THE PROPOSED SUNVELD ENERGY PV FACILITY, WESTERN CAPE PROVINCE, SOUTH AFRICA

Visual Impact Assessment

Draft v_1

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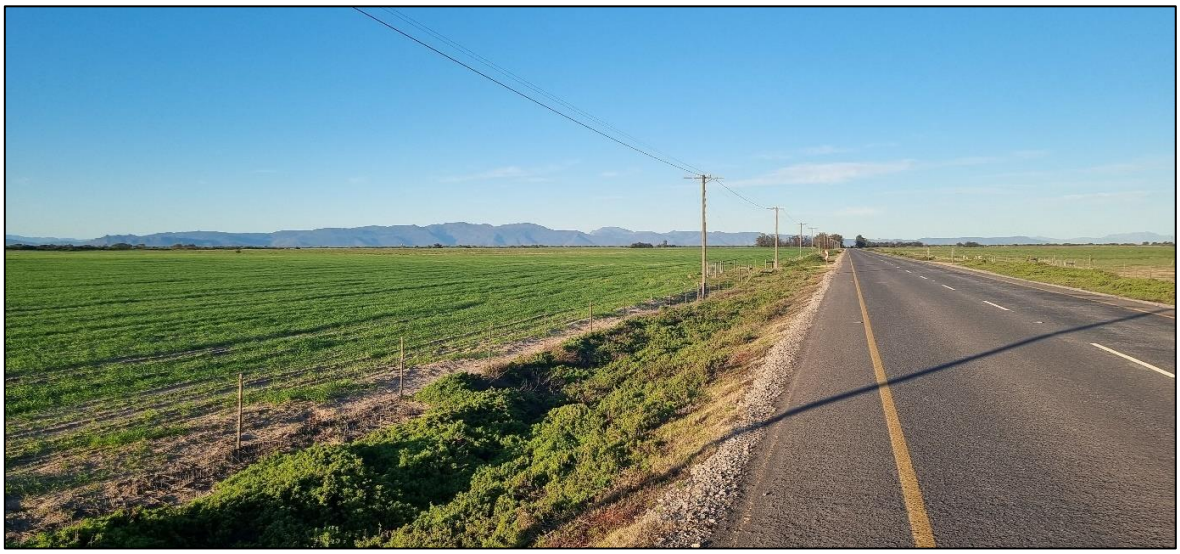
Document prepared for Cape EAPrac
On behalf of Sunveld Energy (Pty) Ltd



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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
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

The DFFE specialist declaration of independence has been signed and provided to Cape EAPrac.

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 (Pending Scoping Phase Comments)

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

A specialist report prepared in terms of the Environmental Impact Regulations of 2014 (as amended in 2017) must contain:	**Relevant section in report**
	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	1 November 2023
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;	Development Sensitivity Map
A description of any assumptions made and any uncertainties or gaps in knowledge;	Assumptions and Limitations
The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment	10 June 2023
A description of the findings and potential implications of such findings on the impact of the proposed activity or activities	Pending Visual Impact Assessment
Any mitigation measures for inclusion in the EMPr	Pending Visual Impact Assessment
Any conditions for inclusion in the environmental authorisation	Pending Visual Impact Assessment
Any monitoring requirements for inclusion in the EMPr or environmental authorisation	Pending Visual Impact Assessment
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	It is the recommendation that the proposed development should be authorised WITH MITIGATION.

A specialist report prepared in terms of the Environmental Impact Regulations of 2014 (as amended in 2017) must contain:	Relevant section in report
A description of any consultation process that was undertaken during the course of carrying out the study	Scoping Phase
A summary and copies if any comments that were received during any consultation process	No comments on landscape or visual issues
Any other information requested by the competent authority.	No comments on landscape or visual issues

1.3 Site Sensitivity Verification

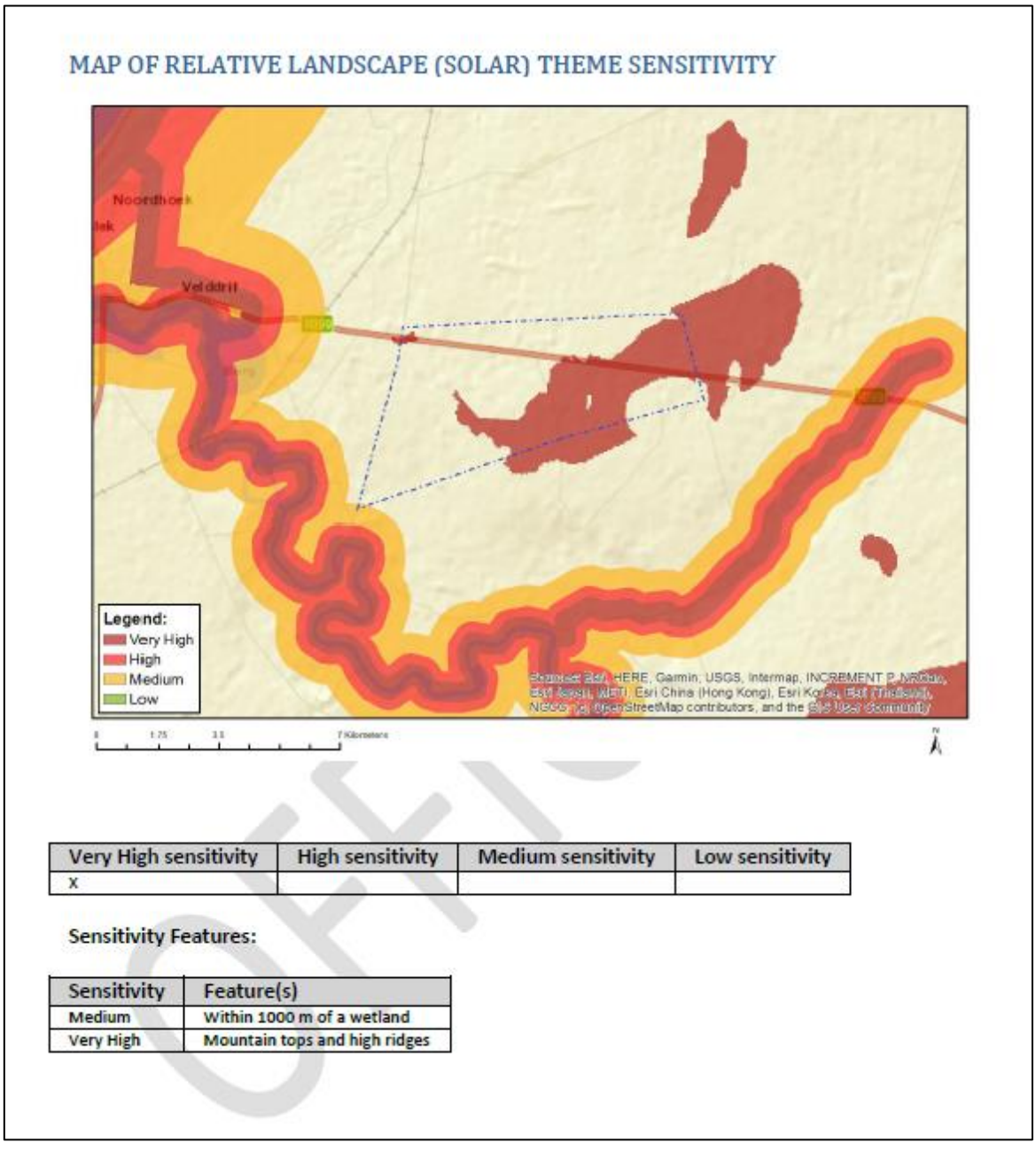
In order to assess the site sensitivity pertaining to landscape and visual resources, a ***site visit that was undertaken on 10 June 2023.*** During the survey, photographs and comments were recorded and can be viewed in Annexure A, with the associated map of the survey points as well as the survey tracks. The following maps and tables outline the risks as informed by DFFE Screening Tool as well as the site visit.

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 on the following page, the Map of Relative Landscape (Solar). Based on the site visit and a review of the landscape related planning for the region, the following table outlines the relevance of the risks raised in the SSV with motivation.

Table 3. Landscape Risk Table.

DFFE Feature	DFFE Sensitivity	Risk Verification	Motivation
Within 1000m of a wetland	**Medium**	**Low**	The development sites are outside of the 1000m buffer.
Mountain tops and high ridgelines	**Very High**	**Medium**	While the project area is regionally elevated, the area in question does not form a prominent ridgeline or mountain top. Care would need to be taken to ensure that skyline intrusion does not take place.
Landscape Feature	**Risk**	**Mitigated Risk**	**Motivation**
R399 tourist view corridor	**High**	**Medium**	With a suitable mitigation the proposed landscape change is likely to Moderately degrade existing landscape resources.

Natural vegetation loss as seen from tourist access road adjacent to the site.	**High**	**Medium**	Loss of vegetation is highlighted as a land use change risk. The views of the natural vegetation around the cultivated areas do add value to the scenic quality.



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Within 1000 m of a wetland
Very High	Mountain tops and high ridges

Figure 1. DFFE Screening Tool for Landscape.

2 EXECUTIVE SUMMARY

Visual Resource Management Africa CC (VRMA) was appointed by Cape EAPrac to undertake a ***Visual Impact Assessment*** for the proposed Sunveld Energy PV VIA on behalf of Sunveld Energy PV (Pty) Ltd. A ***site visit that was undertaken on the 10 June 2023.*** 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 as the survey tracks. The DFFE Screening tool indicated Very High Landscape Sensitivity to High Ridgelines and Mountains. The site visit found that this risk is limited as, although the site has some regional elevation, there are no high ridgelines or mountain features on the site. To reduce this risk, the recommendation is that the PV panels are restricted to 2.5m in height. Other risks identified during the site survey were the importance of tourism view corridors associated with the R399 as well as the gravel access road to the Berg River.

CONCLUSION

It is the recommendation that the proposed development should commence WITH MITIGATION for the following key reasons:

- Wide buffer areas and fragmented design elements of the different PV areas does reduce the massing effects to some degree.
- Mitigation for much of the southern PV area is berm related and as such will result in short-term visual screening.
- PV areas to the north have partial screening from alien trees as well as windrow trees. Further establishment of the windrow cultural landscape theme in these areas will result in the northern portions of the PV being screened in the medium-term.
- No intervisibility between other RE projects.
- Existing authorisation for a PV development (unbuilt) that would generate higher levels of visual intrusion if it was built.
- Medium Post Mitigation Impacts are likely but where residual effects could remain that could moderately degrade local landscape resources.

LANDSCAPE PLANNING 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.** While there is clear support for renewable energy sources and the promotion as part of a planning effort to enhance the electricity capacity in the West Coast District, alternative energy facilities such as solar and wind farms are also listed as a risk to have spatial implications relating to visual impacts, environmental impacts, etc, given the importance of tourism for the area where there is a strong planning requirements to “promote and enhance the Bergrivier Municipality as a unique destination for discerning travellers with unrivalled eco-tourism and authentic cultural heritage tourism opportunities”. As the property is large and, in some areas, visually degraded by alien vegetation. There is also a clear need to ensure that visual resources along the R399 road tourist corridor, and the Berg River are not compromised. There was a previous authorisation for PV development on the property that was not implemented and, no visual issues or concerns were raised in the scoping phase.

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.

ZONE OF VISUAL INFLUENCE: Wide-area/ local with mitigation

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. There is some regional elevation to the where the viewshed is likely to extend beyond the Foreground/ Mid Ground areas. A large Zone of Visual Influence is expected if higher PV structures are utilised. It is recommended that the PV structures are limited to approximately 2.5m above ground in most areas to reduce the ZVI to wide-area local with mitigation.

VISUAL ABSORPTION CAPACITY: Medium

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.

Of relevance to the project is that the VAC levels in relation to vegetation and built infrastructure is rated Medium. The Strandveld vegetation is of medium height and is unlikely to provide visual screening to the PV panels above a 2m height. In some of the areas proposed for PV where there are cultivated fields, there is no vegetation screening. In terms of built infrastructure, there are no farm houses/ agricultural structures that could provide some visual screening.

The gum tree windrow features are important elements in the agrarian cultural landscape and would provide some visual screening. The alien vegetation to the north of the R399 would also provide some visual screening to PV. There are also pockets of Strandveld vegetation areas along the R399 to the south of the road that do offer some visual screening within the 2m above ground level range.

KEY OBSERVATION POINTS: Two KOPs with High Visual Exposure

Key Observation Points (KOPs) are 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 main KOPs for the site are

- The R399 road that is the main access road to the tourist related coastal town of Velddrif (*Very High visual exposure*).

- Berg River and Berg River gravel access road (*Medium visual exposure*).

SCENIC QUALITY: Medium to High

While topography and water is not a dominating element in the broader landscape, the patchwork of cultivated lands in between the Strandveld areas, with contrasting colours and land uses does add value to the scenic quality. The adjacent Berg River landscape, set within a rural agrarian landscape does increase the overall value as a tourist destination. There are areas where the Strandveld vegetation has high significance from a botanical and avifauna perspective, and the R399 view corridor also adds value to the study area as a sensitive landscape.

RECEPTOR SENSITIVITY: Medium to High

The area is within a recognised tourist area, with planning also emphasising the importance of maintaining landscape integrity, with the three identified KOPs all tourist related and as such are likely to have a higher sensitivity to landscape change. The areas adjacent to the R399 have high levels of usage, with the areas set back from the road having lower usage. While not specifically located within a defined/ proclaimed special areas, there are large areas where the Strandveld Fynbos is defined as having botanical and avifaunal importance.

VISUAL RESOURCE MANAGEMENT ASSESSMENT

The BLM has defined four Classes that represent the relative value of the visual resources of an area and are defined making use of the VRM Matrix:

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

<u>Class I</u> (No-go)

- Any river / streams and associated flood lines buffers identified as significant in terms of the WULA process.
- Any wetlands identified as significant in terms of the WULA process.
- Any ecological areas (or plant species) identified as having a high significance.
- Any heritage area identified as having a high significance.
- **R399 200m No-go buffer.**
- **R399 view corridor 500m No-go buffer (where immediate visual screening can't be achieved or where planting of screening trees will block agrarian cultural landscapes of high value).**

To maintain the existing landscape integrity, these proposed areas need to be excluded from the development area as these areas are key to maintaining the high value landscape of the R399 view corridor. These areas will also extend the ZVI further along the R399 where repetitive views of PV development should be minimised and contained to a more localised effect.

<u>Class II</u> (Not recommended without height restriction)

- **Areas between 200m No-go Buffer and 500m high sensitivity buffer, as well as 'gateway' view of the eastern portion of the property that have depth of view,**

that can accommodate low height PV panels that can be visually screened within a short-term from the R399 receptors.

These are areas that have existing partial screening as seen from the R399 receptors, or where a low berm can effectively visually screen 80% of the landscape change. These areas will need to be subject to a 2.4m height restriction, as well as tree screening where this landscape element does adhere to the existing windrows within the agrarian cultural landscape. The berm will need to appear organic and will have to be rehabilitated back to Strandveld vegetation. These modifications will need to align with the existing rural agrarian cultural landscape, or natural Strandveld landscapes.

<u>Class III</u> (Suitable with mitigation)

- **Degraded fynbos / cultivated areas outside of the R399 view corridor No-go buffer areas (Northern PV areas).**

These areas are suitable for PV development with mitigation, as they are outside of the R399 view corridor 200m/ 500m No-go areas, and in areas that well not be visually intrusive. These areas will have to be restricted to 3m above ground level.

<u>Class IV</u> (Suitable without mitigation)

- **Not applicable.**

As the area has higher levels of landscape character that are being used as visual resources, no Class IV areas were defined as this would significantly detract from the R399 view corridor and set in place a negative precedent for larger scaled PV development in the region and along the Berg River landscape areas.

EXPECTED LANDSCAPE AND VISUAL IMPACT SIGNIFICANCE

Rating	**High (-ve)**	**Medium (-ve)**
Comment	Over a long-time period, the full extent development with close proximity to the R399 receptors, will result in Strong levels of visual contrast, with landscape local resource degraded resulting in High Visual Significance and is not recommended. **This should be considered a Fatal Flaw.**	With mitigation and the reduction in heights, the implemented setbacks defined during scoping phase will allow for immediate and short-term screening and as such, moderation of the renewable energy landscape change. Careful use of lights at night would also be required to reduce light spillage and ensure that the current dark-sky sense of place is retained.

CUMULATIVE EFFECTS

Rating	**High (-ve)**	**Medium (-ve)**
Comment	The development without mitigation will set a negative precedent for development of PV projects in remote, rural areas, creating increased potential for	With mitigation and retaining the visual setback buffers, short-term visual screening will take place, reducing the intervisibility of the different project components that

	intervisibility from development of prominent, steep slope areas. **Without mitigation should be considered a Fatal Flaw.**	are spready out over a 6km distance. Residual risks to landscape resources will remain as the precedent for renewable energy development will be site in place, possible attracting future similar land uses changes. This is mitigated to some degree by the setback and height restriction mitigations that will set a more suitable precedent for PV development in the region.

KEY MITIGATIONS

Issue	Mitigation	Motivation
Rural agrarian cultural landscape adjacent to R399 view corridor	• 2.5m height restriction for PV Panels south of the R399 to contain the ZVI. • 200m Buffer No-go (incorporated). • Screening berms rehabilitated to Strandveld vegetation for proposed PV areas south of the R399. • Windrow planting for proposed PV areas to the north of the R399. • 3m height restriction for PV panels north of the R399.	Visual impact reducing mitigations are a requirement to retain the Medium to High visual resources of the R399 view corridor. Without mitigation, the No-Go option is preferred.
	• Monitoring 6 months after Operation Phase commences.	To ensure that visual resources along the R399 are not degraded, post construction monitoring to evaluate the effectiveness of the screening mitigations is a requirement 6 months after Operation Phase commences.

