THE PROPOSED KLIPPUT SOLAR PHOTOVOLTAIC PROJECT, MAKHADO MUNICIPALITY, LIMPOPO PROVINCE, SOUTH AFRICA

Landscape & Visual Impact Assessment

Final v_1

DATE: 31 July 2025

Document prepared for Cape EAPrac (Pty) Ltd
On behalf of Klipput Solar PV (Pty) Ltd

Visual Resource Management Africa cc
P O Box 7233, George, 6531
Cell: +27 (83) 560 9911
E-Mail: steve@vrma.co.za
Web: www.vrma.co.za

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LIST OF ACRONYMS

APHP	Association of Professional Heritage Practitioners
BLM	Bureau of Land Management (United States)
BPEO	Best Practicable Environmental Option
CALP	Collaborative for Advanced Landscape Planning
DEM	Digital Elevation Model
DoC	Degree of Contrast
EIA	Environmental Impact Assessment
EMPr	Environmental Management Plan
GIS	Geographic Information System
GPS	Global Positioning System
IDP	Integrated Development Plan
IEMA	Institute of Environmental Management and Assessment (United Kingdom)
KOP	Key Observation Point
LVIA	Landscape and Visual Impact Assessment
MAMSL	Metres above mean sea level
NELPAG	New England Light Pollution Advisory Group
PNR	Private Nature Reserve
SADC	Southern African Development Community
SDF	Spatial Development Framework
SEA	Strategic Environmental Assessment
VAC	Visual Absorption Capacity
VIA	Visual Impact Assessment
VRM	Visual Resource Management
VRMA	Visual Resource Management Africa
ZVI	Zone of Visual Influence

GLOSSARY OF TECHNICAL TERMS

Technical Terms	**Definition** (Oberholzer, 2005)
Degree of Contrast	The measure in terms of the form, line, colour and texture of the existing landscape in relation to the proposed landscape modification in relation to the defined visual resource management objectives.
Visual intrusion	Issues are concerns related to the proposed development, generally phrased as questions, taking the form of “what will the impact of some activity be on some element of the visual, aesthetic or scenic environment”.
Receptors	Individuals, groups or communities who would be subject to the visual influence of a particular project.
Sense of place	The unique quality or character of a place, whether natural, rural or urban.
Scenic corridor	A linear geographic area that contains scenic resources, usually, but not necessarily, defined by a route.

Viewshed	The outer boundary defining a view catchment area, usually along crests and ridgelines. Similar to a watershed. This reflects the area, or the extent thereof, where the landscape modification would probably be seen.
Visual Absorption Capacity	The potential of the landscape to conceal the proposed project.

Technical Term	**Definition** (USDI., 2004)
Key Observation Point	Receptors refer to the people located in the most critical locations, or key observation points, surrounding the landscape modification, who make consistent use of the views associated with the site where the landscape modifications are proposed. KOPs can either be a single point of view that an observer/evaluator uses to rate an area or panorama, or a linear view along a roadway, trail, or river corridor.
Visual Resource Management	A map-based landscape and visual impact assessment method development by the Bureau of Land Management (USA).
Zone of Visual Influence	The ZVI is defined as 'the area within which a proposed development may have an influence or effect on visual amenity.'

1 DFFE SPECIALIST REPORTING REQUIREMENTS

1.1 Specialist declaration of independence

Table 1. Specialist declaration of independence

All intellectual property rights and copyright associated with VRM Africa's services are reserved, and project deliverables, including electronic copies of reports, maps, data, shape files and photographs, may not be modified or incorporated into subsequent reports in any form, or by any means, without the written consent of the author. Reference must be made to this report, should the results, recommendations or conclusions in this report be used in subsequent documentation. Any comments on the draft copy of the Visual Impact Assessment (VIA) must be put in writing. Any recommendations, statements or conclusions drawn from, or based upon, this report, must make reference to it.

This document was completed by Silver Solutions 887 cc trading as VRM Africa, a Visual Impact Study and Mapping organisation located in George, South Africa. VRM Africa cc was appointed as an independent professional visual impact practitioner to facilitate this VIA. I, Stephen Stead, hereby declare that VRM Africa, an independent consulting firm, has no interest or personal gains in this project whatsoever, except receiving fair payment for rendering an independent professional service.

Stephen Stead

APHP accredited VIA Specialist

1.2 Specialist report requirements in terms of Appendix 6 of the EIA Regulations (2014), as amended in 2017

Table 2: Specialist report requirements table.

A specialist report prepared in terms of the Environmental Impact Regulations of 2014 (as amended in 2017) must contain:	**Relevant section in report**
Details of the specialist who prepared the report	Stephen Stead, owner / director of Visual Resource Management Africa. steve@vrma.co.za Cell: 0835609911
The expertise of that person to compile a specialist report including a curriculum vitae	Registration with Association of Professional Heritage Practitioners
A declaration that the person is independent in a form as may be specified by the competent authority	Table 1
An indication of the scope of, and the purpose for which, the report was prepared	Terms of Reference
A description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change	Baseline Assessment
The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment	28th and 29th January 2025. Seasonal variation is not relevant.
A description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Methodology
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 alternative;	Baseline Visual Inventory
An identification of any areas to be avoided, including buffers	Visual Resource Management Classes
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;	VRM Constraints Map
A description of any assumptions made and any uncertainties or gaps in knowledge;	Assumptions and Limitations
A description of the findings and potential implications of such findings on the impact of the proposed activity or activities	Visual Impact Assessment

A specialist report prepared in terms of the Environmental Impact Regulations of 2014 (as amended in 2017) must contain:	Relevant section in report
Any mitigation measures for inclusion in the EMPr	Environmental Management Plan
Any conditions for inclusion in the environmental authorisation	NA
Any monitoring requirements for inclusion in the EMPr or environmental authorisation	NA
A reasoned opinion as to whether the proposed activity or portions thereof should be authorised	Opportunities and Constraints
Regarding the acceptability of the proposed activity or activities; and	Conclusion
If the opinion is that the proposed activity 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	The recommendation that the proposed development should be authorised with mitigation.
A description of any consultation process that was undertaken during the course of carrying out the study	EIA process
A summary and copies if any comments that were received during any consultation process	Not applicable
Any other information requested by the competent authority.	Not applicable

1.3 DFFE Screening Tool Site Sensitivity Verification

In terms of Part A of the Assessment Protocols published in GN 320 on 20 March 2020, site sensitivity verification is required relevant to the DFFE Screening Tool. As indicated in Figure 1 below, the Map of Relative Landscape (Solar) was flagged as a risk in the Screening Tool for the combined areas of the PV cluster, but with individual tabling of listed risks. No Landscape risk was flagged for the proposed power line routing.

A comprehensive survey was conducted during the site visit. During the survey, photographs and comments were recorded and can be viewed in Annexure A, with the associated map of the survey points as well rating of the expected risk to the receiving landscape. The following table outlines the relevance of the risks raised in the SSV as informed by the site visit.

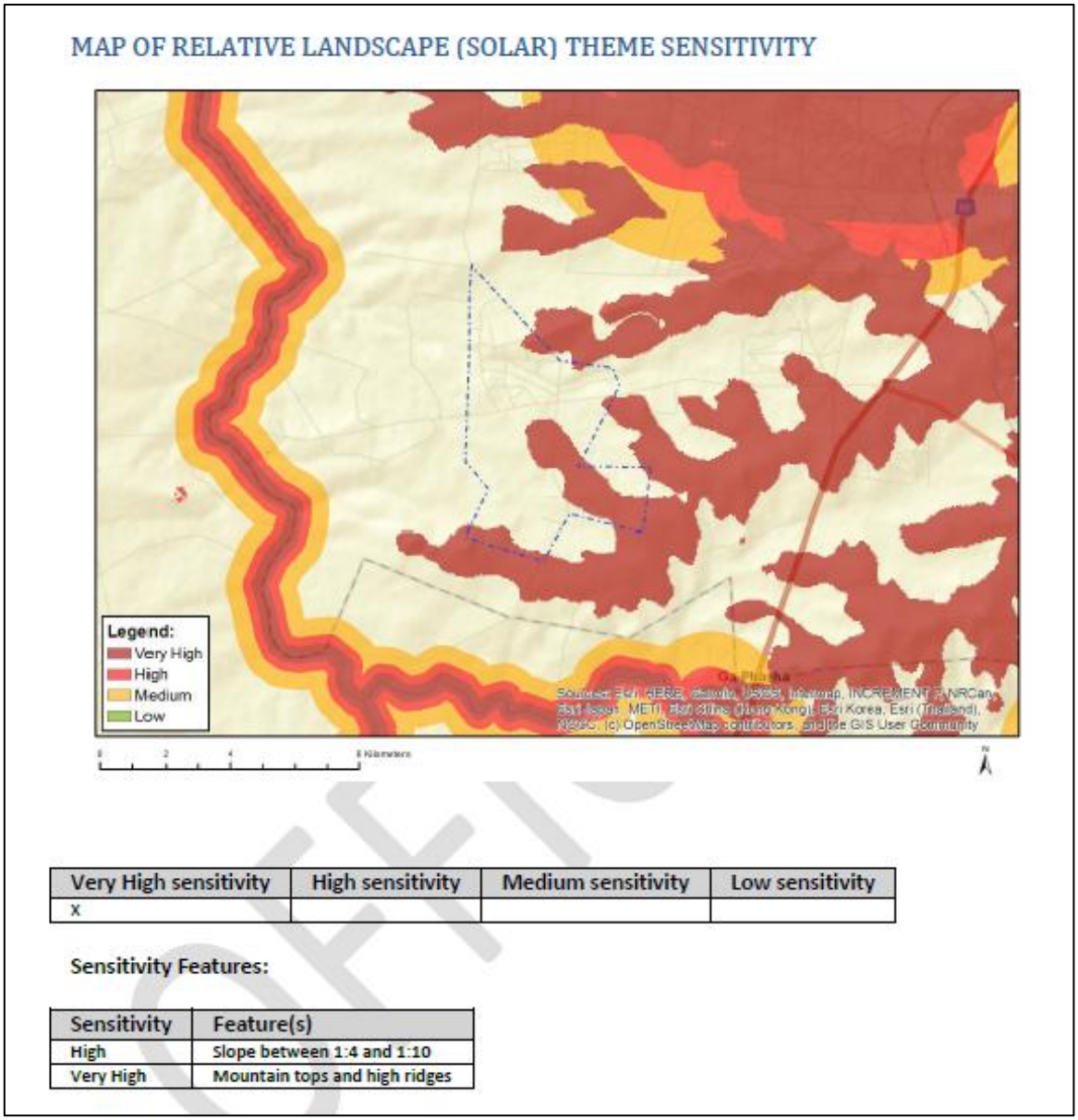


Figure 1. DFFE Screening Tool for Landscape (Combined PV areas).

Table 3. DFFE SSV Landscape Risk table: Klipput PV

DFFE Feature	DFFE Sensitivity	Risk Verification	Motivation
Slope between 1:4 and 1: 10	High	Not applicable	No steep slope areas were identified withing the Klipput PV site.
Mountain tops and high ridges	Very high	Not applicable	No mountain tops or high ridgelines areas were identified withing the Klipput PV site.

2 EXECUTIVE SUMMARY

Visual Resource Management Africa CC (VRMA) was appointed by Cape EAPrac (Pty) Ltd to undertake a ***Visual Impact Assessment*** for proposed Klipput Solar PV and BESS Projects on behalf of Klipput Solar PV (Pty) Ltd **A *site visit was undertaken on 28th and 29th January 2025.*** The Proponent proposes to construct a solar PV array project, BESS, substation and overhead powerlines on a site located south of Louis Trichardt in the Makhado Local Municipality, Vhembe District, Limpopo Province. This project comprises one of four projects that make up the PV cluster, with the other projects named as Bethel, Draailoop and Makoppa Solar PV. VRM Africa is also involved in the assessment of these projects. As the area is not located within a REDZ, a Scoping and Impact Phase assessments are a requirement. This report pertains to the assessment for the PV and BESS landscape changes as well as the three OHPL alternatives.

CONCLUSION: PV & BESS

It is the recommendation of this VIA that the **proposed PV and BESS project should be authorised WITH Mitigation.** The following key reasons provide the motivation:

- The Zone of Visual Influence (ZVI) is contained to some degree that would result in a moderate zone of visual influence.
- The area is remote with only a single lodge in the locality (Klipputs Lodge) that is located outside of the combined PV project viewshed. The farm Klipputs is also looking at the possibility of PV development (EIA pending).
- No other Renewable Energy projects are currently visible from this location reducing potential cumulative effects from massing of PV infrastructures. This, however, is likely to change over time.
- Potential for Medium ~~to Low~~ magnitude visual impact with mitigation.
- National energy objectives for renewable energy and job creation will be met.
- Good alignment with regional and local planning.

The proposed PV and BESS development offers a number of clear benefits. The site is in a remote area with limited visual exposure, and only one nearby lodge (Klipputs) is located within the local area, but not within the direct viewshed. The Klipputs Farm is also in the process of making application of PV development (Pending EIA). There are currently no other visible renewable energy projects nearby, which helps reduce the risk of cumulative visual impact, though this may change in future. With proper mitigation, the visual impact is expected to be moderate. The project also supports national goals for renewable energy and job creation and fits well within local and regional planning frameworks.

On the constrains side, the No-Go option would keep the bushveld landscape intact, supporting its current eco-tourism and hunting use. However, because the area is remote and has only moderate landscape value, its tourism potential is limited. In conclusion, the development is considered suitable for the area, as long as visual impacts are carefully managed through proper mitigation, allowing the rural character and natural qualities of the broader bushveld landscape to be largely retained.

CONCLUSION: GRID CONNECTION

It is the recommendation of this VIA that the **proposed Preferred and Secondary Alternative grid connection projects should be authorised WITH Mitigation**. The following key reasons provide the motivation:

- The site visual resources are limited with a Medium rating for Scenic Quality and Medium rating for Receptor Sensitivity to landscape change.
- The ZVI is contained to some degree by undulating terrain. This would result in a moderate zone of visual influence, with the small size of the monopoles creating limited visual contrast.
- While there is a hunting lodge in the region (Klipputs Lodge), the lodge is well set back from the proposed OHPL routings. There are very few receptors for much of the routing, with the preferred alternative crossing the N1 National Road at an existing OHPL routing corridor.
- National energy objectives for renewable energy and job creation will be met, and there is a good alignment with regional and local planning.
- While there are exclusion areas on all the three assessed alternatives, these areas are for monopole/ pylon placement. There appears to be sufficient spaces within the proposed routing corridors to accommodate the routings. The No-Go areas will need to be excluded from monopole/ pylon placement.

Mitigation is required and would need to be implemented. Mitigation includes the exclusion of structure placement within 50m of the road servitudes, and 100m from the rural residential receptors. With mitigation, the benefits of the PV/ grid connect landscape change are likely to outweigh the landscape status quo, where scenic resources are moderate. **While there is a strong visual preference for the Preferred Routing, the Secondary Alternative routing is rated Medium for Visual Impact Significance and would not be a Fatal Flaw.**

Due to the encirclement of Klipputs Farm by the proposed Tertiary Alternative routing, this alignment is considered a Fatal Flaw. The farm currently supports eco-tourism and hunting activities and includes an active lodge. The proposed overhead power line is expected to result in a strong visual impact during both the construction and operational phases, significantly reducing the property's tourism value and altering its established sense of place. Given the severity of the visual intrusion and the degradation of landscape resources actively used for eco-tourism, **the No-Go option is strongly preferred from a landscape and visual perspective.**

POLICY FIT: Medium Positive

In terms of regional and local planning fit for planned landscape and visual related themes, the expected visual/ landscape policy fit of the landscape change is rated Medium Positive. There is clear motivation for renewable energy projects in the local and district municipality planning documents, with the close proximity of the site to the Eskom Tabor MTS being a clear driver for PV related projects in the area. On the constraints side, there is also a clear emphasis for tourism in the area due to the bushveld landscapes that are well suited to game farming. As game farming is taking place in the region, care would need to be taken to ensure that game farm areas are well buffered, and that PV/ BESS development opportunities are located more along the existing Eskom OHPL corridor where the local

landscapes are partially degraded. Care would also need to be taken in reducing intervisibility that would result in a visual massing effect that could degrade local landscape resources used for eco-tourism.

METHODOLOGY **Visual Resource Management**

The methodology for determining landscape significance is based on the United States Bureau of Land Management's Visual Resource Management (VRM) method (USDI., 2004). This GIS-based method allows for increased objectivity and consistency by using standard assessment criteria to classify the landscape type into four VRM Classes, with Class I being the most valued and Class IV, the least. The Classes are derived from *Scenic Quality*, *Visual Sensitivity Levels*, and *Distance Zones*. Specifically, the methodology involved: site survey; review of legal framework; determination of Zone of Visual Influence (ZVI); identification of Visual Issues and Visual Resources; assessment of Potential Visual Impacts; and formulation of Mitigation Measures.

VISUAL ABSORPTION CAPACITY **Medium to Low**

Land use is a crucial factor in determining landscape character, especially regarding the Visual Absorption Capacity (VAC) of the landscapes. Oberholzer defines VAC as the potential of the landscape to conceal the proposed project (Oberholzer, 2005). i.e.

- High VAC – e.g., effective screening by vegetation and structures.
- Moderate VAC - e.g., partial screening by vegetation and structures.
- Low VAC - e.g., little screening by vegetation or structures.

The project site has VAC levels rated from Medium to Low. Although some sections of bushveld vegetation offer partial visual screening, most of the site's vegetation is of medium height and does not provide significant visual coverage. However, while the bushveld vegetation is unlikely to screen larger PV panels and structures above 3m in height, the average height of the vegetation is higher than human height. The relevance of this is that, from a human perspective, the general landscapes are more localised. This will vary in relation to the topography, with more view opportunity from higher ground, and less views from the lower lying areas along the drainage lines. This does have relevance for ground based eco-tourism land uses such as hunting, where much of the view-scape is localised. In terms of built infrastructure, there are no prominent man-made structures on the property. Modifications include the original lodge complex of houses, and two farmhouses and buildings and these are usually screened from view by larger garden shade trees. There is also a runway that has been cleared of vegetation. The only area with a slightly higher VAC level is the central OHPL corridor, where the powerline provides some visual absorption for similar OHPL landscape changes.

ZONE OF VISUAL INFLUENCE (ZVI): **Moderate Extent**

The visible extent, or viewshed, is "the outer boundary defining a view catchment area, usually along crests and ridgelines" (Oberholzer, 2005). In order to define the extent of the possible influence of the proposed project, a viewshed analysis was undertaken from the proposed site at a specified height above ground level.

PV Development ZVI

The extent of the Zone of Visual Influence for the proposed PV development area is **defined as Wide Area and rated Moderate** for the following reasons:

- With the exception of the areas to the west of the Sand River and some expansion to the south, the viewshed is predominately contained with the Foreground/ Mid-Ground distance areas and within 3km of the project site. This is primarily due to the high ground to the north and east of the site, which restricts view expansion to these areas.
- Outside of the 3km distance area, there are some fragmented views to the north, where higher ground would allow views to the south towards the study area.
- Outside of the 6km distance buffer zone, the view incidence potential is predominantly to the west of the Sand River and well as to the south. However, due to the distance and the bushveld vegetation landscape context, it is unlikely that clear visibility will take place from these areas.

The following receptors were located within the expected ZVI:

- District farm access roads (Very High Visual Exposure).
- Klipputs farmhouse (not the lodge). (Very High Visual Exposure).
- Klipputs farm labourers (Very High Visual Exposure).
- Western isolated farmsteads (Low Visual Exposure).

BESS/ Site Development ZVI

The extent of the Zone of Visual Influence for the proposed BESS/ Site development area is **defined as Local Area and rated Moderate to Low** for the following reasons:

- The viewshed is predominately contained with the Foreground distance areas and within 1km of the project site. This is primarily does to the high ground to the south and east of the site, the restricts view expansion to these areas.
- Outside of the 3km distance area, there are some fragmented views to the north, where higher ground would allow views to the south towards the study area.
- Outside of the 6km distance buffer zone, there is likely to be minimal visual incidence, but it is likely that some partial visibility might take place.

The following receptors were located within the expected ZVI:

- District farm access roads (Very High Visual Exposure).
- Klipputs farm house (not the lodge). (Very High Visual Exposure).
- Klipputs farm labourers (Very High Visual Exposure).

OHPL ZVI

With a minor exception of the Preferred OHPL Alternative which has a slighted reduced visual extent to the northern areas, the extent of the Zone of Visual Influence for the OHPL are very similar. The OHPL ZVI is **defined as Local Area and rated Moderate to Low** for the following reasons:

- The viewshed is predominately contained within the Foreground distance areas and within 1km of the routing due to the bushveld vegetation that will contain the visual exposure to some degree.
- The monopole structures offer limited visual contrast beyond 1km and are unlikely to be visually dominating beyond 3km.

The following receptors were located within the expected ZVI:

- District farm access roads (Very High Visual Exposure).
- Klipputs farm (High Visual Exposure).

- Klipputs farm labourers (Very High Visual Exposure).
- N1 Highway (Very High Visual Exposure).

SCENIC QUALITY: Medium to High

The Scenic Quality is rated as Medium to High. The undulating bushveld landscape does have value due to its extensive coverage without development or transformation by agriculture or human settlement. The terrain is primarily gently undulating, with a small ridgeline in the northern areas and a rocky outcrop in the southern portion of the property. The landscape maintains its value largely because it remains undeveloped by agriculture or settlements. Aside from the Eskom OHPL corridor, which shows some signs of landscape degradation, structural developments are characterized as rural, agricultural, or game farm-related, and are non-imposing.

RECEPTOR SENSITIVITY: Medium

The type of users are predominantly farming related, but as there is game farming taking place in the region, some eco-tourism activities are taking place on the property and surrounding properties. The adjacent property, to the east, is also in process of making application for PV development (pending EIA). There are no significant landform features, water features, or cultural heritage elements that would increase public controversy in response to the proposed PV landscape change. The surrounding area does have some scenic value related to the bushveld sense of place, the rocky outcrops and smaller ridgelines with background views of the hills.

LANDSCAPE AND VISUAL IMPACT SIGNIFICANCE: PV AND BESS

Project	Phase	Mitig. Status	Significance	Cumulative
PV and BESS	Construction	Without	Med to High -Ve	Med to High -Ve
		With	Medium -Ve	Medium -Ve
	Operation	Without	Medium -Ve	Med to High -Ve
		With	Med to Low -Ve	Medium -Ve
	Decommissioning/ Post Closure	Without	Medium -Ve	Med to High -Ve
		With	Negligible	**Low -Ve**

Visual Significance of the Impact

The significance of the visual impact is rated as **Medium to High without mitigation**, and **Medium with mitigation**. The limited number of visual receptors and the contained zone of visual influence help to reduce the overall visual intensity of the landscape change. However, the development would still result in a noticeable transformation of the area's local landscape character. The implementation of light spillage mitigation would help preserve the dark sky quality typical of the rural night-time environment. In addition, the 100-metre setback from Botteliers Road and 100-metre setback from Gage Road contribute to maintaining the bushveld sense of place along these key access routes.

Cumulative Impact Assessment

The Cumulative visual risk to scenic resources was rated **Medium to High** without mitigation and **Medium** with mitigation, with a potential for Neutral Cumulative Effects post closure with effective rehabilitation and restoration.

As the site is topographically screened to some degree, such that the Zone of Visual Influence (ZVI) is limited to the local area, the cumulative impact of this PV project, together with the three existing PV/BESS developments and the potential PV development on the adjacent Klipputs Farm, will result in a substantial transformation of the ***local*** landscape character, regardless of mitigation. Combined light spillage from these developments may significantly alter the rural and natural landscape context and potentially degrade the existing dark-sky quality that supports local eco-tourism and contributes to the area's sense of place.

However, if light spillage is effectively mitigated, and considering the localised ZVI and the presence of setback buffers along farm access roads, the cumulative visual effects can be moderated to some degree.

LANDSCAPE AND VISUAL IMPACT SIGNIFICANCE: OHPL ALTERNATIVES

Project	Phase	Mitig. Status	Significance	Cumulative
Preferred Alternative	Construction	Without	Medium -Ve	Low -Ve
		With	Low -Ve	Very Low -Ve
	Operation	Without	Low -Ve	Medium -Ve
		With	Very Low -Ve	Low -Ve
	Decommissioning	Without	*Permanent feature*	
		With		

Project	Phase	Mitig. Status	Significance	Cumulative
Secondary Alternative	Construction	Without	Med to High -Ve	Medium -Ve
		With	Medium -Ve	Med to Low -Ve
	Operation	Without	Medium -Ve	Low -Ve
		With	Med to Low -Ve	Very Low -Ve
	Decommissioning	Without	*Permanent feature*	
		With		

Project	Phase	Mitig. Status	Significance	Cumulative
Tertiary Alternative	Construction	Without	Med to High -Ve	Med to High -Ve
		With	Med to High -Ve	Med to High -Ve
	Operation	Without	Med to High -Ve	Med to High -Ve
		With	Med to High -Ve	Med to High -Ve
	Decommissioning	Without	*Permanent feature*	
		With		

<u>Visual Significance of the Impact</u>

The significance of the **Preferred and Secondary Alternatives** visual impact is rated as **Medium without mitigation**, and **Low with mitigation**. The limited number of visual receptors and the contained zone of visual influence help to reduce the overall visual

intensity of the landscape change. Due to the co-alignment of the Preferred Alternative with the existing Eskom OHPL corridor, this alternative is the visual preference.

The visual impact significance for the Tertiary Alternative is rated Medium to High with and without mitigation. **Due to the encircling of the adjacent Klipputs Farm that is being used for eco-tourism, the No-Go Alternative is preferred.**

Cumulative Impact Assessment

The Cumulative visual risk to scenic resources from the **Preferred and Secondary Alternatives** was rated **Medium** without mitigation and **Low** with mitigation. As the site is topographically screened to some degree, such that the Zone of Visual Influence (ZVI) is limited to the local area, the cumulative impact of this project is likely to be contained to some degree. The co-alignment with the existing Eskom OHPL corridor also contains the impact to an area that is already degraded, without significantly increasing the massing effect.

The Cumulative visual risk to scenic resources from the **Tertiary Alternatives** was rated **High** with and without mitigation. The encirclement of the Klipputs Farm would result in clear intervisibility of powerlines from most areas on the property.

3 INTRODUCTION

Visual Resource Management Africa CC (VRMA) was appointed by Cape EAPrac (Pty) Ltd to undertake a ***Visual Impact Assessment*** for the proposed Klipput Solar PV LVIA and BESS Projects on behalf of Klipput Solar PV (Pty) Ltd. Klipput Solar PV (Pty) Ltd are proposing the construction of a Solar Photovoltaic (PV) Energy Facility and associated infrastructure on Portion 1 of Farm 425, Portion 1 of Farm 466 and the Remainder of Farm 466 located South of Louis Trichardt in the Makhado Local Municipality, Vhembe District, Limpopo Province. A study site of approximately 601ha is being assessed as part of this Environmental Process and the infrastructure associated with an up to 240 Megawatt (MW) PV facility.

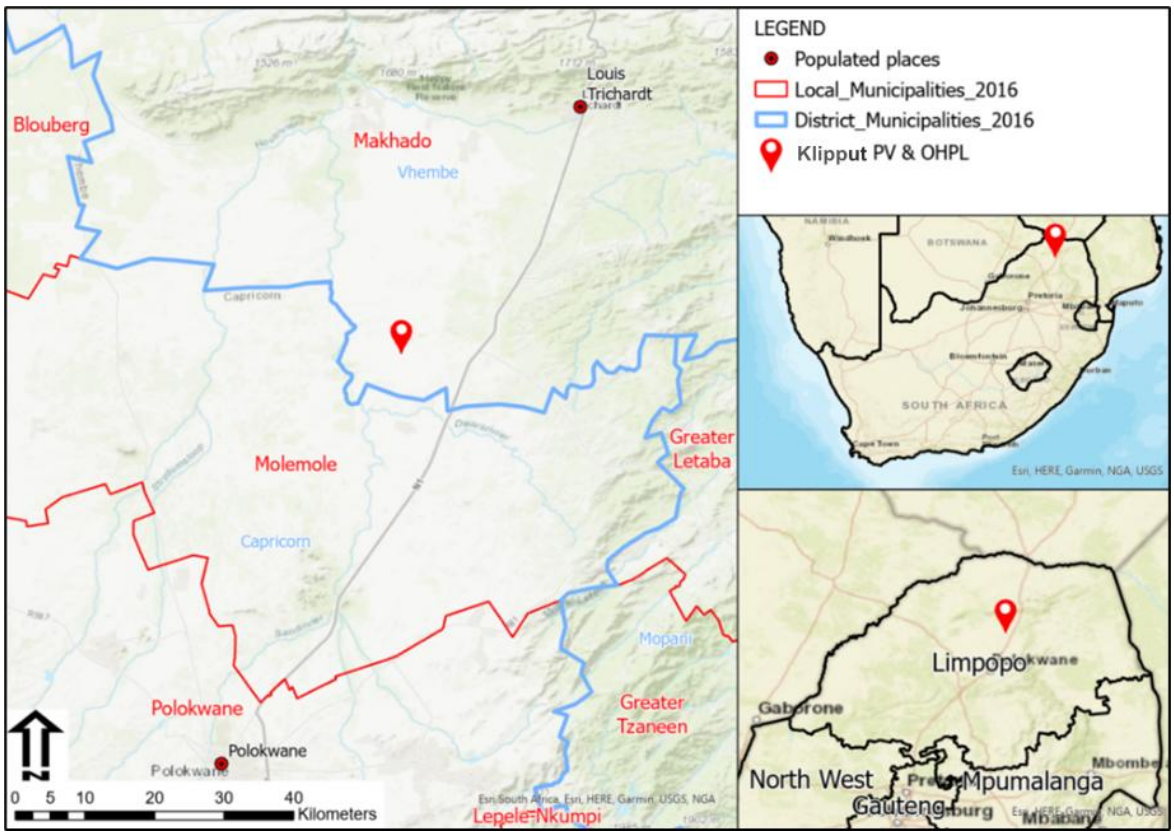


Figure 2: National and regional locality map.

3.1 Terms of Reference

The scope of this study is to cover the entire proposed project area. The broad terms of reference for the study are as follows:

- Collate and analyse all available secondary data relevant to the affected proposed project area. This includes a site visit of the full site extent, as well as of areas where potential impacts may occur beyond the site boundaries.
- Specific attention is to be given to the following:
  - Quantifying and assessing existing scenic resources/visual characteristics on, and around, the proposed site.
  - Evaluation and classification of the landscape in terms of sensitivity to a changing land use.

- Determining viewsheds, view corridors and important viewpoints in order to assess the visual impacts of the proposed project.
- Determining visual issues, including those identified in the public participation process.
- Reviewing the legal framework that may have implications for visual/scenic resources.
- Assessing the significance of potential visual impacts resulting from the proposed project for the construction, operation and decommissioning phases of the proposed project.
- Assessing the potential cumulative impacts associated with the visual impact.
- Generate photomontages of the proposed landscape modification.
- Identifying possible mitigation measures to reduce negative visual impacts for inclusion into the proposed project design, including input into the Environmental Management Programme report (EMPr).

3.2 Study Team

Contributors to this study are summarised in the table below.

Table 4: Authors and contributors to this report.

Aspect	Person	Organisation / Company	Qualifications
Landscape and Visual Assessment (author of this report)	Stephen Stead MSc Geography, 2023 (UKZN, Pietermaritzburg)	Visual Resource Management Africa CC	• 20 years of experience in visual assessments including 230 large scale landscape changes in five sub-Saharan African countries. • Registered with the Association of Professional Heritage Practitioners since 2014.

3.3 Visual Assessment Approach

The full methodology used in the assessment can be found in Annexure B, with this section outlining the key elements of the assessment process. The process that VRM Africa follows when undertaking a VIA is based on the United States Bureau of Land Management's (BLM) Visual Resource Management method (USDI., 2004). This mapping and GIS-based method of assessing landscape modifications allows for increased objectivity and consistency by using standard assessment criteria.

- *"Different levels of scenic values require different levels of management. For example, management of an area with high scenic value might be focused on preserving the existing character of the landscape, and management of an area with little scenic value might allow for major modifications to the landscape. Determining how an area should be managed first requires an assessment of the area's scenic values".*
- *"Assessing scenic values and determining visual impacts can be a subjective process. Objectivity and consistency can be greatly increased by using the basic design elements of form, line, colour, and texture, which have often been used to describe and evaluate landscapes, to also describe proposed projects. Projects that repeat these design elements are usually in harmony with their surroundings; those that don't create*

contrast. By adjusting project designs so the elements are repeated, visual impacts can be minimized" (USDI., 2004).

Baseline Phase Summary

The VRM process involves the systematic classification of the broad-brush landscape types within the receiving environment into one of four VRM Classes. Each VRM Class is associated with management objectives that serve to guide the degree of modification of the proposed site. The Classes are derived by means of a simple matrix with the three variables being the scenic quality, the expected receptor sensitivity to landscape change, and the distance of the proposed landscape modification from key receptor points. The Classes are not prescriptive and are utilised as a guideline to determine visual carrying capacity, where they represent the relative value of the visual resources of an area. Classes I and II are the most valued, Class III represents a moderate value; and Class IV is of least value. The VRM Classes are not prescriptive and are used as a guideline to determine the carrying capacity of a visually preferred landscape as a basis for assessing the suitability of the landscape change associated with the proposed project.

Table 5: VRM Class Matrix table

		VISUAL SENSITIVITY LEVELS								
		High			Medium			Low		
SCENIC QUALITY	A (High)	II	II	II	II	II	II	II	II	II
	B (Medium)	II	III	III/ IV *	III	IV	IV	IV	IV	IV
	C (Low)	III	IV	IV	IV	IV	IV	IV	IV	IV
DISTANCE ZONES		Fore/middle ground	Background	Seldom seen	Fore/middle ground	Background	Seldom seen	Fore/middle ground	Background	Seldom seen

* If adjacent areas are **Class III** or lower, assign **Class III**, if higher, assign **Class IV**

The visual objectives of each of the classes are listed below:

- The Class I objective is to preserve the existing character of the landscape and the level of change to the characteristic landscape should be very low and must not attract attention. Class I is assigned when a decision is made to maintain a natural landscape.
- The Class II objective is to retain the existing character of the landscape and the level of change to the characteristic landscape should be low. The proposed development may be seen but should not attract the attention of the casual observer, and should repeat the basic elements of form, line, colour and texture found in the predominant natural features of the characteristic landscape.
- The Class III objective is to partially retain the existing character of the landscape, where the level of change to the characteristic landscape should be moderate. The proposed development may attract attention, but should not dominate the view of the casual observer, and changes should repeat the basic elements found in the predominant natural features of the characteristic landscape; and

- The Class IV objective is to provide for management activities that require major modifications of the existing character of the landscape. The level of change to the landscape can be high, and the proposed development may dominate the view and be the major focus of the viewer's (s') attention without significantly degrading the local landscape character.

Impact Phase Summary

To determine impacts, a degree of contrast exercise is undertaken. This is an assessment of the expected change to the receiving environment in terms of the form, line, colour and texture, as seen from the surrounding Key Observation Points. This determines if the proposed project meets the visual objectives defined for each of the Classes. If the expected visual contrast is strong, mitigation recommendations are to be made to assist in meeting the visual objectives. To assist in the understanding of the proposed landscape modifications, visual representation, such as photomontages or photos depicting the impacted areas, can be generated. There is an ethical obligation in the visualisation process, as visualisation can be misleading if not undertaken ethically.

3.4 VIA Process Outline

The following approach was used in understanding the landscape processes and informing the magnitude of the impacts of the proposed landscape modification. The table below lists a number of standardised procedures recommended as a component of best international practice that were undertaken in the assessment.

Table 6: Methodology Summary table

Action	***Description***
Site Survey	The identification of existing scenic resources and sensitive receptors in and around the study area to understand the context of the proposed development within its surroundings to ensure that the intactness of the landscape and the prevailing sense of place are taken into consideration.
Project Description	Provide a description of the expected project, and the components that will make up the landscape modification.
Reviewing the Legal Framework	The legal, policy and planning framework may have implications for visual aspects of the proposed development. The heritage legislation tends to be pertinent in relation to natural and cultural landscapes, while Strategic Environmental Assessments (SEAs) for renewable energy provide a guideline at the regional scale.
Identifying Visual Issues and Visual Resources	Visual issues are identified during the public participation process, which is being carried out by others. The visual, social or heritage specialists may also identify visual issues. The anticipated significance of the proposed landscape change is defined, with the extend of the scope of work outlined.
Determining the Zone of Visual Influence	This includes mapping of viewsheds and view corridors in relation to the proposed project elements, in order to assess the zone of visual influence of the proposed project. Based on the topography of the landscape as represented by a Digital Elevation Model, an approximate area is defined which provides

Action	*Description*
	an expected area where the landscape modification has the potential to influence landscapes (or landscape processes) or receptor viewpoints.
Assessing Potential Visual Impacts	An assessment is made of the significance of potential visual impacts resulting from the proposed project for the construction, operational and decommissioning phases of the project. The rating of visual significance is based on the methodology provided by the Environmental Assessment Practitioner (EAP).
Formulating Mitigation Measures	Possible mitigation measures are identified to avoid or minimise negative visual impacts of the proposed project. The intention is that these would be included in the project design, the Environmental Management Programme report (EMPr) and the authorisation conditions.

