ENVIRONMENTAL AUTHORISATION FOR THE PROPOSED UP TO 480MW SOLAR PHOTOVOLTAIC (PV) FACILITY BY ALLIED GREEN ENERGY (PTY) LTD ON PORTION 1 OF THE FARM ZWARTWITPENSBOKFONTEIN 434-KQ, KOEDOESKOP, WATERBERG DISTRICT

LANDSCAPE & VISUAL IMPACT ASSESSMENT

PREPARED FOR:

CONSERVA MANAGEMENT SERVICES
CONTACT: MARISSA BOTHA
TEL: 084 226 5584
EMAIL: CONSERVA-EMS@OUTLOOK.COM

ON BEHALF OF:

ALLIED GREEN ENERGY (PTY) LTD
KOEDOESKOP 0361
LIMPOPO PROVINCE

PREPARED BY:

OUTLINE LANDSCAPE ARCHITECTS CC
815 GOVERNMENT AVE
EASTWOOD, PRETORIA
0083

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EXECUTIVE SUMMARY

Conserva Environmental Management Services was appointed by Allied Green Energy, as the independent environmental consultant to undertake the Environmental Authorization (EA) for the proposed 480MW Solar Photovoltaic Farm on Portion 1 of the Zwartwitpensbokfontein 434KQ, Koedoeskop, Waterberg District Municipality, Limpopo Province.

Outline Landscape Architects was requested to compile a Visual Impact Assessment (VIA) for the project. This VIA is a specialist study that addresses the visual effects of the proposed solar farm project.

The proposed solar development is located on Portion 1 of the farm Zwartwitpensbokfontein 434-KQ and is located next to the D1234 Northam-Koedoeskop Road. The largest of the settlements is Koedoeskop and is about 15km away from the site. There are some smaller farming communities living close to the site that may be visually impacted by the development of the solar farm.

The property is approximately 375 hectares, and the assessment focus area is 276 hectares. The potential Solar PV footprint is approximately 230 hectares on the western portion of the property, which is predominantly a flat area.

SIGNIFICANCE OF VISUAL IMPACTS

VIEWER SENSITIVITY

Within the receiving environment, specific viewers (visual receptors) experience different views of the visual resource and value it differently. They will be affected because of alterations to their views due to the proposed project. The visual receptors included in this study are residents, tourists, and motorists (road and air).

VISUAL IMPACT ON RESIDENTS

The study area is sparsely populated, with a higher population in the small settlement of Koedoeskop.

Residents of the homesteads on surrounding Private Nature Reserves will be most affected. These property owners rely on uninterrupted views with the absence of visual intrusions. Homesteads on the farms on private nature reserves on Schildpaddop 432KQ, Zwartwitpensbokfontein 434KQ, Klipfontein 429KQ and De Hoop 430KQ will be visually affected.

The low density of farm residents may experience intrusion on their views due to the presence of the proposed new solar farm.

VISUAL IMPACT ON TOURISTS AND GAME FARM VISITORS

The study area has very little tourist activity with interspersed pockets of natural bushveld landscapes used for game farms, hunting, and lodges. The roads are not main thoroughfare roads used to reach prominent tourist destinations further to the north and west, where many Bushveld resorts exist.

There are Private Nature Reserves bordering the site. The Tortoiseshell Private Nature Reserve on Schildpaddop 432KQ, Koerooi Private Nature Reserve on Klipfontein 429KQ, a lodge/homestead on Zwartwitpensbokfontein 434KQ, and De Hoop 430KQ may be visually affected by the proposed solar structures (Figure 11). The number of visitors is expected to be low.

VISUAL IMPACT ON AIR AND ROAD TRAVEL

The major routes within the study area are the R511 and R516 connecting the towns, mines and farms. The secondary road network, the P20/2, and the D1234 in the study area carry a much lower volume of motorists. Many of the roads are gravel roads which are utilized by the local residents. Their duration of views will be temporary, and it is expected that the visual intrusion that they will experience will be low.

The glint and glare of the solar panels could be a potential visual distraction and a possible air travel hazard. However, the proposed solar farm is not located near any airport or airfield. The significance of the potential visual impact will be *low.*

CONCLUSION

The proposed activities for the solar farm have been evaluated against internationally accepted criteria to determine the impact they will have on the landscape character and the viewers that have been identified in the study area.