3 INTRODUCTION

The proposed development site is located in Western Cape Province, West Coast District Municipality and within the Bergrivier Local Municipality. The Proponent proposes to construct a solar PV facility on a site located 12 km (approx.) east of the town of Velddrif. This assessment is for the PV component only and does not include the grid connection.

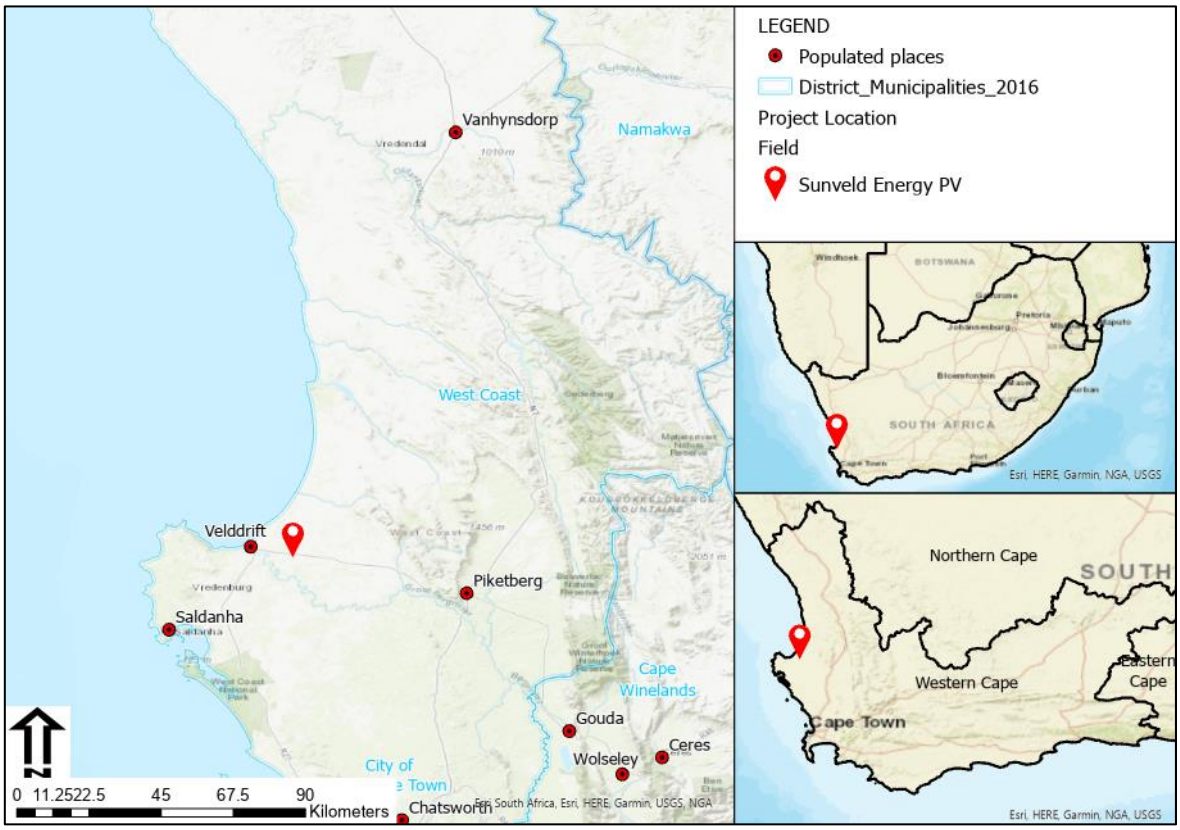


Figure 2: National and regional locality map.

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)	VRMA	• Accredited with the Association of Professional Heritage Practitioner and • 20 years of experience in visual assessments including renewable energy, Power lines, roads, dams across southern Africa. • Registered with the Association of Professional Heritage Practitioners since 2014. • Geography Masters in land use and land-use change.

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.

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.
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 an expected area where the landscape modification has the potential to influence landscapes (or landscape processes) or receptor viewpoints.
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 significance and proposed mitigation of the visual issues are addressed as part of the visual assessment.

Action	*Description*
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 SANI BGIS webmap (SANBI, 2018)

4 PROJECT DESCRIPTION

The following table outlines the project information that was provided by the client that will be incorporated into the assessment and proposed infrastructure relating to the project.

Table 8: Project Information Table

Project Name		**Sunveld Energy PV and BESS**
Applicant Details	Applicant Name:	Sunveld Energy (Pty) Ltd Sunveld Energy (Pty) Ltd is a Special Purpose Vehicle (SPV) incorporated for the sole purpose of developing, constructing, and operating an up to 600 MW solar PV facility including a Battery Energy Storage System (BESS) facility located on the farm Kruispad 120 and on the farm Doornfontein 118 situated approximately 7.5 km east of Velddrif in the Western Cape Province.

Project Name		**Sunveld Energy PV and BESS**
	Company Registration Number:	2023 / 657613 / 07
	Project Name:	Sunveld Energy PV and BESS
Site Details		
Size of the property	Description and Size in hectares of the affected property (Size as per the Deed is in brackets).	**PV/BESS Site**: Remaining Extent of the farm Kruispad 120 : size 2684.71 (2586.32) Remaining Extent of the farm Doornfontein 118: size 3801.30 (3807.04) TOTAL hectares of optioned properties = 6486.01 (6393.36)
Size of the study area	Size in ha of initial study area.	2360 ha
Development Footprint	This includes the total footprint of PV panels, BESS auxiliary buildings, On-site Substation, Mini-Substations, Inverter stations and internal roads.	The Total Development area is 723 ha including: PV 702ha, BESS 29ha (contained within PV 702ha), 2 On-Site Substations 9ha and permanent auxiliary structures (buildings, lay-down areas and access roads) 12ha. (Mini Subs, Inverters and internal roads are distributed within the PV footprint (internal roads 4m wide total 23ha)) Total Fenced Area is 885 ha. (Note: The 2 On-site Substations (these are 2 Collector and Switching Substations of 300MVA each, collecting many inputs (from PV or BESS) of 33kV, transforming to 132kV outputs, footprints are included here although they are part of the EGI too. The input of 33kV is the project-side until it is transformed to 132kV which will be part of the EGI-side. The EGI will be transferred to ESKOM. The On-site Substations will be in areas of overlap of the project development footprint and the EGI.)
PV Technology Details		
Capacity of the facility	Capacity of the PV facility (in MW)	Net generation (contracted) capacity of up to 600 MW_{AC}, which will consist of 12 sites or projects that may be developed singly or in groups in a phased-development approach. Each of the 12 x 50MW sites will be self-sufficient up to the point of an On-site substation or a Collective BESS.

Project Name		Sunveld Energy PV and BESS
Solar Technology selection	Type of technology	Solar photovoltaic (PV) technology (mono-facial or bifacial) with fixed, single or double axis tracking mounting structures, as well as associated infrastructure, which will include: • Laydown area; • Access and Internal road network; • Auxiliary buildings (33kV switch room, gate-house and security, control centre, office, warehouse, canteen & visitors centre, staff lockers etc.); • Facility (IPP) substation; • Inverter-station, transformers and internal electrical reticulation (underground cabling); • Rainwater Tanks; and • Perimeter fencing and security infrastructure.
	Structure height	PV panels with a maximum height of ± 3m above the ground
	Surface area to be covered (including associated infrastructure such as roads)	723 ha
	Structure orientation	Preferred technology - single axis track used in portrait orientation with strings of 1x ±30 panels. Mounting using hammered in uprights (as a worst case there will be 400mm diameter holes and some may need lateral support using pegged out cables, depending on soil type/profile). Alternatives technologies : fixed-tilt: north-facing at a defined angle of tilt, single or double axis tracking: mounted in a north-south orientation, tracking from east to west.
	Laydown area dimensions	Approximately 2 ha temporary laydown area will be required for each 50MW site and will be situated within the assessed footprint Temporary lay down area total at any one time will probably not exceed 8 ha due to development in stages
BESS Technology Details		
BESS technology section	Capacity of BESS facility (in MWh)	2400 MWh

Project Name		Sunveld Energy PV and BESS
	Type of technology (preferred)	Redox Flow, -Vanadium Redox Flow Battery (VRB)
	Type of technology (alternatives)	Solid State including Lithium-Ion, Sodium-Ion and others, Liquid Metal (https://ambri.com/). Other technology types may be considered
	Structure height	Containerised batteries less than 5m high except for lightening conductors and vent pipes. Storage tanks may be required for the VRB and could be 6m high, if the non-containerised type of VRB battery is installed.
	Surface area to be covered (including associated infrastructure such as roads)	29 ha (including electrolyte storage tanks of 18 ha for redox flow battery)
	Structure locations	2 sites each ± 14 ha, near the On-Site Substations- refer to Sub 1 and Sub 2 in the kmz

Auxiliary Infrastructure		
Other infrastructure	Additional Infrastructure	• Auxiliary buildings of approximately 3 ha, including (but not limited to) 33kV switch rooms, gate houses, ablutions, workshop, storage and warehousing areas, site offices and a control centre. • Rain water tanks; and • Electrified perimeter fencing not exceeding 3.5 m in height. And approximately 33.5 km in length around the perimeter
	Details of access roads	During construction 4 access points from the R399 may be used. See the points RAP 1 to RAP 4 in the attached kmz. These will be 5m wide upgraded, existing roads and tracks. These total 4km (2ha) . Only the central access points and roads north and south totalling 1km will be permanent.
	Details of internal roads	A network of approximately 53km of gravel internal access roads, each with a width of up to ± 4 m, will be constructed to provide access to the various components of each facility.
	Extent of areas required for	Approximately 6 ha of temporary laydown areas will be required. A permanent laydown area of a maximum of 2 ha will remain for operations. Total 8ha

	laydown of materials and equipment	

The following photographs of existing solar PV developments depict landscape changes that could take place in relation to the proposed land use change.

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

(US Vanadium, n.d.)

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

Figure 4. Example of a Photomontage Vanadium Flow Batteries in landscape (US Vanadium, n.d.)

Cr: Relay and Power Systems (Green Building Africa, n.d.)

Figure 5. Example of what a small onsite substation could look like.

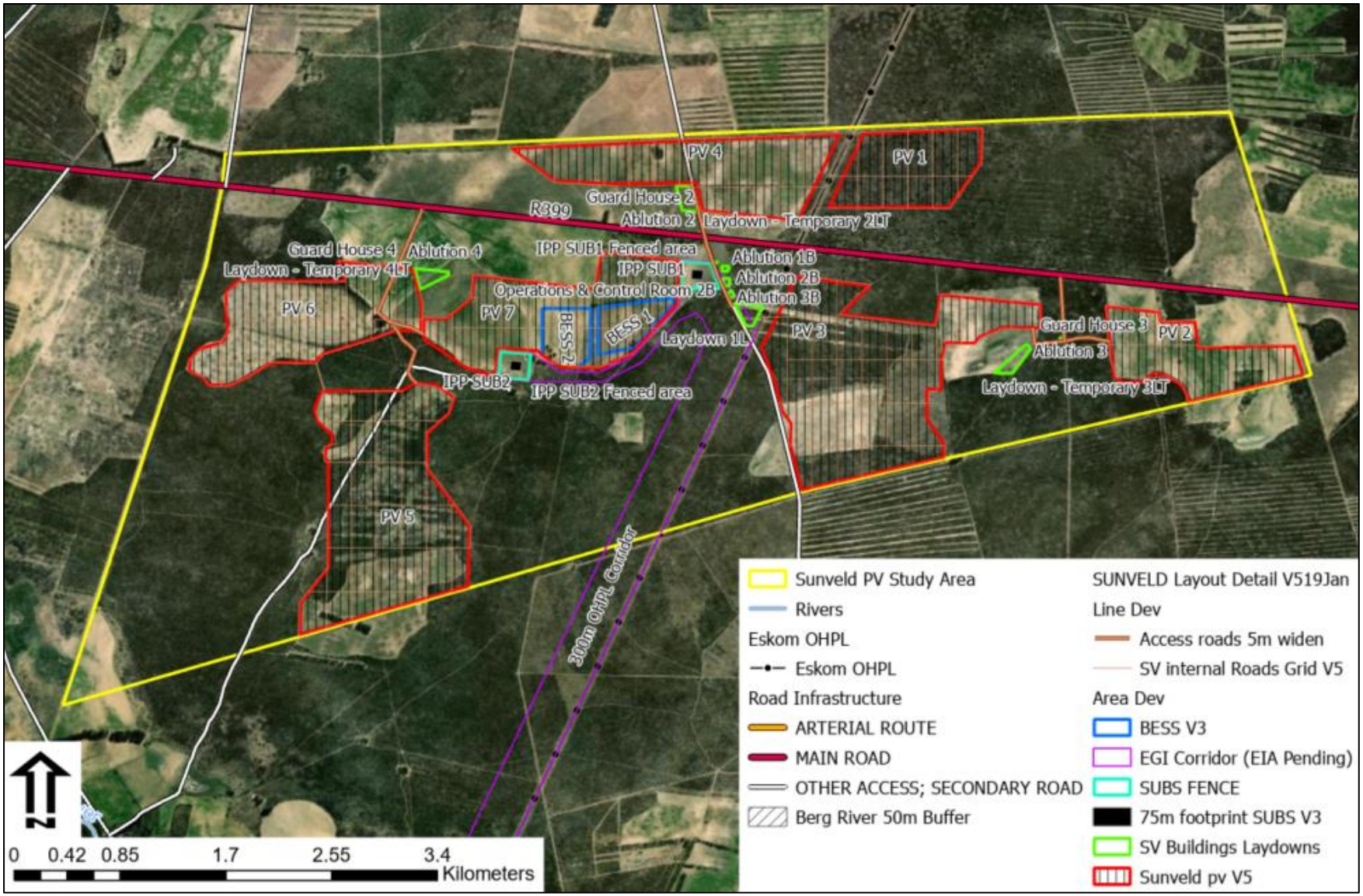


Figure 6: Proposed development area map.

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 cultural landscapes, the following documentation provides good practice guidelines, specifically:

- Guidelines for Landscape and Visual Impact Assessment (GLVIA), Second Edition.
- International Finance Corporation (IFC).
- Millennium Ecosystem Assessment (MEA).
- United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Convention (WHC).

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).

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).

5.1.3 Millennium Ecosystem Assessment

In the Ecosystems and Human Well-being document compiled by the Millennium Ecosystem Assessment in 2005, Ecosystems are defined as being "essential for human well-being through their provisioning, regulating, cultural, and supporting services. Evidence in recent decades of escalating human impacts on ecological systems worldwide raises concerns about the consequences of ecosystem changes for human well-being". (Millennium Ecosystem Assessment, 2005)

The Millennium Ecosystem Assessment defined the following non-material benefits that can be obtained from ecosystems*:*

- Inspiration: Ecosystems provide a rich source of inspiration for art, folklore, national symbols, architecture, and advertising.
- Aesthetic values: Many people find beauty or aesthetic value in various aspects of ecosystems, as reflected in the support for parks, scenic drives, and the selection of housing locations.
- Sense of place: Many people value the “sense of place” that is associated with recognised features of their environment, including aspects of the ecosystem.
- Cultural heritage values: Many societies place high value on the maintenance of either historically important landscapes (“cultural landscapes”) or culturally significant species; and
- Recreation and ecotourism: People often choose where to spend their leisure time based in part on the characteristics of the natural or cultivated landscapes in a particular area. (Millennium Ecosystem Assessment, 2005)

The Millennium Ecosystem Assessment Ecosystems and Human Well-being: Synthesis report indicates that there has been a “rapid decline in sacred groves and species” in relation to spiritual and religious values, and aesthetic values have seen a “decline in quantity and quality of natural lands”. (Millennium Ecosystem Assessment, 2005)

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 7 below.

- DEA&DP Visual and Aesthetic Guidelines.
- REDZ Planning.
- Regional and Local Municipality Planning and Guidelines.

Table 9: List of key planning informants to the project.