3.5 Impact Assessment Methodology

The following impact criteria were used to assess visual impacts. The criteria were defined by the Western Cape *DEA&DP Guideline for involving Visual and Aesthetic Specialists in EIA Processes* (Oberholzer, 2005).

Table 7. DEA&DP Visual and Aesthetic Guideline Impact Assessment Criteria table

Criteria	**Definition**
Extent	The spatial or geographic area of influence of the visual impact, i.e.: • *site-related:* extending only as far as the activity. • *local:* limited to the immediate surroundings. • *regional:* affecting a larger metropolitan or regional area. • *national:* affecting large parts of the country. • *international:* affecting areas across international boundaries.
Duration	The predicted life-span of the visual impact: • *short term,* (e.g., duration of the construction phase). • *medium term,* (e.g., duration for screening vegetation to mature). • *long term,* (e.g., lifespan of the project). • *permanent,* where time will not mitigate the visual impact.
Intensity	The magnitude of the impact on views, scenic or cultural resources. • *low,* where visual and scenic resources are not affected. • *medium,* where visual and scenic resources are affected to a limited extent. • *high,* where scenic and cultural resources are significantly affected.
Probability	The degree of possibility of the visual impact occurring: • *improbable,* where the possibility of the impact occurring is very low. • *probable,* where there is a distinct possibility that the impact will occur.

	• *highly probable,* where it is most likely that the impact will occur. • *definite,* where the impact will occur regardless of any prevention measures.
Significance	The significance of impacts can be determined through a synthesis of the aspects produced in terms of their nature, duration, intensity, extent and probability, and be described as: • *low,* where it will not have an influence on the decision. • *medium,* where it should have an influence on the decision unless it is mitigated. • *high,* where it would influence the decision regardless of any possible mitigation.

3.6 Assumptions and Uncertainties

- Digital Elevation Models (DEM) and viewsheds were generated using ASTER elevation data (NASA, 2009). Although every effort to maintain accuracy was undertaken, as a result of the DEM being generated from satellite imagery and not being a true representation of the earth's surface, the viewshed mapping is approximate and may not represent an exact visibility incidence. Thus, specific features identified from the DEM and derive contours (such as peaks and conical hills) would need to be verified once a detailed survey of the project area has taken place.
- The use of open-source satellite imagery was utilised for base maps in the report.
- Some of the mapping in this document was created using Bing Maps, Open-Source Map, ArcGIS Online and Google Earth Satellite imagery.
- The project deliverables, including electronic copies of reports, maps, data, shape files and photographs are based on the author's professional knowledge, as well as available information.
- VRM Africa reserves the right to modify aspects of the project deliverables if and when new/additional information may become available from research or further work in the applicable field of practice or pertaining to this study.
- As access to farms and private property is often limited due to security reasons, limiting access to private property in order that photographs from specific locations are taken. 3D modelling is used to reflect the expected landscape change area where applicable.
- Mapping makes use of the SANBI BGIS webmap (SANBI, 2018)
- The slopes analysis is approximate and is subject to detailed survey and detailed slopes analysis.

4 PROJECT DESCRIPTION

The following project information was provided by the client that will be incorporated into the assessment and proposed infrastructure relating to the project. The following table outlines the scope of the project, with reference to the extent, heights, and expects landscape change depiction as provide by the proponent/ architects involved in the project design and development.

Table 8: Project Information table: Solar PV

PROPONENT SPECIFICATIONS						
Applicant Details		**Description**				
Applicant Name:		Klipput Solar PV (Pty) Ltd				
Project Name:		Klipput Solar PV LVIA				
Property Descriptions: SOLAR PV						
No	**Farm Name**	**Farm/ Erf No**	**Portion**	**Latitude**	**Longitude**	**Property Type**
1	KLIPPUT	425	1	23°21'56S	29°42'15.21E	Farm
3	MAKOPPA	466	1	23°23'1.92S	29°41'47.96E	Farm
10	MAKOPPA	RE/466		23°23'7.39S	29°42'28.99E	Farm Portion

4.1 Project Details

The applicant Klipput Solar PV (Pty) Ltd are proposing the construction of a Solar Photovoltaic (PV) Energy Facility and associated infrastructure, known as Klipput Solar PV, on Portion 1 of Farm 425, Portion 1 of Farm 466 and the Remainder of Farm 466 located South of Louis Trichardt in the Makhado Local Municipality, Vhembe District, Limpopo Province. A study site of approximately 601ha is being assessed as part of this Environmental Process and the infrastructure associated with an up to 240 Megawatt (MW) PV facility.

The proposed Klipput Solar PV Project will include the following components:

- Solar Field Solar Arrays: PV modules;
- Single axis tracking technology maximum height of 5m (aligned north-south);
- Solar module mounting structures comprised of galvanised steel and aluminium;
- Foundations which will likely be drilled and concreted into the ground;
- Solar measurement and weather stations;
- Central/string Inverters and MV transformers in in field;
- DC coupled Battery Energy Storage system (BESS) containers distributed through PV field located adjacent to inverters ;
    - Lithium Ion battery Cells, Modules, Racks and containers.
    - Power Conversion Equipment.
    - Battery Management System.
    - Energy Management System.

Associated Infrastructure Medium Voltage (MV =22/33 kV) overhead powerlines and underground cables;

- MV Collector stations;
- Access road;
- Internal gravel roads;
- Fencing;
- General maintenance area;
- Storm water channels and berms;
- Water storage tanks and pipelines;
- Temporary work area during the construction phase (i.e. laydown area) (up to 7ha);
- O&M buildings (up to 1ha);
- Storerooms;
- Diesel storage area (up to 0.25ha).

Project IPP Substation (up to 1ha);

- 132kV substation;
- HV transformer;
- Substation Control Building;
- HV metering, Scada and protection building;
- MV collector switchgear buildings;
- Compensation equipment (Filters capacitors reactors statcoms).

AC coupled BESS installation at project substation and laydown area (up to 6ha): Solid Sate Battery technology - either Lithium-Ion or Sodium Sulphide (NaS)

- Battery Cells, Modules, Racks and containers;
- Power Conversion Equipment;
- Battery Management System;
- Energy Management System;
- MV transformers;
- MV cabling and collector stations;
- Fencing;
- Offices, workshop;
- Fire Protection systems.

This environmental application process includes Electrical Grid Connection Infrastructure required to connect the Klipput Solar PV to the National Grid via the existing Tabor Main Transmission Substation (MTS). This Electrical Grid Infrastructure includes:

- Onsite Switching Station (SS) (up to 1ha), adjacent to the IPP Substation.
- 132kV Overhead Power Line (OHPL) – 30m height from the switching station to the existing Eskom Tabor Substation;
- Access Road to Switching Station;
- Maintenance access road below or adjacent to the power line.

Three Grid connection alternatives are under investigation as part of this environmental process. Different land portions are affected by the various grid connection alternatives.

The following photographs depict the *expected* landscape change.

(www.hawaiirenewableenergy.org/Villamesias2, n.d.)

(Junior Mining Network, n.d.)

Figure 3: Photographic example of what the proposed PV could look like as fixed and single portrait model on a tracker.

Figure 4: Example of a Photomontage of Tesla BESS in landscape

Table 9: Project Information table: Grid Infrastructure

TECHNOLOGY DETAILS: GRID INFRASTRUCTURE
This environmental application process includes Electrical Grid Connection Infrastructure required to connect the Klipput Solar PV to the National Grid via the existing Tabor Main Transmission Substation (MTS). This Electrical Grid Infrastructure includes: • Onsite Switching Station (SS) (up to 1ha), adjacent to the IPP Substation. • 132kV Overhead Power Line (OHPL) – 30m height from the switching station to the existing Eskom Tabor Substation; • Access Road to Switching Station; • Maintenance access road below or adjacent to the power line. Three Grid connection alternatives are under investigation as part of this environmental process. Different land portions are affected by the various grid connection alternatives.

Electrical Grid Connection Alternatives Properties:

ALTERNATIVE 1
• Remainder of Farm 466
• Portion 1 of Farm 466
• Portion 1 of Farm 425
• Portion 2 of Farm 425
• Remainder of Farm 424
• Portion 2 of Farm 470
• Farm 1211
• Remaining Extent of Portion 2 of Farm 472
• Farm 1209
• Portion 1 of Farm 473

ALTERNATIVE 2:
• Remainder of Farm 466
• Farm 431
• Portion 1 of Farm 425
• Remainder of Farm 430
• Remainder of Farm 426
• Portion 2 of Farm 425
• Remainder of Farm 423
• Portion 1 of Farm 423
• Portion 1 of Farm 424
• Remainder of Farm 420
• Farm 1211
• Remainder of Farm 418
• Remainder of Farm 1210
• Farm 1209
• Portion 1 of Farm 473

ALTERNATIVE 3

• Remainder of Farm 466
• Portion 1 of Farm 466
• Farm 431
• Portion 1 of Farm 425
• Portion 2 of Farm 425
• Remainder of Farm 426
• Remainder of Farm 423
• Portion 1 of Farm 423
• Portion 1 of Farm 424
• Remainder of Farm 420
• Remainder of Farm 424
• Farm 1211
• Portion 2 of Farm 470
• Remaining Extent of Portion 2 of Farm 472
• Farm 1209
• Portion 1 of Farm 473

The following photographs depict the *expected* landscape change.

Cr: Relay and Power Systems (Green Building Africa, n.d.)
Figure 5. Example of what a small onsite substation could look like.

(Source: Jawatha, India. www.nccprojects.com)

Figure 6: Photographic example of what the proposed OHPL could look like

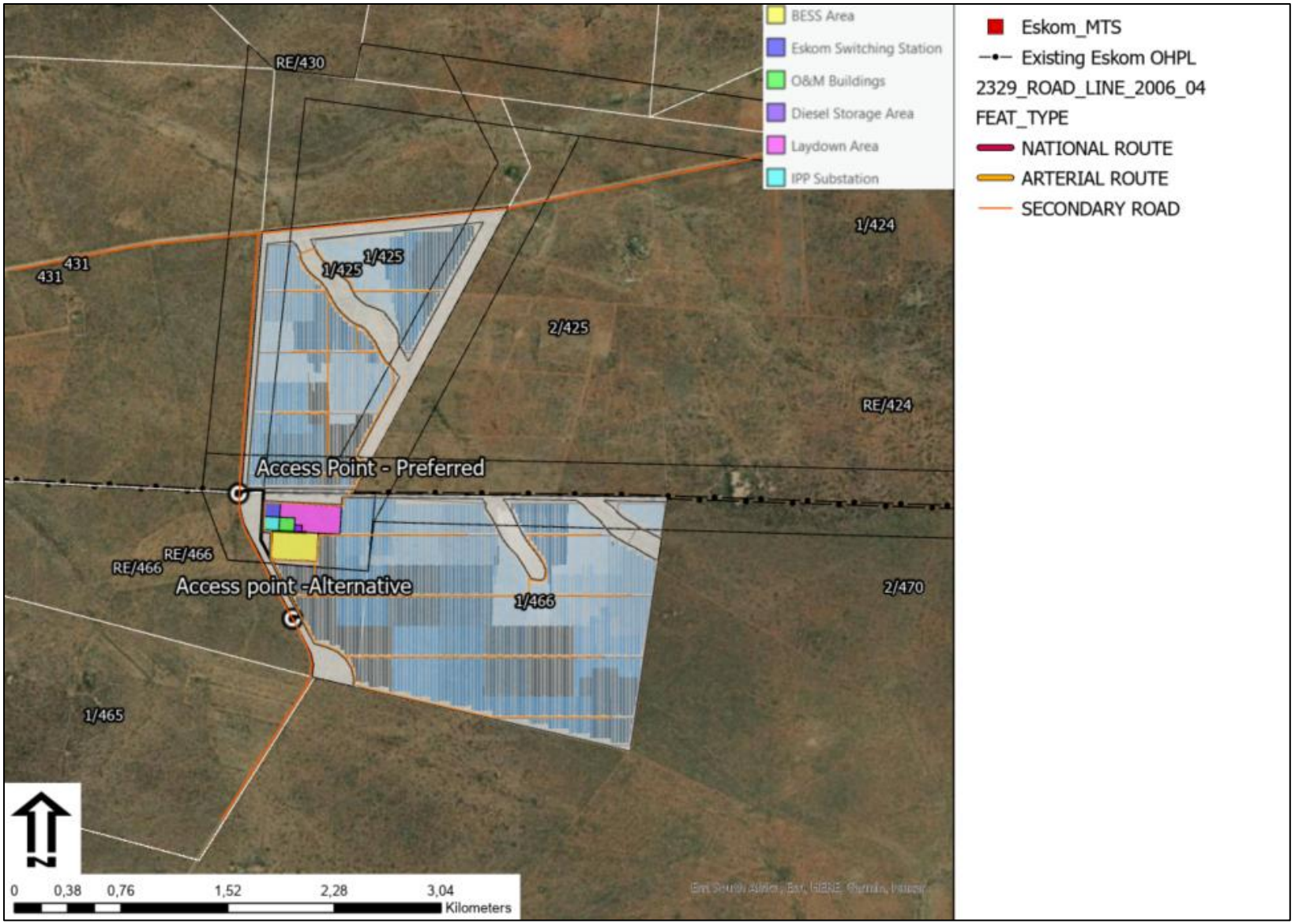


Figure 7: Proposed Klipput Solar PV and associated infrastructure assessment areas map.

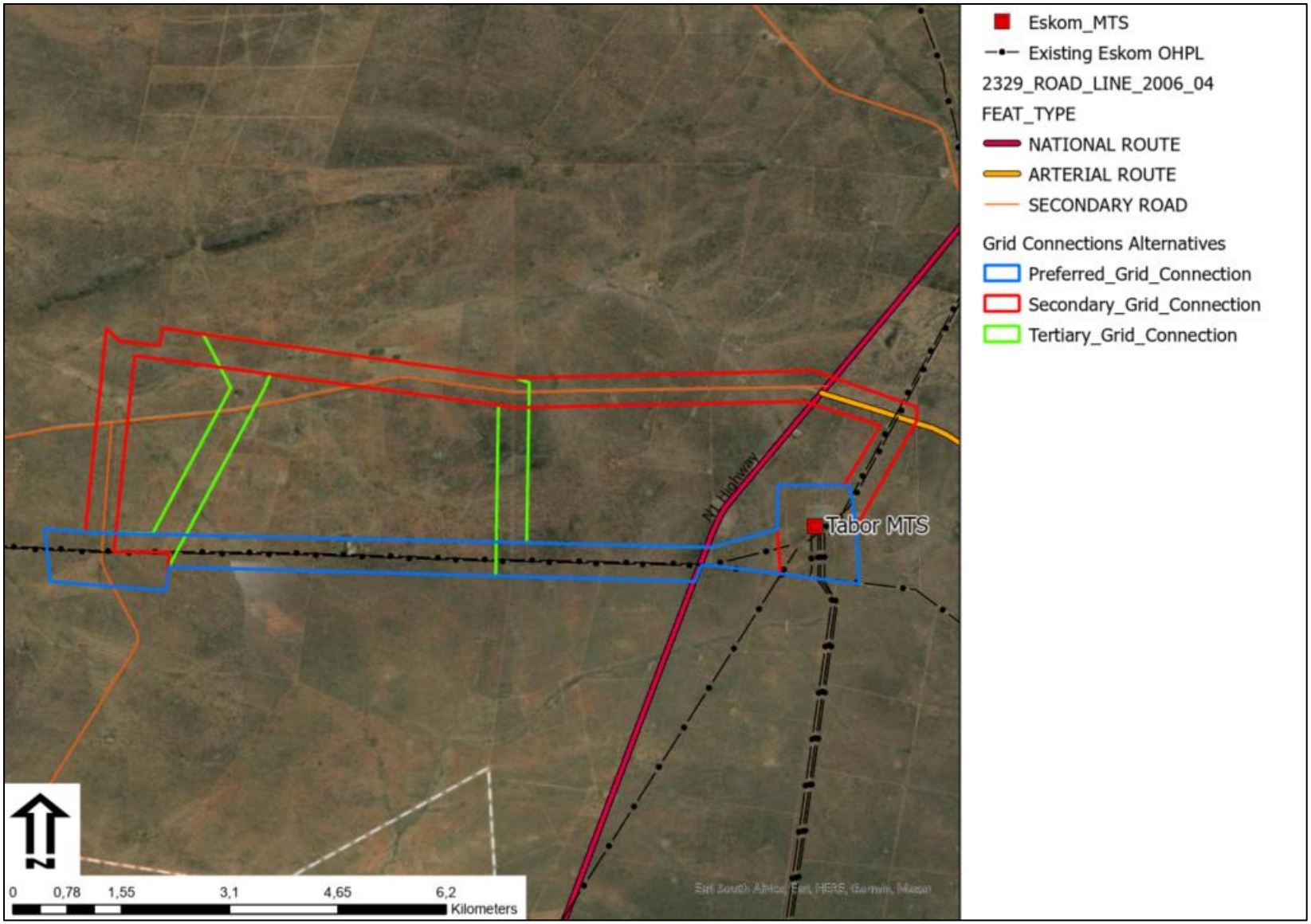


Figure 8: Proposed powerline assessment corridor map.

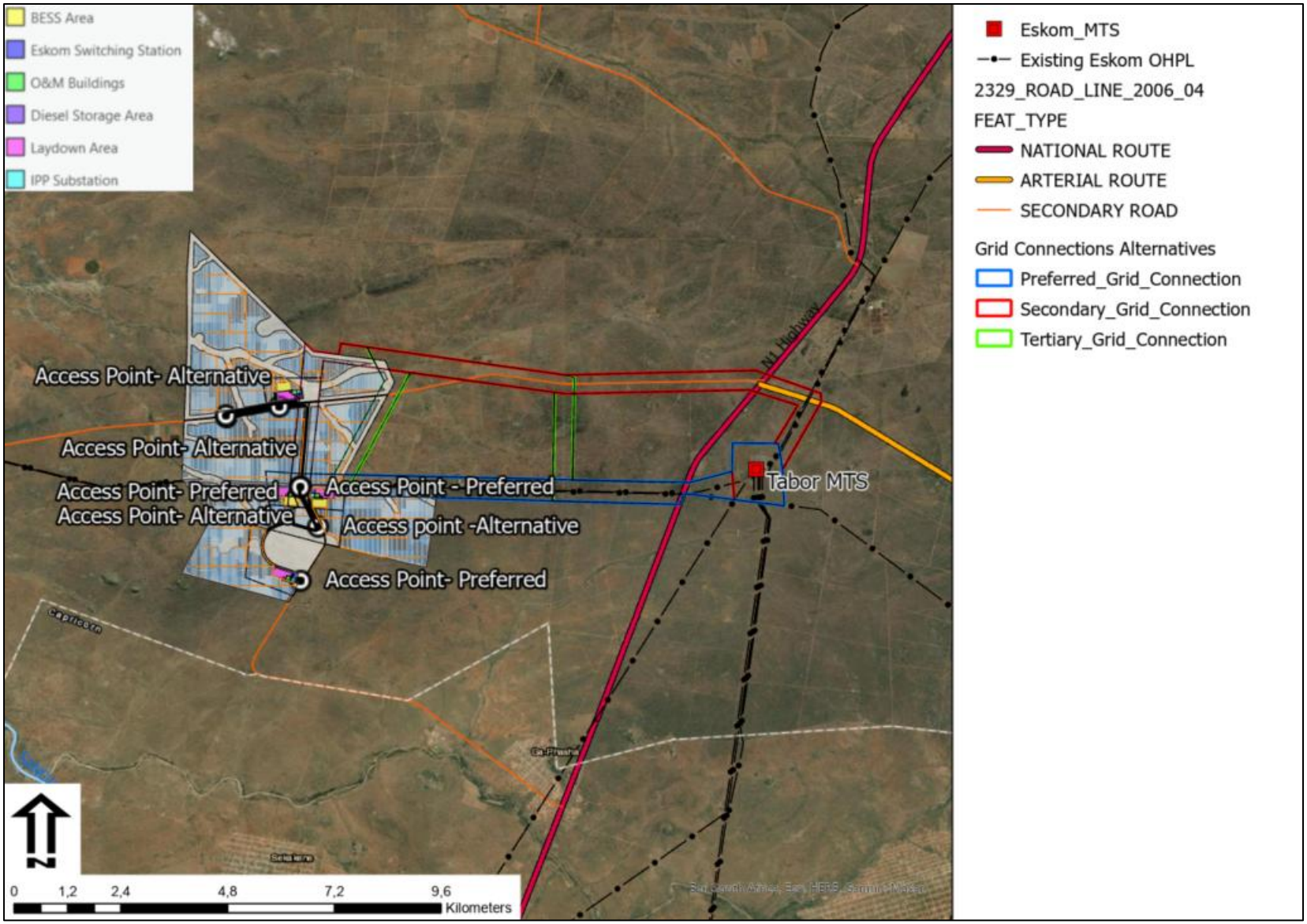


Figure 9: Cumulative map of the PV cluster and the proposed powerline assessment corridor.

5 LEGAL FRAMEWORK

In order to comply with the Visual Resource Management requirements, it is necessary to relate the proposed landscape modification in terms of international best practice in understanding landscapes and landscape processes. The proposed project also needs to be evaluated in terms of 'policy fit'. This requires a review of International, National and Regional best practice, policy and planning for the area to ensure that the scale, density and nature of activities or developments are harmonious and in keeping with the planned sense of place and character of the area.

5.1 International Good Practice

For international good practice in assessment of landscapes, the following documentation is relevant, specifically:

- Guidelines for Landscape and Visual Impact Assessment (GLVIA), Second Edition.

5.1.1 Guidelines for Landscape and Visual Impact Assessment, Second Edition

The Landscape Institute and the Institute of Environmental Management and Assessment (United Kingdom) have compiled a book outlining best practice in landscape and visual impact assessment. This has become a key guideline for LVIA in the United Kingdom. "The principal aim of the guideline is to encourage high standards for the scope and context of landscape and visual impact assessments, based on the collegiate opinion and practice of the members of the Landscape Institute and the Institute of Environmental Management and Assessment. The guidelines also seek to establish certain principles and will help to achieve consistency, credibility and effectiveness in landscape and visual impact assessment, when carried out as part of an EIA" (The Landscape Institute, 2003);

In the introduction, the guideline states that 'Landscape encompasses the whole of our external environment, whether within village, towns, cities or in the countryside. The nature and pattern of buildings, streets, open spaces and trees – and their interrelationships within the built environment – are an equally important part of our landscape heritage" (The Landscape Institute, 2003: Pg. 9). The guideline identifies the following reasons why landscape is important in both urban and rural contexts, in that it is:

- An essential part of our natural resource base.
- A reservoir of archaeological and historical evidence.
- An environment for plants and animals (including humans).
- A resource that evokes sensual, cultural and spiritual responses and contributes to our urban and rural quality of life; and
- Valuable recreation resources. (The Landscape Institute, 2003).

In terms of international best practice for Landscape and Visual Impact Assessment, no issues pertaining to the above listed landscape resources were identified within the project zone of visual influence.

5.1.2 International Finance Corporation (IFC)

The IFC Performance Standards (IFC, 2012) do not explicitly cover visual impacts or assessment thereof. Under IFC PS 6, ecosystem services are organized into four categories, with the third category related to cultural services which are defined as "the non-

material benefits people obtain from ecosystems" and "may include natural areas that are sacred sites and areas of importance for recreation and aesthetic enjoyment" (IFC, 2012).

However, the IFC Environmental Health and Safety Guidelines for Electric Power Transmission and Distribution (IFC, 2007) specifically identifies the risks posed by power transmission and distribution projects to create visual impacts to residential communities. It recommends mitigation measures to be implemented to minimise visual impact. These should include the siting of powerlines and the design of substations with due consideration to landscape views and important environmental and community features. Prioritising the location of high-voltage transmission and distribution lines in less populated areas, where possible, is promoted.

IFC PS 8 recognises the importance of cultural heritage for current and future generations and aims to ensure that projects protect cultural heritage. The report defines Cultural Heritage as "(i) tangible forms of cultural heritage, such as tangible moveable or immovable objects, property, sites, structures, or groups of structures, having archaeological (prehistoric), paleontological, historical, cultural, artistic, and religious values; (ii) unique natural features or tangible objects that embody cultural values, such as sacred groves, rocks, lakes, and waterfalls" (IFC, 2012). The IFC PS 8 defines Critical Heritage as "one or both of the following types of cultural heritage: (i) the internationally recognized heritage of communities who use or have used within living memory the cultural heritage for long-standing cultural purposes; or (ii) legally protected cultural heritage areas, including those proposed by host governments for such designation" (IFC, 2012).

Legally protected cultural heritage areas are identified as important in the IFC PS 8 report. This is for "the protection and conservation of cultural heritage, and additional measures are needed for any projects that would be permitted under the applicable national law in these areas". The report states that "in circumstances where a proposed project is located within a legally protected area or a legally defined buffer zone, the client, in addition to the requirements for critical cultural heritage, will meet the following requirements:

- Comply with defined national or local cultural heritage regulations or the protected area management plans.
- Consult the protected area sponsors and managers, local communities and other key stakeholders on the proposed project; and
- Implement additional programs, as appropriate, to promote and enhance the conservation aims of the protected area". (IFC, 2012).

In terms of alignment with IFC best practice for Landscape and Visual Impact Assessment, no issues pertaining to the above listed landscape resources were identified within the project zone of visual influence.

5.2 National and Regional Legislation and Policies

In order to comply with the Visual Resource Management requirements, it is necessary to clarify which National and Regional planning policies govern the proposed development area to ensure that the scale, density and nature of activities or developments are harmonious and in keeping with the sense of place and character of the area as mapped in Figure 10 below.

- DEA&DP Visual and Aesthetic Guidelines.

- REDZ Planning.
- Regional and Local Municipality Planning and Guidelines.

Table 10: List of key planning informants to the project

Theme	Requirements
Province	Limpopo Cape
District Municipality	Vhembe
Local Municipality	Makhado
REDZ	Not applicable
Strategic Powerline Corridor	International Powerline Corridor

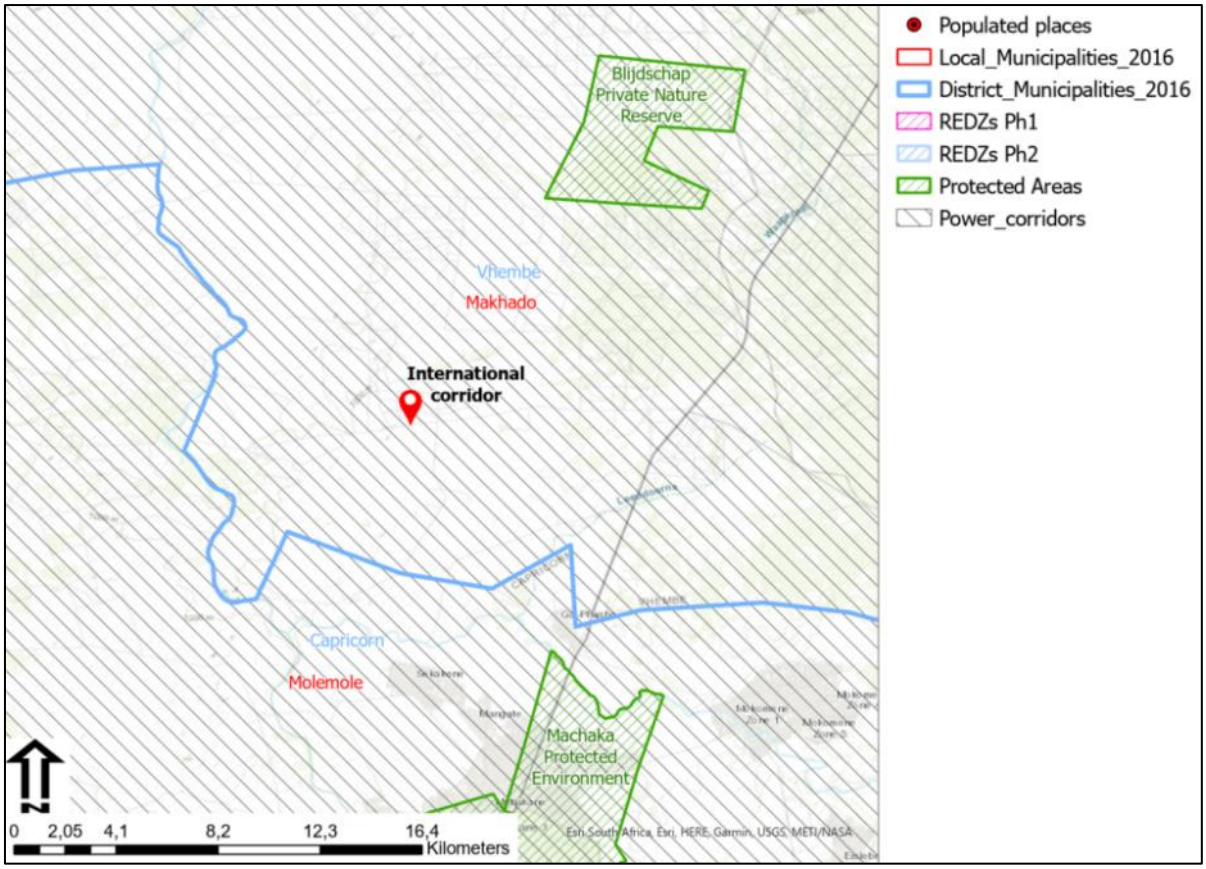


Figure 10: Planning locality map depicting the local, district and national planning zones.

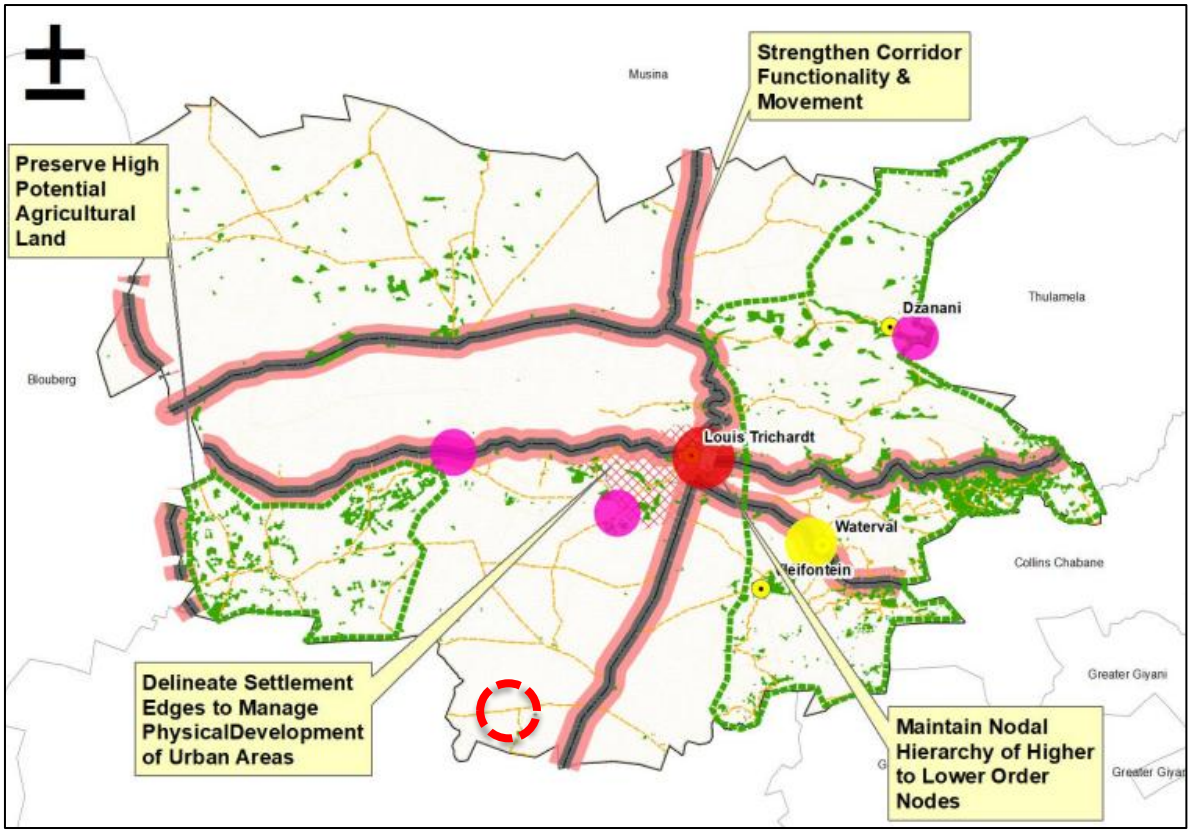


Figure 11: Extract map from the Spatial Development Plan with approximate site identified by the red dashed circle (Makhado Local Municipality , 2020).

5.2.1 DEA&DP Visual and Aesthetic Guidelines

Reference to the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) Guideline for involving visual and aesthetic specialists in Environmental Impact Assessment (EIA) processes is provided in terms of southern African best practice in Visual Impact Assessment. The report compiled by Oberholzer states that the Best Practicable Environmental Option (BPEO) should address the following:

- Ensure that the scale, density and nature of activities or developments are harmonious and in keeping with the sense of place and character of the area. The BPEO must also ensure that development must be located to prevent structures from being a visual intrusion (i.e., to retain open views and vistas).
- Long term protection of important scenic resources and heritage sites.
- Minimisation of visual intrusion in scenic areas.
- Retention of wilderness or special areas intact as far as possible.
- Responsiveness to the area's uniqueness, or sense of place." (Oberholzer, 2005)

While these visual and aesthetic guidelines were compiled for the Western Cape Province, they serve as best National practice for landscape and visual impact assessment. In terms of these guidelines, the following have relevance:

- Minimisation of visual intrusion in scenic areas.
- Retention of wilderness or special areas intact as far as possible.
- Responsiveness to the area's uniqueness, or sense of place.

This relates to the fact that the area in question, and the areas surrounding the proposed development area, are being used for game farming. However, as the area is located near

to the Tabor Eskom, there has been a push for PV developments in the area. To date, no PV projects have been constructed, but it is likely that PV landscape changes will be taking place in the area in the future. However, this would need to be balanced with the existing eco-tourism/ hunting that is still taking place in this bushveld landscape. This also increases the risk from a cumulative perspective, where intervisibility between PV projects could result in a significant landscape change, degrading landscape resources that are being used for eco-tourism.

5.2.2 Conservation Planning

As can be seen in Figure 10 above, there are two proclaimed conservation areas that could potentially fall within the project zone of visual influence. The Blijdschap Private Nature Reserve is located 8.5km to the northeast, and the Machaka Protected Environment is located 5.6km to the southeast. Due to the undulation of the terrain, neither of these conservation areas will fall within the proposed PV landscape zone of visual influence. Risk to conservation management is thus rated Low.

5.2.3 REDZ and Strategic Power Line Planning

A Strategic Environmental Assessment commissioned by the Department of Environmental Affairs, undertaken by the CSIR, identified Renewable Energy Development Zones (REDZs) (Department of Environment Affairs). These are gazetted geographical areas in which several wind and solar PV development projects will have the lowest negative impact on the environment while yielding the highest possible social and economic benefit to the country. The project is not located within a REDZ, and as such a full EIA process is required. The project site is located within the International Strategic Powerline Corridor with routings into the Southern African Development Community (SADC) countries to the north of South Africa. There are already two OHPLs routed through the assessment area, creating an east to west powerline corridor that links up to the Tabor Main Transmission Substation (MTS) in the east.

5.2.4 Other Renewable Energy Projects

According to the DFFE REEA for the third quarter in 2024, five other renewable energy projects are located within the 30km distance buffer. The Zandriveirspoort and Nakhado Solar Power projects are located well outside of the project viewshed with no chance of intervisibility. Three solar projects are located around the Tabor MTS; Ingwe, Mafadi and Boschhoek ranging in distance from 3km to 12km to the east of the proposed project. A preliminary viewshed undertaken from highpoints on the study area found that none of these projects would fall within the viewshed. There are, however, also other PV applications that are yet to be submitted to DFFE. These include the proposed PV project located on the adjacent property on farm Klipputs. Should other PV project be attracted to the area, there is an increased potential for large area coverage of PV that will detract from the existing bushveld landscape.