The construction and operation of the proposed solar farm may have a visual impact on users within close proximity of the site. After mitigation, the visual impact for most users is expected to be low.

An advantage of the solar farm is that it utilises a renewable energy source to generate electricity. It does not emit any harmful by-products or pollutants that may pose health risks to users or observers.

If mitigation is undertaken as recommended it can be concluded that the visual significance will remain low, and the impact can be reduced to acceptable levels.

The activities have been rated in the table below, including the visual impact before mitigation measures and after mitigation measures have been applied.

Evaluation of activities for the proposed solar farm

Visual Impact of Activities	Corrective Measures	Impact Rating Criteria					
		Nature	Extent	Duration	Magnitude	Probability	Significance
480MW Solar PV arrays consisting of 1000-Watt monofacial solar panels	No	Negative	2	4	6	3	36 medium
	Yes	Negative	2	4	4	3	30 medium
Associated Infrastructure	No	Negative	2	4	4	3	30 medium
	Yes	Negative	2	4	4	2	20 low
Short onsite 132kV power line connection to Eskom grid	No	Negative	2	4	4	3	30 medium
	Yes	Negative	2	4	4	2	20 low
Construction laydown area	No	Negative	2	2	4	3	24 low
	Yes	Negative	2	2	2	2	12 low

The following Visual Impact Assessment Criteria (as utilised in the table above) apply:

Status of Impact:
The visual impact is assessed as either having a:

- Negative effect (i.e. at a cost to the environment),
- Positive effect (i.e. a benefit to the environment), or
- Neutral effect on the environment.

Extent of the Impact:

(1) Site (site only),
(2) Local (site boundary and immediate surrounds),
(3) Regional,
(4) National, or
(5) International.

Duration of the Impact:
The length that the impact will last for is described as either:

(1) Immediate (<1 year)
(2) Short term (1-5 years),
(3) Medium term (5-15 years),
(4) Long term (ceases after the operational life span of the project),
(5) Permanent.

Magnitude of the Impact:
The intensity or severity of the impacts is indicated as either:

(0) none,
(2) Minor,
(4) Low,
(6) Moderate (environmental functions altered but continue),
(8) High (environmental functions temporarily cease), or
(10) Very high/unsure (environmental functions permanently cease).

Probability of Occurrence:
The likelihood of the impact actually occurring is indicated as either:

(0) None (the impact will not occur),
(1) Improbable (probability very low due to design or experience)
(2) Low probability (unlikely to occur),
(3) Medium probability (distinct probability that the impact will occur),
(4) High probability (most likely to occur), or
(5) Definite.

Significance of the Impact:
Based on the information contained in the points above, the potential impacts are assigned a significance rating (S). This rating is formulated by adding the sum of the numbers assigned to the extent (E), duration (D) and magnitude (M) and multiplying this sum by the probability (P) of the impact.
S= (E+D+M) P

The significance ratings are given below:

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

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LIST OF ABBREVIATIONS

EIA	Environmental Impact Assessment.
FHWA	Federal Highway Administration of the United States Department of Transportation. The publishers of the guide "*Visual Impact Assessment for High Projects*" 1981.
LCA	Landscape Character Assessment.
LT	Landscape Type
VAC	Visual Absorption Capacity
VIA	Visual Impact Assessment.
ZVI	Zone of Visual Influence

1. INTRODUCTION

Conserva Environmental Management Services was appointed by Allied Green Energy, as the independent environmental consultant to undertake the Environmental Authorization (EA) for the proposed 480MW Solar Photovoltaic Farm on Portion 1 of the Zwartwitpensbokfontein 434KQ, Koedoeskop, Waterberg District Municipality, Limpopo Province.

Outline Landscape Architects was requested to compile a Visual Impact Assessment (VIA) for the project. This VIA is a specialist study that addresses the visual effects of the proposed solar park. Kathrin Hammel, the principal Landscape Architect and Visual Specialist from Outline Landscape Architects undertook this Visual Impact Assessment. She is a registered Professional Landscape Architect at the South African Council of Landscape Architects, SACLAP no 20162. Kathrin has been involved as a Visual Impact Specialist since 2009

Outline Landscape Architects is an independent sub-consultant and neither the author, nor Outline Landscape Architects will benefit from the outcome of the project decision-making.

