	-12	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84
3	-63	-60	-57	-54	-51	-48	-45	-42	-39	-36	-33	-30	-27	-24	-21	-18	-15	-12	-9	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	63
2	-42	-40	-38	-36	-34	-32	-30	-28	-26	-24	-22	-20	-18	-16	-14	-12	-10	-8	-6	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42
1	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	-21	**-20**	**-19**	**-18**	**-17**	**-16**	**-15**	**-14**	**-13**	**-12**	**-11**	**-10**	**-9**	**-8**	**-7**	**-6**	**-5**	**-4**	**-3**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**
Consequence																																							

The significance weightings for each potential impact are as follows:

- < 35 points: **Low** (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- 35-72 points: **Moderate** (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- > 72 points: **High** (i.e. where the impact must have an influence on the decision process to develop in the area)

ANNEXURE B: Curriculum Vitae of Specialist

Name	**Sinenjongo**
Surname	**Spamla**
Age	**30**
Identity Number	**9606135370083**
Nationality	**South African**
Expertise/Job Title	**GIS & Remote Sensing and Visual Impact Assessment Specialist**
Experience	**6 years**

A detail-orientated professional with local and international environmental GIS and Remote Sensing consultancy experience in advanced spatial analysis, spatial data management, cartographic map production, environmental noise monitoring & dispersion modelling as well as visual impact assessments predominantly within the mining, infrastructure development and the renewable energy industries.

SKILLS

- Spatial Data Management
- Geospatial Analysis and Modelling
- Report Writing
- Digital Survey Designing and Data Management
- Visual Impact Assessments
- Project Management
- Advanced Remote Sensing Observatory Analysis
- Cartographic Map Production
- Aerial Surveys and Surveillance

EDUCATION/QUALIFICATIONS

Institution	Year Awarded	Qualification
University of KwaZulu-Natal	2018	Bachelor of Science (Environmental Science)
University of KwaZulu-Natal	2019	Bachelor of Science Honours (Environmental Science)
University of KwaZulu-Natal	2022	Master of Science (Environmental Science)
Other		
University of Cape Town	2022	Project Management Foundations
Drone Safety and Legal (DSL)	2022	Remote Pilot License

PROFESSIONAL BODY AFFILIATIONS

- Geo-Information Society of South Africa (Member)

CAREER SUMMARY

DATE	COMPANY	DESIGNATION
2019-2019	Mondise Environmental Consulting	Assistant GIS & Remote Sensing Specialist
2021-2022	Digby Wells and Associates	GIS and Remote Sensing Intern
2021- 2025	Nsovo Environmental Consulting	GIS Specialist (Freelance)
2022-Present	Mora Ecological Services	GIS Specialist (Freelance)
June 2025- June 2026	Niara Environmental Consultants	GIS Specialist (Full-time)
2023-2025, 2026- Present	Sky vision Geospatial Consulting	GIS & Visual Specialist (Full-time)

PROFESSIONAL EXPERIENCE

- Remote Sensing
- Environmental GIS
- Environmental Impact Assessments
- Visual Impacts Assessments
- Environmental Noise Impact Assessments
- Data Management

LANGUAGE SKILLS

Language	Reading	Speak	Write
English	Excellent	Excellent	Excellent
IsiXhosa	Excellent	Excellent	Excellent
IsiZulu	Excellent	Excellent	Excellent
Sesotho (Southern)	Intermediate	Intermediate	Intermediate

PROJECT EXPERIENCE

PROJECT	YEAR	ROLE

1. Kudumane Manganese Resources 2024 IWWMP & RSIP Update, Northern Cape Province	2024	GIS Specialist
2. VIA for the Proposed Construction of 2 x 400kV powerlines from the existing Lulamisa-Pluto 400kV powerline to the proposed 400/88kV Demeter main transmission substation; Roodepoort strengthening project in the city of Johannesburg Municipality, Gauteng Province	2024	Visual Specialist
3. EIA For the Proposed Eskom Poseidon North Substation, Inxuba Yethemba Local Municipality, Eastern Cape	2024	GIS Specialist
4. Visual Impact Assessment for The Mining Right Application For Coal on Portions of The Farms Uitkyk 834, Uitkyk 835, Smeertouw 297, Uitkijk 315, Langverwacht 476, Zomerveld 277, Uitkyk 743 and Dampoort 17598 Within the Vryheid Area in the KwaZulu-Natal Province.	2024	Visual Specialist
5. VIA for The Proposed Construction of the Burotho-Nzhelele 400kV Powerline, Limpopo Province	2024	Visual Specialist
6. VIA For the Proposed Hospital View Township Development, Bushbuckridge Local Municipality, Mpumalanga Province	2024	Visual Specialist
7. VIA for the Proposed Isandlwana In-Situ Upgrading Housing Project, Nqutu Local Municipality, KwaZulu-Natal Province	2024	Visual Specialist
8. EIA for the Proposed Aurora-Juno 400kV Powerline, Western Cape	2024	GIS Specialist
9. EIA for the Botswana Rail Link Total Route Plan	2024	GIS Specialist
10. EIA for the Proposed Bokokotla Motshabo Mixed-Use Development and Associated Infrastructure	2023	GIS Specialist
11. Sihlanzimvelo Project, Ethekwini Metropolitan Municipality	2023	GIS Specialist
12. Development of ABO Wind Serval Solar Energy Facilities 1-10, Mpumalanga Province	2023	GIS & Visual Specialist
13. EIA for the Proposed Dutya-Butterworth 132kV Powerline, Eastern Cape	2023	GIS Specialist
14. Proposed Dorstfontein West Operations, Emalahleni Local Municipality, Mpumalanga Province	2023	GIS Specialist
15. Amendment of Existing WULA Application for Marula Platinum Mine, Fetakgomo Tubatse Local Municipality, Limpopo Province	2023	GIS Specialist
16. EIA for the proposed Mercury-Umtu 2 x 765kV Powerline	2023	GIS Specialist
17. Amendment of the WULA for Seriti Coal Mine, Steve Tshwete Local Municipality, Mpumalanga Province	2023	GIS Specialist
18. EIA for the Proposed Vamecto Solar Plant, Madibeng Local Municipality, North West Province	2023	GIS Specialist
19. BAR Dorstfontein West Coal Mine Dense Medium Separation Plant, Emalahleni Local Municipality, Mpumalanga Province	2023	GIS Specialist
20. Kudumane Resources IWMP, Joe Morolong Local Municipality, Northern Cape	2021-2023	GIS Specialist
21. Thabor Minerals Mining Waste Management License Application, Ekurhuleni Local Municipality, Gauteng	2023	GIS Specialist