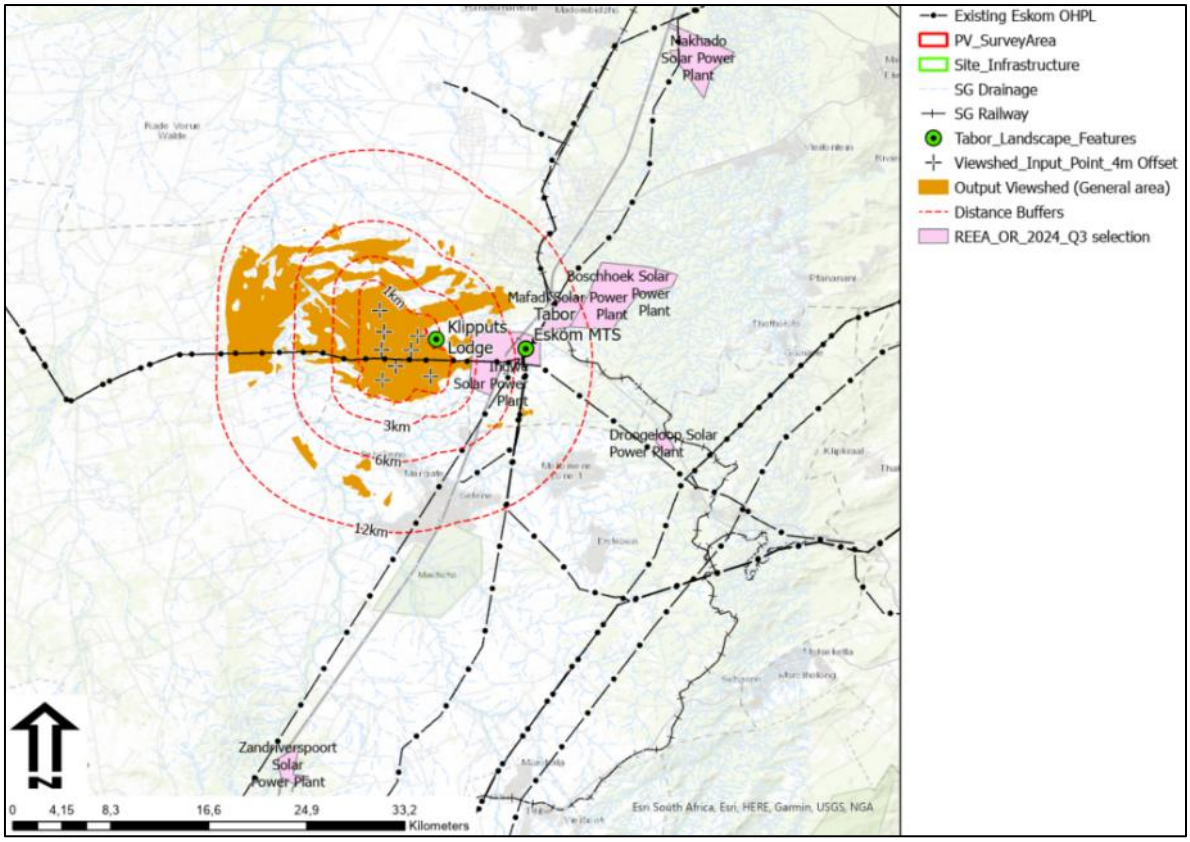


Figure 12: Map depicting DEA Renewable Energy project status in relation to the preliminary viewshed generated from the site highpoints for Klipput Solar PV project (4m Offset).

5.2.5 Local and Regional Planning

The following tables list key regional and local planning that has relevance to the project pertaining to landscape-based tourism, and renewable energy projects.

Table 11: District Planning reference table relevant to the project

Vhembe District Municipality SDF (2007) (Vhembe District Municipality, 2007)		
Theme	**Requirements**	**Page**
Renewable Energy	• It is recommended that electrical supply authorization and issues relating to the restructuring of REDs are finalized as soon as possible with the assistance from DPLG, Provincial Local Government and Housing, SALGA and the MEC for Local Government and Housing in this regard. • Regular power breaks due to ESKOM capacity problems pose a serious challenge as well. Municipalities lose income on electricity investment in ESKOM licensed areas, and this minimizes potentials of further extension of services to the needy areas	11
Economic growth	The Municipality of Makhado being the gateway to other African states strives to improve the quality of life for its entire people by rendering basic, efficient, affordable and sustainable services	7

	through transparent, participatory, governance, dedicated, efficient and an accountable institution focused on developing the area as a growth point.	
	The following strategies guide the spatial development of the Makhado Municipality: • The promotion and development of the Trans-Limpopo Spatial Development Initiative activity spine • The encouragement of higher densities and mixed land uses in selected areas • Development of retail , commercial and informal sector opportunities and facilities in selected areas and encouragement of the diversification of land uses within selected areas • The creation of decentralised (rural) development nodes and activity centres where the development of higher-order activities (retail, commercial, industrial, etc.) is encouraged	52
Conservation	All the ecologically sensitive areas such as flood areas, wilderness areas and ridges are identified as conservation areas.	
Tourism	Main Tourism routes: N1 Polokwane-Makhada: Prime tourism destination within the District is Makhada and environs and N1: Makada Musina: This flow would include tourist traffic to and from Zimbabe, hunting visitors and game farms and visitors to Tshipise, Nwaned and Paturi Gate of Kruger Park	62

Vhembe District Municipality LP Profile and Analysis (Vhembe District Municipality, 2020)		
Theme	**Requirements**	**Page**
Renewable Energy	The Industrial Development Corporation (IDC) has committed R25-billion to new investments in South Africa's "green economy" over the next five year and started with the installation of solar water geysers in new low-cost houses. The district together with UNIVEN/Gondal/CLGH and Eskom are engaged in supporting the Bio energy projects and manufacturing of Solar power in the district	33
Natural Resources	District has a wealth of natural resources which unfortunately is faced with a variety of challenges, from resources over-exploitation to land degradation. Better life for all the residents of the Vhembe District can be achieved through sustainable development, which ensures efficient balance between social, economic and environmental needs. Deforestation, erosion, invasion of alien species, rodents, insects and pests plague, drought, pollution, destabilisation of wetlands, veldfires, poaching and floods are main environmental challenges here.	33

Table 12: Local Planning reference table relevant to the project

Makhado Municipality SDF (Makhado Local Municipality , 2020)		
Theme	**Requirements**	**Page**
Tourism	To this end, the Makhado Spatial Development Framework (MSDF) therefore seeks to leverage on the unique geospatial positioning of this municipality as it strives to be one of the most lucrative gateways into the African continent at large. Moreover, its pristine natural environment as well as its related resource endowments provides unique opportunities for the development of agriculture, tourism, mining and other related economic opportunities	12
	• The district IDP also seeks to harness the following sectors – tourism, agriculture, mining and the promotion of green energy. (Vhembe DM IDP)	
	• Makhado: The Tourism Sector has become increasingly important in the Municipality. The rich cultural heritage of the area, natural beauty, proximity to the N1, large dams (such as Albasini), waterfalls, breathing stone and the climate gives it competitive advantage in tourism. Various tourism routes exist in the area, such as the Ivory route, Ribolla Open Africa Route, Greater Mapubungwe Route, and the Soutpansberg Birding Route. Major tourism products in the area include Dzata Ruins and Schoemansdal Museum.	38
Environment Landscape	• Strategic Objective 5: Environmental conservation and prime agricultural land Protection	78
Renewable Energy	• Explore the possibility of generating energy from renewable sources in the municipality, e.g., Biomass plant from agricultural waste.	95
	• Louis Trichardt: Provide space for economic diversification and higher intensity economic development, with a focus on agriculture and related activities, utilities and power generation, as well as transport and logistics. Support should also be provided to industrial and commercial uses, as well as business incubation centres and innovation centres, training facilities and educational institutes	113

5.3 Landscape Planning Policy Fit

Policy fit refers to the degree to which the proposed landscape modifications align with International, National, Provincial and Local planning and policy. In terms of international best practice, the proposed landscape modification will not trigger any issues as there are no significant cultural/ landscape visual resources found on the site or immediate surrounds that are flagged by international landscape guidelines.

In terms of regional and local planning fit for planned landscape and visual related themes, the **expected visual/ landscape policy fit of the landscape change is rated Medium Positive.** There is clear motivation for renewable energy projects in the local and district municipality planning documents, with the close proximity of the site to the Eskom Tabor MTS being a clear driver for PV related projects in the area. On the constraints side, there is also a clear emphasis for tourism in the area due to the bushveld landscapes that are well suited to game farming. As game farming is taking place in the region, care would need to be taken to ensure that game farm areas are well buffered, and that PV/ BESS development opportunities are located more along the existing Eskom OHPL corridor where the local landscapes are partially degraded. Care would also need to be taken in reducing intervisibility that would result in a visual massing effect that could degrade local landscape resources used for eco-tourism.

6 BASELINE VISUAL INVENTORY

6.1 Local Landscape Context

Landscape character is defined by the U.K. Institute of Environmental Management and Assessment (IEMA) as the 'distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape, and how this is perceived by people. It reflects particular combinations of geology, landform, soils, vegetation, land use and human settlement'. It creates the specific sense of place or essential character and 'spirit of the place' (IEMA, 2002). This section of the VIA identified the main landscape features that define the landscape character.

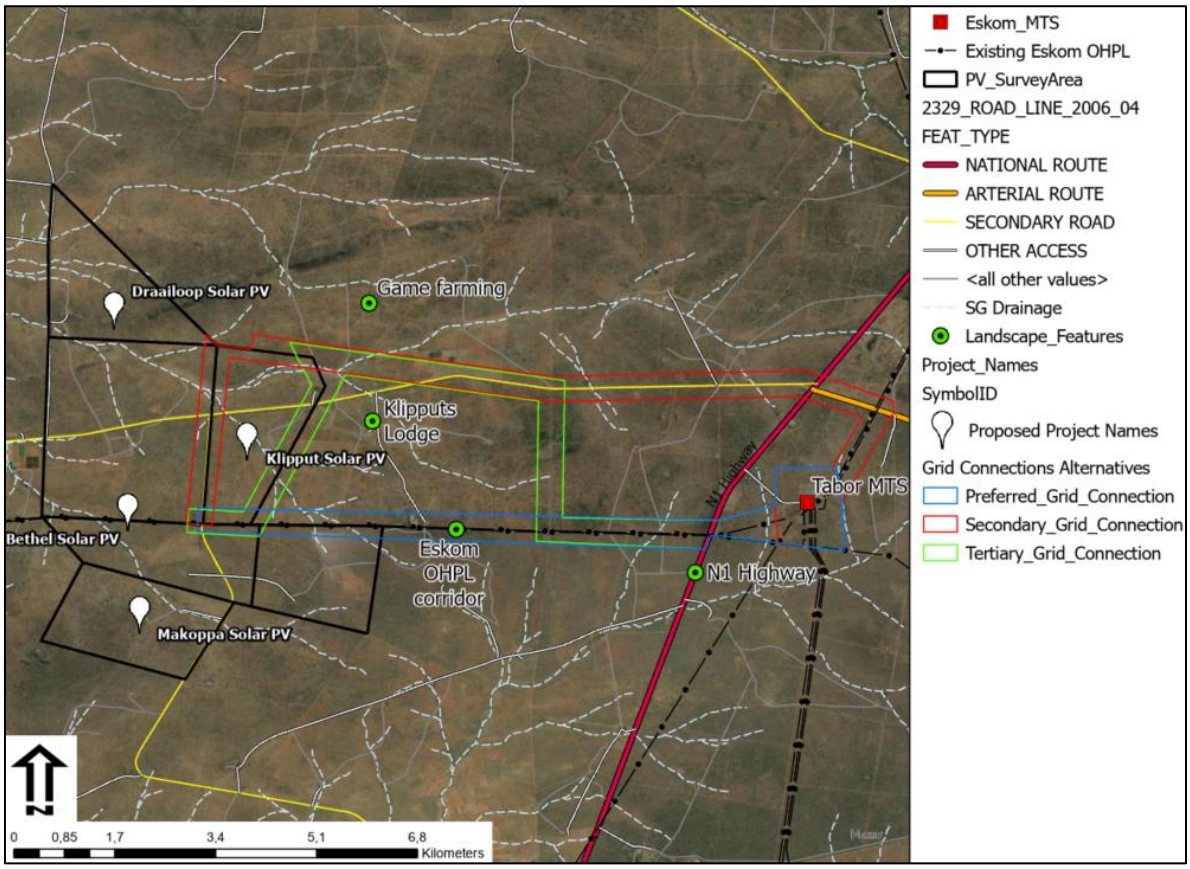


Figure 13. Local landscape themes map.

As mapped in Figure 13 above, the key landscape themes within the Foreground / Middle Ground (6km) distance are tabled below:

Table 13:Key Landscape Themes

Theme	Description
Eskom Tabor MTS and OHPL corridors	A large Main Transmission Substation is located 6.6km to the east of the study area. As a result of the MTS, numerous OHPL are routed through the area. The is a multiple powerline corridor running through the study area that does degrade local landscape resources to some degree.
 	
Klipputs Farm Lodge and Game Farming	The Klipputs farm lodge is located 877m to the east of the project area, with views looking to the northeast. There is elevated terrain (a small rocky outcrop) directly to the west of the lodge that excludes the proposed PV areas from view. This farm is also considering PV development as a long strip along the Eskom powerline corridor. This area is also out of the view of the lodge, allowing for multiple land uses for the property owner.

Game Farming and Hunting	The areas to the north of the study area reflect undulating bushveld landscapes that significantly add to the regional sense of place. This land use is in alignment with the local and regional eco-tourism planning. To ensure that this type of eco-tourism related landscapes are not degraded, suitable setbacks from the northern areas as well as road buffers should be incorporated where applicable.

6.2 Visual Absorption Capacity

Land use and vegetation are a crucial factor in determining landscape character, especially regarding the Visual Absorption Capacity (VAC) of the landscapes. Oberholzer defines VAC as the potential of the landscape to conceal the proposed project (Oberholzer, 2005). i.e.

- High VAC – e.g., effective screening by vegetation and structures.
- Moderate VAC - e.g., partial screening by vegetation and structures.
- Low VAC - e.g., little screening by vegetation or structures.

Vegetation type is a large factor in determining the scenic quality of the site in terms of colour and texture, as well as influencing the local ability of the landscape to absorb the landscape change if larger trees species or prolific vegetation is located on the site or within the local

region. The map below outlines the vegetation type based on BGIS mapping (South African National Biodiversity Institute, 2018).

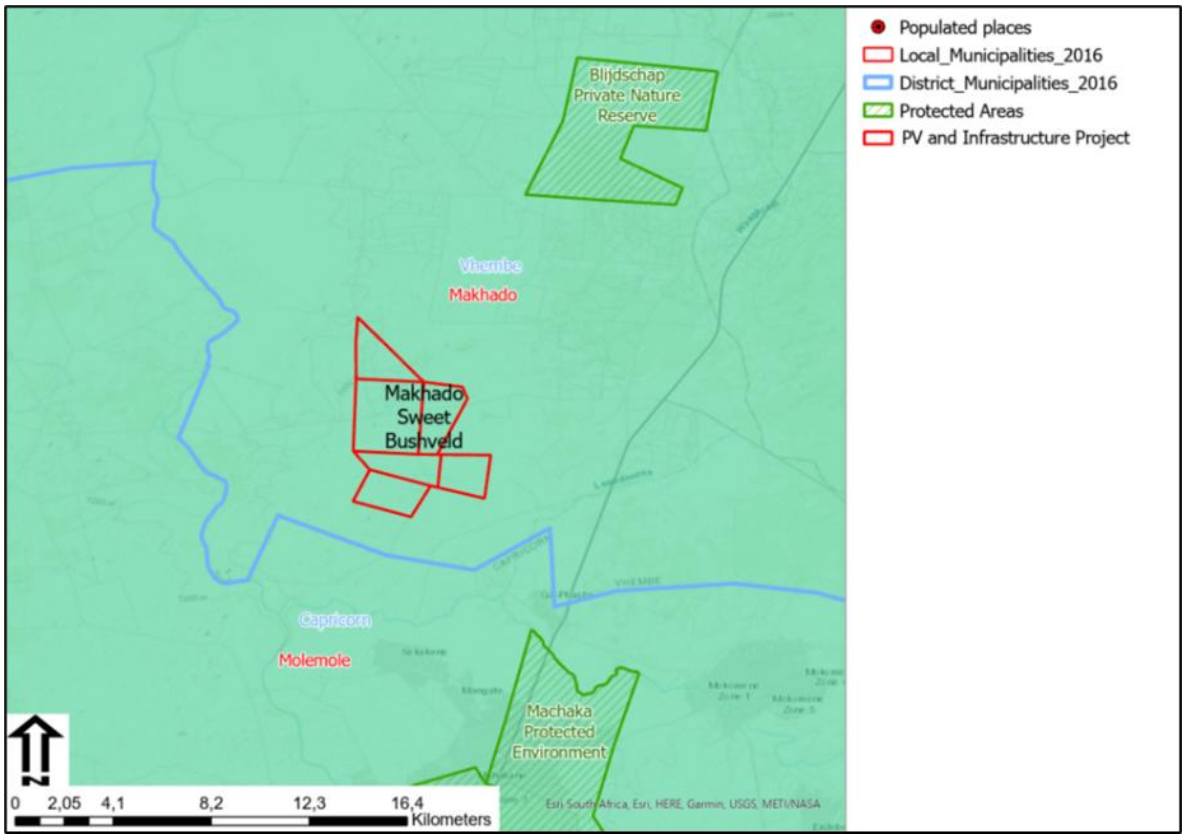


Figure 14. BGIS Biome and Vegetation Type Map (South African National Biodiversity Institute, 2018)

According to the South African National Biodiversity Institute (SANBI) 2012 Vegetation Map of South Africa, Lesotho and Swaziland (South African National Biodiversity Institute, 2012) the project area is located in the Savanna Biome with the main vegetation types being Makhado Sweet Bushveld. As depicted in the photograph below, the bushveld on the site is generally lower in height but is extensive and does include larger trees in lower lying areas adjacent to drainage lines. In some instances, especially in the central and southern portions of the study area, the natural vegetation has been cleared for cultivation, with the current vegetation a regrowth bushveld. This could account for the lower height of the vegetation in some areas.

Figure 15. Photograph of Makhado Sweet Bushveld regrowth taken from the central portion of the study area.

Figure 16. Photograph of Makhado Sweet Bushveld taken a drainage line depicting higher vegetation.

The project site has VAC levels rated from Medium to Low. Although some sections of bushveld vegetation offer partial visual screening, most of the site's vegetation is of medium height and does not provide significant visual coverage. However, while the bushveld vegetation is unlikely to screen larger PV panels and structures above 3m in height, the average height of the vegetation is higher than human height. The relevance of this is that, from a human perspective, the general landscapes are more localised. This will vary in relation to the topography, with more view opportunity from higher ground, and less views from the lower lying areas along the drainage lines. This does have relevance for ground based eco-tourism land uses such as hunting, where much of the view-scape is localised. In terms of built infrastructure, there are no prominent man-made structures on the property. Modifications include the original lodge complex of houses, and two farm houses and building and these are usually screened from view by larger growing garden shade trees. There is also a run-way that has been cleared of vegetation. The only area with a slightly higher VAC level is the central OHPL corridor, where the powerline provides some visual absorption for similar OHPL landscape changes. To reflect the landscape degradation of the OHPL corridor, a buffer of 100m was generated along the OHPL routings. As there are farm building structures on the property, these areas were also mapped to the nearest farm road that defines their utilisation space. In terms of public infrastructure, there are two roads

that cut through the study area. These routes are minor, but with the east-west road a main district road that would carry tourist traffic. The north-south road is very minor and degraded and is highly unlikely to carry tourist traffic. In order to protect the road sense of place, both roads were buffered 50m (centreline) as No-Go areas. As the east-west road is likely to carry eco-tourism traffic, a 100m buffer was placed along this road (excluding main drainage lines) to allow for some semblance of the bushveld landscape as a view corridor. As the run-way is gravel and is not a dominating visual feature in the landscape, the run-way was not mapped as a landscape feature.

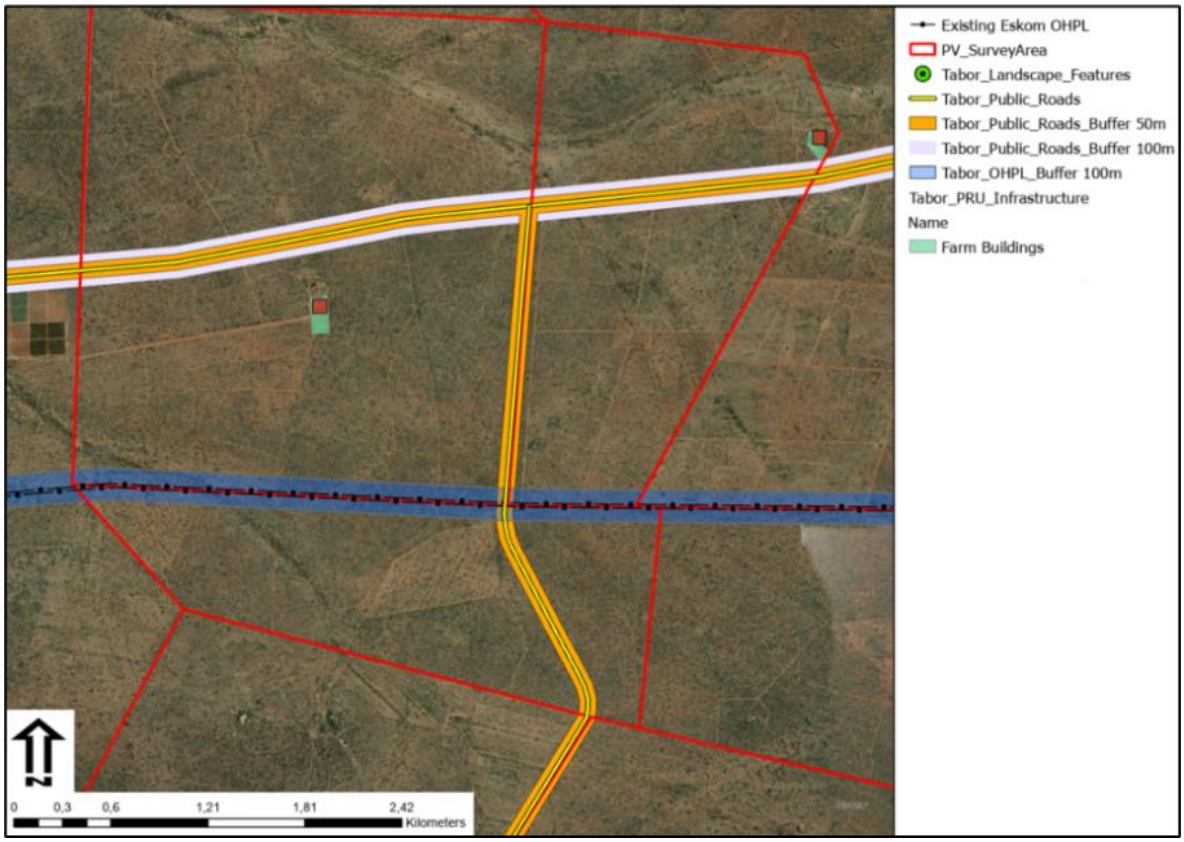


Figure 17. Main infrastructure areas mapping.

6.3 Landscape Topography

Landform is a key variable informing the aesthetic nature of the landscape within the VRM methodology. The viewshed is strongly associated with the regional topography where topographic screening from undulating terrain would restrict views of the proposed landscape change. The site-specific characteristics are also analysed by gradient analysis to determine if any steep slopes are located on the proposed development site.

6.3.1 Regional Landscape Topography

Making use of the NASA STRM digital elevation model, profile lines were generated for the area within 12km on either side of the project area predominantly in the North to South and East to West compass reference points. The map depicting the regional elevation profile lines can be viewed on the following page.

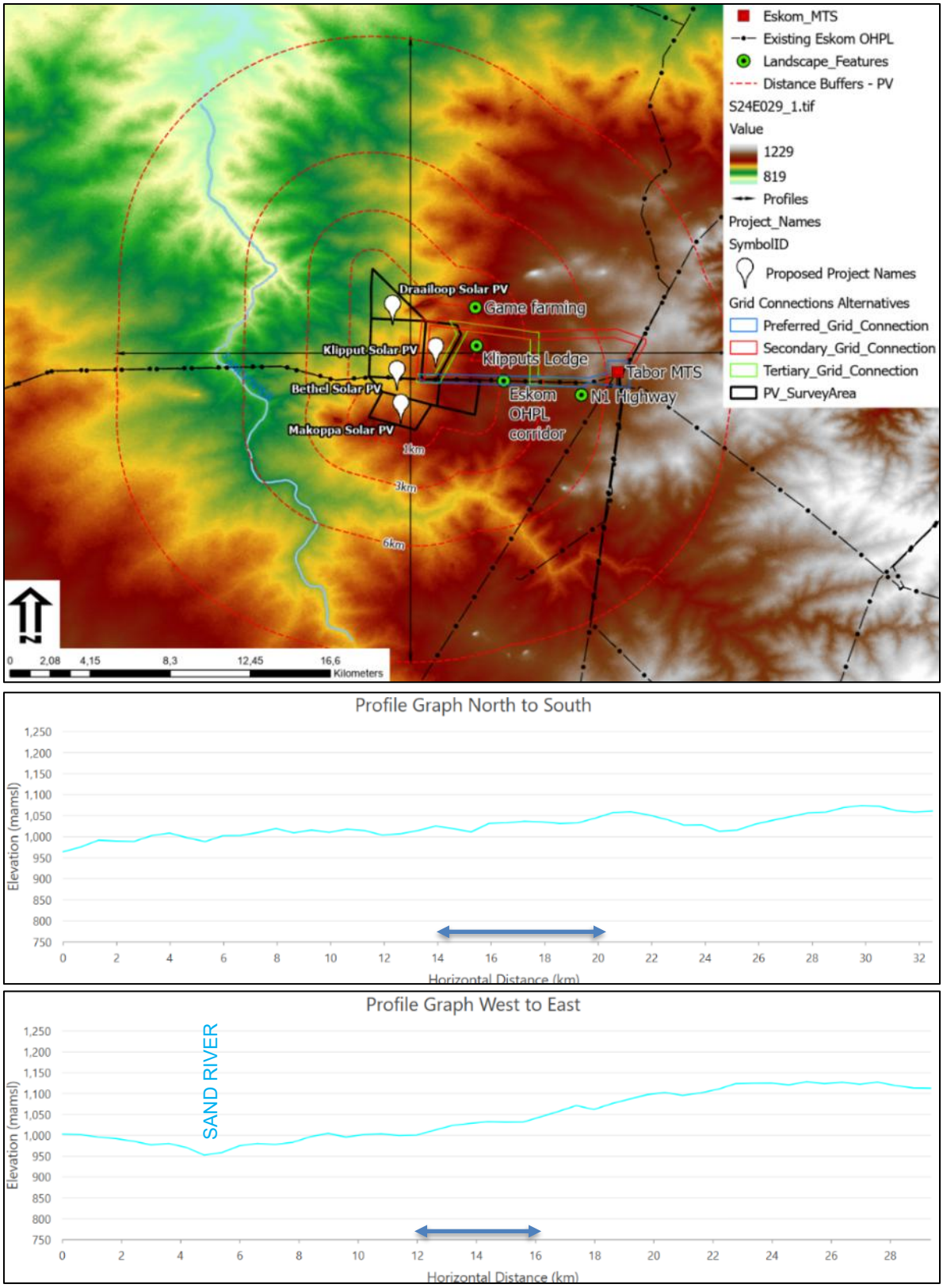


Figure 18: Regional Digital Elevation Mapping and Profiles Graphs *with approximate extent depicted*.

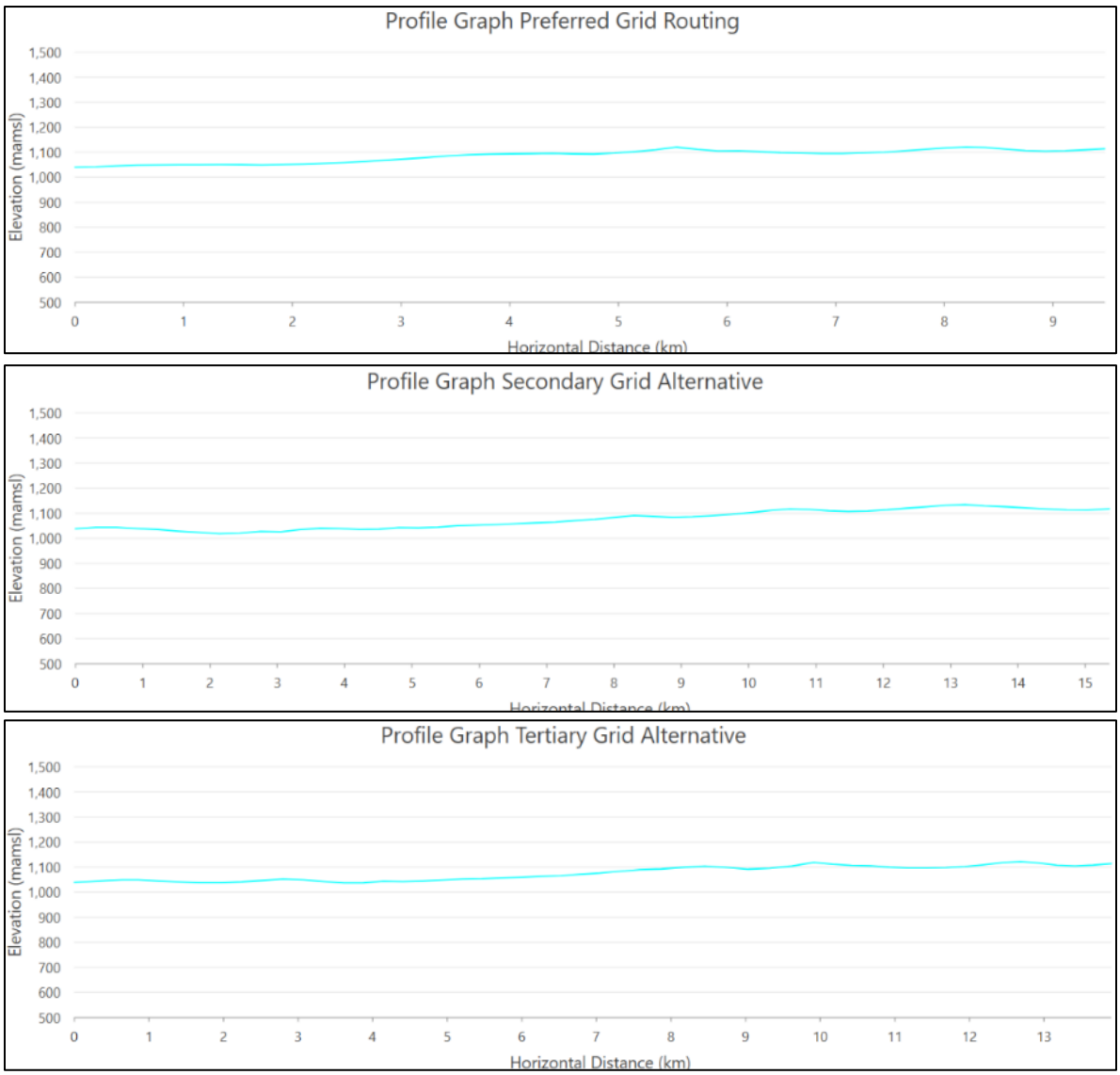


Figure 19: Grid routing alternative profiles.

The general topography of the region is defined as undulating and without any dominating landforms that would create landscape significance. The drainage from the site is to the west and into the Sand River. In terms of elevation, the study area has an average elevation of approx. 1000mamsl and falls mid-way within the broader topography. The regional high point is 15km approx. to the east of the site with elevation of 1229mamsl. The regional low point is the northwest along the Sand River with elevation of 819mamsl.

North to South Profile depicts the study area with a north facing aspect, on moderately undulating terrain. There is a high point to the south of the study area that will effectively contain the viewshed in this direction, but with more open views to the lower lying lands to the north. West to East Profile depicts more slopes than the north to south profile, but with a westerly aspect. There is local high ground to the west of the study area that would mainly contain the viewshed to the site and to the lower lying areas along the Sand River.

The profiles for the three grid alternatives were generated with the finding that all the proposed routes do not cross prominent ridgelines where higher levels of visual intrusion would take place.

6.3.2 Key local topographic features and site slopes analysis

To ensure that significant landforms related to steep slopes are not located on the site or surrounds, a slopes analysis was undertaken. As mapped below and depicted in the photographs, there is a single prominent ridgeline landform on the northern portion of the study area, as well as low lying rocky outcrops on the south section of the study area. The ridgeline falls within the Draailoop PV area, and the rocky outcrops within the Makoppa PV area. The ridgeline is not excessively prominent with the highest point outside the study area and having an approx. height of 40m above average ground level. As the ridgeline does have steep slopes that range between 1 in 10m and 1 in 4m, this landform should be excluded with a 100m buffer to retain the landform sense of place.

Figure 20. Photograph of southern ridgeline landform that creates a skyline effect.

The photograph below depicts the shallow rocky outcrops that are a landform feature of the southern portion of the study area. These areas are also characterised by larger trees, and within the broader bushveld setting, do add value as a landscape resource. These areas should be excluded from the development with a 50m buffer.

Figure 21. Photograph of an example of the few rocky outcrops found in the southern portion of the study area.

There are a number of drainage lines located within the study area. Most of these drainage lines are very shallow and do not create a defined landform such that they would be recognised as a stream or river. There are two main drainage lines that would be perceived as a drainage area and have some landscape value. The main drainage line is located within the Draailoop PV, and the smaller one within the Bethel PV area. These area have been broadly mapped and should be excluded from the development footprint as much as possible. The setbacks that define the No-Go status for all the drainage lines, would need to be defined by the Surface Water Hydrologist and excluded accordingly.

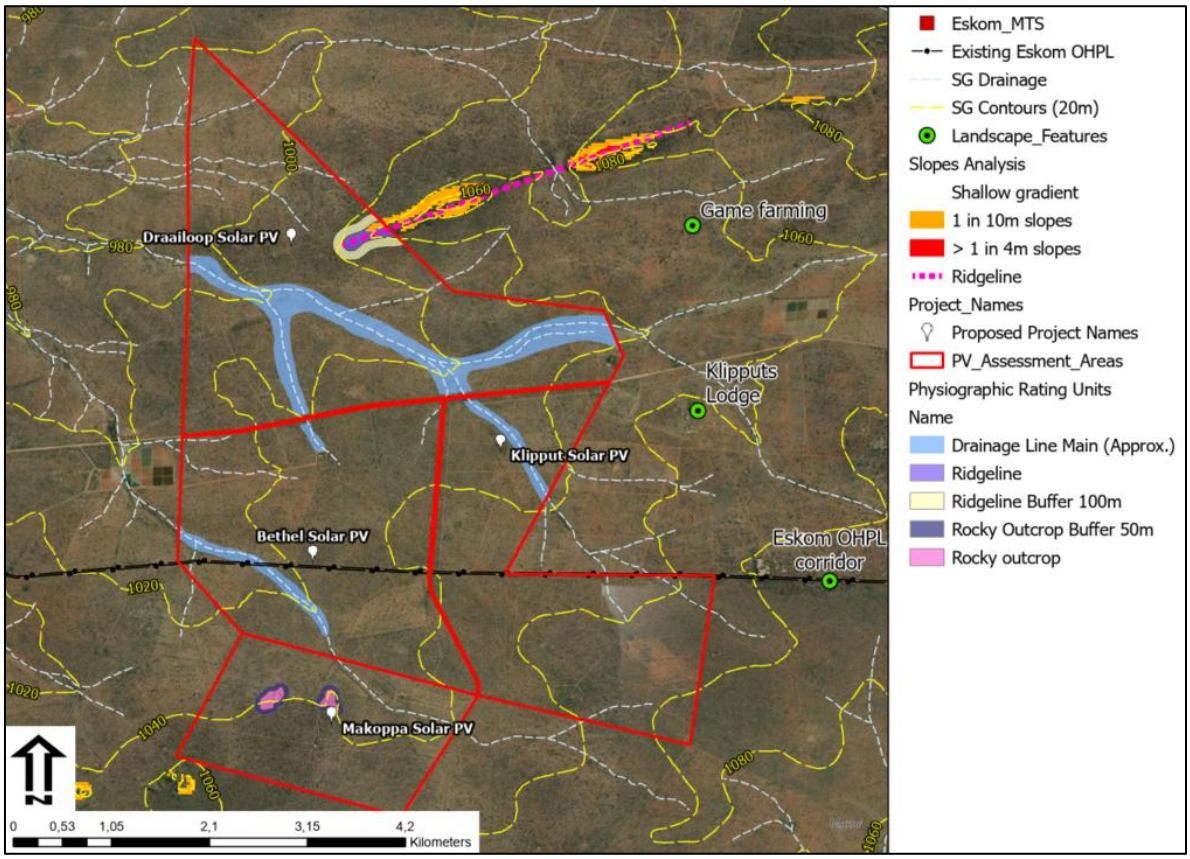


Figure 22: Key topographic features map.