Theme	**Requirements**
Province	Western Cape
District Municipality	West Coast
Local Municipality	Bergrivier
REDZ	Not applicable

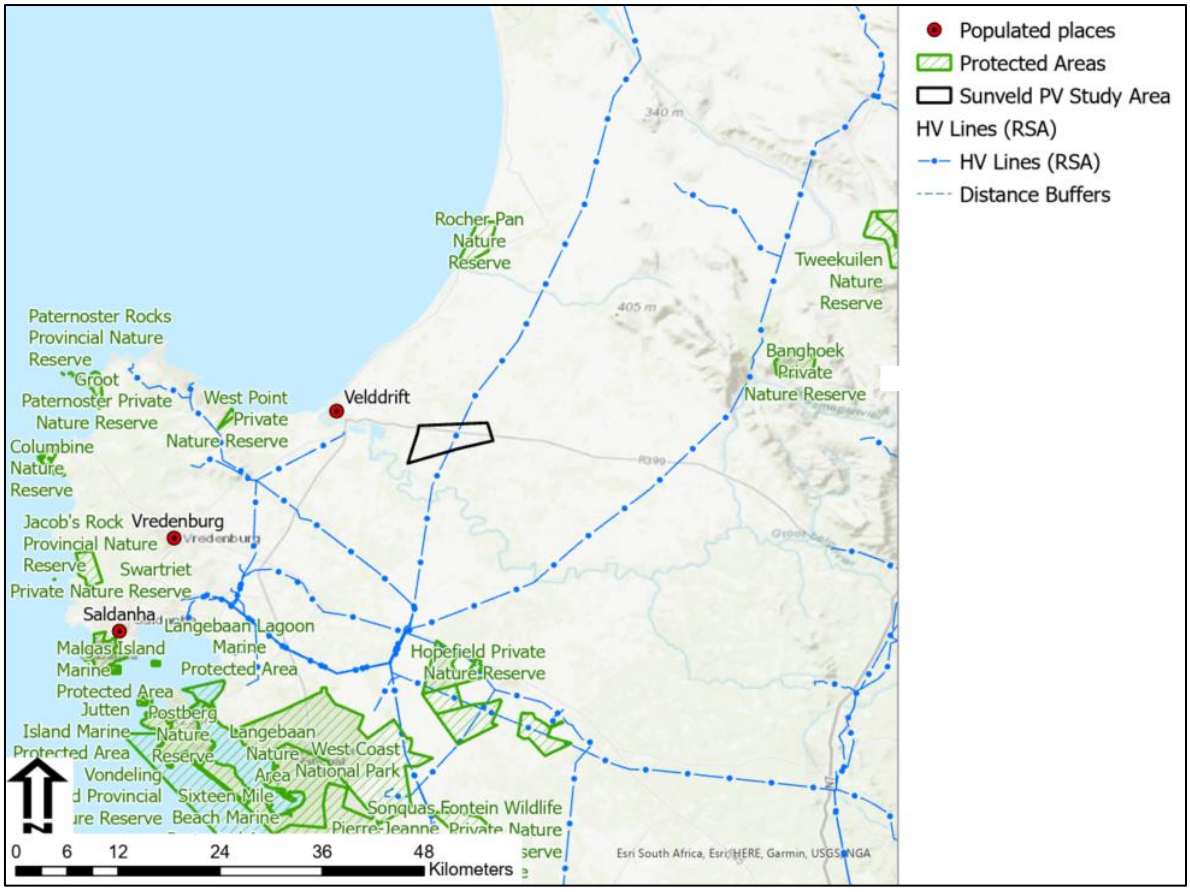


Figure 7: Planning locality map depicting the local, district and national planning zones.

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)

5.2.2 REDZ 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 within a proclaimed REDZ.**

5.2.3 Other Renewable Energy Projects

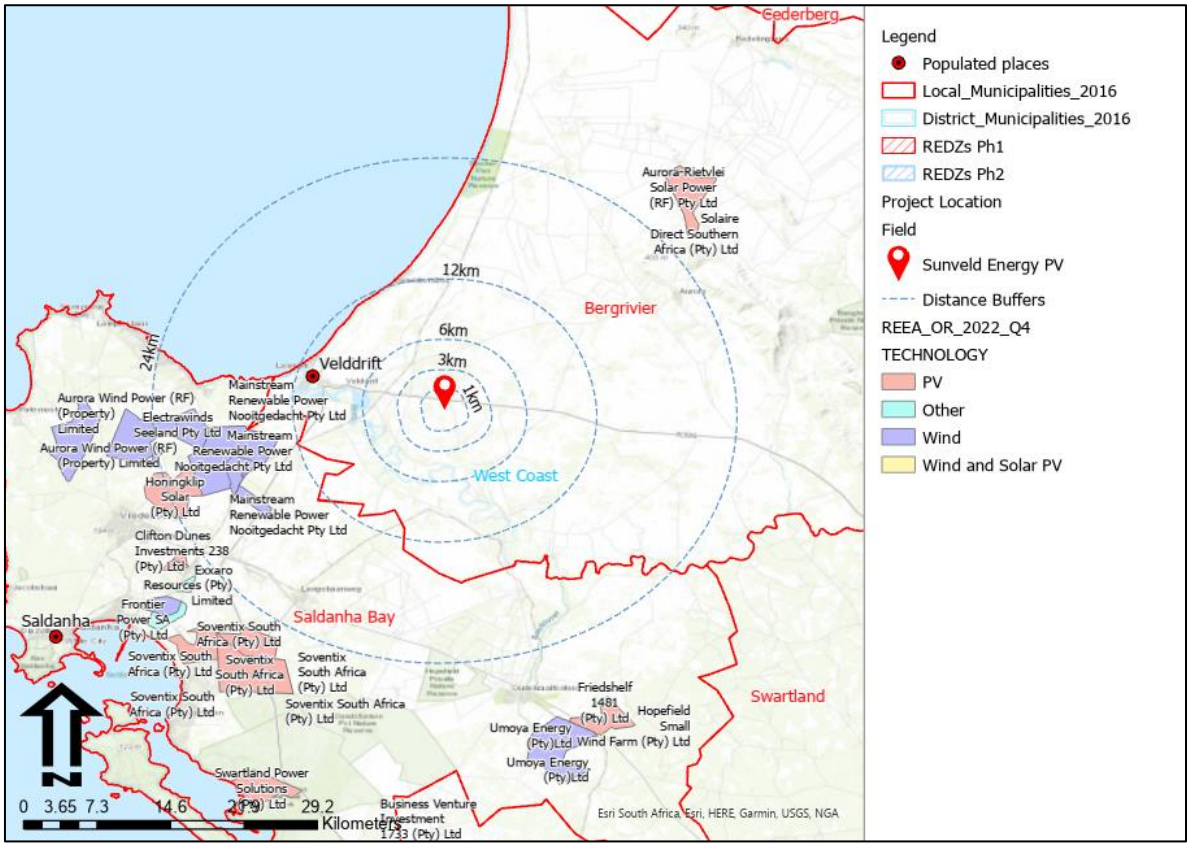


Figure 8: Map depicting DEA Renewable Energy project status.

There are no other authorised Renewable Energy projects within a 12km radius of the proposed project. However, within a 24km radius the following renewable Energy projects are currently under development or not built but are authorised:

- Mainstream Renewable Power (wind)
- Electrawinds (wind)
- Honingklip Solar (solar)

Due to the gentle undulation of the terrain, the proposed PV landscape change is unlikely to result in intervisibility such that a larger massing effect takes place that significantly degrades local landscape resources. **Risk to massing effects from intervisibility is thus rated Low.**

5.2.4 Conservation and Tourism Planning

As can be seen in Figure 8 above, the proposed project lies on the border of the Cape West Coast Biosphere Reserve. Within a 24km radius lie the Rocher Pan Nature Reserve to the north and West Point Private Nature Reserve to the south. However, as noted for the RE project intervisibility, the proclaimed conservation areas are well outside of the proposed project ZVI. The only tourism related activities were the small camp site located to the south of the property on the Berg River. This facility, that belongs to the property owner (*pending confirmation*), is located outside of the current PV project ZVI. Velddrif is also an important

coastal tourist destination, and the R399 road transects the proposed PV project area where higher levels of visual intrusion to tourist receptors is likely to take place. Care would also need to be undertaken to ensure that visual resources related to the Berg River are not compromised. **Due to the High levels of Visual Exposure to the Berg River landscape resources, the risk to conservation and tourism planning is rated Medium to High**.

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. Positive plannings aspects pertaining to the proposed development are highlighted in green, with possible issues of concern highlighted in yellow.

Table 10: District Planning reference table relevant to the project.

Theme	Requirements	Page
Renewable Energy	Policy BE16: Renewable energy sources (wind, solar, gas, etc.) should be promoted to support and enhance the electricity capacity in the West Coast District.	96
	Promote and enhance resource-use efficiency and invest in renewable 'green' energy projects.	11
Landscape	Alternative energy facilities such as solar and wind farms have spatial implications relating to visual impacts, environmental impacts, etc. and its locality should be considered in terms of certain criteria.	49
	Visually obtrusive structures erected on ridgelines and elevated landscapes detract from the natural rural landscapes.	125
Planning	Policy BE17: • Wind and solar farm locations should be informed by a range of criteria, i.e., environmental considerations, topography, planning and land use considerations as well as infrastructure considerations • Wind farms and solar farms should be located where their visual and environmental impact will be the lowest.	96/ 141

(West Coast District Municipality, 2020)

Table 11: Local Planning reference table relevant to the project.

Theme	Requirements	Page
Renewable Energy	Promote the development of renewable energy plants in the Province and associated manufacturing capability. (Western Cape Infrastructure Framework (WCIF))	22
	Strategic Goal 7: Renewable Energy - ensure that adequate energy is supplied to meet developmental challenges	173
Biodiversity	Just over 58% of the total area of Bergrivier has already been transformed through human intervention, most notably farming and settlement. In the lower lying areas nearly 71% of the landscape is transformed. Habitats most suitable for agriculture are all threatened. The most intensively developed areas are classified as being Critically Endangered, with remaining remnants of natural habitats representing less than the threshold value required to maintain a substantial proportion of original species and ecological function.	34

Theme	Requirements	Page
Tourism	• Eco-tourism - capitalising on the significant biodiversity and scenic landscapes of the area supported by training, environmental education and business development.	49
	• Promote and enhance the Bergrivier Municipality as a unique destination for discerning travellers with unrivalled eco-tourism and authentic cultural heritage tourism opportunities.	60
Landscape	Future Challenges: Safeguarding local landscape and scenic value through appropriate land use location, scale and form. Visual environment and unique West Coast sense of place mainstreamed in spatial planning decision-making.	49
	The Bergrivier dictates the southern boundary. It links neighbouring municipal areas providing scenic and recreational opportunities before exiting to the ocean via a serpentine wide estuary of tidal flats and wetlands with high scenic, estuarine and recreational value.	47
	The importance of NEMA in Bergrivier Municipality is fundamental in so far as the issues of environmental sustainability, resilience to climate change and wise use of the natural resource base are key to the current and future socio-economic wellbeing of residents in the municipal area. This is especially so because of the fact that sectors such as agriculture, fishing and tourism, which all rely to a great extent on the natural assets of the area, remain of great importance to the local economy and are likely to do so in future.	20
Agriculture	The agricultural sector is an important sector in the economic makeup of the Bergrivier Municipality, forming part of the primary sector but also providing inputs towards processing and manufacturing activities in the secondary sector and representing an important element of the value chain in the tertiary sector, too.	42

(Bergrivier Municipality, 2019)

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 landscape/ cultural landscape features within the project area there were 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.** While there is clear support for renewable energy sources and the promotion as part of a planning effort to enhance the electricity capacity in the West Coast District, alternative energy facilities such as solar and wind farms are also listed as a risk to have spatial implications relating to visual impacts, environmental impacts, etc, given the importance of tourism for the area where there is a strong planning requirements to "promote and enhance the Bergrivier Municipality as a unique destination for discerning travellers with unrivalled eco-tourism and authentic cultural heritage tourism opportunities". As the property is large and, in some areas, visually degraded by alien vegetation. There is also a clear need to ensure that visual resources along the R399 road tourist corridor, and the Berg River are not compromised. There was a previous authorisation for PV development on the

property that was not implemented and, no visual issues or concerns were raised in the scoping phase.

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.

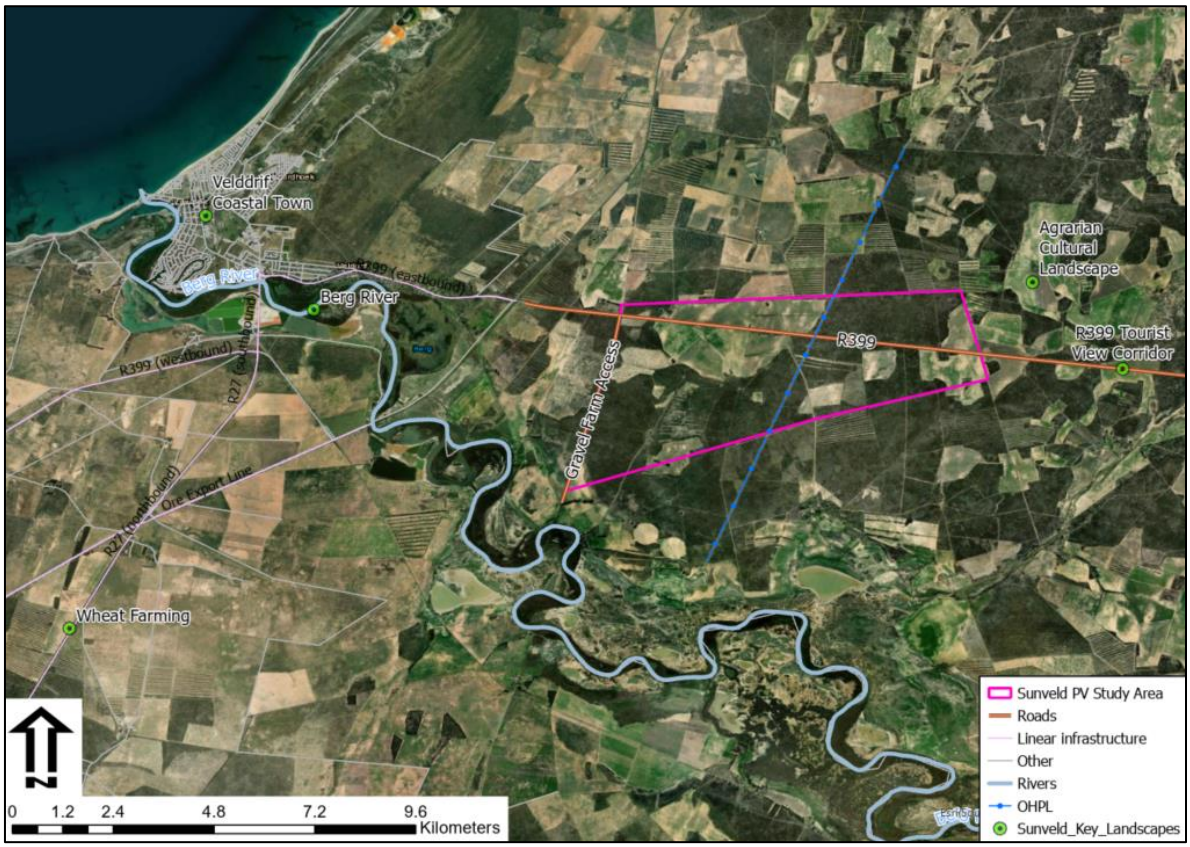
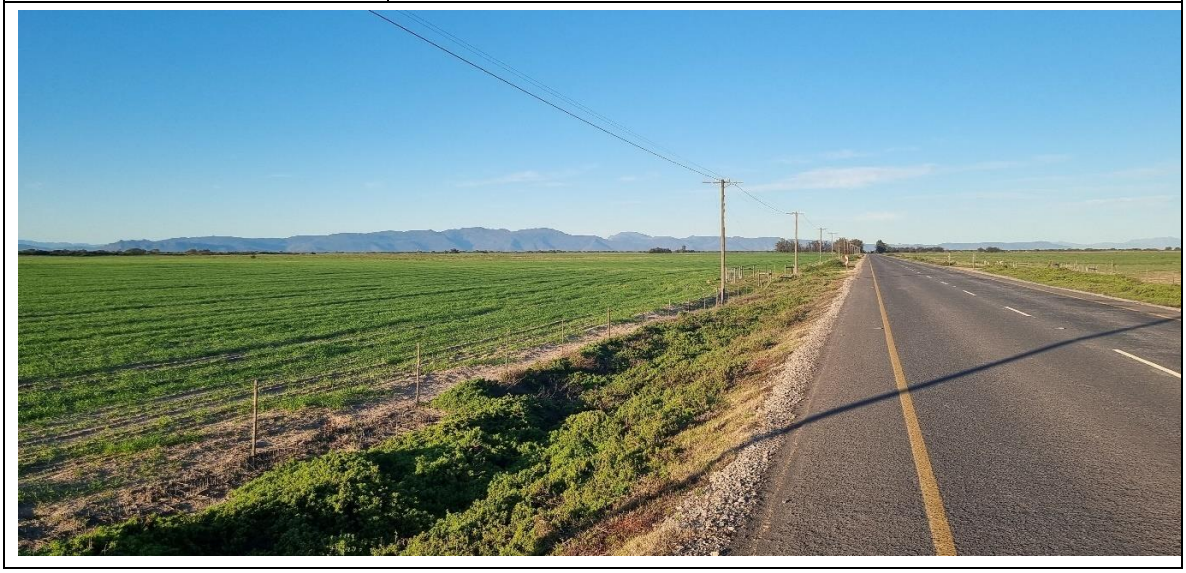


Figure 9. Local landscape themes map.

As mapped in Figure 9 above, the key landscape themes within the Foreground / Middle Ground (6km) distance are tabled below:

Table 12:Key Landscape Themes

Theme	Description
Berg River	The Bergrivier links neighbouring municipal areas providing scenic and recreational opportunities before exiting to the ocean via a serpentine wide estuary of tidal flats and wetlands with high scenic, estuarine and recreational value. The estuary is an important bird habitat and is home to around 30,000 birds.
	
R399 Tourist Corridor	The areas adjacent to the R399 have high levels of usage, with the areas set back from the road having lower usage. While not specifically located within a defined/ proclaimed special areas, there are large areas where the Strandveld Fynbos are defined as having botanical and avifaunal importance.
	