1.1. BACKGROUND AND BRIEF

This VIA will conform to the requirements of a Level Three assessment which requires the realisation of the following objectives (Adapted from Oberholzer (2005)):

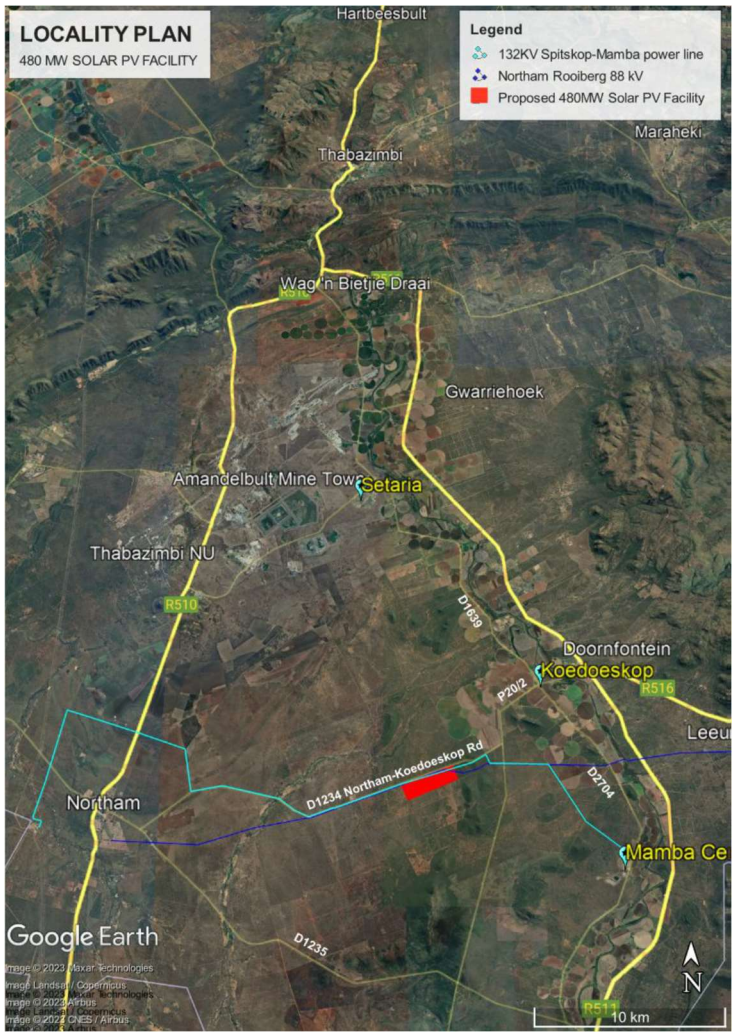
- Determination of the extent of the study area.
- Description of the proposed project and the receiving environment.
- Identification and description of the landscape character of the study area.
- Identification of the elements of particular visual value and -quality that could be affected by the proposed project.
- Identification of landscape- and visual receptors in the study area that will be affected by the proposed project and assess their sensitivity.
- Indication of potential landscape- and visual impacts.
- Assessment of the significance of the landscape- and visual impacts.
- Recommendations of mitigation measures to reduce and/or alleviate the potential adverse landscape- and visual impacts.