In conclusion, there are three main topographic landscape features; the ridgeline (with 1 in 10m slopes) and buffer, the rocky outcrops and buffer, as well as the two main drainage lines. These areas should be excluded from the development footprint.

6.4 Project Zone of Visual Influence

The visible extent, or viewshed, is “the outer boundary defining a view catchment area, usually along crests and ridgelines” (Oberholzer, 2005). In order to define the extent of the possible influence of the proposed landscape change, a viewshed analysis was undertaken from the proposed site at a specified height above ground level. This is to assess the ***theoretical extent*** where the proposed landscape change could be visible from. This theoretical viewshed excludes vegetation, structural development as well as distance from the location where atmospheric influence would reduce visual clarity over increasing distance. The viewshed analysis makes use of open-source NASA ASTER Digital Elevation Model data (NASA, 2009).

Based on the theoretical viewshed and the site visit appraisal of the nature of the landscape, an assessment of the ***Zone of Visual Influence (ZVI)*** is made. The ZVI is the area where the proposed landscape change is most likely to be noticed by the casual observer, taking the site visit into account where vegetation, existing development and distance is taken into consideration. This is a subjective appraisal but informed by the viewshed and the other factors mentioned.

6.4.1 Viewshed Analysis

A viewshed analysis was undertaken for the site making use of an Offset value representing the height of the proposed development as reflected in the table below. The model extent of the viewshed analysis was restricted to a defined distance from the site that represents the expected zone of visual influence (ZVI) of the proposed activities. This takes the scale, and size of the proposed projects into consideration in relation to the natural visual absorption capacity of the receiving environment. The maps are informative only as visibility tends to diminish exponentially with distance, which is well recognised in visual analysis literature (Hull & Bishop, 1988).

Table 14: Proposed Project Heights table

Proposed Activity	Height (m)	Model Extent	Motivation
PV and Structures	3m	24km	Due to the larger scale of the development where large areas of PV coverage could take place, the extent of the viewshed was extended to 24km in order to better understand massing effects and cumulative views.
BESS/ Site	4m	12km	The BESS coverage area is smaller than the PV array areas and is less likely to generate large visual intervisibility. As such, the viewshed extent was capped as 12km.
Grid Connect	32m	4km	Within the bushveld vegetation landscape context, the views are localised, and the proposed OHPL landscape change is unlikely to extend beyond 4km from site. The monopole structure also offers minimal visual contrast beyond 2km if not located in a prominent locality.

The viewsheds maps can be viewed on the following pages. The mapping depicts the theoretical area where the proposed landscape change could be visible.

PV Development ZVI

The extent of the Zone of Visual Influence for the proposed PV development area is **defined as Wide Area and rated Moderate** for the following reasons:

- With the exception of the areas to the west of the Sand River and some expansion to the south, the viewshed is predominately contained with the Foreground/ Mid-Ground distance areas and within 3km of the project site. This is primarily due to the

high ground to the north and east of the site, which restricts view expansion to these areas.

- Outside of the 3km distance area, there are some fragmented views to the north, where higher ground would allow views to the south towards the study area.
- Outside of the 6km distance buffer zone, the view incidence potential is predominantly to the west of the Sand River and well as to the south. However, due to the distance and the bushveld vegetation landscape context, it is unlikely that clear visibility will take place from these areas.

The following receptors were located within the expected ZVI:

- District farm access roads (Very High Visual Exposure).
- Klipputs farmhouse (not the lodge). (Very High Visual Exposure).
- Klipputs farm labourers (Very High Visual Exposure).
- Western isolated farmsteads (Low Visual Exposure).

BESS/ Site Development ZVI

The extent of the Zone of Visual Influence for the proposed BESS/ Site development area is **defined as Local Area and rated Moderate to Low** for the following reasons:

- The viewshed is predominately contained with the Foreground distance areas and within 1km of the project site. This is primarily does to the high ground to the south and east of the site, the restricts view expansion to these areas.
- Outside of the 3km distance area, there are some fragmented views to the north, where higher ground would allow views to the south towards the study area.
- Outside of the 6km distance buffer zone, there is likely to be minimal visual incidence, but it is likely that some partial visibility might take place.

The following receptors were located within the expected ZVI:

- District farm access roads (Very High Visual Exposure).
- Klipputs farm house (not the lodge). (Very High Visual Exposure).
- Klipputs farm labourers (Very High Visual Exposure).

OHPL ZVI

With a minor exception of the Preferred OHPL Alternative which has a slighted reduced visual extent to the northern areas, the extent of the Zone of Visual Influence for the OHPL are very similar. The OHPL ZVI is **defined as Local Area and rated Moderate to Low** for the following reasons:

- The viewshed is predominately contained within the Foreground distance areas and within 1km of the routing due to the bushveld vegetation that will contain the visual exposure to some degree.
- The monopole structures offer limited visual contrast beyond 1km and are unlikely to be visually discernible beyond 3km.

The following receptors were located within the expected ZVI:

- District farm access roads (Very High Visual Exposure).
- Klipputs farm (High Visual Exposure).
- Klipputs farm labourers (Very High Visual Exposure).
- N1 Highway (Very High Visual Exposure).

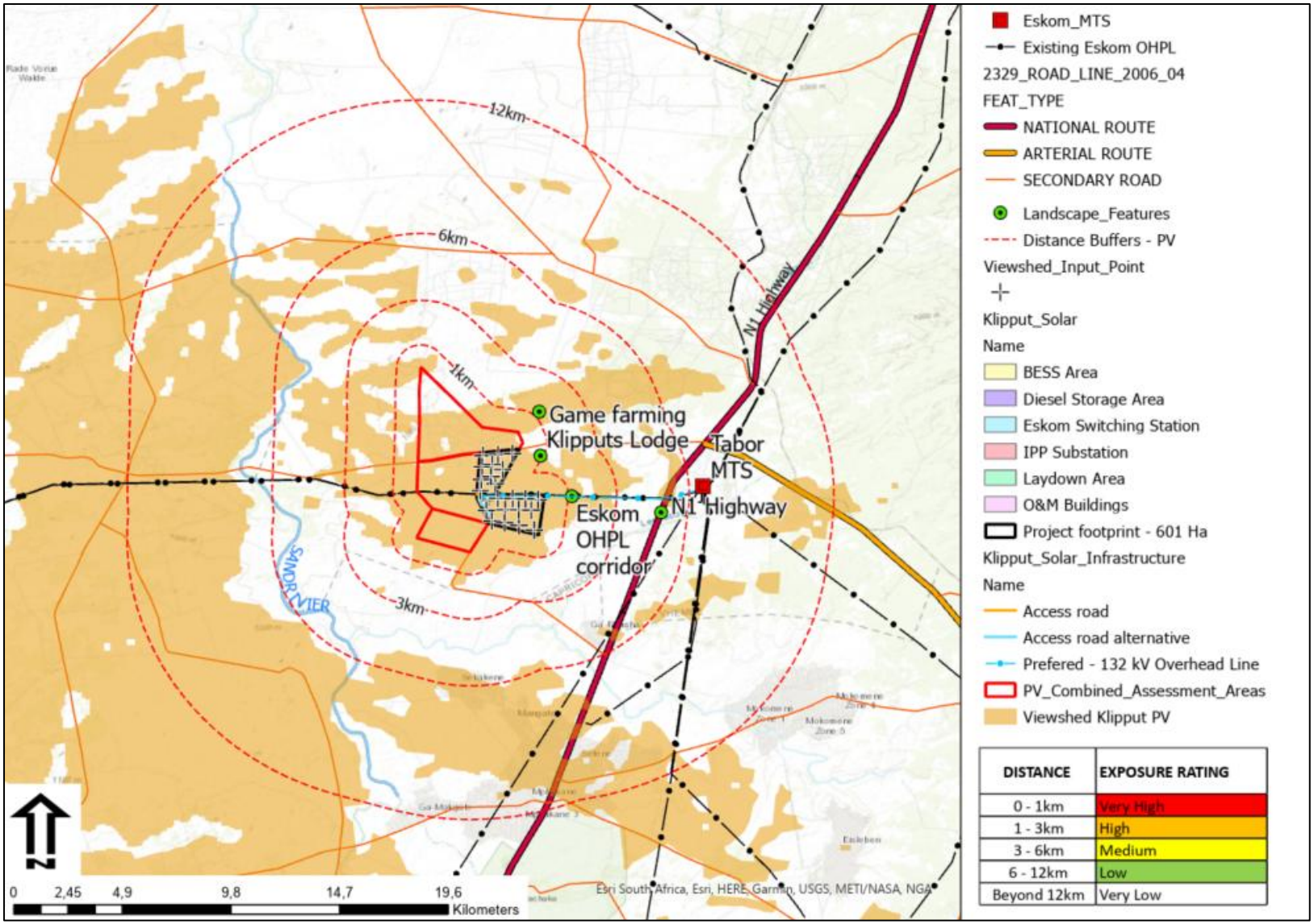


Figure 23: Viewshed analysis map of proposed project: Solar PV.

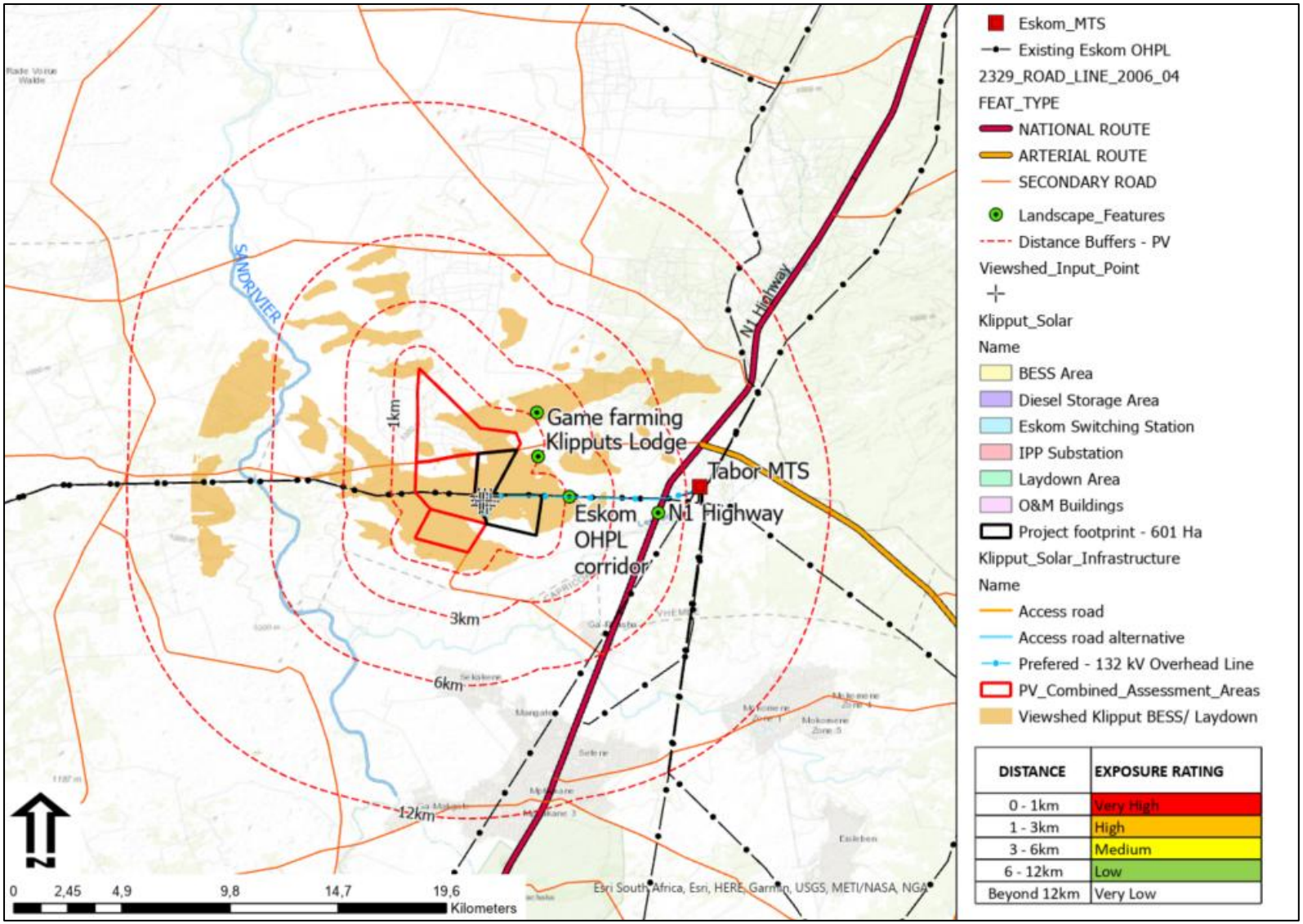


Figure 24: Viewshed analysis map of proposed project: BESS, substation and laydown.

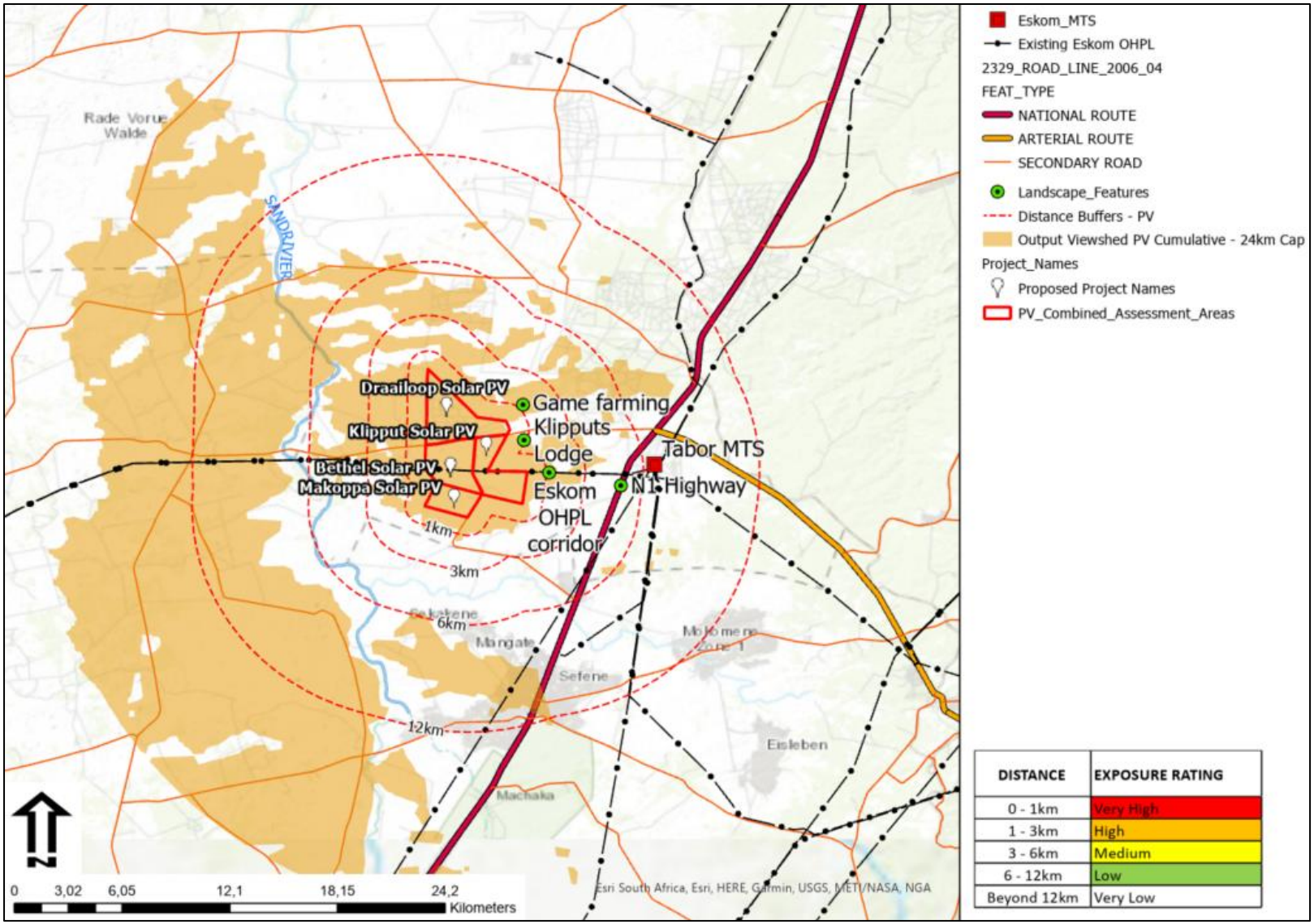


Figure 25: Cumulative viewshed analysis map of proposed combined PV projects.

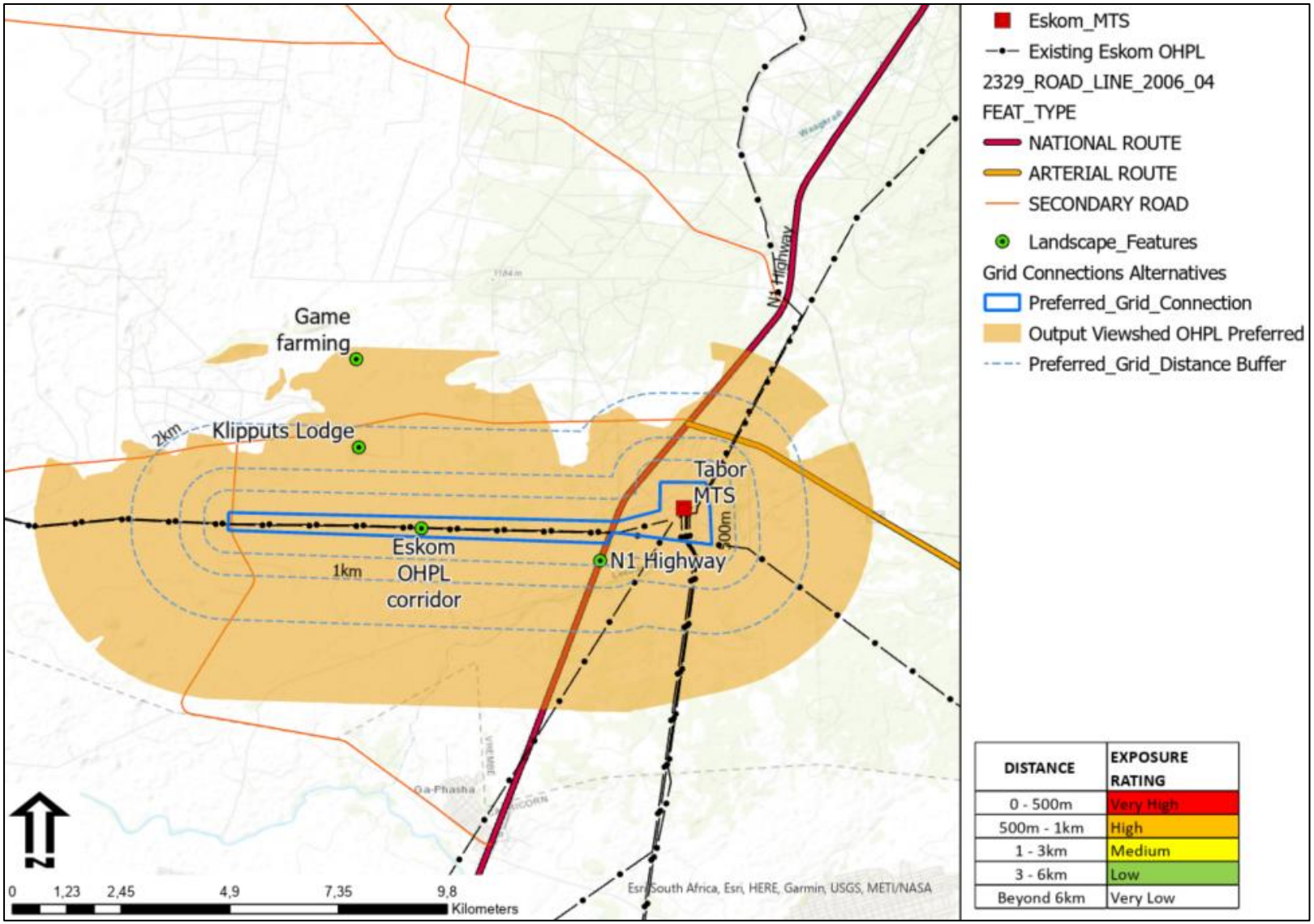


Figure 26: OHPL Preferred Alternative viewshed analysis map.

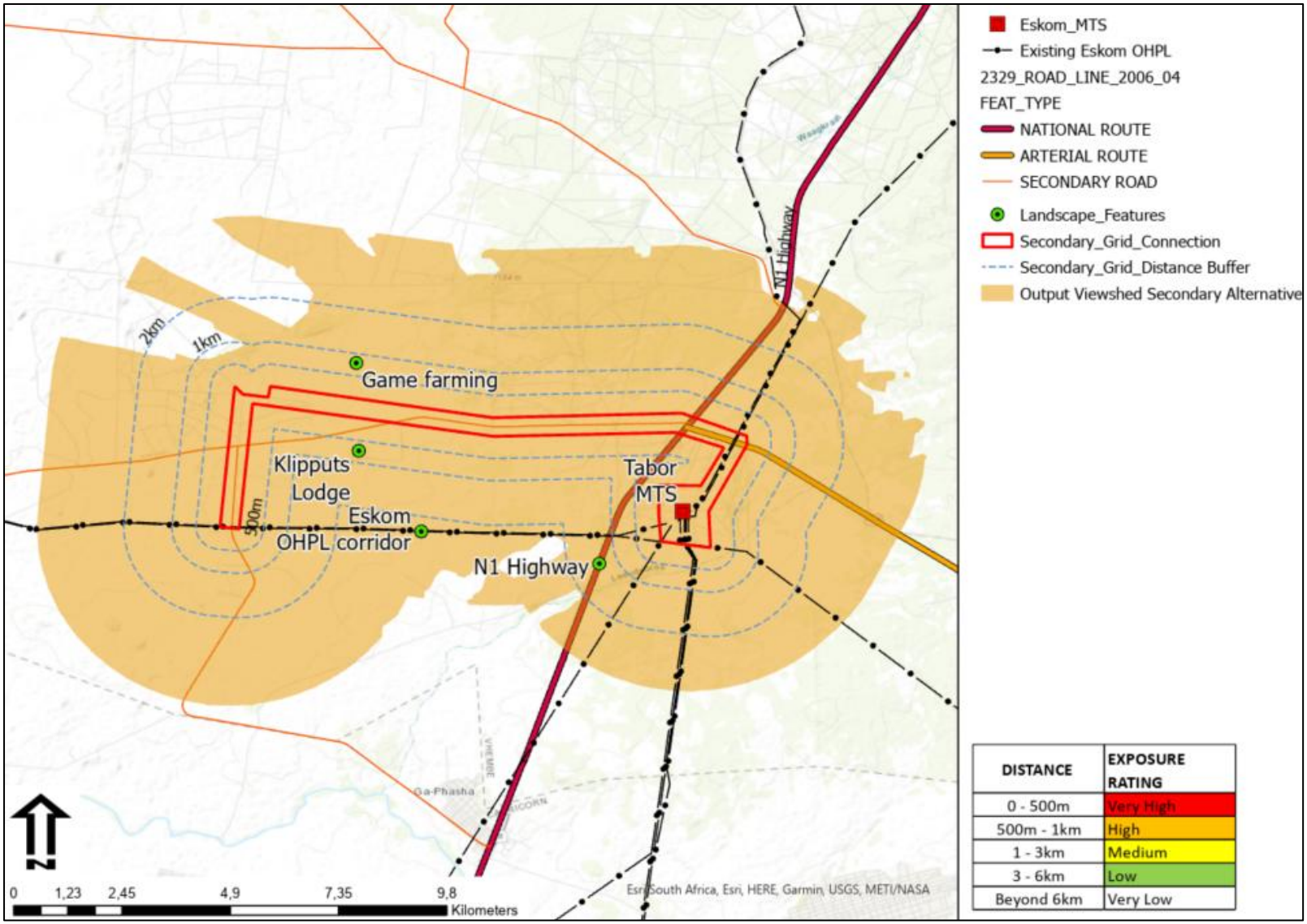


Figure 27: OHPL Secondary Alternative viewshed analysis map.

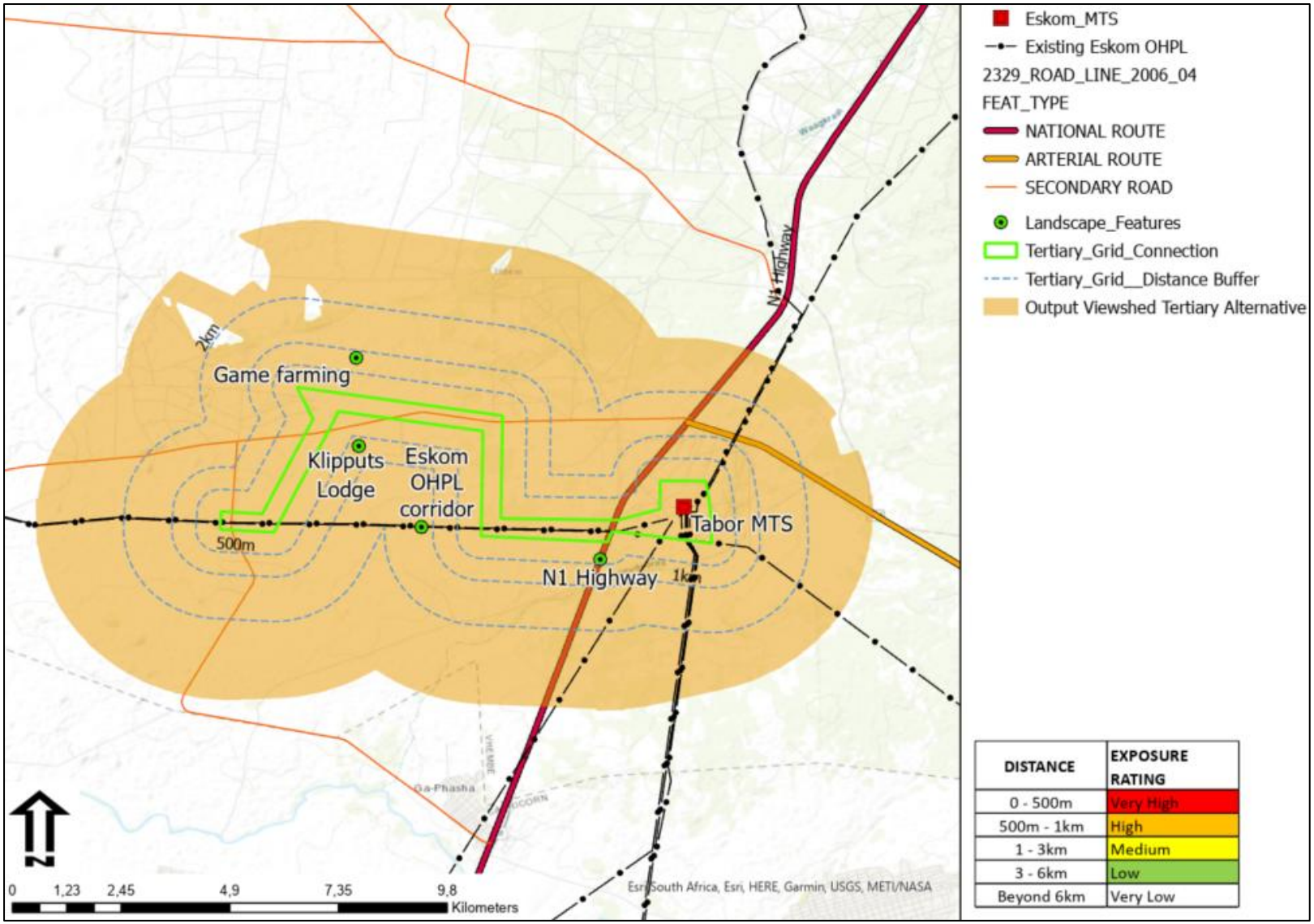


Figure 28: OHPL Tertiary Alternative viewshed analysis map.

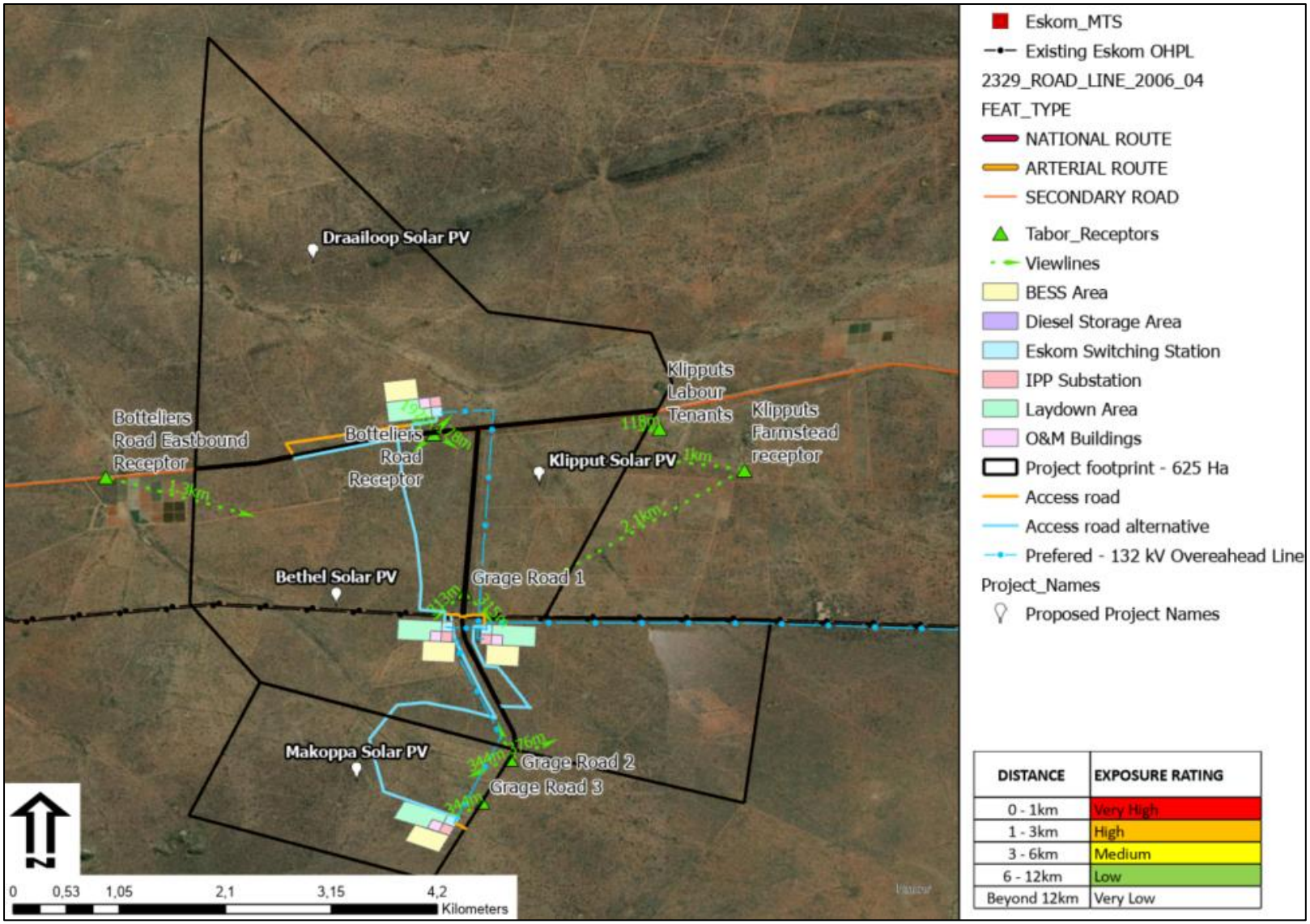


Figure 29: Receptor Key Observation Point and Visual Exposure Map: PV, BESS combined for cumulative assessment purposes.

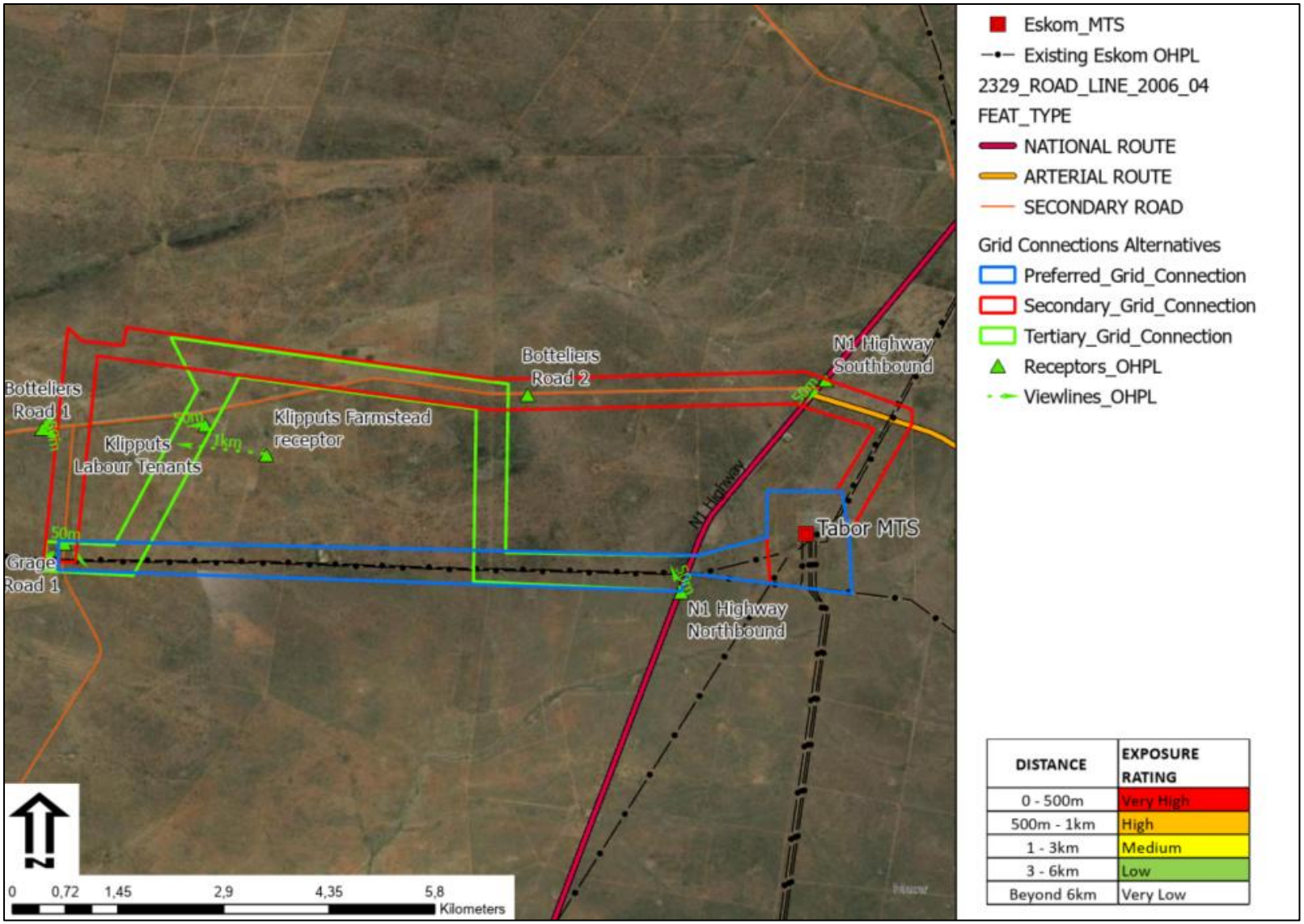


Figure 30: Receptor Key Observation Point and Visual Exposure Map: OHPL Alternatives combined for cumulative assessment purposes.