Agrarian Cultural Landscape	This is due to the interplay of the natural and agrarian cultivated areas, as well as the Berg River. One of the key agricultural land uses is dryland wheat farming in much of the region, but also includes sheep farming as practiced in the farming within the project study area. The terrain is predominately flat and gently undulating, but the backdrop of the mountains to the east and the close proximity to the Berg River valley do add value to the site's scenic resources.

Veldrif Coastal Town	Velddrif is also an important coastal tourist destination, The meandering Berg River reflects the tranquility of this fishing village. Velddrif's lovely beaches form part of the West Coast whale route. A deep-water marina and excellent sailing conditions in St Helena Bay.

(Source: Getaway Magazine/Catherine Hofmeyr)

6.2 Visual Absorption Capacity

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.

Vegetation type is a large factor in determining the scenic quality or 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).

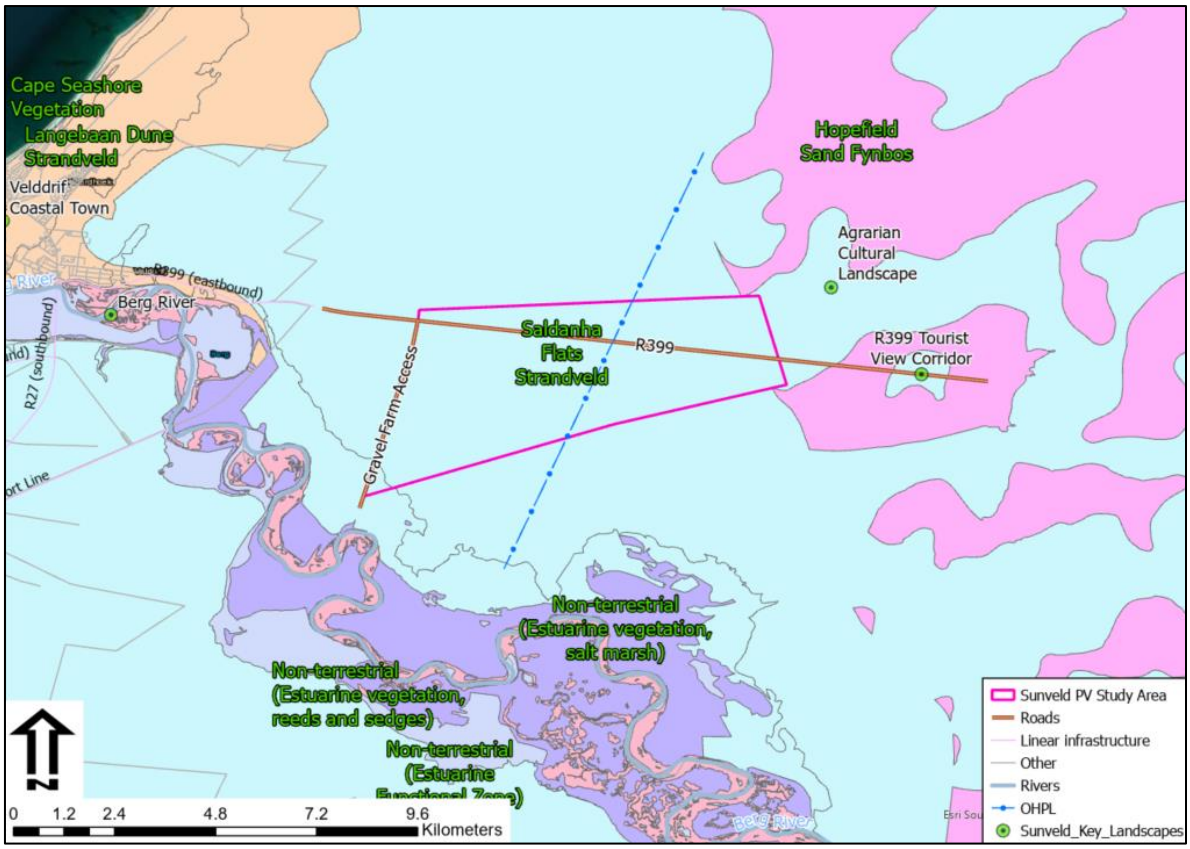


Figure 10. BGIS Vegetation Type Map (South African National Biodiversity Institute, 2018)

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 Fynbos Biome with the main vegetation types being Saldanha Flats Strandveld. The importance of this vegetation within the region is listed as Endangered due to irreversible loss of natural habitat. As the area is also rural agrarian, there are also agriculturally cultivated lands as depicted in the photograph below. The agricultural land use is dryland wheat farming in much of the region, but also includes sheep farming as practiced within the project study area.

(thefynbosguy.com, n.d.)

Figure 11. Photograph of Standveld Flats vegetation

Of relevance to the project is that the VAC levels in relation to vegetation and built infrastructure is rated Medium. The Strandveld vegetation is of medium height and is unlikely to provide visual screening to the PV panels above a 2m height. In some of the areas proposed for PV where there are cultivated fields, there is no vegetation screening. In terms of built infrastructure, there are no farm houses/ agricultural structures that could provide some visual screening.

The gum tree windrow features are important elements in the agrarian cultural landscape and would provide some visual screening. The alien vegetation to the north of the R399 would also provide some visual screening to PV. There are also pockets of Strandveld vegetation areas along the R399 to the south of the road that do offer some visual screening within the 2m above ground level range.

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 but orientated to take into account dominant topographic trends that could influence the local landscape and viewscape. The map depicting the regional elevation profile lines can be viewed on the following page.

The general topography of the region is defined as gently undulating as with no prominent landform features in the landscape, other than the shallow riverine valley of the Berg River to the south of the project area.

North to South Profile depicts a 50m heigh variation over the distance, depicting a predominantly flat terrain, with the high point of 50m located at the location of the project. The low point is to the south along the Berg River valley that is at sea level. The West to East Profile depicts a similar, predominantly flat terrain, but with the high ground to the east and the low areas to the west at the Berg River / Atlantic Ocean. There is the potential for some low intensity prominence as seen from the low lying Berg River to the west of the site, where the proposed PV panels located on slightly more elevated terrain could break the skyline.

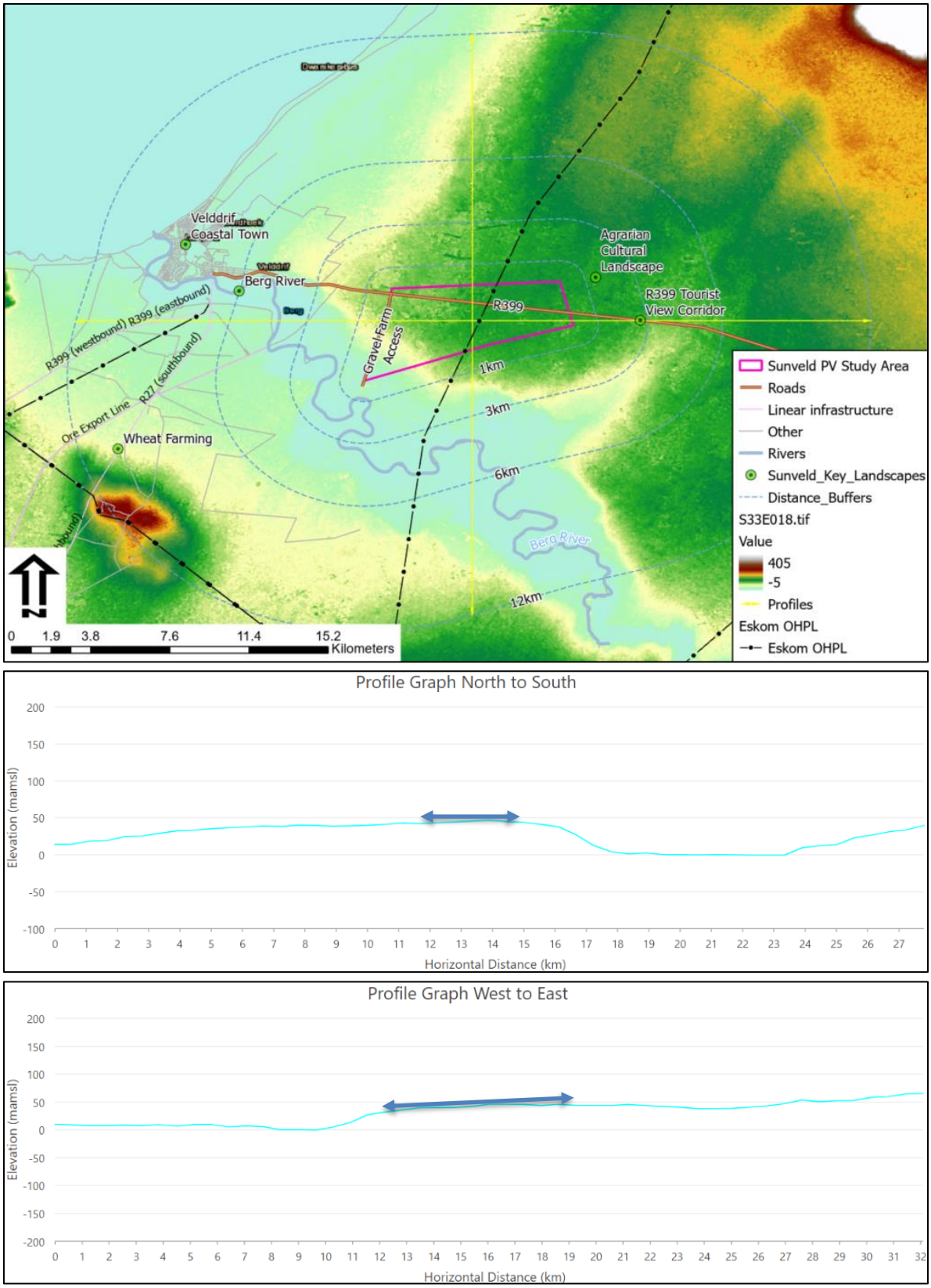


Figure 12: Regional Digital Elevation Mapping and Profiles Graphs *with approximate extent depicted*.

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 in

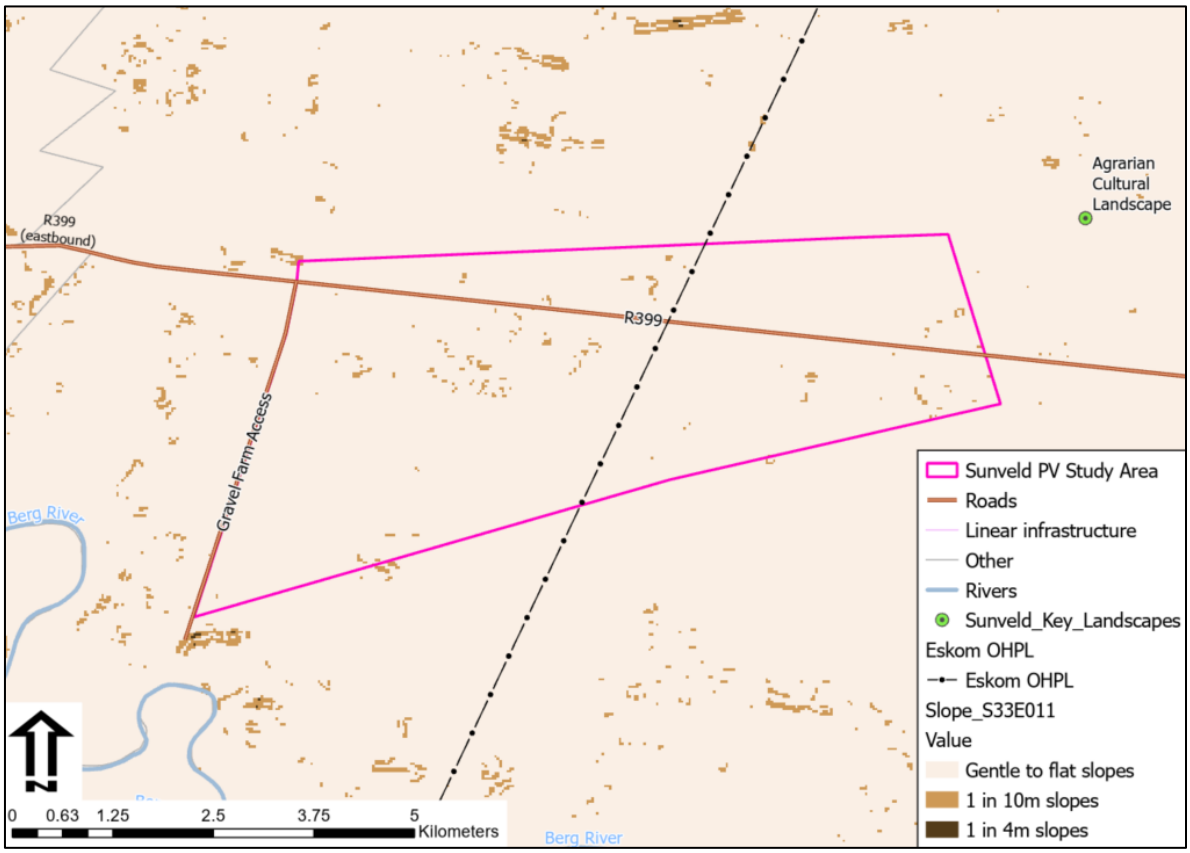


Figure 13 below, **no prominence or ridgelines were identified on the site or within the local region.**

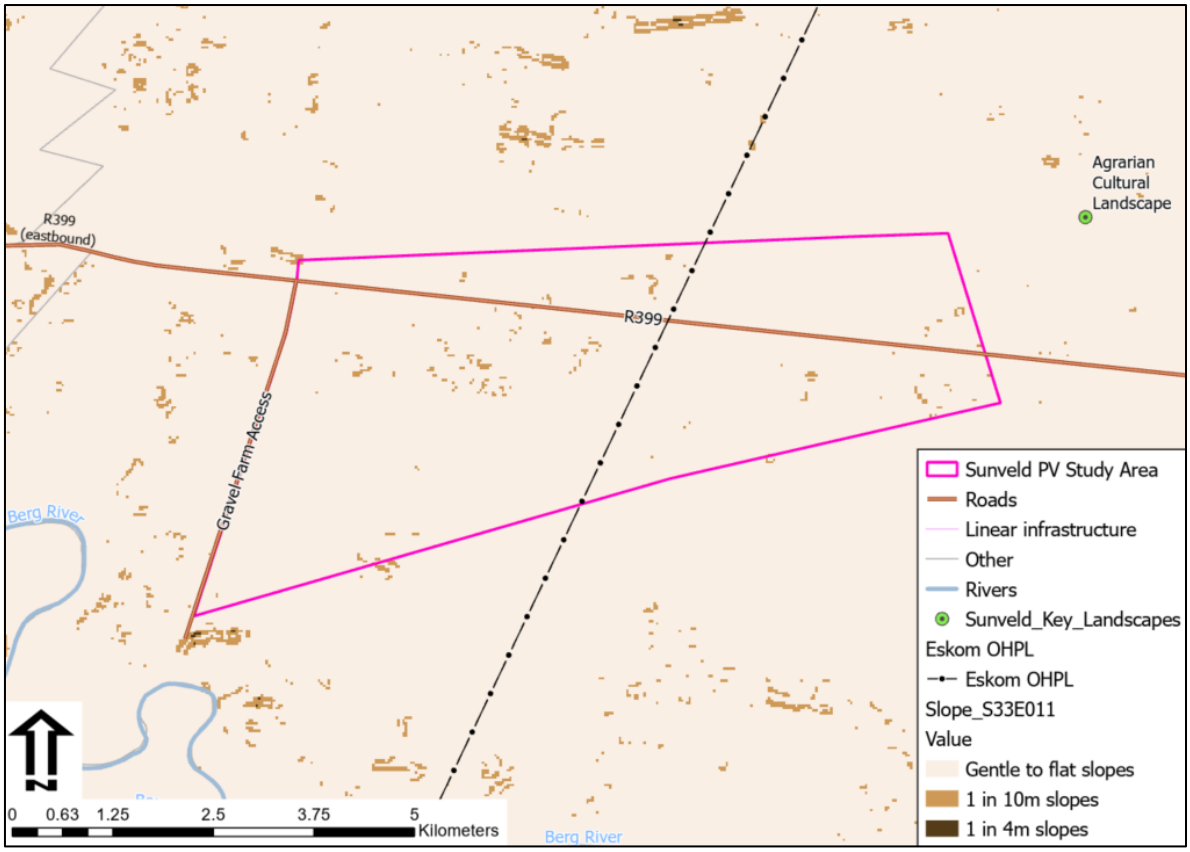


Figure 13: Key topographic features map.

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 13: Proposed Project Heights Table

Proposed Activity	Height (m)	Model Extent	Motivation
PV Structures	5	24km	The region has a medium to low VAC levels due to fynbos vegetation and rural agrarian land uses. In conjunction with the predominantly flat terrain, the hypothetical viewshed has the potential to extend into the background areas.

The viewshed is mapped and can be viewed in Figure 14 on the next page. This depicts the theoretical area where the proposed landscape change could be visible. The viewshed is mainly towards the northwest, west and south, with some moderately high ground to the northwest restricting views outwards to the west beyond the 3km distance. Some low lying landscapes to the south are also excluded from the viewshed. However, due to the predominantly flat terrain surrounding the site, the viewshed has the potential to extend beyond the Foreground/ Mid-Ground areas.