22. Environmental Impact Assessment for Dimbane Coal Mine, Victor Khanye Local Municipality, Mpumalanga Province	2023	GIS Specialist
23. Wescoal Processing Plant Bioimonitoring, Steve Tshwete Local Municipality, Mpumalanga Province	2022	GIS Specialist
24. EIA for the Proposed Dorstfontein West Underground Mining Expansion Block A and B, Emalahleni Local Municipality, Mpumalanga Province	2022	GIS Specialist
25. Bushveld Vanchem WULA Application, Emalahleni Local Muncipality, Mpumalanga Province	2022	GIS Specialist
26. Environmental Noise Impact Assessment for the Proposed Marvel Gold Mine, Bougouni, Mali	2022	Noise Specialist
27. Environmental and Social Impact Assessment Update for the Goulamina Lithium Project, Mali	2022	Noise Specialist
28. Environmental and Social Impact Assessment for the Karo Platinum 132Kv Powerline Project, Zimbabwe	2022	GIS Specialist
29. Visual Impact Assessment for the Karo Platimum 132kV Powerline Project, Zimbabwe	2022	Visual Specialist
30. Tabakorole PFS Baseline and ESIA Scoping, Mali	2022	Noise Specialist
31. IWWMP Update	2022	GIS Specialist
32. Protected Tree Permit Application	2022	GIS Specialist
33. Ivanplats PRA environmental authorization	2022	GIS Specialist
34. Meya River ESIA	2022	GIS Specialist
35. Skimming-Leruleng Phase 2 Resettlement Study	2022	Data Management Specialist
36. Anglo American Social Way Transition 3.0 Polokwane Smelter	2022	Data Management Specialist
37. TEP EMPr Ammendment	2022	GIS Specialist
38. Site Liability Assessment for Babcock Powerlines Site in Nigel	2022	GIS Specialist
39. Mutoshi Dewatering Model Update	2022	GIS Specialist
40. Bulyanhulu Ground Water Study	2022	GIS Specialist
41. Socio Economic Baseline Study	2022	GIS Specialist
42. BAR for the proposed Helipad Expansion in the Port of Richards Bay	2022	GIS Specialist
43. Mofokeng Sewer Pump Upgrade	2022	GIS Specialist
44. Update of The Mining Works Programme	2021	GIS Specialist

45. External Environmental Compliance Audits	2021	GIS Specialist
46. Pre-Feasibility Study for the Proposed Capacity Development for Automotive Volumes via Southcor and the Port of Port Elizabeth O for the construction of Burnstone 132kV powerline	2021	GIS Specialist
47. Update to the alternative Assessment for the Proposed TSF3 at the Peublo Viejo Mine, Dominican Repubic	2021	GIS Specialist
48. NEMA Section 24G, Transnet Helios Application	2021	GIS Specialist
49. Sweetwater Walking School Bus Project	2019	GIS Specialist
50. Invasive alien plants management plan (Mapping and database)	2019	Assistant GIS & Remote Sensing Specialist

REFERENCES

1. **Mr. Keenan Terry –** Digby Wells Environmental; Noise Lead and GIS specialist (Mentor) | 081 360 7421/ 067 291 0181
2. **Mrs. Megan Edwards -** Digby Wells Environmental; Senior Hydrologist |076 831 9043
3. **Mr Jerry Mokgatla Molepo –** Mora Ecological Services; Avifaunal & Biodiversity Specialist and Director | 081 410 3763
4. **Mrs. Munyadizwa Rikhotso** – Nsovo Environmental Consulting; Executive Director | 071 602 2369
5. **Londolani Sitsula –** Zitholele Consulting; Environmental Assessment Practitioner | 081 895 1540