6.4.2 Receptors and Key Observation Points

As defined in the methodology, KOPs are defined by the Bureau of Land Management as the people (receptors) located in strategic locations surrounding the property that make consistent use of the views associated with the site where the landscape modifications are proposed. The following table identifies the receptors identified within the ZVI, as well as motivates if they have significance and should be defined as KOP. The receptors located within the ZVI, and KOPs view lines are indicated on the map on the following page. As motivated and mapped in Table 15 below and mapped in Figure 29 on the previous page, the following receptors have been identified as Key Observation Points and should be used as locations to assess the suitability of the landscape change.

Table 15: KOP Motivation table: PV & BESS (Collective Assessment for cumulative understanding)

Name	Theme	Exposure	KOP	Motivation
Grage Road	Minor District Road	Very High	**Yes**	The Grage Road is a minor district road that links the Botteliers Road to the southern town of Mphakane. The proposed PV array/ and BESS developments on either side of the road will result in strong levels of visual contrast.
Botteliers Road Receptor	Main District Road	Very High	**Yes**	The Botteliers Road is the main east-west access road into the region. As there are game farms along the road, it is likely that some tourist traffic could make use of the road. The PV arrays on either side of the road would generate strong levels of visual contrast and change to the existing rural, bushveld sense of place.
Klipputs Farmstead receptor	Residential	High	**No**	The Klipputs Farm is currently undergoing an EIA process for a PV array on the southern portion of the property. Should the PV project be authorised, the Klipputs PV will be clearly visible in the foreground, with the Tabor PV cluster in the background (similar context).
Klipputs Labour Tenants	Residential	Very High	**Yes**	Although the labour dwellings are located in low ground and surrounded by bushveld vegetation, there is a possibility that the proposed PV landscape change could be visible.

Table 16: KOP Motivation table: OHPL Alternatives.

Name	Theme	Exposure	KOP	Motivation
Grage Road	Minor District Road	Very High	**Yes**	The Grage Road is a minor district road that links the Botteliers Road to the southern town of Mphakane. The proposed OHPL would be clearly visible from the Grage Road receptors.
Botteliers Road Receptor	Main District Road	Very High	**Yes**	The Botteliers Road is the main east-west access road into the region. As there are game farms along the road, it is likely that some tourist traffic could make use of the road. The OHPLs on either side of the road would generate strong levels of visual contrast and change to the existing rural, bushveld sense of place.
Klipputs Farmstead receptor	Residential	High	**No**	The Klipputs Farm is currently undergoing an EIA process for a PV array on the southern portion of the property. Should the PV project be authorised, the Klipputs PV will be clearly visible in the foreground, with the PV and OHPL visible in the background.
Klipputs Labour Tenants	Residential	Very High	**Yes**	The labour dwellings are located within the proposed Tertiary Alternative routing with a 100m No-Go buffer exclusion area.
N1 Highway	National Road	Very High	**Yes**	The N1 Highway is a National Road and should be considered as a tourist view corridor.

7 VISUAL RESOURCE MANAGEMENT

In terms of the VRM methodology, landscape character is derived from a combination of scenic quality, receptor sensitivity to landscape change, and distance of the proposed landscape modification from key receptor points. Making use of the key landscape elements defined in the landscape contextualisation sections above, landscape units are defined which are then rated to derive their intrinsic scenic value, as well as how sensitive people living in the area would be to changes taking place in these landscapes.

7.1 Physiographic Rating Units

The Physiographic Rating Units are the areas within the proposed development area that reflect specific physical and graphic elements that define a particular landscape character. These unique landscapes within the project development areas are rated to assess the scenic quality and receptor sensitivity to landscape change, which is then used to define a Visual Resource Management Class for each of the site's unique landscape/s. The exception is Class I, which is determined based on national and international policy / best practice and landscape significance and as such are not rated for scenic quality and receptor sensitivity to landscape change. Based on the SANBI vegetation mapping and the site visit to define key landscape features, the following broad-brush areas were tabled and mapped in the following pages.

Table 17: Physiographic Landscape Rating Units(all sites)

Landscapes	Motivation
Drainage Line Main	There are two main drainage lines. These areas depict taller bushveld vegetation and larger trees that are a key component of the natural landscape. These areas would be subject to review of the Surface Water Hydrology specialists' findings.
Farm Buildings	There are two farm building areas on the site, the main lodge to the south, and a residential building to the north of the Botteliers Road.
Game Farm Boundary Buffer 200m	Discussions with the neighbouring property owners indicated that the lands to the north are being used for eco-tourism and hunting. As these are game farms, a broad buffer of 100m is proposed along the site boundary to ensure that the game farming sense of place is retained.
OHPL Buffer 100m	The Eskom OHPL corridor is routed through the property. With two large lines, the corridor scenic quality is degraded to some degree within a 100m buffer area.
Ridgeline	There is a small 40m high ridgeline in the northern portion of the study areas, that extends to the east into the neighbouring property. This landform does add scenic value to the local area.
Ridgeline Buffer 100m	To protect the ridgeline as a landscape resource, a 100m buffer is proposed around the ridgeline as this would allow a more natural vegetation fringe around the ridgelines as seen from northern eco-tourism areas.
General Road Buffer 50m	The N1 Highway is a National route and should be considered as a tourist view corridor. Botteliers and Grage Road are

	District gravel roads with public access. To ensure that the sense of place is retained to some degree by the keeping of bushveld vegetation on the verges of the road, a 50m buffer (centreline) is proposed.
Botteliers Road Buffer 100m	The Botteliers Road is the main access road into the region, that does include game farming. To ensure that a wide view corridor is retained, a 100m buffer from the road (centreline) is proposed.
Rocky outcrop	The southern portion of the study area as a few, medium sized rocky outcrops that add scenic value to the site.
Rocky Outcrop Buffer 50m	To protect the rocky outcrops sense of place, a 50m buffer is proposed around these landforms.
Undulating Bushveld	The majority of the site depicts undulating bushveld landscapes, that are mainly shallow gradient and have some degraded vegetation areas.

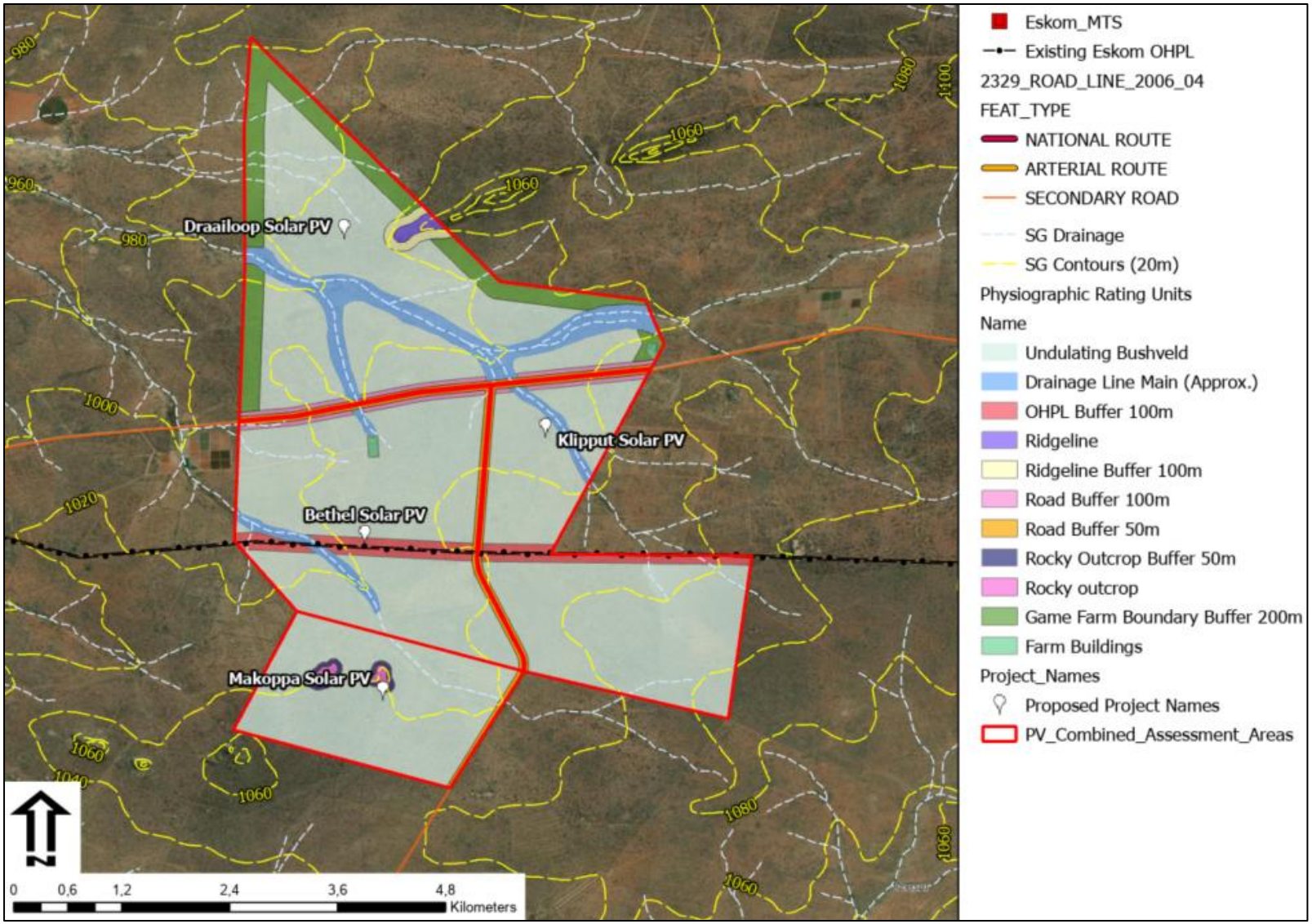


Figure 31: Physiographic Rating Units identified within the defined study area: PV.

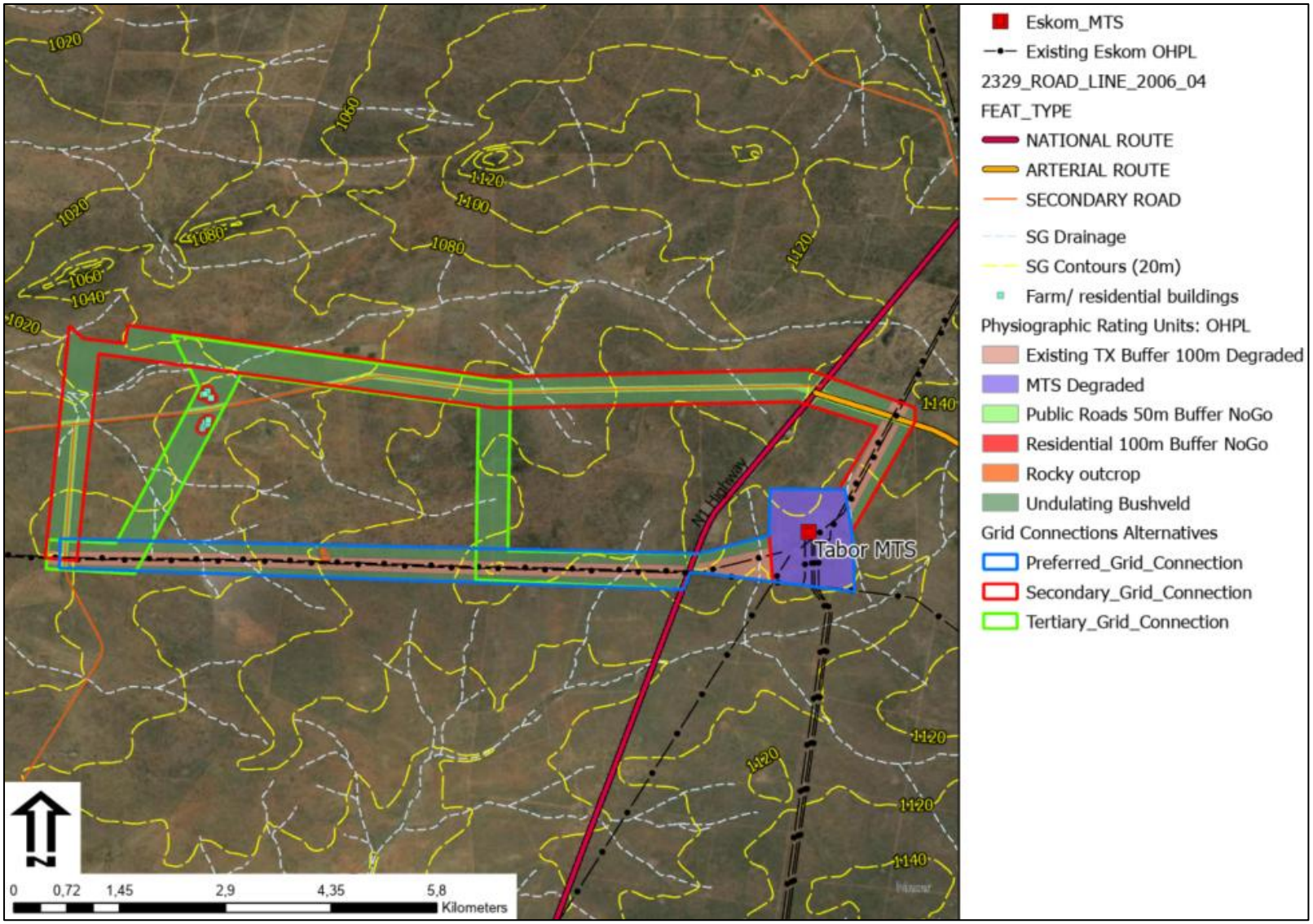


Figure 32: Physiographic Rating Units identified within the defined study area: OHPL.

Table 18: Scenic Quality and Receptor Sensitivity Rating: PV

Landscape Rating Units	Scenic Quality A= scenic quality rating of ≥19; B = rating of 12 – 18, C= rating of ≤11									Receptor Sensitivity H = High; M = Medium; L = Low						VRM		
Attribute	**Landform**	**Vegetation**	**Water**	**Colour**	**Scarcity**	**Adjacent Landscape**	**Cultural Modifications**	**Sum**	**Rating**	**Type of Users**	**Amount of Use**	**Public Interest**	**Adjacent Land Uses**	**Special Areas**	**Rating**	**Inventory Class**	**Management Class**	**Development Sensitivity**
In general, significant Heritage / Ecological / Hydrology. With specific reference to the project: • **Drainage Line Main** • **50m Road Buffer**	**(Class I is not rated)**																**I**	**NoGo**
• **Botteliers 100m road buffer**	2	3	1	3	2	3	0	**14**	**M**	M	M	L	MH	L	**M**	**III**	**II**	**Not recommended**
• **Undulating Bushveld**	1	3	1	3	2	3	0	**12**	**ML**	M	M	L	L	L	**ML**	**III**	**III**	**With mitigation**
• **Eskom OHPL**	1	2	0	1	1	3	-2	**6**	**L**	L	M	L	L	L	**L**	**IV**	**IV**	**Without mitigation**

Red colour indicates change in rating from Visual Inventory to Visual Resource Management Classes motivated in the following section.

The ***Scenic Quality*** scores are totalled and assigned an A (High scenic quality), B (Moderate scenic quality) or C (Low scenic quality) category based on the following split: *A= scenic quality rating of ≥19; B = rating of 12 – 18, C= rating of ≤11* (USDI., 2004).

Receptor Sensitivity levels are a measure of public concern for scenic quality. Receptor sensitivity to landscape change is determined by rating the key factors relating to the perception of landscape change in terms of Low to High (H = High; M = Medium; L = Low).

Table 19: Scenic Quality and Receptor Sensitivity Rating: OHPL

Landscape Rating Units	Scenic Quality A= scenic quality rating of ≥19; B = rating of 12 – 18, C= rating of ≤11									Receptor Sensitivity H = High; M = Medium; L = Low						VRM		
Attribute	**Landform**	**Vegetation**	**Water**	**Colour**	**Scarcity**	**Adjacent Landscape**	**Cultural Modifications**	**Sum**	**Rating**	**Type of Users**	**Amount of Use**	**Public Interest**	**Adjacent Land Uses**	**Special Areas**	**Rating**	**Inventory Class**	**Management Class**	**Development Sensitivity**
In general, significant Heritage / Ecological / Hydrology. With specific reference to the project: • **50m Road Buffer**	**(Class I is not rated)**																**I**	**NoGo**
• **Farm buildings** • **Botteliers Road (South of road)**	2	3	1	3	2	3	0	**14**	**M**	M	M	L	MH	L	**M**	**III**	**II**	**Not recommended**
• **Undulating Bushveld**	1	3	1	3	2	3	0	**12**	**ML**	M	M	L	L	L	**ML**	**III**	**III**	**With mitigation**
• **Eskom OHPL**	1	2	0	1	1	3	-2	**6**	**L**	L	M	L	L	L	**L**	**IV**	**IV**	**Without mitigation**

Red colour indicates change in rating from Visual Inventory to Visual Resource Management Classes motivated in the following section.

The ***Scenic Quality*** scores are totalled and assigned an A (High scenic quality), B (Moderate scenic quality) or C (Low scenic quality) category based on the following split: *A= scenic quality rating of ≥19; B = rating of 12 – 18, C= rating of ≤11* (USDI., 2004).

Receptor Sensitivity levels are a measure of public concern for scenic quality. Receptor sensitivity to landscape change is determined by rating the key factors relating to the perception of landscape change in terms of Low to High (H = High; M = Medium; L = Low).

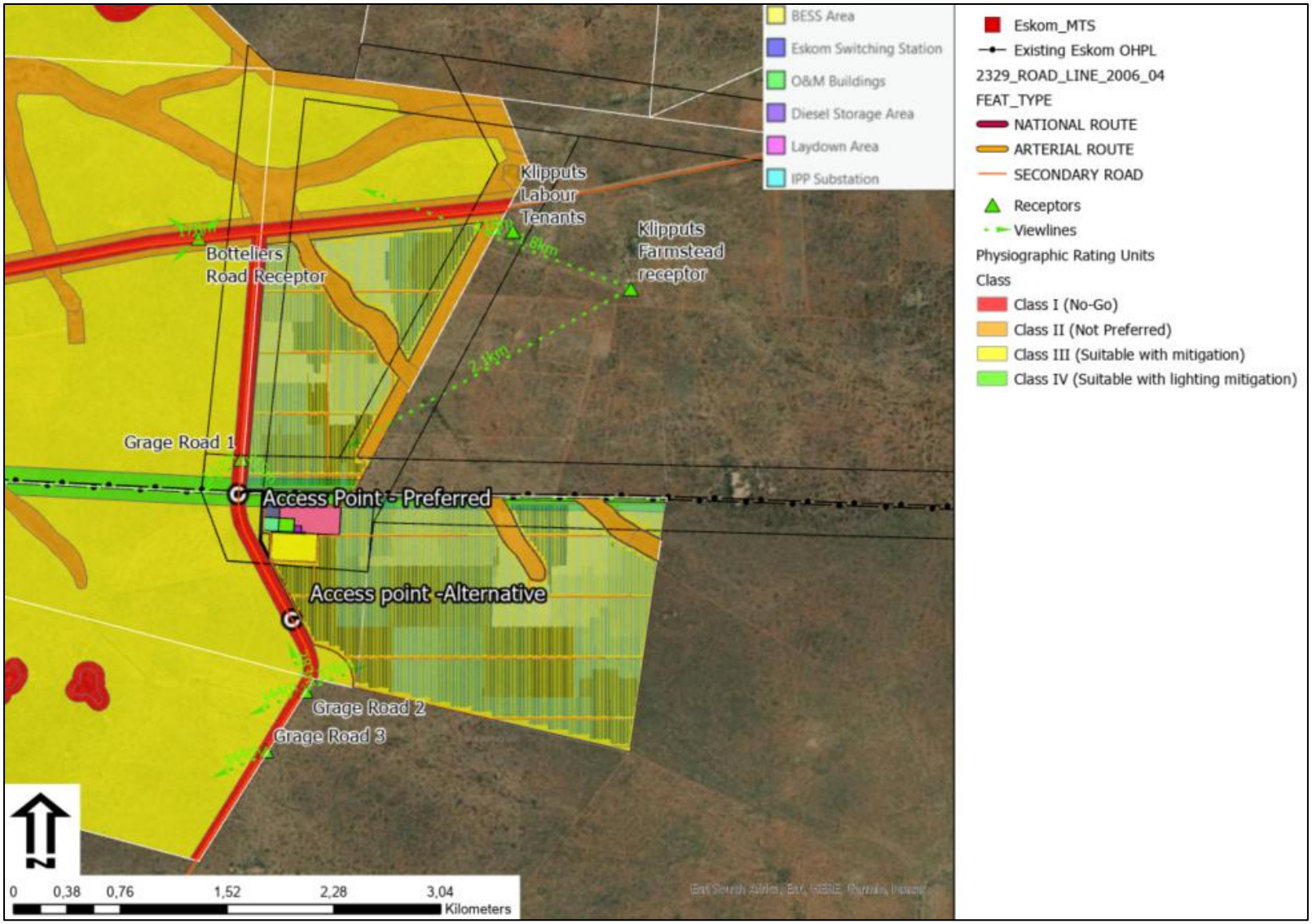


Figure 33: Visual Resource Management Classes map: PV (site specific).

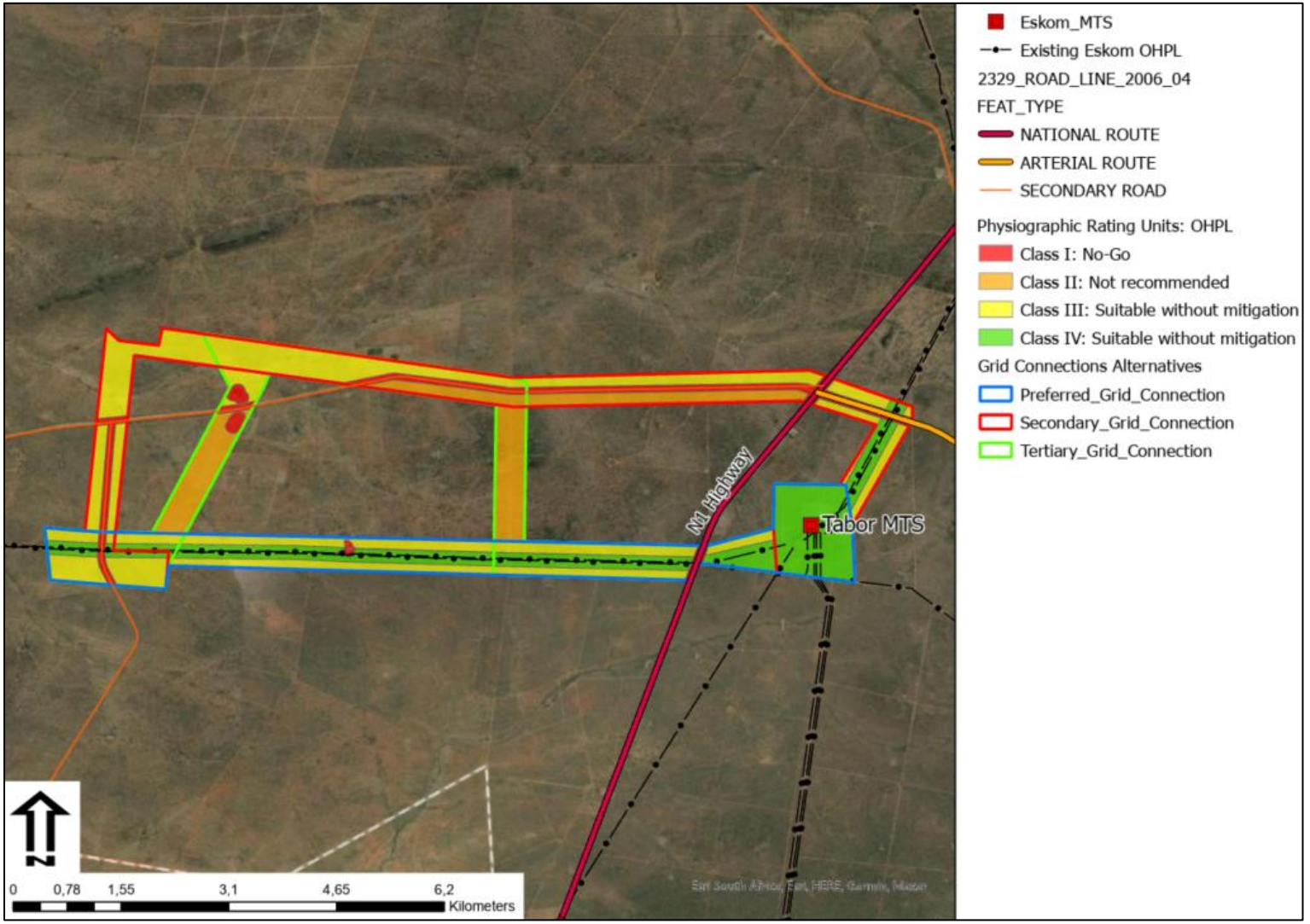


Figure 34: Visual Resource Management Classes map: OHPL.

7.2 Scenic Quality Assessment

The scenic quality is determined making use of the VRM Scenic Quality Checklist that identifies seven scenic quality criteria which are rated with 1 (low) to 5 (high) scale. The scores are totalled and assigned an A (High), B (Moderate) or C (low) based on the following split:

A= scenic quality rating of ≥19 (H = High).
B = rating of 12 – 18 (M = Medium).
C= rating of ≤11 (L = Low).

Table 20: Scenic Quality Rating table

Landscapes	Rating	Motivation
Landform *Topography becomes more of a factor as it becomes steeper, or more severely sculptured.*	ML	The terrain is predominantly gently undulating, with the exception of a small ridgeline in the northern areas, and a small rocky outcrop in the southern portion of the property.
Vegetation Primary consideration given to the variety of patterns, forms, and textures created by plant life.	MH	The vegetation is bushveld and offers a variety of patterns and textures from a wide variety of species.
Water *That ingredient which adds movement or serenity to a scene. The degree to which water dominates the scene is the primary consideration.*	L	Water is not a dominating visual element in the landscape, but with the two main drainage lines reflecting some scenic quality from the increased vegetation growth.
Colour *The overall colour(s) of the basic components of the landscape (e.g., soil, rock, vegetation, etc.) are considered as they appear during seasons or periods of high use.*	MH	Colour within the study area are predominantly related to the bushveld vegetation and depicts a variety of greens that enhance the scenic value.
Scarcity *This factor provides an opportunity to give added importance to one, or all, of the scenic features that appear to be relatively unique or rare within one physiographic region.*	M	The undulating bushveld landscape does have value related to the large area of coverage that is not otherwise developed/ transformed by agriculture or human settlement.
Adjacent Landscapes *Degree to which scenery and distance enhance, or starts to influence, the overall impression of the scenery within the rating unit.*	MH	The surrounding area does have some scenic value related to the bushveld sense of place, the rocky outcrops and smaller ridgelines with background views of the hills.
Cultural Modifications *Cultural modifications should be considered and may detract from the scenery or complement or improve the scenic quality of an area.*	M	Other than the Eskom OHPL corridor that does depict some landscape degradation, the structural development is rural, agricultural in nature and non-imposing.

Scenic Quality	Medium High
The Scenic Quality is rated as Medium to High. The undulating bushveld landscape does have value due to its extensive coverage without development or transformation by agriculture or human settlement. The terrain is primarily gently undulating, with a small ridgeline in the northern areas and a rocky outcrop in the southern portion of the property. The landscape maintains its value largely because it remains undeveloped by agriculture or settlements. Aside from the Eskom OHPL corridor, which shows some signs of landscape degradation, structural developments are characterized as rural, agricultural, or game farm-related, and are non-imposing.	

7.3 Receptor Sensitivity Assessment

Different types of receptors are likely to have different responses to the landscape change changes. The following table identified the different criteria used to evaluate a broad understanding of receptor sensitivity to landscape change.

Table 21: Receptor Sensitivity Rating table.

Landscapes	Rating	Motivation
Type of Users *Visual sensitivity will vary with the type of users, e.g., recreational sightseers may be highly sensitive to any changes in visual quality, whereas workers who pass through the area on a regular basis may not be as sensitive to change*.	M	The type of users are predominantly farming related, but as there is game farming taking place in the region, some eco-tourism activities are taking place on the property and surrounding properties.
Amount of use *Areas seen or used by large numbers of people are potentially more sensitive.*	ML	The area is relatively remote and off the main roads with no visual exposure to the N1 National Road. The gravel road is used as the main access road to the western farming areas.
Public interest *The visual quality of an area may be of concern to local, or regional, groups. Indicators of this concern are usually expressed via public controversy created in response to proposed activities.*	L	There are no significant landform features, water features, or cultural heritage elements that would increase public controversy in response to the proposed PV landscape change.
Adjacent land Users *The interrelationship with land uses in adjacent lands. For example, an area within the viewshed of a residential area may be very sensitive, whereas an area surrounded by commercially developed lands may not be as visually sensitive.*	MH	While some game farming and hunting is taking place to the north of the site, the adjacent property to the east has made application for PV authorisation pending EIA process. The adjacent property to the west is more agricultural in land use.
Special Areas *Management objectives for special areas such as Natural Areas, Wilderness Areas or Wilderness Study Areas, Wild and Scenic Rivers, Scenic Areas, Scenic*	M	The surrounding area do have some scenic value related to the bushveld sense of place, the rocky outcrops and smaller ridgelines with background views of the hills.

Landscapes	Rating	Motivation
Roads or Trails, and Critical Biodiversity Areas frequently require special consideration for the protection of their visual values.		
Receptor Sensitivity	**Medium**	
The type of users are predominantly farming related, but as there is game farming taking place in the region, some eco-tourism activities are taking place on the property and surrounding properties. The adjacent property, to the east, is also in process of making application for PV development (pending EIA). There are no significant landform features, water features, or cultural heritage elements that would increase public controversy in response to the proposed PV landscape change. The surrounding area does have some scenic value related to the bushveld sense of place, the rocky outcrops and smaller ridgelines with background views of the hills.		

7.4 Visual Resource Management (VRM) Classes: PV & BESS

The BLM has defined four Classes that represent the relative value of the visual resources of an area and are defined in terms of the VRM Matrix as follows:

i. **Classes I and II** are the most valued.
ii. **Class III** represent a moderate value.
iii. **Class IV** is of least value.

7.4.1 VRM Class I

Class I is assigned when legislation restricts development in certain areas, or when very high visual intrusion or loss of significant landscape resources is likely to take place. The visual objective is to preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract attention. A Class I visual objective was assigned to the following features within the proposed development area due to their protected status within the South African legislation:

- Generic Landscape Issues
    - Rivers / streams, wetlands and associated flood lines buffers identified as found significant by the Aquatic Biodiversity Specialist.
    - Vegetation areas (or plant species) identified as having a high significance by the Botanical Specialists.
    - Heritage area identified as having a high significance as defined by the Heritage Specialist.
- **Landscape Specific Issues**
    - **Drainage Lines (Main).**
    - **50m Road Buffer.**

Due to the significance that these landscapes, and/ or the visual features add to the scenic quality, these areas should be excluded from the development footprint.

7.4.2 VRM Class II

The Class II objective is to retain the existing character of the landscape and the level of change to the characteristic landscape should be low. The proposed development may be seen but should not attract the attention of the casual observer, and should repeat the basic

elements of form, line, colour and texture found in the predominant natural features of the characteristic landscape.

- **Botteliers Road 100m buffer.**

While not significant in their own right, collectively these landscape features do add to the scenic quality and visual resources related to eco-tourism/ game farming that is taking place. The recommendation is that these areas are used as little as possible for PV development.

7.4.3 VRM Class III

The Class III objective is to partially retain the existing character of the landscape, where the level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer, and changes should repeat the basic elements found in the predominant natural features of the characteristic landscape. The following landscape was defined as having Class III Visual Objectives where development would be most suitable:

- **Undulating Bushveld.**

Due to the moderate scenic value of these bushveld areas, these areas would be suitable for PV and BESS development with mitigation. Mitigation would require reduction in lights at night spillage, as well as a 3m (approx.) PV height for less dominating landscape change to the rural landscape context.

7.4.4 VRM Class IV

The Class IV objective is to provide for management activities that require major modifications of the existing character of the landscape. The level of change to the landscape can be high, and the proposed development may dominate the view and be the major focus of the viewer's (s') attention without significantly degrading the local landscape character. Due to the degraded sense of place, the following areas were rated Class IV:

- **Eskom OHPL corridor.**

The Eskom OHPL corridor does degrade location landscape resources and increases the VAC for similar developments. It is recommended that these areas are suitable for PV or BESS development with light mitigation to retain the existing dark night sky sense of place of the rural landscape.

7.5 Visual Resource Management (VRM) Classes: OHPL& Substations

7.5.1 VRM Class I

Class I is assigned when legislation restricts development in certain areas, or when very high visual intrusion or loss of significant landscape resources is likely to take place. The visual objective is to preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract attention. A Class I visual objective was assigned to the following features within the proposed development area due to their protected status within the South African legislation:

- Generic Landscape Issues
    - Rivers / streams, wetlands and associated flood lines buffers identified as found significant by the Aquatic Biodiversity Specialist.
    - Vegetation areas (or plant species) identified as having a high significance by the Botanical Specialists.

- Heritage area identified as having a high significance as defined by the Heritage Specialist.

- **Landscape Specific Issues**
  - **50m Road Buffer .**
  - **Farm buildings and buffer.**

Due to the significance that these landscapes, and/ or the visual features add to the scenic quality, these areas should be excluded from the development footprint.

7.5.2 VRM Class II

The Class II objective is to retain the existing character of the landscape and the level of change to the characteristic landscape should be low. The proposed development may be seen but should not attract the attention of the casual observer, and should repeat the basic elements of form, line, colour and texture found in the predominant natural features of the characteristic landscape.

- **Areas south of the Botteliers Road corridor.**
- **Farm boundary 100m buffer.**

While not significant in their own right, the areas to the south of the Botteliers road are more visually associated with the Klipputs Lodge and eco-tourism. The recommendation is that these areas are used as little as possible and that the OHPL routing is located to the north of the road.

7.5.3 VRM Class III

The Class III objective is to partially retain the existing character of the landscape, where the level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer, and changes should repeat the basic elements found in the predominant natural features of the characteristic landscape. The following landscape was defined as having Class III Visual Objectives where development would be most suitable:

- **Undulating Bushveld.**

Due to the moderate scenic value of these bushveld areas, these areas would be suitable for development with mitigation. Mitigation would require reduction in lights at night spillage.

7.5.4 VRM Class IV

The Class IV objective is to provide for management activities that require major modifications of the existing character of the landscape. The level of change to the landscape can be high, and the proposed development may dominate the view and be the major focus of the viewer's (s') attention without significantly degrading the local landscape character. Due to the degraded sense of place, the following areas were rated Class IV:

- **Eskom OHPL corridor**

The Eskom OHPL corridor does degrade location landscape resources and increases the VAC for the similar developments. It is recommended that these areas are suitable for development with light mitigation to retain the existing dark night sky sense of place of the rural landscape.

8 VISUAL IMPACT ASSESSMENT

Impacts are defined in terms of the standardised impact assessment criteria provided by the environmental practitioner. Using the defined impact assessment criteria, the potential environmental impacts identified for the project were evaluated according to severity, duration, extent and significance of the impact. The potential occurrence and cumulative impact (as defined in the methodology) was also assessed. In order to better understand the nature of the severity of the visual impacts, a Contrast Rating exercise was undertaken from the assumed view of the defined Key Observation Points.

8.1 Contrast Rating and Photomontages

As indicated in the methodology, a contrast rating is undertaken to determine if the VRM Class Objectives are met. The suitability of a landscape modification is assessed by comparing and contrasting the existing receiving landscape to the expected contrast that the proposed landscape change will generate. This is done by evaluating the level of change to the existing landscape by assessing the line, colour, texture and form, in relation to the visual objectives defined for the area.

The following criteria are utilised in defining the degree of contrast (DoC):

- **None**: The element contrast is not visible or perceived.
- **Weak**: The element contrast can be seen but does not attract attention.
- **Moderate**: The element contrast begins to attract attention and begins to dominate the characteristic landscape.
- **Strong**: The element contrast demands attention, will not be overlooked, and is dominant in the landscape.

8.1.1 Contrast Rating: PV & BESS KOPs

Table 22: PV & BESS Contrast Rating Table

Key Observation Point	Attributes				Contrast Elements					Visual Objectives Met?
	VRM Class	Distance	Exposure	Mitigation	Form	Line	Colour	Texture	Degree of Contrast	
Botteliers Road	III	100m	High	Without	W	W	S	S	**M**	**Yes**
				With	***(Light at night)***					
Gage Road	III	50m	High	Without	W	M	M	M	**M**	**Yes**
				With	***(Light at night)***					
Klipputs Farmstead	III	1km	Med	Without	W	M	M	M	**M**	**Yes**
				With	***(Light at night)***					
Klipputs Labour Tenants	III	200m	Med	Without	W	W	W	W	**W**	**Yes**
				With	***(Light at night)***					

** S = Strong, M = Medium, W = Weak, N = None*

Botteliers Road & Western Adjacent Farmers

Located approximately 100 metres from the proposed PV site and 3.9 kilometres from the BESS development area, the PV installation would be clearly visible from the western farming areas and from receptors travelling east along Botteliers Road. This is primarily due to the slightly elevated position of the PV site relative to the eastbound KOP on the road. In contrast, views from westbound travellers, as well as more proximate eastbound views, are likely to be largely screened by existing bushveld vegetation located within the 100-metre buffer zone, which has been designated as a No-Go area for PV development. As the BESS is located 1.8km to the south of the road, view incidence is likely to be limited.