The extent of the Zone of Visual Influence is defined as Regional and rated Medium to High for the following reasons:

- **The extent is predominantly contained within the 6km distance but could extend into the background areas to the southwest due to the lowlands along the Berg River.**

The following receptors were located within the expected ZVI:

- **Berg River Rural Residence**
- **Kliphoek River Resort**
- **R399 East and Westbound**
- **Eastern gravel access road**

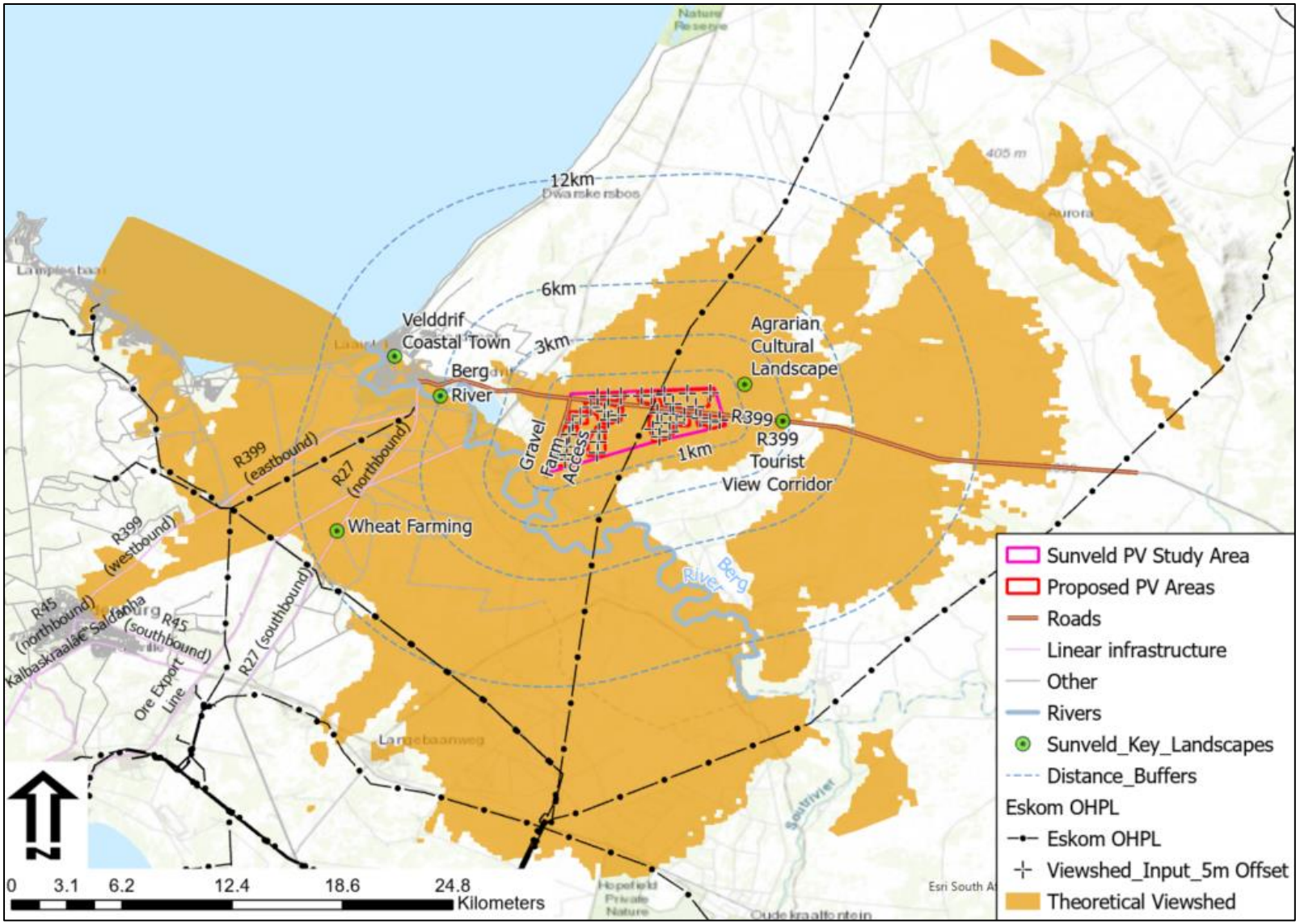


Figure 14: Viewshed analysis map of proposed project.

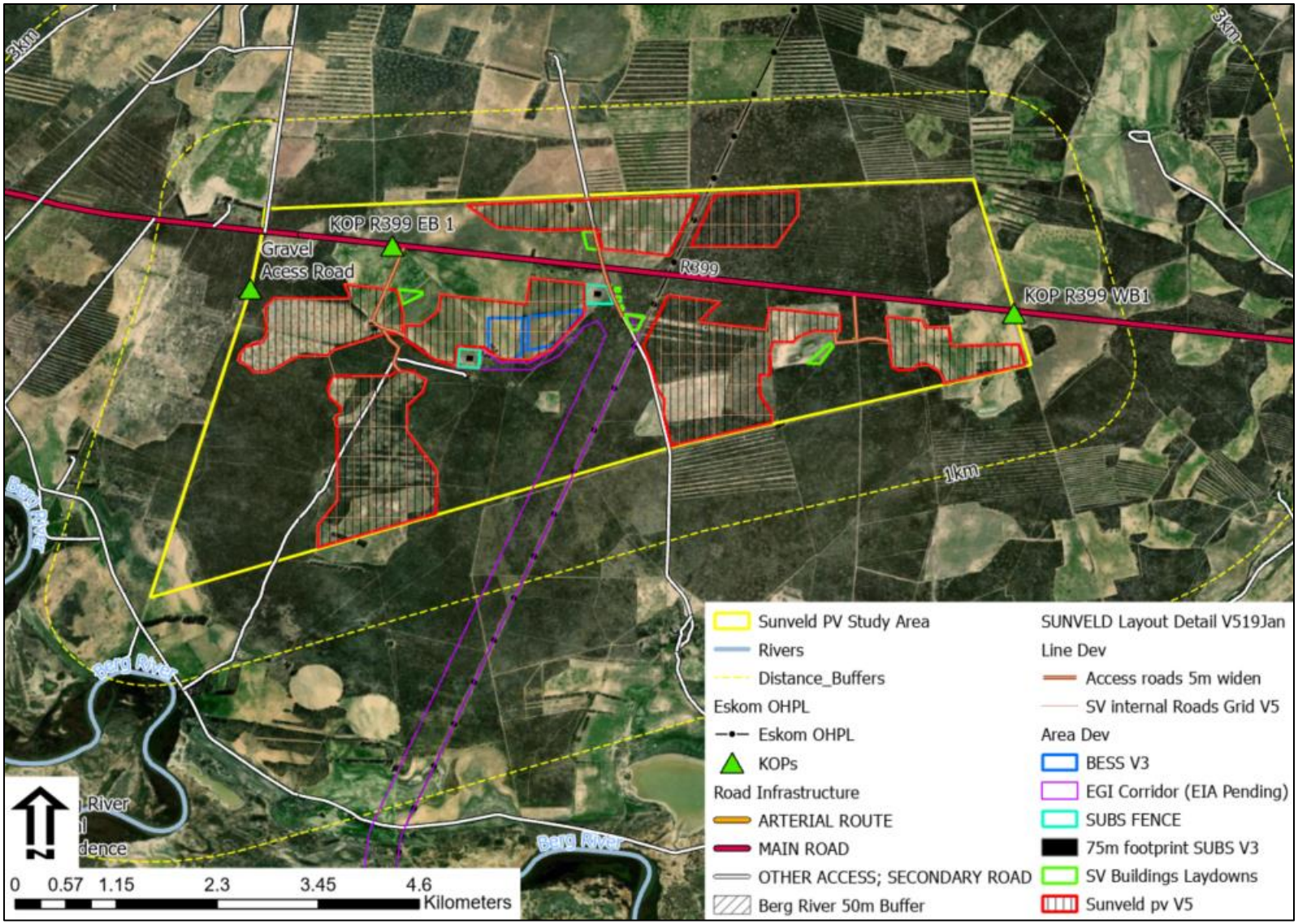


Figure 15: Receptor Key Observation Point and Visual Exposure Map Berg River Rural Residence

6.5 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 14 below and mapped in Figure 15 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 14: KOP Motivation Table.

Name	Theme	Exposure	Motivation
Berg River Rural Residence	Rural Residence	Medium (4km)	The users of the adjacent Berg River areas are likely to have a higher sensitivity to landscape change.
Kliphoek River Resort	Resort	High (2.4km)	Tourist related and as such are likely to have a higher sensitivity to landscape change.
R399 East and Westbound	View corridor	Very High (200m)	The areas adjacent to the R399 have high levels of usage. It is a visual resource related to the Berg River and the tourist access routes to Velddrif which should not compromised
Eastern gravel access road	Rural access road	Very High (200m)	The road is primarily a rural access road, but the backdrop of the mountains to the east and the close proximity to the Berg River valley do add value to the road as scenic resources for tourists.

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 Figure 16 below.

Table 15: Physiographic Landscape Rating Units.

Landscapes	Motivation
Alien invaded fynbos	The landscape does include some gum tree windrows, as well as alien invasive vegetation areas (Port Jackson).
Cultivated	As the area is also rural agrarian, there are also agriculturally cultivated lands. The agricultural land use is dryland wheat farming in much of the region, but also includes sheep farming as practiced in the farming within the project study area. Berg River farms, pending the availability of water and soil type, have the potential for intensive irrigation development as witnessed by recent viticulture and vegetable projects. (Bergrivier Municipality, 2019)
High Significance Strandveld Fynbos	The Strandveld Fynbos is classified as Endangered with only the Rocherpan Nature Reserve protecting a proportion of endangered Saldanha Flats Strandveld. The main transformation drivers: urban sprawl, road network development, agricultural cultivation, and alien invasive plants. (CSIR, 2019)
R399 View corridor landscape sensitive	The R399 View corridor is tourist related and as such is likely to have a higher sensitivity to landscape change. It is a visual resource related to the Berg River and the tourist access routes to Velddrif which should not compromised.

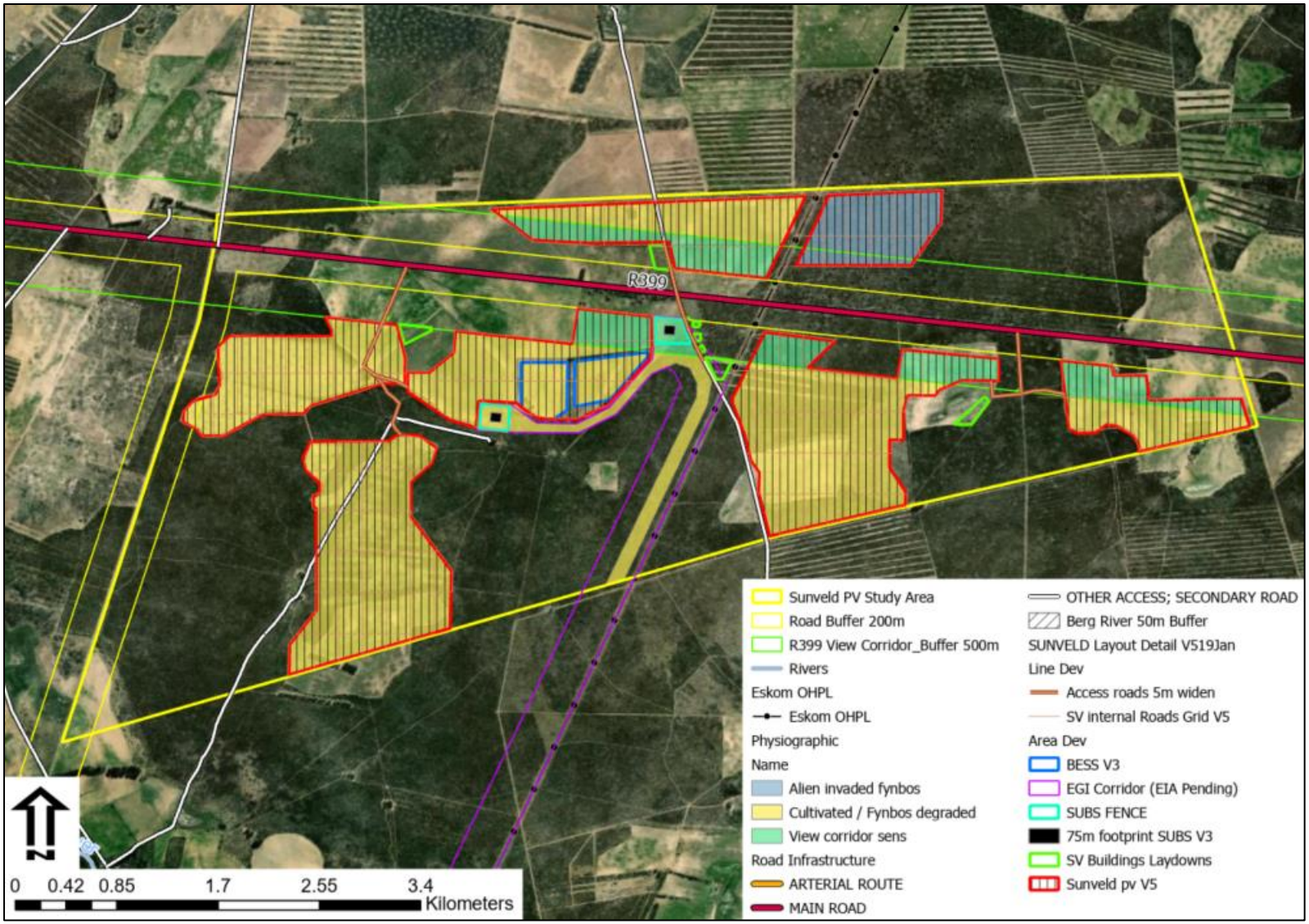


Figure 16: Physiographic Rating Units identified within the defined study area.

Table 16: Scenic Quality and Receptor Sensitivity Rating.

Landscape Rating Units	Scenic Quality									Receptor Sensitivity						VRM		
	A= scenic quality rating of ≥19; B = rating of 12 – 18, C= rating of ≤11									H = High; M = Medium; L = Low								
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: • **View corridor sensitivity with no existing partial screening.**	**(Class I is not rated)**															**I**	**NoGo**	
Eastern Road High Exposure	1	3	2	3	2	4	2	**17**	**B**	H	H	M	H	H	**H**	**II**	**II**	**Not recommended**
Cultivated lands & alien invaded fynbos	1	3	2	3	2	4	2	**17**	**B**	H	H	M	H	M	**M**	**III**	**III**	**With 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

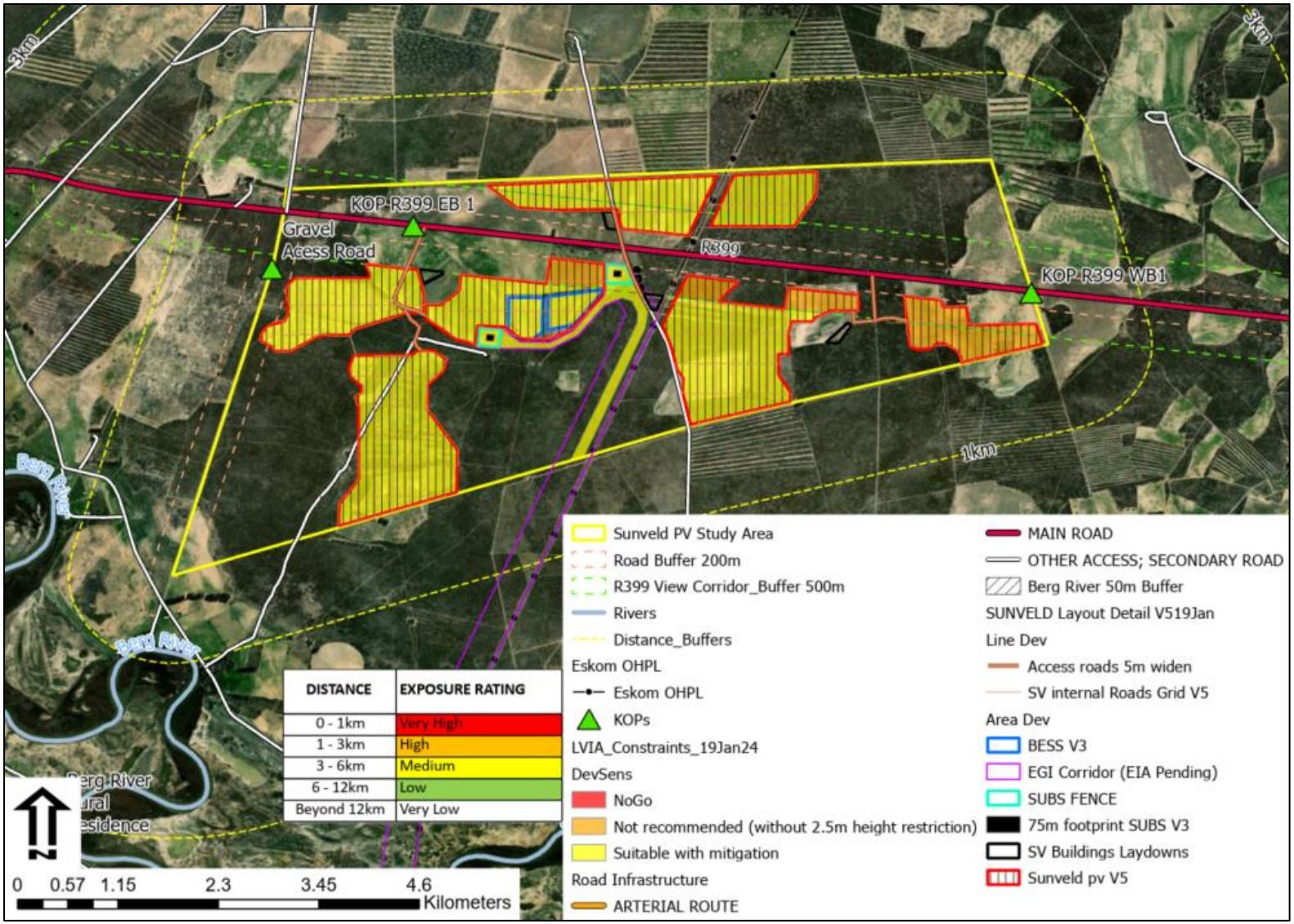


Figure 17: Visual Resource Management Classes map.

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 (High).
B = rating of 12 – 18 (Medium).
C= rating of ≤11 (Low).

Table 17: Scenic Quality Rating Table.

Landscapes	Rating	Motivation
Landform	L	*Topography becomes more of a factor as it becomes steeper, or more severely sculptured.* The topography is gently undulating without significant landforms providing key features in the landscape.
Vegetation	MH	*Primary consideration given to the variety of patterns, forms, and textures created by plant life*. While the vegetation has been cleared in the cultivated areas, the Strandveld Fynbos is significant as a landscape feature. The cultivated wheat fields also add value to the agrarian cultural landscape.
Water	M	*That ingredient which adds movement or serenity to a scene. The degree to which water dominates the scene is the primary consideration.* No dominating water features are apparent in the landscape but there are small ponds that create focus areas in the landscape.
Colour	MH	*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.* The contrast between the light colours, the cultivated sand areas and the dark Strandveld Fybnos significantly adds to the landscape character.
Scarcity	MH	*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.* There are areas where the Strandveld vegetation has high significance from a botanical and avifauna perspective. The R399 view corridor also adds value to the study area as a landscape.
Adjacent Landscapes	MH	*Degree to which scenery and distance enhance, or starts to influence, the overall impression of the scenery within the rating unit.* The adjacent Berg River landscape, set within a rural agrarian landscape does increase the overall value as a tourist destination.
Cultural Modifications	MH	*Cultural modifications should be considered and may detract from the scenery or complement or improve the scenic quality of an area.* The patchwork of cultivated lands in between the fynbos areas, with contrasting colours and land uses does add value to the scenic quality.

Scenic Quality	**Medium to High**	**While topography and water is not a dominating element in the broader landscape, the patchwork of cultivated lands in between the fynbos areas, with contrasting colours and land uses does add value to the scenic quality. The adjacent Berg River landscape, set within a rural agrarian landscape does increase the overall value as a tourist destination. There are areas where the Strandveld vegetation has high significance from a botanical and avifauna perspective, and the R399 view corridor also adds value to the study area as a sensitive landscape.**

7.3 Receptor Sensitivity Assessment

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

Table 18: Receptor Sensitivity Rating Table.

Landscapes	Rating	Motivation
Type of Users	H	*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*. The three identified KOPs are all tourist related and as such are likely to have a higher sensitivity to landscape change.
Amount of use	MH	*Areas seen or used by large numbers of people are potentially more sensitive.* The areas adjacent to the R399 have high levels of usage, with the areas set back from the road having lower usage.
Public interest	M	*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.* The area is within a recognised tourist area, with planning also emphasising the importance of maintaining landscape integrity.
Adjacent land Users	H	*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.* The users of the adjacent Berg River areas are likely to have a higher sensitivity to landscape change.
Special Areas	MH	*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.* While not specifically located within a defined/ proclaimed special areas, there are large areas where the Strandveld Fynbos are defined as having botanical and avifaunal importance.
Receptor Sensitivity	**MH**	**The area is within a recognised tourist area, with planning also emphasising the importance of maintaining landscape integrity, with the three identified KOPs all tourist related and as such are likely to have a higher sensitivity to landscape change. The areas adjacent to the R399 have high levels of usage, with the areas set back from the road having lower usage. While not specifically**

Landscapes	Rating	Motivation
		located within a defined/ proclaimed special areas, there are large areas where the Strandveld Fynbos is defined as having botanical and avifaunal importance.

7.4 Visual Resource Management (VRM) Classes

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. 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:

- Any river / streams and associated flood lines buffers identified as significant in terms of the WULA process.
- Any wetlands identified as significant in terms of the WULA process.
- Any ecological areas (or plant species) identified as having a high significance.
- Any heritage area identified as having a high significance.
- **R399 200m No-go buffer.**
- **R399 view corridor 500m No-go buffer (where immediate visual screening can't be achieved or where planting of screening trees will block agrarian cultural landscapes of high value).**

To maintain the existing landscape integrity, these proposed areas need to be excluded from the development area as these areas are key to maintaining the high value landscape of the R399 view corridor. These areas will also extend the ZVI further along the R399 where repetitive views of PV development should be minimised and contained to a more localised effect.

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.

- **Areas between 200m No-go Buffer and 500m high sensitivity buffer, as well as 'gateway' view of the eastern portion of the property that have depth of view, that can accommodate low height PV panels that can be visually screened within a short-term from the R399 receptors.**

These are areas that have existing partial screening as seen from the R399 receptors, or where a low berm can effectively visually screen 80% of the landscape change. These areas will need to be subject to a 2.4m height restriction, as well as tree screening. The berm will need

to appear organic and will have to be rehabilitated back to Strandveld vegetation. These modifications will need to align with the existing rural agrarian cultural landscape.

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:

- **Degraded fynbos / cultivated areas outside of the R399 view corridor No-go buffer areas (Northern PV areas).**

These areas are suitable for PV development with mitigation, as they are outside of the R399 view corridor 200m/ 500m No-go areas, and in areas that well not be visually intrusive. These areas will have to be restricted to 3m above ground level.

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:

- **Not applicable.**

As the area has higher levels of landscape character that are being used as visual resources, no Class IV areas were defined as this would significantly detract from the R399 view corridor and set in place a negative precedent for larger scaled PV development in the region.

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, assuming the view of the defined Key Observation Point. Detailed photomontages are not provided, but photographic depictions were generated to inform the assessment of the proposed landscape change.

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.

Table 19: Contrast Rating Key Observation Points Table

	Exposure			**Landscape Elements**					
Key Observation Point	**Distance**	**Exposure**	**Mitigation**	**Form**	**Line**	**Colour**	**Texture**	**Degree of Contrast**	**Visual Objectives Met?**
R399 Eastbound	200m	Very High	W/Out	M	S	S	S	S	No
			With	W	S	M	M	MS	Yes
R399 Westbound	200m	Very High	W/Out	M	S	S	S	S	No
			With	W	S	M	M	MS	Yes
Berg River Access Road	50m	Very High	W/Out	W	M	W	W	W	Yes
			With	Not applicable					

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

R399 Contrast Rating Findings

Without mitigation, the receptors passing through the PV development would be visually exposed to 'walling' effect of the large PV panels in either side of the road with the security fencing on either side of the road. This would be visually intrusive and significantly degrade the local landscape character of the rural area. While the form would be limited due to the partial setback from the road, and the limited change to the landform from the PV structure, the line, colour and texture of the PV panels would generate strong levels of visual contrast and the Class II & Class III visual objects required to retain the visual integrity of the R399 would not be met. High visual impact would take place and a negative precedent for PV larger scale development would be set in place.

With mitigation and the introduction of visual screening elements into the landscape that are already depicted within the large landscape, the visual intrusion can be reduced such that the Class II & Class III visual objectives are met. This would require a combination of screening trees in the central and northern areas where there is a precedent for windrow tree plantings, as well as low berms to the south. The southern landscapes are either cultivated or Strandveld vegetation on undulating sand that naturally form low berms in the landscape. The berms would need to be 5m in height with a 1 in 4m slope. The berm areas would need to be planted with Strandveld type vegetation that could be transplanted from partially degraded Strandveld vegetation areas that have been deemed suitable for development.

The rows of trees would need to be planted at 10m spaces and can incorporate quicker growing non-indigenous trees that are wind hardy and grow to a medium height such as the

Syzygium paniculatum or similar. Other indigenous trees that could be considered are Searsia lancea, Pappea capensis, Scolopia mundii. Gum trees, Casurina and Poplar trees should not be used.

8.2 Mitigation Map

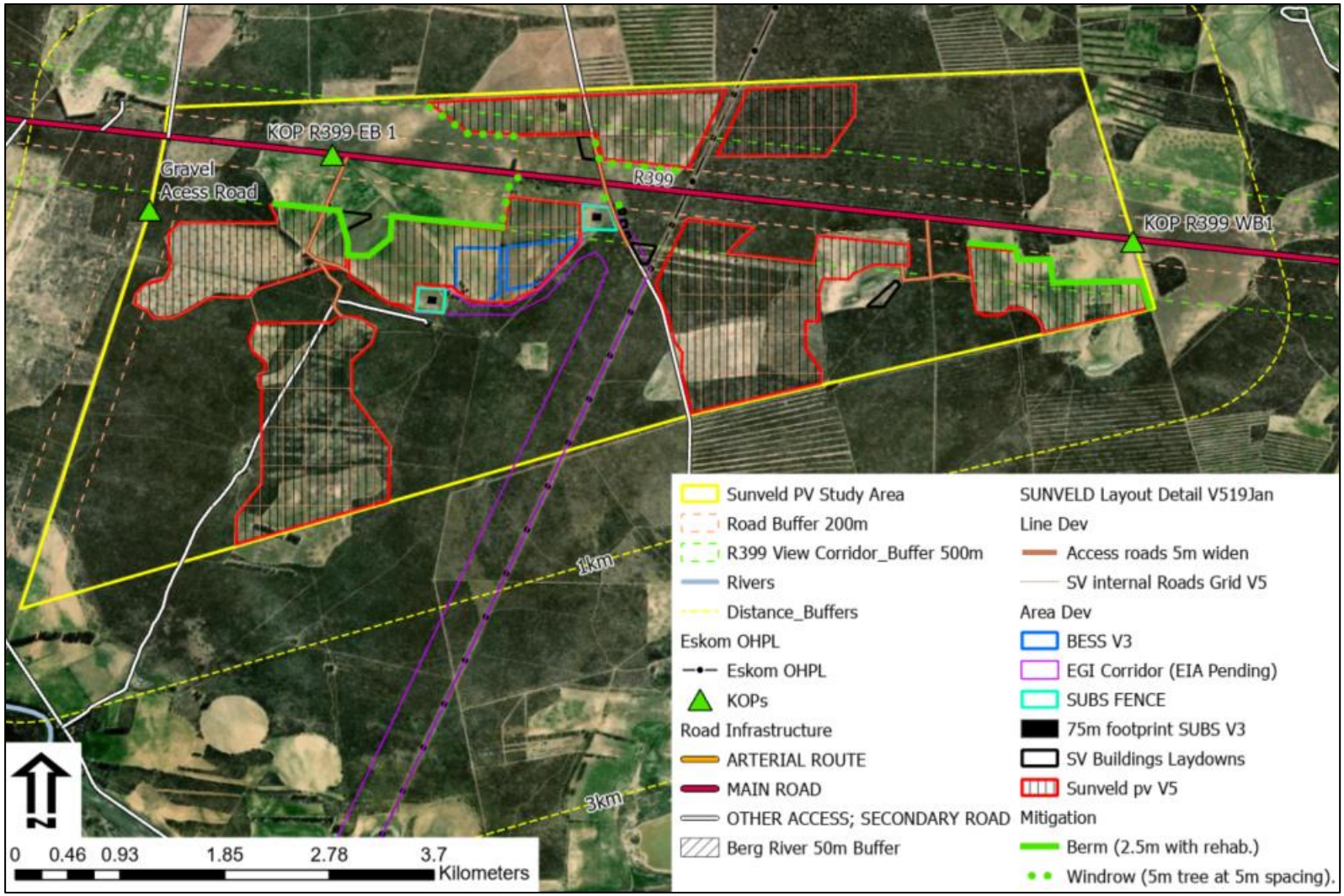


Figure 18: Mitigation Location Map.

8.3 KOP Photographic Depictions

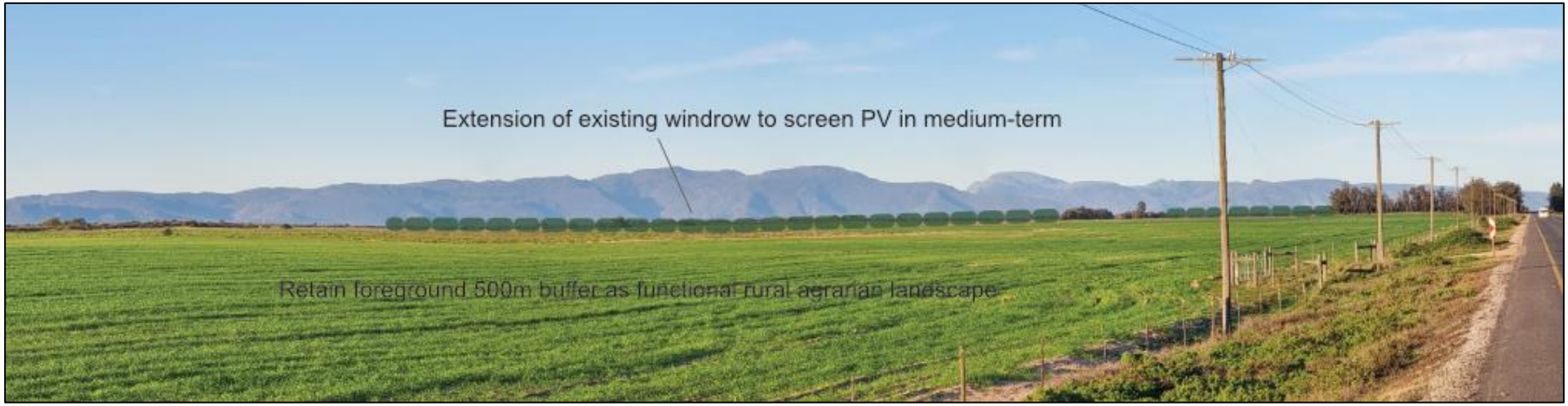


Figure 19: R399 Eastbound initial view northest towards restricted height PV panels.

Figure 20: R399 Eastbound view to the southeast towards restricted height PV panels. (Existing southern view towards previously authorised PV development area).

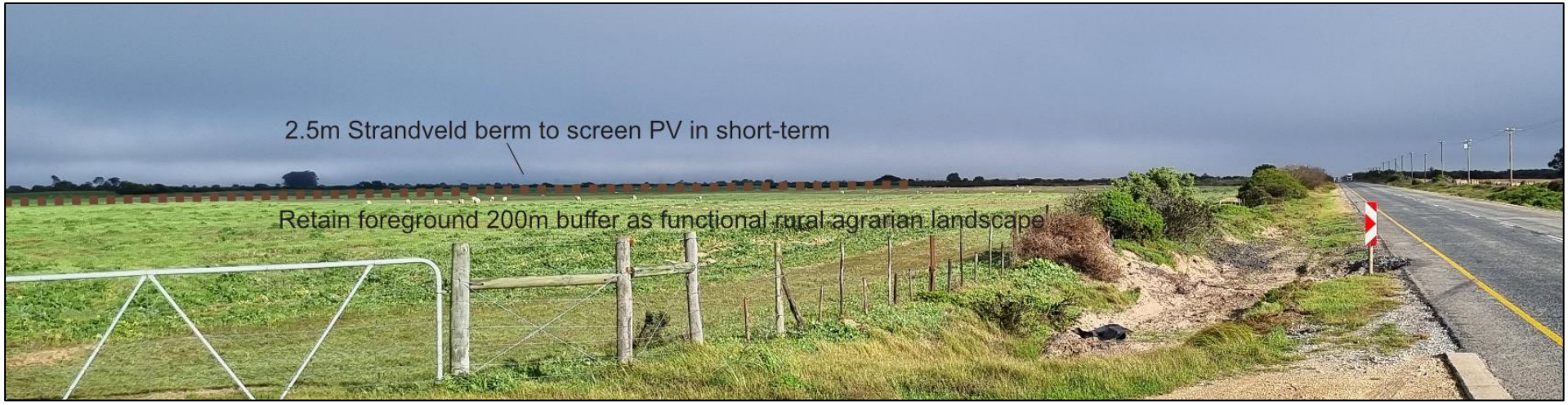


Figure 21: R399 Westbound initial view to the south towards restricted height PV panels with existing partial screening along the road verge.

8.4 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.

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 renewable energy projects, resulting in a loss of scenic quality of the local area.