Although the colour and texture of the PV array would present strong visual contrast from mid-ground distances, the surrounding vegetation would assist in reducing the contrast in form and line. Overall, the visual change would be consistent with a Class III Visual Management Objective, provided that night-time lighting mitigation is effectively implemented.

Gage Road

Due to the proximity of Gage Road—located approximately 50 metres from the PV structures and 120m from the BESS development areas and situated on the same elevation—the bushveld vegetation on either side of the road is expected to provide partial visual screening of the PV infrastructure as well as the BESS structures. As a result, limited form contrast would be apparent for the PV, with partial view of the PV structures creating moderate form, line, colour, and texture contrast visible, owing to the bushveld vegetation. To further reduce visual intrusion, colour mitigation measures should be applied to the BESS and management structures. Additionally, mitigation for light spillage at night is essential to preserve the existing dark sky character and maintain the rural night-time sense of place within the surrounding landscape context. The Class III Visual Objectives would be met without further mitigation.

Klipputs Farmstead

The Klipputs Farmstead is located approximately 1 km from the PV development and 2.8 km from the proposed BESS project. While views of the Bethel site would be limited, the elevated position of the farmstead residence would allow for clear views of the Klipput PV array. Notably, this property is also engaged in a PV development process, with preliminary findings indicating that a separate PV installation is proposed approximately 150 metres south of the residence.

Given the emerging development context, where multiple PV installations would be present in the broader viewshed, the visual contrast in terms of form, line, colour, and texture is expected to be strong. Should the adjacent PV project currently undergoing EIA authorisation be approved, the visual character of the area would reflect a broader solar energy landscape. As Klipputs Farm would also then be a PV proponent, the strong levels of visual contrast from this receptor would be acceptable. Excluding the Klipputs Farmstead visual intrusion, the Class III Visual Management Objectives would generally be achieved without the need for additional mitigation in order to maintain the adjacent farm residence sense of place.

Klipputs Labour Tenants

The labour tenants are located on the Farm Klipputs (adjacent farm to Klipputs PV project). There are a number of occupied dwellings located approx. 250m to the east of the northern portion of the PV. As the dwellings are generally located at the same elevation of the PV arrays, and surrounded by bushveld vegetation, clear views of the PV will be limited from the residential locations. The BESS is located 2.3km to the northwest of the location and it is

unlikely that visual incidence will take place. Contrast generated from the PV arrays and BESS structures is likely to be weak and would meet the Class III visual objectives without mitigation.

8.1.2 Contrast Rating: OHPL Preferred Alternative

Table 23: OHPL Contrast Rating Table: Preferred Alternative

Key Observation Point	Attributes				Contrast Elements					Visual Objectives Met?
	VRM Class	Distance	Exposure	Mitigation	Form	Line	Colour	Texture	Degree of Contrast	
Gage Road	IV	50m	Very High	W/Out	N	W	M	M	**M**	**Yes**
				With	***50m Road Buffer Exclusion for structures***					
N1 National Road	IV	50m	Very High	W/Out	N	W	M	M	**M**	**Yes**
				With	***50m Road Buffer Exclusion for structures***					

** S = Strong, M = Medium, W = Weak, N = None*

OHPL Preferred Alternative Contrast Rating Findings

The preferred alternative is routed along an existing Eskom powerline corridor, and is the most direct route from the proposed PV substation to the Eskom Tabor MTS. The visual impact assessment for both the Gage Road and N1 National Road Key Observation Points (KOPs) indicates very high exposure due to their close proximity (50 metres) to the proposed development. However, the contrast in form and line is assessed as None and Weak respectively, even without mitigation. This is largely attributed to the precedent set by existing Eskom infrastructure, including the nearby powerlines and the Tabor substation, which provide a high visual absorption capacity. The 50-metre road buffer exclusion zone for structural development further enhances mitigation, ensuring that Visual Resource Management (VRM) Class IV objectives are maintained at both KOPs.

8.1.3 Contrast Rating: OHPL Secondary Alternative

Table 24: OHPL Contrast Rating Table: Secondary Alternative

Key Observation Point	Attributes				Contrast Elements					Visual Objectives Met?
	VRM Class	Distance	Exposure	Mitigation	Form	Line	Colour	Texture	Degree of Contrast	
Gage Road	III	50m	Very High	W/Out	N	W	M	M	**M**	**Yes**
				With	***50m Road Buffer Exclusion for structures***					
N1 National Road	III	50m		W/Out	N	W	M	M	**M**	**Yes**

			Very High	With	***50m Road Buffer Exclusion for structures***						
Botteliers Road	III	50m	Very High	W/Out	N	S	M	M	**M**	**Yes**
				With	***50m Road Buffer Exclusion for structures/ North of road preference***					

** S = Strong, M = Medium, W = Weak, N = None*

OHPL Secondary Alternative Contrast Rating Findings

The Secondary Alternative represents the longest routing option, extending north along Gage Road, crossing Botteliers Road, and continuing west for approximately 4 km along Botteliers before crossing the N1 Highway. It then aligns southward with an existing Eskom overhead power line (OHPL) corridor toward the MTS. Due to the presence of bushveld vegetation, visual contrast at the perpendicular crossings of Gage Road and the N1 is expected to be limited. With a 50-metre exclusion zone for monopole or pylon structures from these roads, the Class III Visual Management Objective would be achieved without the need for additional mitigation.

Along the 4 km stretch of Botteliers Road, line contrast is anticipated to be strong, although colour and texture contrast is expected to diminish over time. Given the presence of an existing telecommunication line north of the road, it is recommended that the proposed routing be aligned to the north of Botteliers Road. While the scenic quality is limited and receptor presence is low, routing to the south would not constitute a fatal flaw, though northern alignment remains the preferred visual option.

8.1.4 Contrast Rating: OHPL Tertiary Alternative

Table 25: OHPL Contrast Rating Table: Tertiary Alternative

Key Observation Point	**Attributes**				**Contrast Elements**					**Visual Objectives Met?**
	VRM Class	**Distance**	**Exposure**	**Mitigation**	**Form**	**Line**	**Colour**	**Texture**	**Degree of Contrast**	
Botteliers Road	III	50m	Very High	W/Out	N	S	M	M	**M**	**Yes**
				With	***50m Road Buffer Exclusion for structures***					
N1 National Road	III	50m	Very High	W/Out	N	W	M	M	**M**	**Yes**
				With	***50m Road Buffer Exclusion for structures***					
Klipputs Farmstead	II	800m	High	W/Out	W	S	M	S	S	***No***
				With	W	S	M	S	S	***No***
Klipputs Labour Tenants	II	100m	Very High	W/Out	W	S	M	S	S	***No***
				With	W	M	M	M	M	***Yes***

** S = Strong, M = Medium, W = Weak, N = None*

OHPL Tertiary Alternative Contrast Rating Findings

This routing is considered the least preferred of the three OHPL alternatives. It begins by routing east along the existing Eskom OHPL corridor, then turns northeast along the Klipputs Farm boundary, crossing Botteliers Road. From there, it continues east along the northern boundary of Klipputs Farm, with approximately 2 km running adjacent to Botteliers Road, before turning south along the farm's eastern boundary. The alignment then follows the Eskom OHPL corridor eastward, crossing the N1 National Highway on route to the Eskom MTS.

Due to the potential for strong visual contrast as experienced from the Klipputs Farm tenants, and the encirclement of the farm, which currently operates as a guest farm and lodge, this routing presents a significant visual intrusion. The impact on landscape character and sense of place for this tourism-focused property is substantial, and as such, this routing is deemed a fatal flaw from a landscape and visual perspective.

8.2 PV & BESS Project Impact Ratings and Motivation

The following visual impacts could take place during the lifetime of the project:

Construction:

- Loss of site landscape character due to the removal of vegetation and the construction of the project infrastructure.
- Wind-blown dust due to the removal of large areas of vegetation.
- Possible soil erosion from temporary roads crossing drainage lines.
- Wind-blown litter from the laydown and construction sites.
- Movement of large earth moving vehicles.
- Construction of PV panels, laydowns site, construction camps and maintenance areas.

Operation:

- Massing effect in the landscape from a large-scale landscape modification.
- On-going soil erosion.
- On-going windblown dust.

Decommissioning:

- Movement of vehicles and associated dust.
- Wind-blown dust from the disturbance of cover vegetation / gravel.

Cumulative:

- A long-term change in land use setting a precedent for other similar types of PV projects, resulting in a wide area loss of scenic quality.

Table 26: PV & BESS - Construction Phase Impacts table

Phase	**Construction Phase**
Impact	**Loss of landscape character from the construction of the PV development and associated infrastructure**
Description of impact	• Loss of site landscape character due to the removal of vegetation and the construction of the project infrastructure. • Wind-blown dust due to the removal of large areas of vegetation. • Possible soil erosion from temporary roads crossing drainage lines.

	• Wind-blown litter from the laydown and construction sites. • Movement of large earth moving vehicles. • Construction of PV panels, laydowns site, construction camps and maintenance areas.	
Mitigability	Medium	The mitigation will partially reduce the significance of the visual and landscape impacts.
Potential mitigation	• Stockpiling of topsoil from impact areas for later use in rehabilitation. • Wind blown dust mitigation. • Dust mitigation for moving vehicles. • BESS structures should be painted a light green colour with a mid-grey hue to allow for reduce colour contrast while sill allowing some reflectivity effect to reduce heat buildup (subject to BESS design specifications). • General buildings and structures should have walls painted a mid grey-green colour so as to better blend in with the bushveld vegetation. Roof sheeting should be a slightly darker mid-grey, green colour and preferably rough textured to reduce reflectivity. (Architectural / design variation around the grey-green colour would be acceptable). • Substation structures to be built to Eskom specification. The visual preference is that these smaller structures be constructed from a brown, rough-textured face brick with roof colour a grey hue material. • Light spillage mitigations and no overhead lighting. • Strick enforcement of non-littering with monthly checking of fencing for wind swept litter.	

Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Short-term	Impact will last approximately 12 months.	Short-term	Impact will last approximately 12 months.
Extent	Wide Area	Contained within the Foreground/ Mid Ground (approx. 6km from site)	Local	Contained within the Foreground/ Mid Ground (approx. 3km from site)
Intensity	High	Natural and/ or social functions and/ or processes are clearly altered.	Medium	Natural and/ or social functions and/ or processes are partially altered.
Probability	Sure	Substantive supportive data exists to verify the assessment	Sure	Substantive supportive data exists to verify the assessment
Reversibility	Possible	The landscape change is reversible but only with time and rehabilitation.	Possible	The landscape change is reversible but only with time and rehabilitation.
Significance	**Medium to High**		**Medium**	

Motivation	The clearing of bushveld vegetation and the presence of construction-related activities, including moving vehicles and dust generation, will be clearly visible to the surrounding areas, resulting in a noticeable visual impact. However, the intensity of this impact will be moderated by several factors: the relatively short construction duration, a reduced viewshed within a bushveld landscape context, and the remote location, where the scenic quality is moderate. With the implementation of dust suppression and other mitigation measures, the visual intensity of the impact is expected to be further reduced, though it remains within the medium to high significance range due to its visibility and contrast during construction.	
Cumulative	**Medium to High**	**Medium**
Motivation	The proposed PV site is located in close proximity to three PV developments within the broader project cluster, as well as an additional PV development currently undergoing EIA to the east. This spatial concentration of projects will result in clear intervisibility within the localised 4 km zone, although topographic screening will limit broader cumulative visibility. Despite this containment, the simultaneous construction of multiple projects will contribute to a notable short-term cumulative impact, likely altering the local sense of place during peak construction periods. Implementation of dust suppression measures and night-time lighting controls will be necessary to reduce visual intensity and support moderation of cumulative landscape change.	

Table 27: PV & BESS - Operation Phase Impacts table

Phase	**Operation Phase**	
Impact	**Loss of landscape character from the long-term operation of the PV development and associated infrastructure**	
Description of impact	• Massing effect in the landscape from a large-scale landscape modification. • On-going soil erosion. • On-going windblown dust.	
Mitigability	Medium	The mitigation will partially reduce the significance of the visual and landscape impacts.
Potential mitigation	• Continued dust monitoring and management as needed. • Continued monitoring and management for possible soil erosion along drainage channels. • Continued management of the bushveld buffers areas along the road to ensure that these areas do not become a fire risk, and that the bushveld vegetation can continue to grow. • Continued light spillage monitoring and no overhead lighting. • Moderate signage along the main access road with no excessive advertising banners displayed. • Continued monitoring for wind blown litter.	
Assessment	**Without mitigation**	**With mitigation**
Nature	Negative	Negative

Duration	Long - term	Impact will last approximately 20 years.	Long - term	Impact will last approximately 20 years.
Extent	Wide Area	Contained within the Foreground/ Mid Ground (approx. 6km from site)	Local	Contained within the Foreground/ Mid Ground (approx. 3km from site)
Intensity	Medium	Natural and/ or social functions and/ or processes are partially altered.	Medium to Low	Natural and/ or social functions and/ or processes are somewhat altered.
Probability	Sure	Substantive supportive data exists to verify the assessment	Sure	Substantive supportive data exists to verify the assessment
Reversibility	Possible	The landscape change is reversible but only with time and rehabilitation.	Possible	The landscape change is reversible but only with time and rehabilitation.
Significance	**Medium**		**Medium to Low**	
Motivation	The limited number of receptors and the contained Zone of Visual Influence (ZVI) reduce the overall visual intensity of the landscape change. However, the development would still result in a notable transformation of the moderate landscape resources in the area. The implementation of light spillage mitigation will assist in preserving the dark sky quality of the rural night-time landscape. Furthermore, the 100 m setback from Botteliers Road and 50 m from Gage Road will help maintain the bushveld sense of place along these key access routes. These factors collectively support a medium significance rating without mitigation, which may be reduced to medium to low with effective mitigation measures.			
Cumulative	**Medium to High**		**Medium**	
Motivation	As the site is topographically screened to some degree, such that the Zone of Visual Influence (ZVI) is limited to the local area, the cumulative impact of this PV project—together with the three existing PV/BESS developments and the potential PV development on the adjacent Klipputs Farm—will result in a substantial transformation of the *local* landscape character, regardless of mitigation. Combined light spillage from these developments may significantly alter the rural and natural landscape context and potentially degrade the existing dark-sky quality that supports local eco-tourism and contributes to the area's sense of place. However, if light spillage is effectively mitigated, and considering the localised ZVI and the presence of setback buffers along farm access roads, the cumulative visual effects can be moderated. As a result, the significance of the impact could be reduced from medium to high, to medium with appropriate mitigation in place.			

Table 28: PV & BESS - Decommissioning Phase Impacts table

Phase	**Decommissioning Phase**

Impact	**Short-term landscape change from the removal of the PV structures, followed by rehabilitation of the impacted areas back to agricultural lands.**			
Description of impact	• Movement of large vehicles required for the removal of the PV panels. • Wind-blown dust from delays in restoration of vegetation on impacted areas. • Wind-blown litter from the laydown and de-construction sites.			
Mitigation Viability	Medium	The mitigation will reduce the significance of the visual and landscape impacts		
Potential mitigation	• Dust suppression measures. • Litter management measures. • Removal of all structures and processing in terms of according to NEMWA specifications. • Rehabilitation of impacted areas to veld grasses.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Short term	Impact will last approximately 8 months.	Short term	Impact will last approximately 8 months.
Extent	Local	Contained within the Foreground/ Mid Ground (approx. 3km from site)	Local	Contained within the Foreground/ Mid Ground (approx. 3km from site)
Intensity	Medium	Natural and/ or social functions and/ or processes are moderately altered.	Medium	Natural and/ or social functions and/ or processes are moderately altered.
Probability	Likely	The impact is likely to occur	Likely	The impact is likely to occur.
Confidence	Sure	Substantive supportive data exists to verify the assessment	Sure	Substantive supportive data exists to verify the assessment
Reversibility	Medium	The affected landscape will be able to recover from the impact.	Medium	The affected landscape will be able to recover from the impact.
Significance	**Medium (-ve)**		**Neutral**	
Motivation	The visual impacts associated with dust and vehicle movement during the deconstruction phase are short-term in duration. Following the removal of the PV structures and successful rehabilitation of the site to veld grassland, the overall visual impact is expected to reduce to a neutral level. However, as the original bushveld vegetation cannot be restored, no positive visual or landscape outcomes are anticipated.			
Cumulatives	**Medium to High**		**Low**	

Motivation	In the absence of rehabilitation and the removal of project infrastructure, the visual impacts would persist over a longer time frame, potentially leading to local landscape degradation and contributing to negative cumulative effects. However, with effective rehabilitation and site restoration, the landscape can be returned to a functional agricultural state, thereby minimising long-term visual impacts and reducing the overall cumulative significance to a low negative level.

8.3 Grid Connection Alternatives Impact Ratings and Motivation

The following visual impacts could take place during the lifetime of the project:

Construction:

- Loss of site landscape character due to the removal of vegetation and the construction of the project infrastructure.
- Wind-blown dust due to the removal of large areas of vegetation.
- Possible soil erosion from temporary roads crossing drainage lines.
- Wind-blown litter from the laydown and construction sites.
- Movement of large earth moving vehicles.
- Construction of PV panels, laydowns site, construction camps and maintenance areas.

Operation:

- Massing effect in the landscape from a large-scale landscape modification.
- On-going soil erosion.
- On-going windblown dust.

Decommissioning:

- Movement of vehicles and associated dust.
- Wind-blown dust from the disturbance of cover vegetation / gravel.

Cumulative:

- A long-term change in land use setting a precedent for other similar types of PV projects, resulting in a wide area loss of scenic quality.

8.3.1 OHPL Preferred Alternative Impact Assessment

Table 29: OHPL Preferred Alternative - Construction Phase Impacts table

Phase	**Construction Phase**
Impact	**Loss of landscape character from the construction of the OHPL infrastructure**
Description of impact	• Loss of site landscape character due to the removal of vegetation and the construction of the project infrastructure. • Possible soil erosion from temporary/ maintenance roads crossing drainage lines or moderate slope areas. • Wind-blown litter from the laydown and construction sites. • Movement of large earth moving vehicles and cranes. • Construction of OHPL pylons/ monopoles, laydowns site, construction camps and maintenance areas.

Mitigability	Medium	The mitigation will partially reduce the significance of the visual and landscape impacts.
Potential mitigation	• Dust mitigation for moving vehicles. • The laydown needs to be well set back from the adjacent roads and not located on prominent terrain with a minimum buffer of 100m from roads. • 50m setback from roads for monopole/ pylon placement.	

Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Short-term	Impact will last approximately 12 months.	Short-term	Impact will last approximately 12 months.
Extent	Local	Contained within the Foreground/ Mid Ground (approx. 3km from site)	Local	Contained within the Foreground/ Mid Ground (approx. 3km from site)
Intensity	Medium	Natural and/ or social functions and/ or processes are clearly altered.	Low	Natural and/ or social functions and/ or processes are partially altered.
Probability	Sure	Substantive supportive data exists to verify the assessment	Sure	Substantive supportive data exists to verify the assessment
Reversibility	Possible	The landscape change is reversible but only with time and rehabilitation.	Possible	The landscape change is reversible but only with time and rehabilitation.
Significance	**Medium**		**Low**	
Motivation	The proposed routing closely follows an existing Eskom OHPL corridor that already contains two lines. This alignment benefits from a high visual absorption capacity, which significantly reduces the potential for visual intrusion. Although there is moderate potential for visual impact at the N1 National Road crossing, the inclusion of a 50-metre setback is likely to be consistent with the existing infrastructure precedent, and any resulting visual intrusion is expected to be nominal. The short-term intrusion from the construction vehicles would be minimal.			
Cumulative	**Low**		**Very Low**	
Motivation	Given the presence of existing OHPL infrastructure and the proximity to the Tabor Main Transmission Substation, the proposed routing aligns with an established development precedent. As a result, the cumulative visual impact is low without mitigation, and with the implementation of standard mitigation measures, the residual impact would be negligible.			

Table 30: OHPL Preferred Alternative - Operation Phase Impacts table

Phase	**Operation Phase**
Impact	**Loss of landscape character from the long-term operation of the OHPL infrastructure**

Description of impact	• Local landscape degradation from a long, linear infrastructure modification. • On-going soil erosion along the maintenance road.			
Mitigability	Medium	The mitigation will partially reduce the significance of the visual and landscape impacts.		
Potential mitigation	• Long term loss of site landscape character due to the operation of the PV development. • Wind-blown dust and dust from moving vehicles accessing the site. • Possible soil erosion along drainage lines from increased surface water run-off. • Movement of large maintenance vehicles. • Light pollution from unshielded security lighting.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Long - term	Impact will last approximately 20 years.	Long - term	Impact will last approximately 20 years.
Extent	Wide Area	Contained within the Foreground/ Mid Ground (approx. 6km from site)	Local	Contained within the Foreground/ Mid Ground (approx. 3km from site)
Intensity	Medium	Natural and/ or social functions and/ or processes are partially altered.	Low	Natural and/ or social functions and/ or processes are somewhat altered.
Probability	Sure	Substantive supportive data exists to verify the assessment	Sure	Substantive supportive data exists to verify the assessment
Reversibility	Possible	The landscape change is reversible but only with time and rehabilitation.	Possible	The landscape change is reversible but only with time and rehabilitation.
Significance	**Low**		**Very Low**	
Motivation	The proposed routing closely follows an existing Eskom OHPL corridor that already contains two lines. This alignment benefits from a high visual absorption capacity, which significantly reduces the potential for visual intrusion. Although there is moderate potential for visual impact at the N1 National Road crossing, the inclusion of a 50-metre setback is likely to be consistent with the existing infrastructure precedent, and any resulting visual intrusion is expected to be nominal.			
Cumulative	**Medium**		**Low**	
Motivation	Given the presence of existing OHPL infrastructure and the proximity to the Tabor Main Transmission Substation, the proposed routing aligns with an established development precedent. As a result, the cumulative visual impact is low without mitigation, and with the implementation of standard mitigation measures, the residual impact would be negligible. As some			

	increase in massing effect will take place from the introduction of a third line within the OHPL corridor, the impact without mitigation is expected to be Medium.

8.3.2 OHPL Secondary Alternative Impact Assessment

Table 31: OHPL Secondary Alternative - Construction Phase Impacts table

Phase	**Construction Phase**			
Impact	**Loss of landscape character from the construction of the OHPL infrastructure**			
Description of impact	• Loss of site landscape character due to the removal of vegetation and the construction of the project infrastructure. • Wind-blown dust due to the removal of large areas of vegetation. • Possible soil erosion from temporary roads crossing drainage lines. • Wind-blown litter from the laydown and construction sites. • Movement of large earth moving vehicles and cranes. • Construction of OHPL pylons/ monopoles, laydowns site, construction camps and maintenance areas.			
Mitigability	Medium	The mitigation will partially reduce the significance of the visual and landscape impacts.		
Potential mitigation	• Dust mitigation for moving vehicles. • The laydown needs to be well set back from the adjacent roads and not located on prominent terrain with a minimum buffer of 100m from roads. • Preference for routing to the north of Botteliers Road.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Short-term	Impact will last approximately 12 months.	Short-term	Impact will last approximately 12 months.
Extent	Wide Area	Contained within the Foreground/ Mid Ground (approx. 6km from site)	Local	Contained within the Foreground/ Mid Ground (approx. 3km from site)
Intensity	Medium to High	Natural and/ or social functions and/ or processes are clearly altered.	Medium	Natural and/ or social functions and/ or processes are partially altered.
Probability	Sure	Substantive supportive data exists to verify the assessment	Sure	Substantive supportive data exists to verify the assessment
Reversibility	Possible	The landscape change is reversible but only with time and rehabilitation.	Possible	The landscape change is reversible but only with time and rehabilitation.
Significance	**Medium to High**		**Medium**	

Motivation	The presence of bushveld vegetation along the route provides a degree of natural screening, limiting the visual magnitude at the perpendicular crossings of Gage Road and the N1. The inclusion of a 50-metre exclusion zone for monopole or pylon structures along these roads will further reduce visual intrusion. Although construction vehicles and activities are likely to create a dominant visual impact at the local level, this effect will be temporary. Aligning the routing to the north of Botteliers Road, where the visual absorption capacity is higher, will further assist in moderating the visual impact, resulting in a reduced significance with mitigation.	
Cumulative	**Medium**	**Medium to Low**
Motivation	As there are no other overhead power lines in the local vicinity and given the generally high visual absorption capacity provided by the surrounding bushveld vegetation, the potential for intervisibility is limited. The implementation of mitigation measures, including road setbacks and alignment of the route to the north of Botteliers Road, would further reduce the cumulative visual impact.	

Table 32: OHPL Secondary Alternative - Operation Phase Impacts table

Phase	**Operation Phase**			
Impact	**Loss of landscape character from the long-term operation of the OHPL infrastructure**			
Description of impact	• Local landscape degradation from a long, linear infrastructure modification. • On-going soil erosion along the maintenance road.			
Mitigability	Medium	The mitigation will partially reduce the significance of the visual and landscape impacts.		
Potential mitigation	• Long term loss of site landscape character due to the operation of the PV development. • Wind-blown dust and dust from moving vehicles accessing the site. • Possible soil erosion along drainage lines from increased surface water run-off. • Movement of large earth moving vehicles and cranes.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Long - term	Impact will last approximately 20 years.	Long - term	Impact will last approximately 20 years.
Extent	Wide Area	Contained within the Foreground/ Mid Ground (approx. 6km from site)	Local	Contained within the Foreground/ Mid Ground (approx. 3km from site)
Intensity	Medium	Natural and/ or social functions and/ or processes are partially altered.	Medium to Low	Natural and/ or social functions and/ or processes are somewhat altered.

Probability	Sure	Substantive supportive data exists to verify the assessment	Sure	Substantive supportive data exists to verify the assessment
Reversibility	Possible	The landscape change is reversible but only with time and rehabilitation.	Possible	The landscape change is reversible but only with time and rehabilitation.
Significance	**Medium**		**Medium to Low**	
Motivation	Due to the limited receptors and contained zone of visual influence due to the Bushveld vegetation, the visual intensity of the permanent landscape change would be reduced but would still noticeably alter the moderate landscape resources of the locality. Moderation of the visual significance also takes into consideration that the contained zone of visual influence, moderate landscape resources and moderate visual sensitivity to landscape change.			
Cumulative	**Low**		**Very Low**	
Motivation	As there are no other overhead power lines in the local vicinity and given the generally high visual absorption capacity provided by the surrounding bushveld vegetation, the potential for intervisibility is limited. The implementation of mitigation measures, including road setbacks and alignment of the route to the north of Botteliers Road, would further reduce the cumulative visual impact.			

8.3.3 OHPL Tertiary Alternative Impact Assessment

Table 33: OHPL Tertiary Alternative - Construction Phase Impacts table

Phase	**Construction and Operation Phase**	
Impact	**Loss of landscape character from the construction of the OHPL infrastructure**	
Description of impact	• Loss of site landscape character due to the removal of vegetation and the construction of the project infrastructure. • Wind-blown dust due to the removal of large areas of vegetation. • Possible soil erosion from temporary roads crossing drainage lines. • Wind-blown litter from the laydown and construction sites. • Movement of large earth moving vehicles and cranes. • Construction of OHPL pylons/ monopoles, laydowns site, construction camps and maintenance areas.	
Mitigability	Medium	The mitigation will partially reduce the significance of the visual and landscape impacts.
Potential mitigation	• Review proposed routing so as to not enclose the adjacent property where eco-tourism activities are taking place. • Dust mitigation for moving vehicles. • The laydown needs to be well set back from the adjacent roads and not located on prominent terrain with a minimum buffer of 100m from roads.	

	• Ongoing maintenance for soil erosion along the maintenance road should the routing be constructed.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Long-term	Impact will last approximately 12 months.	Long-term	Impact will last approximately 12 months.
Extent	Wide Area	Contained within the Foreground/ Mid Ground (approx. 6km from site)	Local	Contained within the Foreground/ Mid Ground (approx. 3km from site)
Intensity	High	Natural and/ or social functions and/ or processes are strongly altered.	High	Natural and/ or social functions and/ or processes are strongly altered.
Probability	Sure	Substantive supportive data exists to verify the assessment	Sure	Substantive supportive data exists to verify the assessment
Reversibility	Possible	The landscape change is reversible but only with time and rehabilitation.	Possible	The landscape change is reversible but only with time and rehabilitation.
Significance	**Medium to High**		**Medium to High**	
Motivation	The routing of the overhead power line around Klipputs Farm results in the effective encirclement of a property currently used for game farming and eco-tourism, including a guest lodge. This alignment is expected to create a strong visual impact during both the construction and operational phases, significantly diminishing the property's tourism value and altering it's sense of place. Due to the severity of the visual intrusion and the sensitivity of the land use, the No-Go option is preferred.			
Cumulative	**Medium to High**		**Medium to High**	
Motivation	The routing of the overhead power line around Klipputs Farm results in the encirclement of a property currently used for game farming and eco-tourism, including a guest lodge. The intervisibility between the proposed route and the existing southern Eskom overhead line would amplify the visual impact, leading to a significant cumulative effect on the property's landscape character and tourism potential. Given the sensitivity of the land use and the extent of the cumulative intrusion, the No-Go option is considered the preferred alternative.			

9 ENVIRONMENTAL MANAGEMENT PLAN: PV AND BESS

Table 34. Pre-Construction Phase EMP Table

Impact/ Aspect	**Mitigation/Management Actions**	***Responsibility***	***Methodology***	**Mitigation/Management Objectives and Outcomes**	***Frequency***
Large signage on roads and on BESS structures has the potential to create a visual nuisance.	• Signage on the road should be moderated in size and use natural colours, while still providing effective directions. • No large signage on the BESS structures.	Project management and EPC	NA	Signage is efficient but not dominating for casual observers.	NA
Unnecessary roads have the potential to create a visual disturbance long after the usage as past.	• Limit road access to an efficient minimum by coordinating planning between the project management and the environmental control officer.	Project management and EPC	Clear pre-planning is conducted with clear routing identification, and consequences for off-road driving.	The surrounding landscape remains rural and agricultural in landscape and land use.	As required.
Long fencing lines have the potential to be visually dominating.	• Fencing should be simple and appear transparent from a distance and located around the construction camp and not encircle the total project area	Project management and EPC	Clear planning of the laydown and construction yards is conducted with security fencing demarcated for construction areas.	Security fencing is kept to an effective minimum without jeopardizing security of the project.	At the onset of project planning.
Rural landscape change	• Restrict the height of PV panels to less than 4m to	Project management and EPC	NA	Local landscape is modified but the ZVI is contained by local	NA

	retain the rural agricultural landscape context.			topography to some degree.	

Table 35. Construction Phase EMP Table

Impact/ Aspect	**Mitigation/Management Actions**	***Responsibility***	***Methodology***	**Mitigation/Management Objectives and Outcomes**	***Frequency***
Topsoil loss can reduce the viability of rehabilitation measures and needs to be carefully managed if available.	• Topsoil excavated from the site should be stockpiled and utilised for rehabilitation of the site after construction.	Project management and EPC	As defined by the rehabilitation specialist.	Topsoil is utilized and no sterilization of topsoil takes place.	As required.
Unnecessary roads have the potential to create a visual disturbance long after the usage as past.	• Limit road access to an efficient minimum by coordinating planning between the project management and the environmental control officer.	Project management and EPC	Temporary roads should be well marked and should only cross drainage lines on areas identified as permanent road features where erosion and soil loss management can be contained. Non-compliance with road signage and utilisation of non authorised roads should become a finable offence.	The surrounding landscape remains rural and agricultural in landscape and land use.	As required.
Windblown dust and dust from moving vehicles have the potential to become a significant	• Set up a clear management plan with clear accountability structures with set	Project management and EPC (as the issue arises).	Should excessive dust be generated from the movement of vehicles on the roads such that	Dust generated on site as well as on the access road to the site is well managed and does not	On-going

nuisance factor to local farms around the site and along the access road.	thresholds for triggering mitigations.		the dust becomes visible to the immediate surrounds, dust-retardant measures should be implemented under authorisation of the EPC.	become a nuisance factor for the workers or the surrounding farmsteads.	
Buildings painted bright colours can increase the visual presence of the structures in a rural landscape, creating higher levels of visual contrast and attracting the attention of the casual observer.	• BESS structures should be painted a light green colour with a mid-grey hue to allow for reduce colour contrast while sill allowing some reflectivity effect to reduce heat buildup (subject to BESS design specifications). • General buildings and structures should have walls painted a mid grey-green colour (or sheet material) so as to better blend in with the bushveld vegetation. Roof sheeting should be a slightly darker mid-grey, green colour and preferably rough textured to reduce reflectivity. (Architectural / design variation around the grey-green colour would be acceptable). • Substation structures to be built to Eskom specification. The visual	Project management and EPC	At the commencement of construction, purchase order criteria for ordering paints and sheet metals need to be clearly defined.	Colour contrast generated from the buildings as seen from the roads is low and does not attract the attention of the casual observer.	Commencement of construction.

	preference is that these smaller structures are constructed from a brown, rough-textured face brick with roof colour a grey hue material.				
Light spillage from security lighting of structures can significantly increase the visual impact of a project in a rural landscape in a dark-sky context.	• Light spillage mitigation from security lighting should be implemented and monitored by the ECO during construction to ensure that light spillage does not create a glowing effect. • No overhead/ flood lighting of structures or areas. • No up lighting to be used (refer to generic light mitigations in Annexure E).	Project management and EPC	At the commencement of construction, purchase order criteria for ordering of security lighting need to be clearly defined.	Lights contrast generated from the buildings as seen from the roads is low and does not attract the attention of the casual observer.	Commencement of construction.
Litter has the potential to degrade landscape character and can be contained by fencing around the construction camp/ laydown.	• Littering should be a finable offence. • Fencing around the laydown should be diamond shaped to catch wind-blown litter. The fences should be routinely checked for the collection of litter caught on the fence.	Project management and EPC	Littering rules need to be clearly defined and workers effectively informed of the consequences of littering.	Solid waste litter is effectively controlled and does not become a landscape degradation risk.	Checked bi-monthly
Soil erosion can result in visual scarring on prominent areas.	• In areas where construction has taken place on moderate slopes,	Project management and EPC (checked monthly)	Clear methodology for rehabilitation and restoration is provided by the rehabilitation	Soil erosion is limited and effectively managed such that visual scarring does not take place.	Commencement of construction. On-going

	soil erosion measures need to be implemented.		specialist. As soon as construction has concluded on the area , rehabilitation processes need to commence.		
Cut and Fill areas can generate visual scarring in the landscape beyond the locality.	• Cut & Fill areas should be limited as much as possible, with specific detail placed on the prevention of soil erosion. • Slopes should preferably not exceed 1 in 3m gradients and need to be rehabilitated to natural vegetation directly post construction. • Should stabilisation be a requirement, gabion is preferred over concrete retaining wall. If concrete retaining walls are an engineering requirement, a brown colour should be used.	Project management and EPC with input from rehabilitation specialist.	Clear methodology for rehabilitation and restoration is provided by the rehabilitation specialist. As soon as construction has concluded on the area , rehabilitation processes need to commence.	Cut/ fill scarring is limited and effectively managed and does not dominate the attention of the casual observer.	Commencement of construction. On-going

Table 36. Operational Phase EMP Table

Impact/ Aspect	**Mitigation/Management Actions**	***Responsibility***	***Methodology***	**Mitigation/Management Objectives and Outcomes**	***Frequency***
Compaction of larger areas can result in soil sterilisation and landscape degradation.	• Post construction, the laydown areas and other construction areas no longer needed for	Project management and EPC with input	As defined by the rehabilitation specialist.	Soil sterilization does not take place and large degraded areas do not occur, with overall	On completion of construction phase. On-going

	operational management, should be ripped (0.5m depth) to restore compacted topsoil, and then rehabilitated to natural vegetation under the supervision of the rehabilitation specialist.	from rehabilitation specialist.		landscape integrity maintained.	
Soil erosion can result in visual scarring on prominent areas.	• In areas where construction has taken place on steeper slopes, soil erosion measures need to be implemented.	Project management and EPC	Clear methodology for rehabilitation and restoration is provided by the rehabilitation specialist. As soon as construction has concluded on the area , rehabilitation processes need to commence.	Soil erosion is limited and effectively managed such that visual scarring does not take place.	Bi-annual
Light spillage from security lighting of structures can significantly increase the visual impact of a project in a rural landscape in a dark-sky context.	• Light spillage measures designed during pre-construction phase should be implemented and monitored by the ECO during construction to ensure that light spillage does not create a glowing effect.	Project management and EPC.	A review of the security lights at night is undertaken by the EPC to check that undue light spillage is not taking place without loss of security.	Lights contrast generated from the buildings as seen from the roads is low and does not dominate the attention of the casual observer.	At commencement of Operation Phase. Bi-annual.
Windblown dust and dust from moving vehicles have the potential to become a significant nuisance factor to local farms around the	• Should excessive dust be generated from the movement of vehicles on the unpaved roads such that the dust becomes visible to the immediate surrounds, dust-retardant	Project management and EPC (as the need arises).	Set up a clear management plan with clear accountability structures with set thresholds for triggering of mitigations.	Dust generated on site as well as on the access road to the site is well managed and does not become a nuisance factor for the workers or	On-going.

site and along the access road.	measures should be implemented under authorization of the ECO.			the surrounding farmsteads.	