Table 20: Construction Phase Impacts Table

Project phase	**Construction Phase**			
Impact	**Short-term landscape change from the current rural agricultural sense of place to the semi-industrial RE landscape.**			
Description of impact	• Loss of site landscape character due to the removal of vegetation and the construction of the PV structures and associated infrastructure. • Wind-blown dust due to the removal of large areas of vegetation and large earth moving equipment. • Possible soil erosion from temporary roads. • Wind-blown litter from the laydown and construction sites.			
Mitigation Viability	Medium	The mitigation will partially reduce the significance of the visual and landscape impacts		
Potential mitigation	• Wind blown dust mitigation. • Dust mitigation for moving vehicles. • Fencing around the PV parcels and not around the total project. Fencing should not exceed 2.4m in height and should be located behind the screening areas. • Structures need to be painted mid-grey/ brown colour. • Planting of screening trees where stipulated. • Construction of low berms where stipulated.			
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. 6km from site)	Local	Contained within the Foreground/ Mid Ground (approx. 6km from site)
Intensity	High	Natural and/ or social functions and/ or processes are clearly altered.	Medium to High	Natural and/ or social functions and/ or processes are partially 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 landscape change is reversible but only with time and rehabilitation.	Medium	The landscape change is reversible but only with time and rehabilitation.
Significance	**Medium to High (-ve)**		**Medium (-ve)**	
Comment on significance	Although for a shorter time period, the full extent development with close proximity to the receptors, will result in Strong levels of visual contrast during construction. This should be considered a Fatal Flaw.		With mitigation and the construction of the screening berms, much of the southern PV areas will be immediately screened. The berm itself will also generate visual contrast in the short-term, until the rehabilitation has taken place. With this mitigation, the short-term construction phase impact will be Medium.	
Cumulatives	**High (-ve)**		**Low (-ve)**	
Cumulative impacts	The development without mitigation will set a negative precedent for development of PV projects in remote, rural areas, creating increased potential for intervisibility from development of prominent, steep slope areas.		With mitigation and retaining the visual setback buffers, short-term visual screening will take place, reducing the intervisibility of the different project components that are spready out over a 6km distance. Without mitigation should be considered a Fatal Flaw.	

Table 21: Operation Phase Impacts Table

Project phase	**Operation Phase**	
Impact	**Short-term landscape change from the current rural agricultural sense of place to the semi-industrial RE landscape.**	
Description of impact	• Loss of site landscape character due to the operation of the PV structures and associated infrastructure.	
Mitigation Viability	Medium	The mitigation will partially reduce the significance of the visual and landscape impacts
Potential mitigation	• Lights at night management and no overhead lighting. • Continued dust suppression as required. • Continued rehabilitation of the screening berms. • Continued maintenance of the screening windrows.	
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	Local	Contained within the Foreground/ Mid Ground (approx. 6km from site)	Local	Contained within the Foreground/ Mid Ground (approx. 6km from site)
Intensity	Strong	Natural and/ or social functions and/ or processes are clearly altered.	Medium to Strong	Natural and/ or social functions and/ or processes are partially 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	High	The affected landscape will be able to recover from the impact.	Medium	The affected landscape will be able to recover from the impact.
Significance	**High (-ve)**		**Medium (-ve)**	
Comment	Over a long-time period, the full extent development with close proximity to the receptors, will result in Strong levels of visual contrast, with landscape resource degraded resulting in High Visual Significance and is not recommended. This should be considered a Fatal Flaw.		With mitigation and the reduction in the development area with visual setbacks, the Operational Phase impact will be moderated to some degree, with the visual resources of the R399 view corridor moderately impacted. Careful use of lights at night would also assist to reduce light spillage and ensure that the current dark-sky sense of place is retained.	
Cumulatives	**High (-ve)**		**Medium (-ve)**	
Comment	The development without mitigation will set a negative precedent for development of PV projects in remote, rural areas, creating increased potential for intervisibility from development of prominent, steep slope areas. Without mitigation should be considered a Fatal Flaw.		With mitigation and retaining the visual setback buffers, short-term visual screening will take place, reducing the intervisibility of the different project components that are spready out over a 6km distance. Residual risks to landscape resources will remain as the precedent for renewable energy development will be site in place, possible attracting future similar land uses changes. This is mitigated to some degree by the setback and height restriction mitigations that will set a more suitable precedent for PV development in the region.	

Table 22: Decommissioning Phase Impacts Table

Project 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, power lines, mono-poles and substations.

	• Wind-blown dust from impacts to vegetation. • Wind-blown litter from the laydown and 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 agricultural lands.			
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. 6km from site)	Local	Contained within the Foreground/ Mid Ground (approx. 6km 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)**		**Low (-ve)**	
Comment on significance	The dust and vehicle movement impacts are short-term in Duration, and outside the main views of the receptor residences.		Visual Intrusion from wind blown dust and from vehicle movement is limited and short-term in Duration.	
Cumulatives	**Medium (-ve)**		**Low (-ve)**	
Cumulative impacts	Without rehabilitation, the return of the vegetation to the site and the associated visual impacts would last a longer time period.		Effective management of rehabilitation can result in the return of the landscape to that of a functional agricultural area.	

9 PRELIMINARY ENVIRONMENTAL MANAGEMENT PLAN

9.1 PV Project

9.1.1 Design Phase

- To reduce visual intrusion to the surrounding landscapes that do have value, the PV height should be restricted to 2.5m above ground level for PV panels to the south of the R399.
- Restrict PV panels north of theR399 to 3m above ground height.

- Fencing around the PV parcels and not around the total project with the height of the security fencing restricted to 2.4m above ground level. The fencing also needs to be placed behind the screening berms and windrows so as to not become a visual intrusion.
- Structures need to be painted mid-grey colour. BESS areas need to be visually screened from the R399 with screening trees between the BESS area (10m intervals) and the road.
- Secure the services of a qualified landscape practitioner that specialises in rehabilitation to define a detailed landscape rehabilitation plan.
- Define the number of trees required for the screening windrows (5m intervals) and secure to site to harden saplings in partial shade areas with maintenance.
- Define which areas of the degraded Strandveld can be used for plant rescue and compare against the berm rehabilitation requirements.

9.1.2 Construction Phase

- Following the removal of the vegetation, wind-blown dust during construction should be monitored by the ECO to ensure that it does not become a nuisance factor to the local receptors. 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 ECO.
- Topsoil from the footprints of the road and structures should be dealt with in accordance with EMP.
- The buildings should be painted a grey-brown colour.
- Fencing around the construction camp should be simple, diamond shaped (to catch wind-blown litter) and appear transparent from a distance. The fences should be checked on a weekly basis for the collection of litter caught on the fence.
- Signage on the main access roads should be moderated.
- Lights at night have the potential to significantly increase the visual exposure of the proposed project. It is recommended that mitigations be implemented to reduce light spillage (refer to appendix for general guidelines). No overhead lighting to be used for security purposes.
- Limit the height of the PV panels as specified (see Design Phase above).
- All AC internal power line cables need to be buried so as to reduce visual intrusion to the local landscape.

9.1.3 Operation Phase

- Control of lights at night to allow only local disturbance to the current dark sky night landscape (refer to appendix for general guidelines).
- Continued soil erosion control and management of dust.

9.1.4 Decommissioning Phase

- All structures should be removed and where possible, recycled.
- Building structures should be broken down (including foundations).
- The rubble should be managed according to NEMWA and deposited at a registered landfill if it cannot be recycled or reused.
- All compacted areas should be rehabilitated according to a rehabilitation specialist.
- Monitoring for soil erosion should be undertaken on a routine biannual basis for one year following the completion of the Decommissioning Phase.

10 OPPORTUNITIES AND CONSTRAINTS

10.1 PV Project

10.1.1 Opportunities

- The ZVI is contained to the local area with Foreground/ Mid Ground distancing due to slightly undulating terrain that results in a moderate zone of visual influence (with mitigation)
- No active tourist activities were located within the project ZVI.
- No residential receptors within the project ZVI.
- National energy objectives for renewable energy and job creation will be met.

10.1.2 Constraints

- High Exposure views from the R399 view corridor with potential for High visual impact without mitigation.
- The area is not within the REDZ area.

10.2 No-Go Option

10.2.1 Opportunities

- The current rural agricultural land uses of the property do add to the rural agricultural landscape character.
- Agricultural productivity from sheep farming creates some employment opportunities.

10.2.2 Constraints

- National energy objectives for renewable energy and job creation will not be met.

11 CONCLUSION

It is the recommendation that the proposed development should commence WITH MITIGATION for the following key reasons:

- Wide buffer areas and fragmented design elements of the different PV areas does reduce the massing effects to some degree.
- Mitigation for much of the southern PV area is berm related and as such will result in short-term visual screening.
- PV areas to the north have partial screening from alien trees as well as windrow trees. Further establishment of the windrow cultural landscape theme in these areas will result in the northern portions of the PV being screened in the medium-term.
- No intervisibility between other RE projects.
- Existing authorisation for a PV development (unbuilt) that would generate higher levels of visual intrusion if it was built.
- Medium Post Mitigation Impacts are likely but where residual effects could remain that could moderately degrade local landscape resources.

To ensure that visual resources along the R399 are not degraded, post development monitoring to evaluate the effectiveness of the screening mitigations is a requirement 6 months after Operation Phase commences.

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13 ANNEXURE A: SITE VISIT PHOTOGRAPHS AND COMMENTS

The following photographs were taken during the field survey. The text below the photograph describes the landscape and visual issues of the locality, if applicable. The map below depicts the survey points and the following table summaries the comments made during the regarding landscape and visual risks.

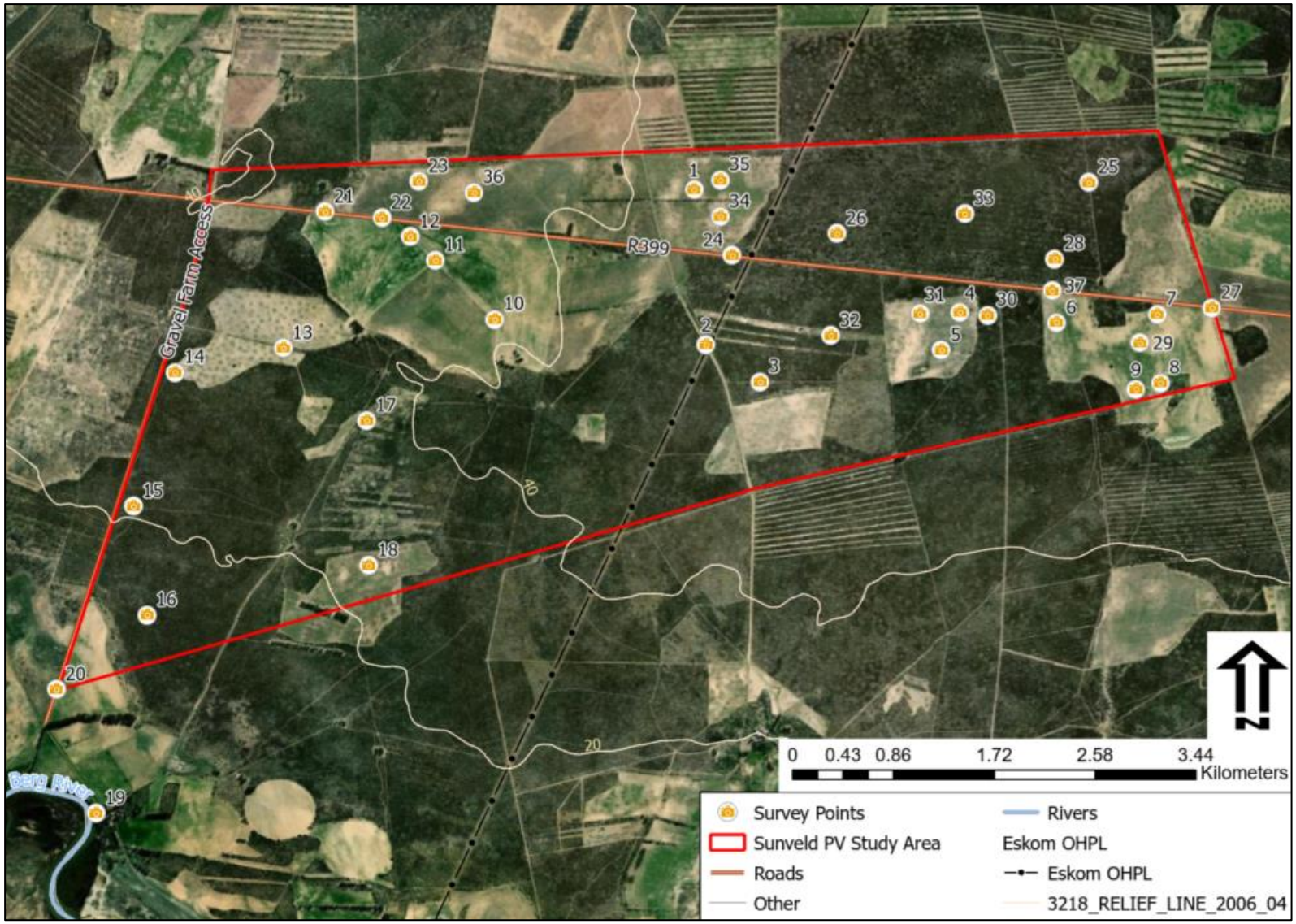


Figure 22: Site survey point map.

Table 23. Site Survey Issue and Risk Table.

ID	Remarks	Time	Geometry	Risk	Motivation
1	site pv	06/10/2023 13:50:43.596 GMT+02:00	POINT Z (18,28331295 -32,79417566 0,000)	Medium	Low prominence and some veg screening. Mitigation requires pv north of existing tree line for Medium to Low VI. Planting of similar windrow to the west of the PV area along the gravel road access. 50m buffer from road.
2	Powerline 220kV	06/10/2023 13:59:38.999 GMT+02:00	POINT Z (18,28424451 -32,80604409 78,287)	Low	Existing Eskom lattice tower OHPL with local landscape degradation as not visually dominating.
3	Site pv	06/10/2023 14:05:06.000 GMT+02:00	POINT Z (18,28838579 -32,80888877 79,827)	Medium	Low prominence and Medium exposure with natural vegetation partially degraded.
4	Site pv	06/10/2023 14:17:52.822 GMT+02:00	POINT Z (18,30368869 -32,80355763 0,000)	High	NoGo for development. Retain pv south of survey point 5 on low lying lands so dune topo screening to R399 road receptor takes place. 3m height restriction for Medium VI.
5	Site pv	06/10/2023 14:20:41.011 GMT+02:00	POINT Z (18,30226444 -32,80646868 0,000)	Medium	Low lying lands with Medium VE. Mit for 3m height for Medium to Low VI.
6	Site pv	06/10/2023 14:27:08.999 GMT+02:00	POINT Z (18,31106423 -32,80433835 82,321)	High	Very High exposure to tourist view corridor with agrarian landscape a key component of the sense of place. NoGo.

7	Site pv	06/10/2023 14:33:15.999 GMT+02:00	POINT Z (18,31877687 -32,80371800 77,220)	High	Very High exposure to tourist view corridor with agrarian landscape a key component of the sense of place. NoGo.
8	Pan	06/10/2023 14:37:59.999 GMT+02:00	POINT Z (18,31903887 -32,80897134 75,519)	High	Retain small pan as NoGo for landscape integrity.
9	Site pv	06/10/2023 14:40:26.187 GMT+02:00	POINT Z (18,31717148 -32,80945319 0,000)	Low	Although outside of R399 500m NoGo buffer, retain the complete field area as NoGo as landscape patch to retain agrarian landscape sense of place.
10	Site pv	06/10/2023 15:08:38.999 GMT+02:00	POINT Z (18,26805744 -32,80410668 71,369)	Medium	Low prominence and Medium exposure. Height mitigation required to retain R399 sense of place as well as low screening mound 3m in height with natural veg rehab.
11	Site pv	06/10/2023 15:14:12.999 GMT+02:00	POINT Z (18,26350496 -32,79960302 69,659)	High	Very High exposure to tourist view corridor with agrarian landscape a key component of the sense of place. NoGo.
12	Site pv	06/10/2023 15:17:50.999 GMT+02:00	POINT Z (18,26158288 -32,79778526 68,613)	High	Very High exposure to tourist view corridor with agrarian landscape a key component of the sense of place. NoGo.
13	Site pv	06/10/2023 15:23:38.000 GMT+02:00	POINT Z (18,25186870 -32,80631117 70,111)	Medium	Low prominence and exposure. with existing veg screening. Mitigate with 3m height restriction for Medium to Low VI.

14	Site pv	06/10/2023 15:31:32.000 GMT+02:00	POINT Z (18,24356664 -32,80817164 65,737)	High	Within 200m Berg River access road and natural vegetation. NoGo.
15	Site pv	06/10/2023 15:42:13.000 GMT+02:00	POINT Z (18,24038308 -32,81842478 53,041)	High	Within 200m Berg River access road and natural vegetation. NoGo.
16	Site pv	06/10/2023 15:51:25.034 GMT+02:00	POINT Z (18,24143596 -32,82674480 0,000)	Medium	Medium exposure and low prominence but with likely High Sens vegetation. Mitigation with 3m height restriction to ensure low impacts to Berg River visual resources.
17	Site pv	06/10/2023 16:18:37.999 GMT+02:00	POINT Z (18,25825230 -32,81186191 65,430)	Low	Low prominence and exposure and partially degraded veg. Suitable with 4m height restriction.
18	Site pv	06/10/2023 16:25:36.820 GMT+02:00	POINT Z (18,25839724 -32,82295451 0,000)	Low	Low prominence and exposure and partially degraded veg. Suitable with 4m height restriction.
19	Berg River camp site	06/10/2023 16:36:27.000 GMT+02:00	POINT Z (18,23750953 -32,84193538 38,687)	Medium	Medium risk to visual resources if PV well back from resource with height restriction to ensure Low VI to resource.
20	KOP gravel road	06/10/2023 16:43:34.000 GMT+02:00	POINT Z (18,23446335 -32,83244173 33,262)	Medium	Access road to Berg River. 200m setback to retain local landscape resource.

21	KOP R399	06/10/2023 16:53:59.999 GMT+02:00	POINT Z (18,25507272 -32,79588639 70,805)	High	Tourist view corridor access to Velddrif with very high visual exposure to pv on both sides of the road. Mitigation to reduce VI to M removal of northern PV area to allow mountain views to NE, and 500m buffer setback to south PV. Retain agrarian sense of place.
22	KOP R399 NB 2	06/10/2023 17:01:33.999 GMT+02:00	POINT Z (18,25940756 -32,79635666 68,736)	High	As for R399 NB1 but retain views unchanged within 500m buffer
23	Site pv	06/10/2023 17:04:43.934 GMT+02:00	POINT Z (18,26225460 -32,79354292 0,000)	High	Very high visual exposure with agrarian land uses a key component of the R399 sense of place. NoGo for development.
24	KOP R399 EB3	06/10/2023 17:10:58.999 GMT+02:00	POINT Z (18,28625513 -32,79922597 79,191)	Medium	Port Jackson vegetation adjacent to road provides some visual screening. Retain along the northern portion of the road.
25	Site pv	06/10/2023 17:24:38.000 GMT+02:00	POINT Z (18,31355788 -32,79364440 83,843)	Medium	Alien vegetation but with some elevation prominence. Mitigation with height for Medium VI. 4m max height.
26	Site pv	06/10/2023 17:38:18.525 GMT+02:00	POINT Z (18,29427246 -32,79754838 0,000)	Low	Low prominence and well screened by alien veg. Retain 200m buffer 4m height PV.
27	KOP R399 WB1	06/11/2023 10:03:45.999 GMT+02:00	POINT Z (18,32297824 -	High	High visual exposure to view corridor with agrarian landscape adjacent route adding value. Due to massing

			32,80323318 78,626)		effect degrading route, mitigated with 500m setback unless veg screened (then 200m).
28	Site pv	06/11/2023 10:11:41.728 GMT+02:00	POINT Z (18,31096116 -32,79948312 0,000)	High	Low prominence and well screened by alien veg. Retain 200m buffer 4m height PV.
29	Site pv	06/11/2023 10:13:47.331 GMT+02:00	POINT Z (18,31746753 -32,80592903 0,000)	High	Massing effects and landscape degradation as seen from R399 view corridor. NoGo.
30	Site pv	06/11/2023 10:14:15.663 GMT+02:00	POINT Z (18,30579121 -32,80378843 0,000)	High	Indigenous vegetation in close proximity to the R399 view corridor. Retain as NoGo area.
31	Site PV	06/11/2023 10:14:57.934 GMT+02:00	POINT Z (18,30061287 -32,80367712 0,000)	Medium	Transformed lands but with limited screening. Retain as NoGo as within the 500m R399 buffer.
32	Site PV	06/11/2023 10:15:05.082 GMT+02:00	POINT Z (18,29380073 -32,80534654 0,000)	Medium	Partially transformed and Medium VE to R399. Mitigation with 3m PV height and 2.5m sand berm rehabilitated to natural veg (angle reposed 1 in10m).
33	Site PV	06/11/2023 10:15:52.317 GMT+02:00	POINT Z (18,30404174 -32,79603437 0,000)	Medium	Suitable for PV development as alien invaded and has vegetation screening. Retain alien road buffer 200m with long-term rehab to natural bush vegetation that includes small trees and shrubs such that visual screening can take place.

34	Site PV	06/11/2023 10:18:38.098 GMT+02:00	POINT Z (18,28534104 -32,79624124 0,000)	High	Agrarian sense of place is degraded from massing effects. Retain as NoGo.
35	Site PV	06/11/2023 10:19:17.381 GMT+02:00	POINT Z (18,28533098 -32,79344202 0,000)	Medium	Outside of 500m R399 buffer and partially screened by windrow of trees. Suitable for development with 4m height restriction for PV.
36	KOP R399	06/11/2023 10:19:52.760 GMT+02:00	POINT Z (18,26647237 -32,79440395 0,000)	High	Agrarian sense of place is degraded from massing effects. Retain as NoGo.
37	KOP R399 EB2	06/11/2023 10:20:59.000 GMT+02:00	POINT Z (18,31073653 -32,80193746 80,453)	High	Retain existing sense of place along the R399 tourist view corridor with 500m NoGo buffer on either side of the road as well as NoGo for key focus areas along the road.

ID	1
PHOTO	Site PV
RISK	Medium
DIRECTION	N
COMMENT	Low prominence and some veg screening. Mitigation requires PV north of existing tree line for Medium to Low VI. Planting of similar windrow to the west of the PV area along the gravel road access. 50m buffer from road.

ID	2
PHOTO	Site infrastructure powerline 220kV
RISK	Low
DIRECTION	N
COMMENT	Existing Eskom lattice tower OHPL with local landscape degradation as not visually dominating.

ID	3
PHOTO	Site PV
RISK	Medium
DIRECTION	N

COMMENT	Low prominence and Medium exposure with natural vegetation partially degraded.

ID	4
PHOTO	Site PV
RISK	Medium
DIRECTION	W
COMMENT	NoGo for development. Retain pv south of survey point 5 on low lying lands so dune topo screening to R399 road receptor takes place. 3m height restriction for Medium VI.

ID	5
PHOTO	Site PV
RISK	High
DIRECTION	SW
COMMENT	Low lying lands with Medium VE. Mit for 3m height for Medium to Low VI.

ID	6
PHOTO	Site PV
RISK	High
DIRECTION	NE
COMMENT	Very High exposure to tourist view corridor with agrarian landscape a key component of the sense of place. NoGo.

ID	7
PHOTO	Site PV
RISK	High
DIRECTION	E
COMMENT	Very High exposure to tourist view corridor with agrarian landscape a key component of the sense of place. NoGo.

ID	8
PHOTO	Site pan
RISK	High
DIRECTION	E
COMMENT	Retain small pan as NoGo for landscape integrity.

ID	9
PHOTO	Site PV
RISK	Low
DIRECTION	NW
COMMENT	Although outside of R399 500m NoGo buffer, retain the complete field area as NoGo as landscape patch to retain agrarian landscape sense of place.

ID	10
PHOTO	Site PV
RISK	Medium
DIRECTION	N
COMMENT	Low prominence and Medium exposure. Height mitigation required to retain R399 sense of place as well as low screening mound 3m in height with natural veg rehab.

ID	11
PHOTO	Site PV
RISK	High
DIRECTION	N
COMMENT	Very High exposure to tourist view corridor with agrarian landscape a key component of the sense of place. NoGo.

ID	12
PHOTO	Site PV
RISK	High
DIRECTION	NW
COMMENT	Very High exposure to tourist view corridor with agrarian landscape a key component of the sense of place. NoGo.

ID	13
PHOTO	Site PV
RISK	Low
DIRECTION	W
COMMENT	Low prominence and exposure. with existing veg screening. Mitigate with 3m height restriction for Medium to Low VI.

ID	14
PHOTO	Site PV
RISK	High
DIRECTION	SE
COMMENT	Within 200m Berg River access road and natural vegetation. NoGo.

ID	15
PHOTO	Site PV
RISK	High
DIRECTION	SE
COMMENT	Within 200m Berg River access road and natural vegetation. Some relative prominence. NoGo.

ID	16
PHOTO	Site PV
RISK	Medium
DIRECTION	N
COMMENT	Medium exposure and low prominence but with likely High Sens vegetation. Mitigation with 3m height restriction to ensure low impacts to Berg River visual resources.

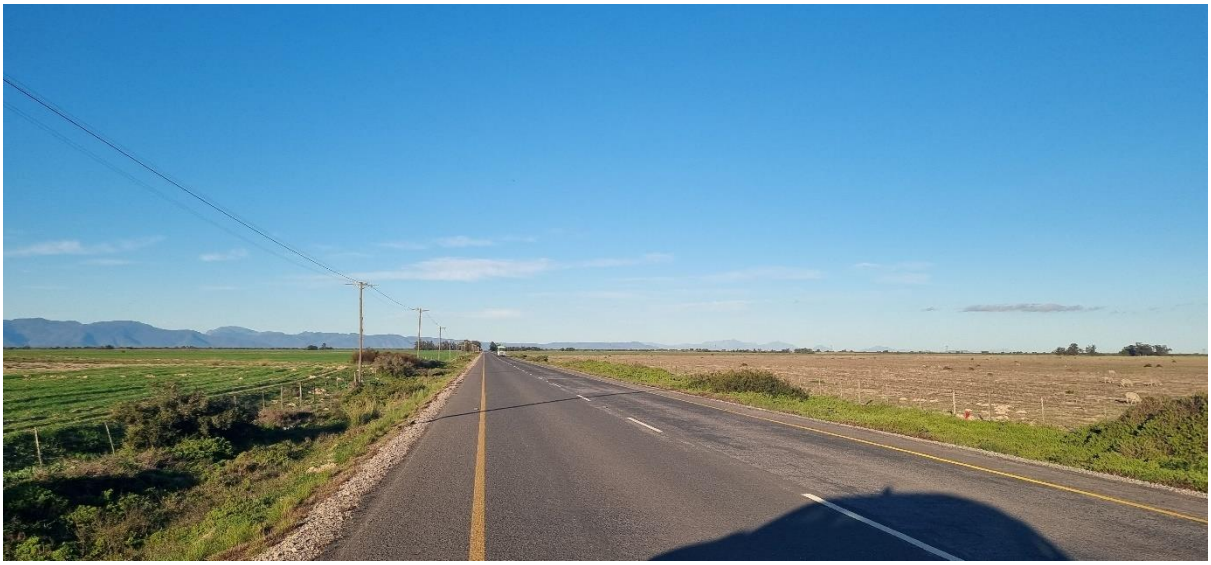
ID	17
PHOTO	Site PV
RISK	Low
DIRECTION	NE
COMMENT	Low prominence and exposure and partially degraded veg. Suitable with 4m height restriction.

ID	18
PHOTO	Site PV
RISK	Low
DIRECTION	E
COMMENT	Low prominence and exposure and partially degraded veg. Suitable with 4m height restriction.

ID	19
PHOTO	Sense of Place camp site (farmer?)
RISK	Low
DIRECTION	SW
COMMENT	Medium risk to visual resources if PV well back from resource with height restriction to ensure Low VI to resource.

ID	20
PHOTO	KOP gravel road Northbound
RISK	Medium
DIRECTION	N
COMMENT	Access road to Berg River. 200m setback to retain local landscape resource. Restrict height of PV to less than 3m in visible areas along the road.

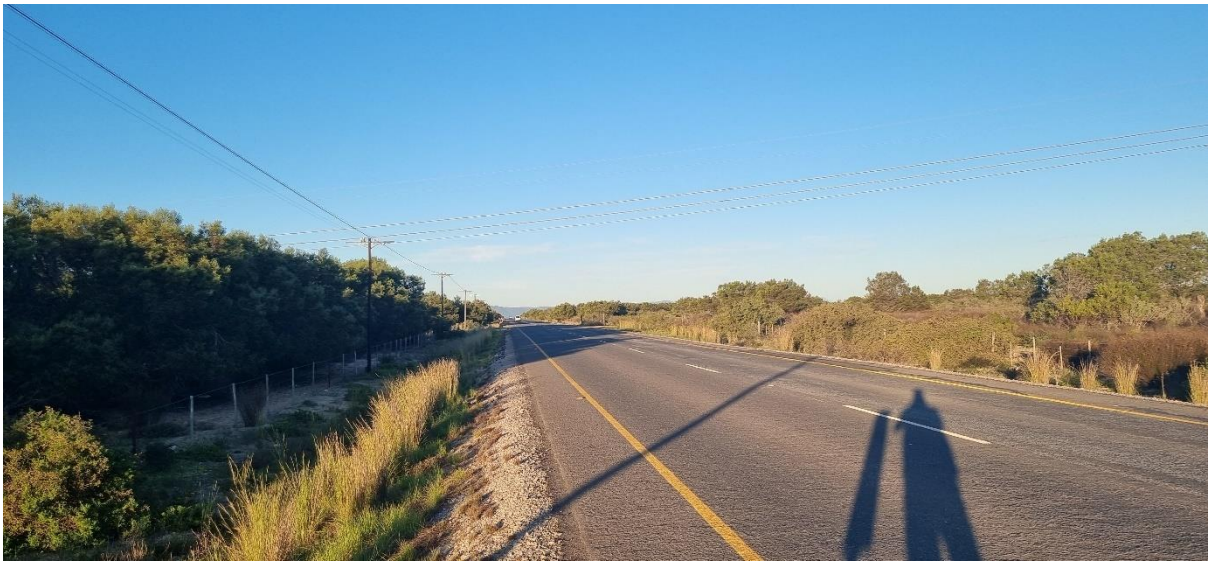
ID	21
PHOTO	KOP R399 Eastbound
RISK	High
DIRECTION	SE
COMMENT	Tourist view corridor access to Velddrif with very high visual exposure to pv on both sides of the road. Mitigation to reduce VI to M removal of northern PV area to allow mountain views to NE, and 500m buffer setback to south PV. Retain agrarian sense in Foreground area. Max height 3m where no high visual exposure takes place.



ID	22
PHOTO	KOP R399 Northbound 2
RISK	High
DIRECTION	NE
COMMENT	As for R399 NB1 but retain views unchanged within 500m buffer.

ID	23
PHOTO	Site PV
RISK	High
DIRECTION	N
COMMENT	Very high visual exposure with agrarian land uses a key component of the R399 sense of place. NoGo for development.

ID	24
PHOTO	KOP R399 Eastbound 3
RISK	Medium
DIRECTION	E
COMMENT	Port Jackson vegetation adjacent to road provides some visual screening. Retain 200m buffer along the northern portion of the road for alien vegetation screening.



ID	25
PHOTO	Site PV
RISK	High
DIRECTION	N
COMMENT	Alien vegetation but with some elevation prominence. Mitigation with height for Medium VI. 4m max height.

ID	26
PHOTO	Site PV
RISK	Low
DIRECTION	SE
COMMENT	Low prominence and well screened by alien veg. Retain 200m buffer 4m height PV.

ID	27
PHOTO	KOP R399 Westbound 1
RISK	High
DIRECTION	SW
COMMENT	High visual exposure to view corridor with agrarian landscape adjacent route adding value. Due to massing effect degrading route, mitigated with 500m setback unless veg screened (then 200m).

ID	28
PHOTO	Site PV
RISK	High
DIRECTION	NW
COMMENT	Low prominence and well screened by alien veg. Retain 200m buffer 4m height PV.

ID	29
PHOTO	NOGO massing effects
RISK	High
DIRECTION	N
COMMENT	Massing effects and landscape degradation as seen from R399 view corridor. NoGo.

ID	30
PHOTO	NOGO vis screening
RISK	High
DIRECTION	NE
COMMENT	Indigenous vegetation in close proximity to the R399 view corridor but with skyline intrusion from PV behind vegetation. Retain as NoGo area.

ID	31
PHOTO	Suitable with 200m setback and 3m height
RISK	High
DIRECTION	No photo
COMMENT	Reference point for setback.

ID	32
PHOTO	Suitable with 500m setback and 3m height
RISK	Medium
DIRECTION	No photo
COMMENT	Reference point for setback.

ID	33
PHOTO	Suitable with 200m setback where vegetation screening exists
RISK	Medium
DIRECTION	No photo
COMMENT	Reference point for setback.

ID	34
PHOTO	NOGO
RISK	High
DIRECTION	No photo.
COMMENT	Agrarian landscape degradation and massing effects

ID	35
PHOTO	Suitable north of tree line 3m height
RISK	High
DIRECTION	No photo
COMMENT	Reference point for setback.

ID	36
PHOTO	No-Go
RISK	High
DIRECTION	No photo.
COMMENT	Agricultural landscape degradation and massing effects

ID	37
PHOTO	KOP R399 Eastbound 2
RISK	High
DIRECTION	SW
COMMENT	Retain existing sense of place along the R399 tourist view corridor with 500m NoGo buffer on either side of the road as well as NoGo for key focus areas along the road.

14 ANNEXURE B: SPECIALIST INFORMATION

14.1 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 2023 – 1 JULY 2024

VICE-CHAIRPERSON

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

Watermark Image: Plate XXIII drawn by Mr J F Schofield, A.R.I.B.A.
Watermark Reference: Fouche, L. (1937) *Mapungubwe Ancient Bantu Civilization on the Limpopo* Cambridge University Press: London

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

14.2 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:** **Tel: +27 (0) 44 876 0020**
   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: Land use and land use change.

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:**
    - 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:

A list of ***some*** of the large-scale projects that VRMA has assessed has been attached below with the client list indicated per project (Refer to www.vrma.co.za for a full list of projects undertaken).

Table 24: VRM Africa Projects Assessments Table

DESCRIPTION	COUNT	DESCRIPTION	COUNT
Dam	2	UISP	8
Mari-culture	1	Structure	9
Port	1	OHPL	11
Railway	1	Industrial	12
Power Station	3	Wind Energy	14
Hydroelectric	4	Battery Storage	15
Resort	4	Mine	20
Golf/Residential	5	Residential	45
Road Infrastructure	5	Solar Energy	61
Substation	5	TOTAL	**226**

15 ANNEXURE C: METHODOLOGY DETAIL

15.1 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.

15.1.1 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.

15.1.2 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.

15.1.3 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.

15.1.4 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.

15.2 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.

15.2.1 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.

15.2.2 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).