Table 37. Decommissioning Phase EMP Table

Impact/ Aspect	**Mitigation/Management Actions**	***Responsibility***	***Methodology***	**Mitigation/Management Objectives and Outcomes**	***Frequency***
Compaction of larger areas can result in soil sterilisation and landscape degradation.	• Post construction, the laydown areas and other construction areas no longer needed for operational management, should be ripped (0.5m depth) to restore compacted topsoil, and then rehabilitated to natural vegetation under the supervision of the rehabilitation specialist.	Project management and EPC with input from rehabilitation specialist.	As defined by the rehabilitation specialist.	Soil sterilization does not take place and large degraded areas do not occur, with overall landscape integrity maintained.	Within 1 year of closure.
Old, unused structures have the potential to significantly degrade the landscape character.	• All structures not required for agricultural purposes post-closure should be removed and where possible, recycled or reused. • Building structures should be broken down (including building foundations) • The rubble should be managed according to the National Environmental Management: Waste Act	Project management and EPC	As defined by the rehabilitation specialist.	The post operation landscape reverts to rural agricultural without landscape degradation created by un-used/ old structures.	Within 1 year of closure.

	(Act 59 of 2008) (NEMWA) and deposited in a registered landfill if it cannot be recycled or reused.				
Windblown dust and dust from moving vehicles have the potential to become a significant nuisance factor to local farms around the site and along the access road.	• Set up a clear management plan with clear accountability structures with set thresholds for triggering mitigations.	Project management and EPC (as the issue arises).	Should excessive dust be generated from the movement of vehicles on the roads such that the dust becomes visible to the immediate surrounds, dust-retardant measures should be implemented under authorization of the EPC.	Dust generated on site as well as on the access road to the site is well managed and does not become a nuisance factor for the workers or the surrounding farmsteads.	On-going

10 ENVIRONMENTAL MANAGEMENT PLAN: GRID CONNECTION

Table 38. OHPL Construction Phase EMP Table

Impact/ Aspect	**Mitigation/Management Actions**	***Responsibility***	***Methodology***	**Mitigation/Management Objectives and Outcomes**	***Frequency***
Topsoil loss can reduce the viability of rehabilitation measures and needs to be carefully managed if available.	• Topsoil excavated from the site should be stockpiled and utilised for rehabilitation of the site after construction.	Project management and EPC	As defined by the rehabilitation specialist.	Topsoil is utilized and no sterilization of topsoil takes place.	As required.

Unnecessary roads have the potential to create a visual disturbance long after the usage as past.	• Limit road access to an efficient minimum by coordinating planning between the project management and the environmental control officer.	Project management and EPC	Temporary roads should be well marked and should only cross drainage lines on areas identified as permanent road features where erosion and soil loss management can be contained. Noncompliance with road signage and utilisation of non authorised roads should become a finable offence.	The surrounding landscape remains rural and agricultural in landscape and land use.	As required.
Windblown dust and dust from moving vehicles have the potential to become a significant nuisance factor to local farms around the site and along the access road.	• Set up a clear management plan with clear accountability structures with set thresholds for triggering mitigations.	Project management and EPC (as the issue arises).	Should excessive dust be generated from the movement of vehicles on the roads such that the dust becomes visible to the immediate surrounds, dust-retardant measures should be implemented under authorisation of the EPC.	Dust generated on site as well as on the access road to the site is well managed and does not become a nuisance factor for the workers or the surrounding farmsteads.	On-going
Litter has the potential to degrade landscape character and can be contained by fencing around the construction camp/ laydown.	• Littering should be a finable offence. • Fencing around the laydown should be diamond shaped to catch wind-blown litter. The	Project management and EPC	Littering rules need to be clearly defined and workers effectively informed of the consequences of littering.	Solid waste litter is effectively controlled and does not become a landscape degradation risk.	Checked bi-monthly

	fences should be routinely checked for the collection of litter caught on the fence.				
Soil erosion can result in visual scarring on prominent areas.	• In areas where construction has taken place on moderate slopes, soil erosion measures need to be implemented.	Project management and EPC (checked monthly)	Clear methodology for rehabilitation and restoration is provided by the rehabilitation specialist. As soon as construction has concluded on the area , rehabilitation processes need to commence.	Soil erosion is limited and effectively managed such that visual scarring does not take place.	Commencement of construction. On-going

Table 39. OHPL Operational Phase EMP Table

Impact/ Aspect	**Mitigation/Management Actions**	***Responsibility***	***Methodology***	**Mitigation/Management Objectives and Outcomes**	***Frequency***
Compaction of larger areas can result in soil sterilisation and landscape degradation.	• Post construction, the laydown areas and other construction areas no longer needed for operational management, should be ripped (0.5m depth) to restore compacted topsoil, and then rehabilitated to natural vegetation under the supervision of the rehabilitation specialist.	Project management and EPC with input from rehabilitation specialist.	As defined by the rehabilitation specialist.	Soil sterilization does not take place and large degraded areas do not occur, with overall landscape integrity maintained.	On completion of construction phase. On-going
Soil erosion can result in visual scarring on prominent areas.	• In areas where construction has taken place on steeper slopes, soil erosion	Project management and EPC	Clear methodology for rehabilitation and restoration is provided	Soil erosion is limited and effectively managed	Bi-annual

	measures need to be implemented.		by the rehabilitation specialist. As soon as construction has concluded on the area , rehabilitation processes need to commence.	such that visual scarring does not take place.	

11 SUMMARY OF VISUAL IMPACT FINDINGS: PV & BESS

A summary of the visual impacts assessed in located on the following page. The headings below refer to the identified impact assessment criteria.

Table 40: PV Impact Significance Summary Table

Project	Phase	Mitig. Status	Significance	Cumulative
PV and BESS	Construction	Without	Med to High -Ve	Med to High -Ve
		With	Medium -Ve	Medium -Ve
	Operation	Without	Medium -Ve	Med to High -Ve
		With	Med to Low -Ve	Medium -Ve
	Decommissioning	Without	Medium -Ve	Med to High -Ve
		With	Negligible	Low -Ve

Nature of the Impact

The nature of the PV development is rated **Negative as the proposed PV development will result in a strong change to the local landscape character which is primarily bushveld and does have some eco-tourism/ hunting lodge activity.**

Extent of the Impact

The Extent of the project is rated **Regional** pre mitigation. With mitigation of light spillage the extent of the proposed landscape change can be Local Area**.** This is due to the topographic screening that does contain the PV landscape change to some degree within the 6km distance range.

Duration of the Impact

The Construction and Decommissioning Phases are rated Short Term as these phases are likely to be concluded within two years. Operation Phase is rated Long-Term as the project is likely to remain in the landscape for 20 years.

Magnitude of the Impact

The Magnitude of the PV project Construction and Decommissioning is rated **Medium to High** before mitigation. With mitigation, the Magnitude of the impacts would be reduced to **Medium** for these phases. For Operational Phases, the Magnitude is rated Medium to High without mitigation. The incorporation of the mitigation would result in a reduction in the Magnitude to Medium to Low.

Probability of the Impact

Probability of the visual impacts taking place is defined as Highly Likely as the removal of the bushveld vegetation will definitely result in a significant change to the local landscape character.

Confidence of the Impact

The impact ratings were defined as Sure as all information was provided regarding the nature of the landscape modification, and a site visit was undertaken.

Reversibility of the Impact

Due to the limited necessity for major earthworks in the construction of the PV project, the project was defined as Reversible The existing landscape could be re-established to some degree with rehabilitation and restoration, but the loss Bushveld vegetation would not be reversed.

Resource Irreplaceability of the Impact

The nature of the receiving landscape is rated Medium in terms of irreplaceability. There are no significant landforms that add value to the local landscape, which is fairly common within the region characterised as undulating bushveld.

Visual Significance of the Impact

The significance of the visual impact is rated as **Medium to High without mitigation**, and **Medium with mitigation**. The limited number of visual receptors and the contained zone of visual influence help to reduce the overall visual intensity of the landscape change. However, the development would still result in a noticeable transformation of the area's local landscape character. The implementation of light spillage mitigation would help preserve the dark sky quality typical of the rural night-time environment. In addition, the 100-metre setback from Botteliers Road and 50-metre setback from Gage Road contribute to maintaining the bushveld sense of place along these rural ~~l access~~ routes.

Cumulative Impact Assessment

The Cumulative visual risk to scenic resources was rated **Medium to High** without mitigation and **Medium** with mitigation, with a potential for Neutral Cumulative Effects post closure with effective rehabilitation and restoration.

As the site is topographically screened to some degree, such that the Zone of Visual Influence (ZVI) is limited to the local area, the cumulative impact of this PV project, together with the three existing PV/BESS developments and the potential PV development on the adjacent Klipputs Farm, will result in a substantial transformation of the ***local*** landscape character, regardless of mitigation. Combined light spillage from these developments may significantly alter the rural and natural landscape context and potentially degrade the existing dark-sky quality that supports local eco-tourism and contributes to the area's sense of place.

However, if light spillage is effectively mitigated, and considering the localised ZVI and the presence of setback buffers along farm access roads, the cumulative visual effects can be moderated to some degree.

12 SUMMARY OF VISUAL IMPACT FINDINGS: GRID CONNECT

A summary of the visual impacts assessed in located on the following page. The headings below refer to the identified impact assessment criteria.

Table 41: OHPL Alternative Impact Significance Summary Table

Project	Phase	Mitig. Status	Significance	Cumulative
Preferred Alternative	Construction	Without	Medium -Ve	Low -Ve
		With	Low -Ve	Very Low -Ve
	Operation	Without	Low -Ve	Medium -Ve
		With	Very Low -Ve	Low -Ve
	Decommissioning	Without	*Permanent feature*	
		With		

Project	Phase	Mitig. Status	Significance	Cumulative
Secondary Alternative	Construction	Without	Med to High -Ve	Medium -Ve
		With	Medium -Ve	Med to Low -Ve
	Operation	Without	Medium -Ve	Low -Ve
		With	Med to Low -Ve	Very Low -Ve
	Decommissioning	Without	*Permanent feature*	
		With		

Project	Phase	Mitig. Status	Significance	Cumulative
Tertiary Alternative	Construction	Without	Med to High -Ve	Med to High -Ve
		With	Med to High -Ve	Med to High -Ve
	Operation	Without	Med to High -Ve	Med to High -Ve
		With	Med to High -Ve	Med to High -Ve
	Decommissioning	Without	*Permanent feature*	
		With		

Nature of the Impact

The nature of the PV development is rated Negative as the proposed OHPL development will result in a strong change to the local landscape character which is primarily bushveld and does have some eco-tourism/ hunting lodge activity.

Extent of the Impact

The Extent of the project is rated **Local** as the receiving landscape primarily comprises bushveld vegetation that does allow for a higher regional VAC level. The terrain is also undulating such that topographic screening is also likely to reduce the extent of the OHPL landscape change.

Duration of the Impact

The Construction and Decommissioning Phases are rated Short Term as these phases are likely to be concluded within two years. Operation Phase is rated Permanent as the project is likely to remain in the landscape.

Magnitude of the Impact

For both the Preferred and Secondary Alternatives, the magnitude of visual impact during the construction and decommissioning phases is rated as Medium without mitigation and would be reduced to Low with the implementation of mitigation measures. Similarly, during the operational phase, the magnitude is initially rated as Medium but would decrease to Low with appropriate mitigation in place. In contrast, the Tertiary Alternative due to the encirclement of Klipputs Farm, which is actively used for eco-tourism is rated as having a High magnitude of impact, both with and without mitigation, reflecting the severity and permanence of the landscape change in this sensitive context.

Probability of the Impact

The probability of visual impacts occurring is rated as likely for the Preferred and Secondary Alternatives, as the routing of the powerline through bushveld vegetation will clearly result in a noticeable change to the local landscape character. For the Tertiary Alternative, the probability is rated as highly likely due to the encirclement of Klipputs Farm, which significantly increases the potential for visual intrusion and long-term alteration of the landscape, particularly in the context of its eco-tourism and hunting use.

Confidence of the Impact

The impact ratings were defined as Sure as all information was provided regarding the nature of the landscape modification, and a site visit was undertaken.

Reversibility of the Impact

Due to the limited necessity for major earthworks in the construction of the OHPL project, the project was defined as Reversible The existing landscape could be re-established with rehabilitation and restoration.

Resource Irreplaceability of the Impact

The nature of the receiving landscape is rated Medium in terms of irreplaceability. There are no significant landforms that add value to the local landscape, which is fairly common within the region characterised as undulating bushveld.

Visual Significance of the Impact

The significance of the **Preferred and Secondary Alternatives** visual impact is rated as **Medium without mitigation**, and **Low with mitigation**. The limited number of visual receptors and the contained zone of visual influence help to reduce the overall visual intensity of the landscape change. Due to the co-alignment of the Preferred Alternative with the existing Eskom OHPL corridor, this alternative is the visual preference.

The visual impact significance for the Tertiary Alternative is rated Medium to High with and without mitigation. Due to the encircling of the Klipputs Farm that is being used for eco-tourism, the No-Go Alternative is preferred.

Cumulative Impact Assessment

The Cumulative visual risk to scenic resources from the **Preferred and Secondary Alternatives** was rated **Medium** without mitigation and **Low** with mitigation. As the site is topographically screened to some degree, such that the Zone of Visual Influence (ZVI) is limited to the local area, the cumulative impact of this project is likely to be contained to some degree. The co-alignment with the existing Eskom OHPL corridor also contains the impact to an area that is already degraded, without significantly increasing the massing effect.

The Cumulative visual risk to scenic resources from the **Tertiary Alternatives** was rated **High** with and without mitigation. The encirclement of the Klipputs Farm would result in clear intervisibility of powerlines from most areas on the property.

13 OPPORTUNITIES AND CONSTRAINTS

13.1 PV & BESS Development

Opportunities

- The ZVI is contained to some degree that would result in a moderate zone of visual influence.
- The area is remote with only a single lodge ~~receptor~~ (Klipputs Lodge) that is located within the area but *outside* of the lodge viewshed (i.e. the lodge will be topographically screened from the combined views of the Tabor PV development). The farm Klipputs is also looking at the possibility of PV development (EIA pending).
- No other Renewable Energy projects are currently visible from this location reducing potential cumulative effects from massing of PV infrastructures. This, however, is likely to change over time.
- Potential for Medium to Low magnitude visual impact with mitigation
- National energy objectives for renewable energy and job creation will be met.
- Good alignment with regional and local planning.

Constraints

- Degradation of bushveld vegetation that does offer medium levels of scenic quality and is being used for eco-tourism/ hunting.
- Local area change in landscape character due to the development of PV/ BESS and associated infrastructure.

13.2 No-Go Option

Opportunities

- Retain the existing bushveld sense of place that is being used for eco-tourism/ hunting.
- Some employment opportunities for workers staying on the property.

Constraints

- The remote location and moderate landscape resources limit the potential for the area to be utilised more intensively for tourism/ eco-tourism.
- National objective for renewable energy would not be met.

- Limited potential for local / regional economic development.

Summary Findings: PV and BESS

The proposed PV and BESS development offers a number of clear benefits. The site is in a remote area with limited visual exposure, and only one nearby lodge (Klipputs) falls within the broader area, but not within the direct viewshed. The Klipputs Farm is also in the process of making application of PV development (Pending EIA). There are currently no other visible renewable energy projects nearby, which helps reduce the risk of cumulative visual impact, though this may change in future. With proper mitigation, the visual impact is expected to be moderate. The project also supports national goals for renewable energy and job creation and fits well within local and regional planning frameworks.

On the constraints side, the No-Go option would keep the bushveld landscape intact, supporting its current eco-tourism and hunting use. However, because the area is remote and has only moderate landscape value, its tourism potential is limited. In conclusion, the development is considered suitable for the area, as long as visual impacts are carefully managed through proper mitigation, allowing the rural character and natural qualities of the broader bushveld landscape to be largely retained.

13.3 Grid Connection Development: Preferred and Secondary Alternatives

Opportunities

- The relatively small size of the monopoles creates limited visual contrast outside of High Exposure Zones.
- The multiple Eskom power lines to the north of the site degrade the local sense of place to some degree, increasing the Visual Absorption Capacity of the landscape.
- Receptor sensitivity to landscape change is expected to be Low due to the limited visual resources of the site and surrounds, and the existing power line landscape context.
- Potential for Low Magnitude visual impact with the proposed routing adjacent to an existing Eskom OHPL corridor.
- National energy objectives for renewable energy and job creation will be met.
- Good alignment with regional and local planning.
- The bushveld vegetation increases the VAC levels where the OHPL routings landscape change will be locally experienced.

Constraints

- The close proximity of the routing to farm access roads and N1 National Road are likely to change the sense of place to some degree. However, this is likely to be minimal for the Preferred Alternative, due to alignment to the existing Eskom OHPLs that are routed to the Tabor MTS.

13.4 Grid Connection No-Go Option: Preferred and Secondary Alternatives

Opportunities

- The current rural agricultural land uses of the property do add to the regional sense of place, due to the remoteness of the locality.
- Agricultural productivity from low intensity cattle farming requiring some employment opportunities.

Constraints

- The visual resources are limited with Low existing scenic resources.
- National energy objectives for renewable energy and job creation will not be met.

Summary Findings: Preferred and Secondary Alternatives

The proposed grid connection for both the Preferred and Secondary Alternatives offers a number of clear advantages that outweigh the identified constraints. The relatively small scale of the monopole structures, combined with their routing adjacent to existing Eskom overhead lines, results in low visual contrast outside of high exposure zones. Receptor sensitivity is considered low, and the bushveld vegetation provides additional screening, further reducing the magnitude of potential visual impacts.

These alternatives align well with national energy objectives and regional planning priorities, supporting both renewable energy expansion and job creation. Although there may be some localised change in sense of place, particularly near farm access roads and the N1 National Road, this impact is expected to be minimal due to the already modified visual context of the area (Preferred Alternative), and the bushveld vegetation providing partial screening (Secondary Alternative).

In contrast, the No-Go option would preserve existing rural agricultural uses and contribute to the regional bushveld sense of place. However, as these areas offer limited scenic value, minimal economic uplift, and would not contribute to national energy goals, **the benefits of the proposed grid connection alternatives clearly outweigh the constraints.**

13.5 Grid Connection Development: Tertiary Alternative

Opportunities

- The relatively small size of the monopoles creates limited visual contrast outside of High Exposure Zones.
- The multiple Eskom power lines to the north of the site degrade the local sense of place to some degree, increasing the Visual Absorption Capacity of the landscape.
- National energy objectives for renewable energy and job creation will be met.
- The bushveld vegetation increases the VAC levels where the OHPL routings landscape change will be locally experienced.

Constraints

- The enclosure of the Klipputs Farm by the proposed routing effectively encircles the property. As the farm is being used for eco-tourism/ hunting and comprises a well established lodge, this is a significant constraint.

13.6 Grid Connection No-Go Option: Tertiary Alternative

Opportunities

- The current eco-tourism and lodge accommodation land uses of the property are maintained.

Constraints

- The property visual resources are limited with Low existing scenic resources.
- National energy objectives for renewable energy and job creation will not be met.

Summary Findings: Tertiary Alternative

While the Tertiary Alternative offers certain benefits, such as the small scale of monopoles, existing Eskom infrastructure reducing landscape sensitivity, and alignment with national energy and employment objectives, the routing presents a significant constraint by encircling Klipputs Farm, a property actively used for eco-tourism and hunting with an established lodge. This would lead to a major alteration in sense of place and severely compromise the property's tourism potential.

In contrast, the No-Go option preserves the existing land use, maintaining the viability of the lodge and eco-tourism operations. Although the scenic resources of the area are limited, the economic and cultural value of the existing land use outweighs the marginal visual benefit of the grid infrastructure at this location.

Given the severity of the visual intrusion and the impact on an active eco-tourism property, the No-Go option is preferred for the Tertiary Alternative.

14 CONCLUSION

PV & BESS Development

It is the recommendation of this VIA that the **proposed PV and BESS project should be authorised WITH Mitigation.** The following key reasons provide the motivation:

- The ZVI is contained to some degree that would result in a moderate zone of visual influence.
- The area is remote with only a single lodge in the locality (Klipputs Lodge) that is located outside of the combined PV project viewshed. The farm Klipputs is also looking at the possibility of PV development (EIA pending).
- No other Renewable Energy projects are currently visible from this location reducing potential cumulative effects from massing of PV infrastructures. This, however, is likely to change over time.
- Potential for Medium ~~to Low~~ magnitude visual impact with mitigation.
- National energy objectives for renewable energy and job creation will be met.
- Good alignment with regional and local planning.

The proposed PV and BESS development offers a number of clear benefits. The site is in a remote area with limited visual exposure, and only one nearby lodge (Klipputs) is located within the local area, but not within the direct viewshed. The Klipputs Farm is also in the process of making application of PV development (Pending EIA). There are currently no other visible renewable energy projects nearby, which helps reduce the risk of cumulative visual impact, though this may change in future. With proper mitigation, the visual impact is expected to be moderate. The project also supports national goals for renewable energy and job creation and fits well within local and regional planning frameworks.

On the constrains side, the No-Go option would keep the bushveld landscape intact, supporting its current eco-tourism and hunting use. However, because the area is remote and has only moderate landscape value, its tourism potential is limited. In conclusion, the development is considered suitable for the area, as long as visual impacts are carefully managed through proper mitigation, allowing the rural character and natural qualities of the broader bushveld landscape to be largely retained.

Grid Connection

It is the recommendation of this VIA that the **proposed Preferred and Secondary Alternative grid connect projects should be authorised WITH Mitigation**. The following key reasons provide the motivation:

- The site visual resources are limited with a Medium rating for Scenic Quality and Medium rating for Receptor Sensitivity to landscape change.
- The ZVI is contained to some degree by undulating terrain. This would result in a moderate zone of visual influence, with the small size of the monopoles creating limited visual contrast.
- While there is a hunting lodge in the region (Klipputs Lodge), the lodge is well set back from the proposed OHPL routings. There are very few receptors for much of the routing, with the preferred alternative crossing the N1 National Road at an existing OHPL routing corridor.
- National energy objectives for renewable energy and job creation will be met, and there is a good alignment with regional and local planning.
- While there are exclusion areas on all the three assessed alternatives, these areas are for monopole/ pylon placement. There appears to be sufficient spaces within the proposed routing corridors to accommodate the routings. The No-Go areas will need to be excluded from monopole/ pylon placement.

Mitigation is required and would need to be implemented. Mitigation includes the exclusion of structure placement within 50m of the road servitudes, and 100m from the rural residential receptors. With mitigation, the benefits of the PV/ grid connect landscape change are likely to outweigh the landscape status quo, where scenic resources are moderate. **While there is a strong visual preference for the Preferred Routing, the Secondary Alternative routing is rated Medium for Visual Impact Significance and would not be a Fatal Flaw.**

Due to the encirclement of Klipputs Farm by the proposed Tertiary Alternative routing, this alignment is considered a Fatal Flaw. The farm currently supports eco-tourism and hunting activities and includes an active lodge. The proposed overhead power line is expected to result in a strong visual impact during both the construction and operational phases, significantly reducing the property's tourism value and altering its established sense of place. Given the severity of the visual intrusion and the degradation of landscape resources actively used for eco-tourism, **the No-Go option is strongly preferred from a landscape and visual perspective.**

15 BIBLIOGRAPHY

Department of Environment Affairs. (2013). *DEA National Wind and Solar PV Strategic Environmenal Assessment.*

Green Building Africa. (n.d.). *https://www.greenbuildingafrica.co.za/brics-bank-provides-eskom-with-us-180-million-loan-for-renewable-energy-grid-connection-infrastructure/*.

Hull, R. B., & Bishop, I. E. (1988). *Scenic Impacts of Electricity Power Mine: The Influence of Landscape Type and Observer Distance. Journal of Environmental Management.(27) Pg 99-108.*

IEMA. (2002). *U.K Institute of Environmental Management and Assessment (IEMA). 'Guidelines for Landscape and Visual Impact Assessment' Second Edition, Spon Press. Pg 44.*

IFC. (2012). *International Finance Corporation (IFC) prescribes eight performance standards (PS) on environmental and social sustainability. Millennium Ecosystem Assessment. 2005.*

Junior Mining Network. (n.d.). *https://www.juniorminingnetwork.com/junior-miner-news/press-releases/2961-cse/sgd/*.

Makhado Local Municipality . (2020). *Makhado Local Municipality SDF: Final Draft Report.*

NASA, A. G. (2009). *Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) Global Digital Elevation Model Version 2 (GDEM V2 2011). Ministry of Economy, Trade, and Industry (METI) of Japan and United States National Aeronauti.*

NELPAG. (n.d.). *New England Light Pollution Advisory Group (NELPAG) http://cfa/ www.harvard .edu /cfa/ps/nelpag.html) and Sky & Telescope http://SkyandTelescope.com/). NELPAG and Sky & Telescope support the International Dark-Sky Association (IDA) (http://www.darksky.o.*

Oberholzer, B. (2005). *Guideline for involving visual and aesthetic specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 F. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs and Deve.*

SANBI. (2018). *www.sanbi.org*. Retrieved from 2018 National Biodiversity Assessment (NBA): https://www.sanbi.org/link/bgis-biodiversity-gis/

Sheppard, D. S. (2000). *Guidance for crystal ball gazers: Developing a code of ethics for landscape visualization.* Department of Forest Resources Management and Landscape Architecture Program, University of British Columbia, Vancouver, Canada .

South African National Biodiversity Institute. (2018). *Vegetation Map of South Africa, Lesotho and Swaziland.*

The Landscape Institute. (2003). *Guidelines for Landscape and Visual Impact Assessment* (Second ed.). Spon Press.

USDI., B. (2004). *Bureau of Land Management, U.S. Department of Interior. 2004. Visual Resource Management Manual 8400.*

Vhembe District Municipality. (2007). *Vhembe District Municipality SDF.*

Vhembe District Municipality. (2020). *Vhembe District Municipality LP Profile and Analysis.*

www.hawaiirenewableenergy.org/Villamesias2. (n.d.).

16 ANNEXURE A: SITE VISIT PHOTOGRAPHS AND COMMENTS

The following photographs were taken during the field survey as mapped below. The text below the photograph describes the landscape and visual risks flagged during the site survey, if applicable. The following photographs depict the PV, BESS and OHPL survey points.

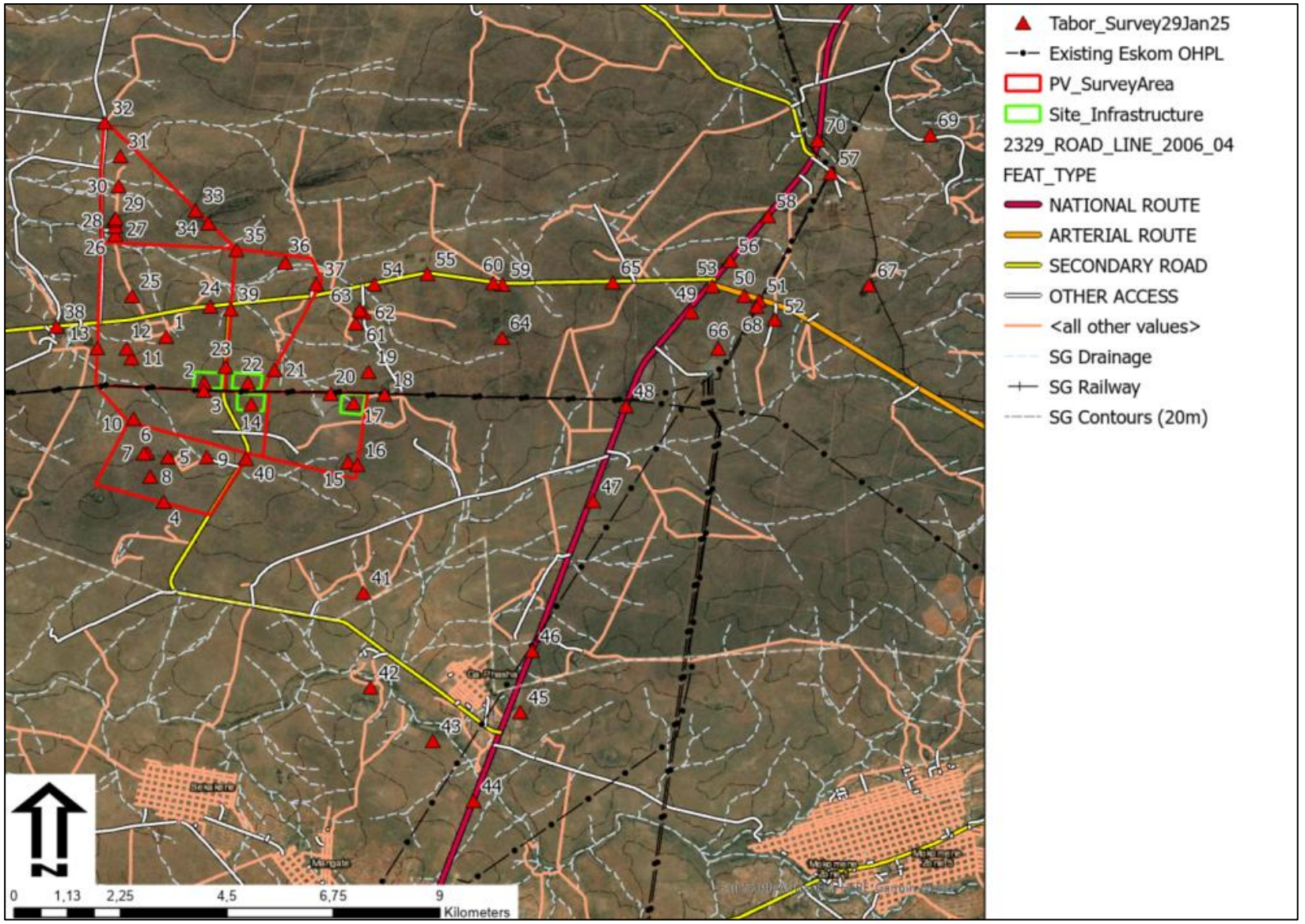
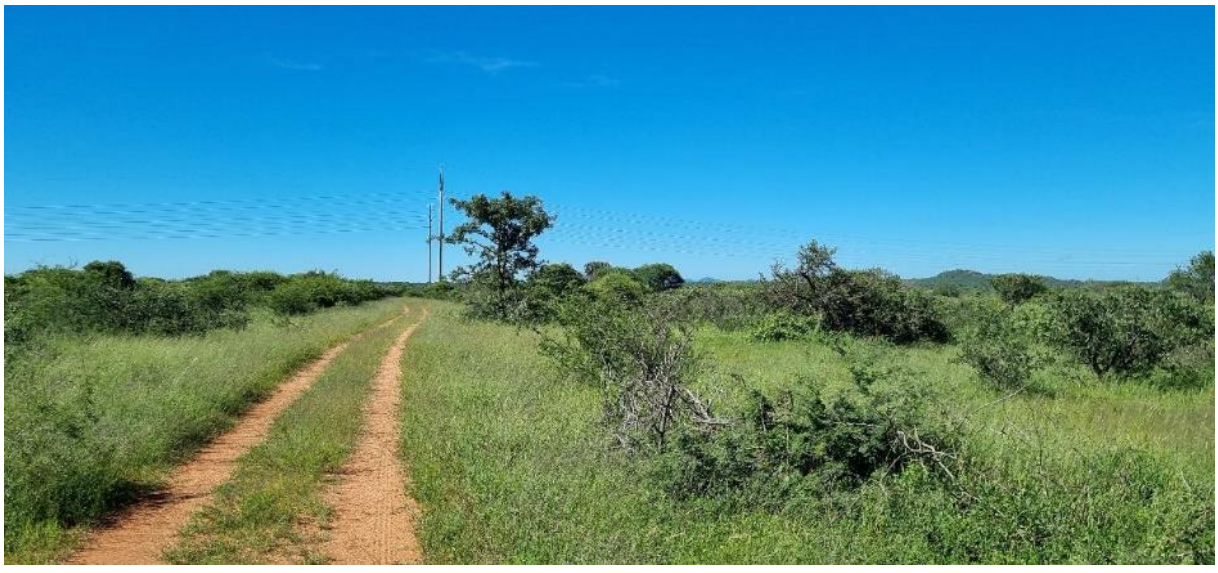


Figure 35: Survey point and project locality map.

ID	1
PHOTO	Existing lodge and runway
RISK	Low
DIRECTION	West
COMMENT	Low prominence and remote
PHOTO ID	Tabor 2_20250128_085113833.jpg

ID	2
PHOTO	BESS Site
RISK	Medium
DIRECTION	West
COMMENT	Some prominence with open views to the west but unlikely to be visually intrusive due to low height of structures and close proximity to Eskom powerline corridor. Mitigate with tree screening around site for Low.
PHOTO ID	Tabor 2_20250128_085917931.jpg



ID	3
PHOTO	Existing Eskom powerline
RISK	Medium
DIRECTION	West
COMMENT	Some prominence and landscape degradation
PHOTO ID	

ID	4
PHOTO	Site bushveld medium height
RISK	Low
DIRECTION	North
COMMENT	Low prominence and remote
PHOTO ID	

ID	5
PHOTO	Koppie
RISK	High
DIRECTION	East
COMMENT	Scenic value and bushveld sense of place.
PHOTO ID	

ID	6
PHOTO	Drainage line and Rocky outcrops
RISK	High
DIRECTION	South
COMMENT	Drainage and sense of place. Exclude with 50m buffer
PHOTO ID	

ID	7
PHOTO	Rocky outcrops and large trees
RISK	High
DIRECTION	West
COMMENT	Exclude sense of place
PHOTO ID	

ID	8
PHOTO	Rocky outcrop
RISK	Medium
DIRECTION	South
COMMENT	Exclude with buffer 50m
PHOTO ID	Tabor 2_20250128_095050264.jpg

ID	9
PHOTO	Dam feature
RISK	High
DIRECTION	North
COMMENT	Exclude with buffer 50m
PHOTO ID	Tabor 2_20250128_095747781.jpg

ID	10
PHOTO	bushveld flat terrain
RISK	Low
DIRECTION	North West
COMMENT	Low prominence and remote with medium scenic quality. Suitable for development.
PHOTO ID	Tabor 2_20250128_100529368.jpg

ID	11
PHOTO	Low bushveld
RISK	Medium
DIRECTION	North
COMMENT	Some moderate prominence but suitable for PV development as remote and bushveld screening.
PHOTO ID	Tabor 2_20250128_101237973.jpg

ID	12
PHOTO	88kv powerline
RISK	Low
DIRECTION	East
COMMENT	Limited visual disturbance with wooden poles.
PHOTO ID	Tabor 2_20250128_101512996.jpg

ID	13
PHOTO	Western boundary
RISK	Medium
DIRECTION	North
COMMENT	Low prominence and remote. Buffer 100m along boundary to retain sense of place (Pending neighbour consent)
PHOTO ID	Tabor 2_20250128_101914737.jpg

ID	14
PHOTO	BESS South Site
RISK	Low
DIRECTION	South
COMMENT	Flat terrain locally surrounded by bushveld vegetation. Remote with medium scenic quality. Suitable with lighting mitigation and no Overhead lighting.
PHOTO ID	Tabor 2_20250128_103942945.jpg

ID	15
PHOTO	Eastern PV extent.
RISK	Low
DIRECTION	West
COMMENT	Flat terrain and remote with medium scenic quality.
PHOTO ID	Tabor 2_20250128_105144802.jpg

ID	16
PHOTO	Grd P2 Opt 3A
RISK	Low
DIRECTION	North
COMMENT	Some prominence but remote and existing Eskom 88kv line precedent.
PHOTO ID	Tabor 2_20250128_105413800.jpg

ID	17
PHOTO	PV eastern
RISK	Low
DIRECTION	West
COMMENT	Topographically contained in low depression with limited views and medium scenic quality. Suitable.
PHOTO ID	Tabor 2_20250128_110140603.jpg

ID	18
PHOTO	OHPL P1 Opt1& P2 Opt 1A and 1B
RISK	Low
DIRECTION	East
COMMENT	existing Eskom OHPL corridor precedent.
PHOTO ID	Tabor 2_20250128_110537034.jpg

ID	19
PHOTO	TX P1 P2 Opt 2
RISK	Medium
DIRECTION	North
COMMENT	Some prominence but bushveld vegetation screening localises zone of visual influence to some degree. remote.
PHOTO ID	Tabor 2_20250128_111005689.jpg

ID	20
PHOTO	Existing Eskom OHPL
RISK	Low
DIRECTION	East
COMMENT	Remote and limited prominence with medium scenic quality. Suitable without mitigation.
PHOTO ID	Tabor 2_20250128_111726918.jpg

ID	21
PHOTO	Grid P1 Op2
RISK	Low
DIRECTION	North East
COMMENT	Low prominence and well set back from single receptor with similar views of existing Eskom powerlines. Suitable without mitigation.
PHOTO ID	Tabor 2_20250128_112717980.jpg

ID	22
PHOTO	BESS North
RISK	Low
DIRECTION	North East
COMMENT	Flat terrain, remote and Eskom powerline corridor precedent.
PHOTO ID	Tabor 2_20250128_113146592.jpg

ID	23
PHOTO	District Road Receptor. Grage Road
RISK	Medium
DIRECTION	North
COMMENT	Medium scenic quality but remote and not much ecotourism taking place. Preferred 100m buffer on all roads to retain bushveld sense of place. i.e. not recommended but not a fatal flaw. Grid connection 75m buffer.
PHOTO ID	Tabor 2_20250128_114658794.jpg

ID	24
PHOTO	Botteliers Road Receptor
RISK	High
DIRECTION	East
COMMENT	Clear views of PV from moderately prominent location along the road. Buffer 100m either side preferred.
PHOTO ID	Tabor 2_20250128_115651410.jpg

ID	25
PHOTO	Scenic bushveld
RISK	Medium
DIRECTION	North
COMMENT	Remote and not prominent but does have scenic value. Suitable for partial, nodal development in areas of low ecological and botanical sensitivity.
PHOTO ID	Tabor 2_20250128_120754900.jpg

ID	26
PHOTO	Graveyard
RISK	High
DIRECTION	West
COMMENT	No go as per heritage specialist findings.
PHOTO ID	Tabor 2_20250128_121451142.jpg

ID	27
PHOTO	Old structure
RISK	Low
DIRECTION	North
COMMENT	degraded
PHOTO ID	Tabor 2_20250128_121638529.jpg

ID	28
PHOTO	Powerline 88kv
RISK	Low
DIRECTION	South West
COMMENT	Low zone of visual influence in rural agricultural landscape
PHOTO ID	Tabor 2_20250128_121903392.jpg

ID	29
PHOTO	Old structure
RISK	Low
DIRECTION	North
COMMENT	Degraded
PHOTO ID	Tabor 2_20250128_122006270.jpg

ID	30
PHOTO	Small dam in drainage line
RISK	High
DIRECTION	North
COMMENT	Adding to scenic quality. Retain (Subject to hydrological specialists finding).
PHOTO ID	Tabor 2_20250128_122411188.jpg

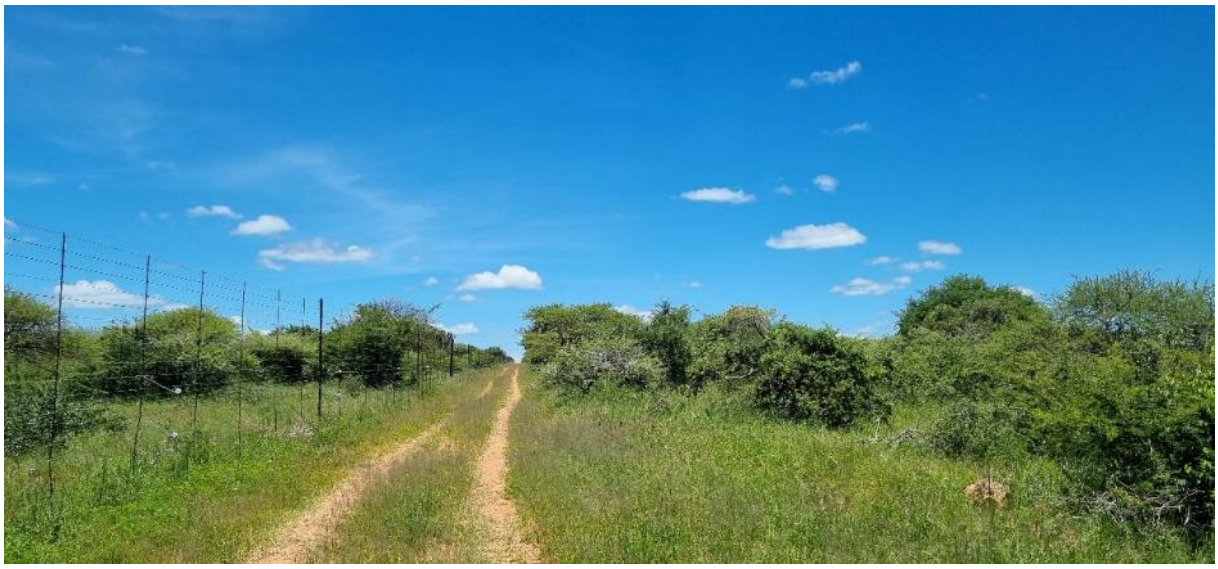
ID	31
PHOTO	Low lying and possible drainage
RISK	High
DIRECTION	North
COMMENT	Exclude as per SWS findings.
PHOTO ID	Tabor 2_20250128_122957179.jpg

ID	32
PHOTO	Northern PV site view south
RISK	Medium
DIRECTION	North
COMMENT	Moderate elevation and some scenic value. Not recommended.
PHOTO ID	Tabor 2_20250128_123414313.jpg

ID	33
PHOTO	ridgeline
RISK	High
DIRECTION	North
COMMENT	Local scenic resource. Exclude 1in10m plus 50m buffer for sense of place.
PHOTO ID	Tabor 2_20250128_124348995.jpg

ID	34
PHOTO	Bushveld medium sensitivity
RISK	High
DIRECTION	North
COMMENT	
PHOTO ID	Tabor 2_20250128_124832069.jpg

ID	35
PHOTO	Grid P1 Op2
RISK	Medium
DIRECTION	North
COMMENT	Existing farm road fence line corridor but some scenic value and degradation of northern scenic resources. Not preferred but not a fatal flaw.
PHOTO ID	Tabor 2_20250128_125257407.jpg



ID	36
PHOTO	Degraded bushveld
RISK	High
DIRECTION	North
COMMENT	
PHOTO ID	Tabor 2_20250128_125940645.jpg

ID	37
PHOTO	Farmhouse proponent
RISK	High
DIRECTION	North
COMMENT	Retain as large trees and buildings add scenic value.
PHOTO ID	Tabor 2_20250128_130258505.jpg

ID	38
PHOTO	Botteliers Road Eastbound Receptor
RISK	Medium
DIRECTION	East
COMMENT	Medium scenic value and medium low receptor sensitivity. More agricultural than tourism in land use. Mitigate with 50m road buffer exclusion for low impact .
PHOTO ID	Tabor 2_20250128_131804941.jpg

ID	39
PHOTO	Grid P1 Op2
RISK	Medium
DIRECTION	South
COMMENT	Medium scenic value and remote. Buffer road 50m foe medium impact.
PHOTO ID	Tabor 2_20250128_132822874.jpg

ID	40
PHOTO	Grage Road Southbound
RISK	Medium
DIRECTION	South
COMMENT	Medium scenic bur remote and few receptors. Buffer 50m on road for Medium Low impact.
PHOTO ID	Tabor 2_20250128_133525845.jpg

ID	41
PHOTO	Grid P2 Op3B
RISK	Low
DIRECTION	East
COMMENT	Medium to low scenic quality and remote with no high export residential receptors. Suitable without mitigation.
PHOTO ID	Tabor 2_20250128_134924403.jpg

ID	42
PHOTO	Grid P2 Op3B
RISK	Medium
DIRECTION	South
COMMENT	Medium exposure to town receptor but lower scenic quality.
PHOTO ID	Tabor 2_20250128_135236859.jpg

ID	43
PHOTO	Grid P2 Op3B
RISK	Medium
DIRECTION	South
COMMENT	Medium exposure to town receptor but lower scenic quality.
PHOTO ID	Tabor 2_20250128_135744595.jpg

ID	44
PHOTO	Grid P2 Op3B
RISK	Medium
DIRECTION	North
COMMENT	Higher VAC from village built environment and some pole infrastructure. Low sensitivity for receptors as scenic quality medium to low.
PHOTO ID	Tabor 2_20250128_140516058.jpg

ID	45
PHOTO	Rocky outcrop
RISK	High
DIRECTION	North East
COMMENT	Local scenic quality. Exclude.
PHOTO ID	Tabor 2_20250128_140834406.jpg

ID	46
PHOTO	N2 Road Receptor
RISK	Medium
DIRECTION	North East
COMMENT	Grid P2 Op3B should be to the east as higher visual absorption capacity with Low existing telecommunications infrastructure.
PHOTO ID	Tabor 2_20250128_141118804.jpg

ID	47
PHOTO	Existing 88kv powerline
RISK	Low
DIRECTION	North East
COMMENT	Co align with existing 88kv OHL would reduce visual intrusion.
PHOTO ID	Tabor 2_20250128_141539346.jpg

ID	48
PHOTO	N1 road crossing
RISK	Low
DIRECTION	North
COMMENT	Existing multiple overhead lines crossing N1 increases visual absorption capacity levels.
PHOTO ID	Tabor 2_20250128_141903096.jpg

ID	49
PHOTO	Total 1 stop
RISK	Medium
DIRECTION	North
COMMENT	Higher VAC but prefer for routing following existing 88kv east of station.
PHOTO ID	Tabor 2_20250128_143625187.jpg

ID	50
PHOTO	R36 receptor
RISK	Low
DIRECTION	East
COMMENT	Higher VAC from existing TX. Routing prefer to south aligned with existing 88kv OHL.
PHOTO ID	Tabor 2_20250128_144345748.jpg

ID	51
PHOTO	Grid P1 Op2
RISK	Low
DIRECTION	South
COMMENT	Existing multi grid corridor. Suitable without mitigation.
PHOTO ID	Tabor 2_20250128_144704276.jpg

ID	52
PHOTO	Grid P2 Op2B
RISK	Medium
DIRECTION	South
COMMENT	No direct visual association with other transmission routing but within visual presence.
PHOTO ID	Tabor 2_20250128_145111633.jpg

ID	53
PHOTO	N1 Road crossing
RISK	Low
DIRECTION	South West
COMMENT	Higher VAC levels. Route preference aligned with existing 88kv to south of R36 road.
PHOTO ID	Tabor 2_20250128_145712467.jpg

ID	54
PHOTO	Grid P2 Op2A & 2B
RISK	High
DIRECTION	South
COMMENT	Very close proximity to the Klipput Lodge. Nogo preferred as will result in landscape degradation.
PHOTO ID	Tabor 2_20250128_151111030.jpg

ID	55
PHOTO	D36 Eastbound Receptor
RISK	Medium
DIRECTION	East
COMMENT	Existing precedent with 88kv line routed south of road. Preferred for similar routing and not on either side of the road.
PHOTO ID	Tabor 2_20250128_152053329.jpg

ID	56
PHOTO	Grid P2 Op2B
RISK	Medium
DIRECTION	North
COMMENT	Existing telecommunications routing to the east which is visual preference to reduce corridor effect.
PHOTO ID	Tabor 2_20250128_152936381.jpg

ID	58
PHOTO	N1 Highway Receptor SB
RISK	High
DIRECTION	South
COMMENT	Retain western side open views as eastern side transmission degraded.
PHOTO ID	Tabor 2_20250129_114059746.jpg

ID	59
PHOTO	Belle solar proposed
RISK	High
DIRECTION	North
COMMENT	
PHOTO ID	Tabor 2_20250129_091201913.jpg

ID	60
PHOTO	Multi transmission routing
RISK	Medium
DIRECTION	West
COMMENT	Cumulative effects but likely solar sense of place.
PHOTO ID	Tabor 2_20250129_091413490.jpg

ID	61
PHOTO	Klipputs Farmstead receptor
RISK	Medium
DIRECTION	West
COMMENT	Some buffering but will change sense of place. Also PV proponent for Belle PV.
PHOTO ID	Tabor 2_20250129_092638134.jpg

ID	62
PHOTO	Grid P Op
RISK	Medium
DIRECTION	West
COMMENT	Landscape degradation for Klipputs Lodge. Nogo or buffer 100m if owner in agreement.
PHOTO ID	Tabor 2_20250129_093251039.jpg

ID	63
PHOTO	Klipputs Lodge Receptor
RISK	High
DIRECTION	East
COMMENT	High levels of visual intrusion. Nogo or buffer if owner consent.
PHOTO ID	Tabor 2_20250129_093639084.jpg

ID	64
PHOTO	Grid P1 Op 3
RISK	Medium
DIRECTION	North
COMMENT	Some visual prominence but remote and no receptors. Suitable without mitigation as already a boundary clearing.
PHOTO ID	Tabor 2_20250129_104721851.jpg

ID	65
PHOTO	Grid P1 Op2
RISK	Medium
DIRECTION	West
COMMENT	Routing along R36 but with existing 88kv. Preference for routing south of road aligned with existing 88kv overhead lines.
PHOTO ID	Tabor 2_20250129_110940257.jpg

ID	66
PHOTO	Bottelierskop MTS
RISK	Low
DIRECTION	South
COMMENT	Degraded landscape context.
PHOTO ID	Tabor 2_20250129_112057765.jpg

ID	67
PHOTO	Grid P2 Op2B
RISK	Medium
DIRECTION	North West
COMMENT	Limited exposure to receptors but moderate prominence will extend the zone of visual influence. ZVI also includes other transmission lines. Ecolodge within viewshed medium exposure.
PHOTO ID	Tabor 2_20250129_113216470.jpg

ID	68
PHOTO	Dam on drainage line
RISK	High
DIRECTION	South
COMMENT	Exclusion sense of place.
PHOTO ID	Tabor 2_20250129_113625200.jpg

ID	69
PHOTO	Grid P2 Op2B
RISK	Medium
DIRECTION	North
COMMENT	Some relative prominence but agricultural and existing Eskom transmission lines degraded landscape to some degree. Suitable without mitigation.
PHOTO ID	Tabor 2_20250129_114503586.jpg

ID	70
PHOTO	Grid P2 Op2B
RISK	High
DIRECTION	North East
COMMENT	Routing over railway bridge would require increased height structures increasing visual intrusion . Nogo preferred. Move N1 crossing to south where other transmission lines are crossing.
PHOTO ID	Tabor 2_20250129_115139627.jpg

17 ANNEXURE B: SPECIALIST INFORMATION

17.1 Professional Registration Certificate

APHP

Association of Professional Heritage Practitioners

MEMBERSHIP CERTIFICATE

THIS CERTIFIES THAT

STEPHEN STEAD

MEMBERSHIP NUMBER: PHP0063

has been awarded membership as a

PROFESSIONAL MEMBER (PHP)

This membership is subject to the *Standards for Membership* and *Code of Conduct*, referred to in Sections 2 and 3 of the APHP Constitution respectively. The definition of a Professional may be found at: www.aphp.org.za/membership

Please contact us via info@aphp.org.za should further information be required.

THIS CERTIFICATE IS VALID FROM 1 JUNE 2025 – 1 JULY 2026

CHAIRPERSON

[Issued by the Association of Professional Heritage Practitioners Executive Committee]

Watermark image: Lydenburg-Head, circa 600 AD
Illustration from: Ritual Space in the Zimbabwe Culture. https://www.researchgate.net/figure/One-of-the-original-Lydenburg-Heads-redrawn-from-photograph-courtesy-Iziko-Museums_fig7_272310317 [accessed 29 Jun 2026]

Association of Professional Heritage Practitioners
info@aphp.org.za
www.aphp.org.za

17.2 Curriculum Vitae (CV)

1. **Position**: Owner / Director
2. **Name of Firm**: Visual Resource Management Africa cc *(www.vrma.co.za)*
3. **Name of Staff**: Stephen Stead
4. **Date of Birth**: 9 June 1967
5. **Nationality:** South African
6. **Contact Details:** **Cell: +27 (0) 83 560 9911**
   Email: steve@vrma.co.za
7. **Educational qualifications**:
   - University of Natal (Pietermaritzburg):
   - Bachelor of Arts: Psychology and Geography
   - Bachelor of Arts (Hons): Human Geography and Geographic Information Management Systems
   - MSc Geography, University of KwaZulu-Natal (2023)
8. **Professional Accreditation**
   - Association of Professional Heritage Practitioners (APHP) Western Cape
     - Accredited VIA practitioner member of the Association (2011)
9. **Association involvement:**
   - International Association of Impact Assessment (IAIA) South African Affiliate
     - Past President (2012 - 2013)
     - President (2012)
     - President-Elect (2011)
     - Conference Co-ordinator (2010)
     - National Executive Committee member (2009)
     - Southern Cape Chairperson (2008)
10. **Conferences Attended:**
    - International Geographical Congress, Lisbon (2017)
    - IAIAsa 2012
    - IAIAsa 2011
    - IAIA International 2011 (Mexico)
    - IAIAsa 2010
    - IAIAsa 2009
    - IAIAsa 2007
11. **Continued Professional Development:**
    - Integrating Sustainability with Environment Assessment in South Africa (IAIAsa Conference, 1 day)
    - Achieving the full potential of SIA (Mexico, IAIA Conference, 2 days 2011)

- Researching and Assessing Heritage Resources Course (University of Cape Town, 5 days, 2009)

12. Countries of Work Experience:

- South Africa, Mozambique, Malawi, Lesotho, Kenya and Namibia

13. Relevant Experience:

Stephen gained six years of experience in the field of Geographic Information Systems mapping and spatial analysis working as a consultant for the KwaZulu-Natal Department of Health and then with an Environmental Impact Assessment company based in the Western Cape. In 2004 he set up the company Visual Resource Management Africa that specializes in visual resource management and visual impact assessments in Africa. The company makes use of the well-documented Visual Resource Management methodology developed by the Bureau of Land Management (USA) for assessing the suitability of landscape modifications. Stephen has assessed of over 150 major landscape modifications throughout southern and eastern Africa. The business has been operating for eighteen years and has successfully established and retained a large client base throughout Southern Africa which include amongst other, Rio Tinto (Pty) Ltd, Bannerman (Pty) Ltd, Anglo Coal (Pty) Ltd, Eskom (Pty) Ltd, NamSolar and Vale (Pty) Ltd, Ariva (Pty) Ltd, Harmony Gold (Pty) Ltd, Millennium Challenge Account (USA), Pretoria Portland Cement (Pty) Ltd.

14. Languages:

- English – First Language
- Afrikaans – fair in speaking, reading and writing.

15. Projects:

Table 42: VRM Africa Projects Assessments Table

DESCRIPTION	COUNT	DESCRIPTION	COUNT
Dam	1	UISP	8
Mari-culture	1	Structure	8
Port	1	OHPL	12
Railway	1	Industrial	12
Power Station	3	Wind Energy	22
Hydroelectric	4	Battery Storage	14
Resort	4	Mine	20
Golf/Residential	1	Residential	45
Road Infrastructure	5	Solar Energy	62
Substation	5	**TOTAL**	**237**

18 ANNEXURE C: GENERAL LIGHTS AT NIGHT MITIGATIONS

Mitigation:

- Effective light management needs to be incorporated into the design of the lighting to ensure that the visual influence is limited to the project, without jeopardising project operational safety and security (See lighting mitigations by The New England Light Pollution Advisory Group (NELPAG) and Sky Publishing Corp in 14.2).
- Utilisation of specific frequency LED lighting with a green hue on perimeter security fencing.
- Directional lighting on the more exposed areas of operation, where point light source is an issue.
- No use of overhead lighting and, if possible, locate the light source closer to the operation.

Mesopic Lighting

Mesopic vision is a combination of photopic vision and scotopic vision in low, but not quite dark, lighting situations. The traditional method of measuring light assumes photopic vision and is often a poor predictor of how a person sees at night. The light spectrum optimized for mesopic vision contains a relatively high amount of bluish light and is therefore effective for peripheral visual tasks at mesopic light levels. *(CIE, 2012)*

The Mesopic Street Lighting Demonstration and Evaluation Report by the Lighting Research Centre (LRC) in New York found that the 'replacement of white light sources (induction and ceramic metal halide) were tuned to optimize human vision under low light levels while remaining in the white light spectrum. Therefore, outdoor electric light sources that are tuned to how humans see under mesopic lighting conditions can be used to reduce the luminance of the road surface while providing the same, or better, visibility. Light sources with shorter wavelengths, which produce a "cooler" (bluer and greener) light, are needed to produce better mesopic vision. Based on this understanding, the LRC developed a means of predicting visual performance under low light conditions. This system is called the unified photometry system. Responses to surveys conducted on new installations revealed that area residents perceived higher levels of visibility, safety, security, brightness, and colour rendering with the new lighting systems than with the standard *High-Purity Standards* (HPS) systems. The new lighting systems used 30% to 50% less energy than the HPS systems. These positive results were achieved through tuning the light source to optimize mesopic vision. Using less wattage and photopic luminance also reduces the reflectance of the light off the road surface. Light reflectance is a major contributor to light pollution (sky glow).' *(Lighting Research Centre. New York. 2008)*

'Good Neighbour – Outdoor Lighting'

Presented by the New England Light Pollution Advisory Group (NELPAG) *(http://cfa/ www.harvard .edu /cfa/ps/nelpag.html)* and Sky & Telescope *(http://SkyandTelescope.com/).* NELPAG and Sky & Telescope support the International Dark-Sky Association (IDA) *(http://www.darksky.org/).*
(NELPAG)

What is good lighting? Good outdoor lights improve visibility, safety, and a sense of security, while minimizing energy use, operating costs, and ugly, dazzling glare.

Why should we be concerned? Many outdoor lights are poorly designed or improperly aimed. Such lights are costly, wasteful, and distractingly glary. They harm the night-time environment and neighbours' property values. Light directed uselessly above the horizon creates murky skyglow — the "light pollution" that washes out our view of the stars.

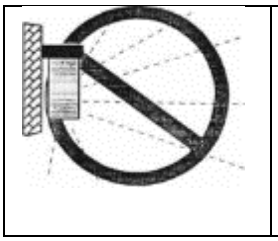
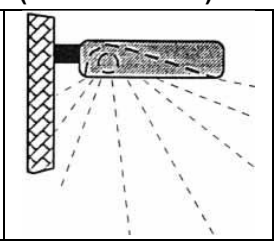
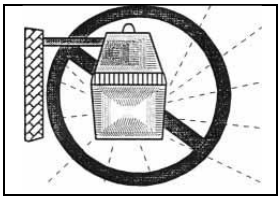
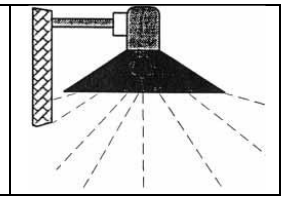
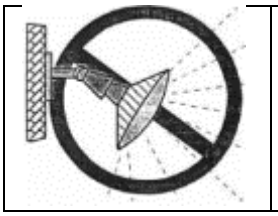
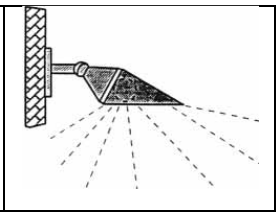
Glare Here's the basic rule of thumb: If you can see the bright bulb from a distance, it's a bad light. With a good light, you see lit ground instead of the dazzling bulb. "Glare" is light that beams directly from a bulb into your eye. It hampers the vision of pedestrians, cyclists, and drivers.

Light Trespass Poor outdoor lighting shines onto neighbours' properties and into bedroom windows, reducing privacy, hindering sleep, and giving the area an unattractive, trashy look.

Energy Waste Many outdoor lights waste energy by spilling much of their light where it is not needed, such as up into the sky. This waste results in high operating costs. Each year we waste more than a billion dollars in the United States needlessly lighting the night sky.

Excess Lighting Some homes and businesses are flooded with much stronger light than is necessary for safety or security.

Good and Bad Light Fixtures

Typical "Wall Pack"	**Typical "Shoe Box" (forward throw)**
	
BAD Waste light goes up and sideways	**GOOD** Directs all light down
Typical "Yard Light"	**Opaque Reflector (lamp inside)**
	
BAD Waste light goes up and sideways	**GOOD** Directs all light down
Area Flood Light	**Area Flood Light with Hood**
	
BAD Waste light goes up and sideways	**GOOD** Directs all light down

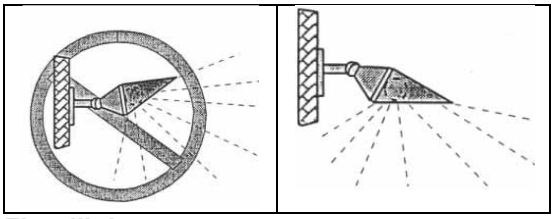
How do I switch to good lighting?

Provide only enough light for the task at hand; don't over-light, and don't spill light off your property. Specifying enough light for a job is sometimes hard to do on paper. Remember that a full Moon can make an area quite bright. Some lighting systems illuminate areas 100 times more brightly than the full Moon! More importantly, by choosing properly shielded lights, you can meet your needs without bothering neighbours or polluting the sky.

- Aim lights down. Choose “full-cut-off shielded” fixtures that keep light from going uselessly up or sideways. Full-cut-off fixtures produce minimum glare. They create a pleasant-looking environment. They increase safety because you see illuminated people, cars, and terrain, not dazzling bulbs.
- Install fixtures carefully to maximize their effectiveness on the targeted area and minimize their impact elsewhere. Proper aiming of fixtures is crucial. Most are aimed too high. Try to install them at night, when you can see where all the rays actually go. Properly aimed and shielded lights may cost more initially, but they save you far more in the long run. They can illuminate your target with a low-wattage bulb just as well as a wasteful light does with a high-wattage bulb.
- If colour discrimination is not important, choose energy- efficient fixtures utilising yellowish high-pressure sodium (HPS) bulbs. If “white” light is needed, fixtures using compact fluorescent or metal-halide (MH) bulbs are more energy-efficient than those using incandescent, halogen, or mercury-vapour bulbs.
- Where feasible, put lights on timers to turn them off each night after they are no longer needed. Put home security lights on a motion-detector switch, which turns them on only when someone enters the area; this provides a great deterrent effect!

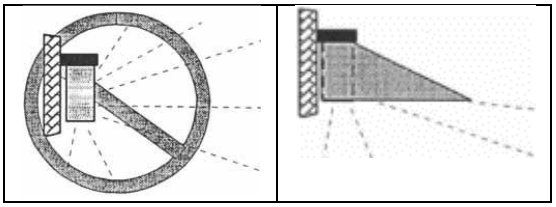
What You Can Do To Modify Existing Fixtures

Change this . . . to this (aim downward)



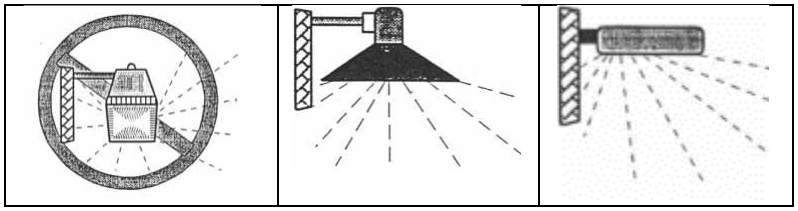
Floodlight:

Change this . . . to this (aim downward)



Wall Pack

Change this . . . to this or this



Yard Light | Opaque Reflector | Show Box

Replace bad lights with good lights.

You’ll save energy and money. You’ll be a good neighbour. And you’ll help preserve our view of the stars.

19 ANNEXURE D: METHODOLOGY DETAIL

19.1 Baseline Analysis Stage

In terms of VRM methodology, landscape character is derived from a combination of ***scenic quality***, ***receptor sensitivity*** to landscape change and ***distance*** from the proposed landscape change. The objective of the analysis is to compile a mapped inventory of the visual resources found in the receiving landscape, and to derive a mapped Visual Resource sensitivity layer from which to evaluate the suitability of the landscape change.

19.1.1 Scenic Quality

The scenic quality is determined making use of the VRM Scenic Quality Checklist that identifies seven scenic quality criteria which are rated with 1 (low) to 5 (high) scale. The scores are totalled and assigned an A (High), B (Moderate) or C (low) based on the following split:
A= scenic quality rating of ≥19;
B = rating of 12 – 18,
C= rating of ≤11

The seven scenic quality criteria are defined below:

- **Land Form**: Topography becomes more of a factor as it becomes steeper, or more severely sculptured.
- **Vegetation**: Primary consideration given to the variety of patterns, forms, and textures created by plant life.
- **Water**: That ingredient which adds movement or serenity to a scene. The degree to which water dominates the scene is the primary consideration.
- **Colour**: The overall colour(s) of the basic components of the landscape (e.g., soil, rock, vegetation, etc.) are considered as they appear during seasons or periods of high use.
- **Scarcity**: This factor provides an opportunity to give added importance to one, or all, of the scenic features that appear to be relatively unique or rare within one physiographic region.
- **Adjacent Land Use**: Degree to which scenery and distance enhance, or start to influence, the overall impression of the scenery within the rating unit.
- **Cultural Modifications**: Cultural modifications should be considered and may detract from the scenery or complement or improve the scenic quality of an area.

19.1.2 Receptor Sensitivity

Receptor sensitivity to landscape change is determined by rating the following factors in terms of Low to High:

- **Type of Users**: Visual sensitivity will vary with the type of users, e.g. recreational sightseers may be highly sensitive to any changes in visual quality, whereas workers who pass through the area on a regular basis may not be as sensitive to change.
- **Amount of Use**: Areas seen or used by large numbers of people are potentially more sensitive.
- **Public Interest**: The visual quality of an area may be of concern to local, or regional, groups. Indicators of this concern are usually expressed via public controversy created in response to proposed activities.
- **Adjacent Land Uses**: The interrelationship with land uses in adjacent lands. For example, an area within the viewshed of a residential area may be very sensitive, whereas an area surrounded by commercially developed lands may not be as visually sensitive.

- **Special Areas**: Management objectives for special areas such as Natural Areas, Wilderness Areas or Wilderness Study Areas, Wild and Scenic Rivers, Scenic Areas, Scenic Roads or Trails, and Critical Biodiversity Areas frequently require special consideration for the protection of their visual values.
- **Other Factors**: Consider any other information such as research or studies that include indicators of visual sensitivity.

19.1.3 Exposure

The area where a landscape modification starts to influence the landscape character is termed the Zone of Visual Influence (ZVI) and is defined by the U.K. Institute of Environmental Management and Assessment's (IEMA) *'Guidelines for Landscape and Visual Impact Assessment'* as 'the area within which a proposed development may have an influence or effect on visual amenity (of the surrounding areas).'

The inverse relationship of distance and visual impact is well recognised in visual analysis literature *(Hull, R.B. and Bishop, I.E., 1988)*. According to Hull and Bishop, exposure, or visual impact, tends to diminish exponentially with distance. The areas where most landscape modifications would be visible are located within 2 km from the site of the landscape modification. Thus, the potential visual impact of an object diminishes at an exponential rate as the distance between the observer and the object increases due to atmospheric conditions prevalent at a location, which causes the air to appear greyer, thereby diminishing detail. For example, viewed from 1000 m from a landscape modification, the impact would be 25% of the impact as viewed from 500 m from a landscape modification. At 2000m it would be 10% of the impact at 500 m.

Distance from a landscape modification influences the size and clarity of the landscape modification viewing. The Bureau of Land Management defines three distance categories:

i. ***Foreground / Middle ground***, up to approximately 6km, which is where there is potential for the sense of place to change;
ii. ***Background areas***, from 6km to 24km, where there is some potential for change in the sense of place, but where change would only occur in the case of very large landscape modifications; and
iii. ***Seldom seen areas***, which fall within the Foreground / Middle ground area but, as a result of no receptors, are not viewed or are seldom viewed.

19.1.4 Key Observation Points

During the Baseline Inventory Stage, Key Observation Points (KOPs) are identified. KOPs are defined by the Bureau of Land Management as the people (receptors) located in strategic locations surrounding the property that make consistent use of the views associated with the site where the landscape modifications are proposed. These locations are important in terms of the VRM methodology, which requires that the Degree of Contrast (DoC) that the proposed landscape modifications will make to the existing landscape be measured from these most critical locations, or receptors, surrounding the property. To define the KOPs, potential receptor locations were identified in the viewshed analysis, and screened, based on the following criteria:

- Angle of observation.
- Number of viewers.
- Length of time the project is in view.
- Relative project size.

- Season of use.
- Critical viewpoints, e.g., views from communities, road crossings; and
- Distance from property.

19.2 Assessment and Impact Stage

The analysis stage involves determining whether the potential visual impacts from proposed surface-disturbing activities or developments will meet the management objectives established for the area, or whether design adjustments will be required. This requires a contrast rating to assess the expected DoC the proposed landscape modifications would generate within the receiving landscape in order to define the Magnitude of the impact.

19.2.1 Contrast Rating

The contrast rating is undertaken to determine if the VRM Class Objectives are met. The suitability of landscape modification is assessed by comparing and contrasting existing receiving landscape to the expected contrast that the proposed landscape change will generate. This is done by evaluating the level of change to the existing landscape by assessing the line, colour, texture and form, in relation to the visual objectives defined for the area. The following criteria are utilised in defining the DoC:

- **None**: The element contrast is not visible or perceived.
- **Weak**: The element contrast can be seen but does not attract attention.
- **Moderate**: The element contrast begins to attract attention and begins to dominate the characteristic landscape.
- **Strong**: The element contrast demands attention, will not be overlooked, and is dominant in the landscape.

As an example, in a Class I area, the visual objective is to preserve the existing character of the landscape, and the resultant contrast to the existing landscape should not be notable to the casual observer and cannot attract attention. In a Class IV area example, the objective is to provide for proposed landscape activities that allow for major modifications of the existing character of the landscape. Based on whether the VRM objectives are met, mitigations, if required, are defined to avoid, reduce or mitigate the proposed landscape modifications so that the visual impact does not detract from the surrounding landscape sense of place.

Based on the findings of the contrast rating, the Magnitude of the Landscape and Visual Impact Assessment is determined.

19.2.2 Photomontages

As a component in this contrast rating process, visual representation, such as photo montages are vital in large-scale modifications, as this serves to inform Interested & Affected Parties and decision-making authorities of the nature and extent of the impact associated with the proposed project/development. There is an ethical obligation in this process, as visualisation can be misleading if not undertaken ethically. In terms of adhering to standards for ethical representation of landscape modifications, VRMA subscribes to the Proposed Interim Code of Ethics for Landscape Visualisation developed by the Collaborative for Advanced Landscape Planning (CALP) (Sheppard, 2000). This code states that professional presenters of realistic landscape visualisations are responsible for promoting full understanding of proposed landscape changes, providing an honest and neutral visual representation of the expected

landscape, by seeking to avoid bias in responses and demonstrating the legitimacy of the visualisation process. Presenters of landscape visualisations should adhere to the principles of:

- Access to Information
- Accuracy
- Legitimacy
- Representativeness
- Visual Clarity and Interest

The Code of Ethical Conduct states that the presenter should:

- Demonstrate an appropriate level of qualification and experience.
- Use visualisation tools and media that are appropriate to the purpose.
- Choose the appropriate level of realism.
- Identify, collect and document supporting visual data available for, or used in, the visualisation process.
- Conduct an on-site visual analysis to determine important issues and views.
- Seek community input on viewpoints and landscape issues to address in the visualisations.
- Provide the viewer with a reasonable choice of viewpoints, view directions, view angles, viewing conditions and timeframes appropriate to the area being visualised.
- Estimate and disclose the expected degree of uncertainty, indicating areas and possible visual consequences of the uncertainties.
- Use more than one appropriate presentation mode and means of access for the affected public.
- Present important non-visual information at the same time as the visual presentation, using a neutral delivery.
- Avoid the use, or the appearance of, ‘sales’ techniques or special effects.
- Avoid seeking a particular response from the audience.
- Provide information describing how the visualisation process was conducted and how key decisions were taken (Sheppard, 2000).