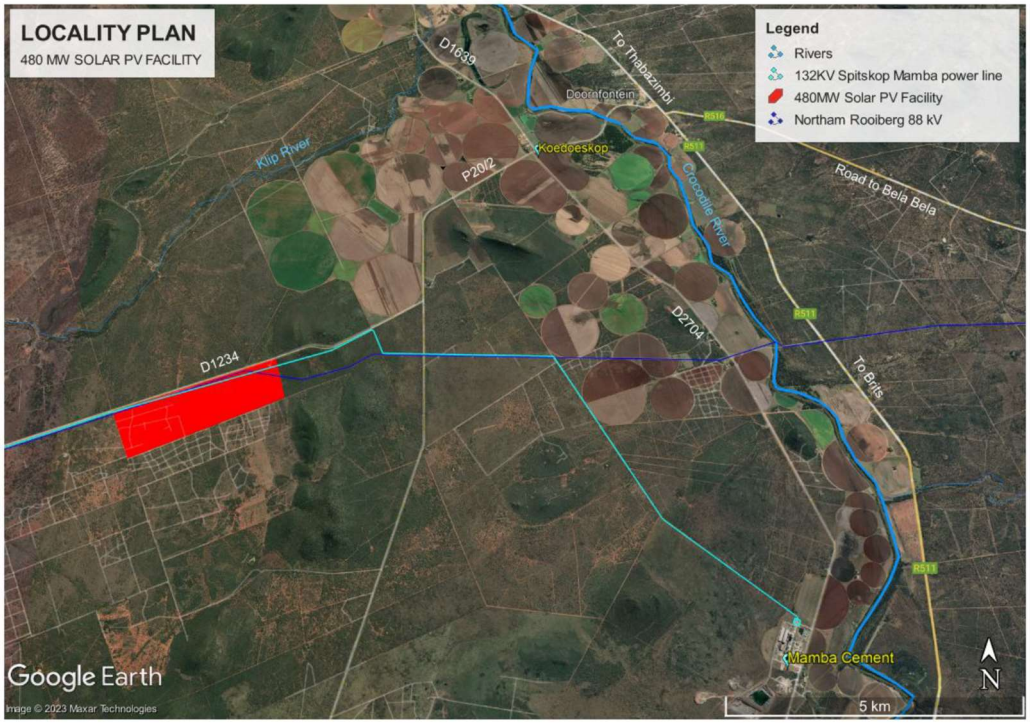
1.2. STUDY AREA

The study area is within the Waterberg District Municipality in the Limpopo Province (Figure 1). The proposed solar development is located on Portion 1 of the farm Zwartwitpensbokfontein 434-KQ and is located next to the D1234 Northam-Koedoeskop Road. The largest of the settlements is Koedoeskop and is about 15km away from the site. There are some smaller farming communities living close to the site that may be visually impacted by the development of the solar park.

The property is approximately 375 hectares, and the assessment focus area is 276 hectares. The potential Solar PV footprint is approximately 230 hectares on the western portion of the property, which is predominantly a flat area.

Figure 1: Locality Map





2. STUDY APPROACH

2.1. INFORMATION BASE

This assessment was based on information from the following sources:

- Topographical maps and GIS generated data were sourced from the Surveyor General, and EcoGIS (2023) respectively.
- Observations made and photographs taken during site visits.
- Professional judgement based on experience gained from similar projects.
- Literature research on similar projects.

2.2. ASSUMPTIONS AND LIMITATIONS

This assessment was undertaken during the conceptual stage of the project and is based on information available at the time.

- This level of assessment excludes surveys to establish viewer preference and thereby their sensitivity. Viewer sensitivity is determined by means of a commonly used rating system (Table 3).
- The site visit was conducted during August 2023 and the photographs used in this report illustrate the character of the landscape in the winter.

2.3. LEVEL OF CONFIDENCE

The level of confidence assigned to the findings of this assessment is based on:

- The level of information available and/or understanding of the study area (rated 2); and
- The information available and/or knowledge and experience of the project (rated 3).

This visual impact assessment is rated with a general confidence level of 6. This rating indicates that the author's general confidence in the accuracy of the findings is *high* (Table 2). Where the confidence level of specific findings is not regarded as high, it is noted in the last column of each impact assessment table.

2.4. METHOD

A broad overview of the approach and methodology used in this assessment is provided below:

- The extent of the study area is determined and indicated in Figure 1.
- The site is visited to establish a photographic record of the site, views and areas of particular visual quality and or -value.
- The project components and activities are described and assessed as potential elements of visual and landscape impacts.
- The receiving environment is described in terms of its prevailing landscape- and visual character.
- Landscape- and visual receptors that may be affected by the proposed project are identified and described.
- Mitigation measures are proposed to reduce adverse impacts; and
- The findings of the study are documented in this Visual Impact Assessment.

3. PROJECT DESCRIPTION

3.1. OVERVIEW OF DEVELOPMENT

The proposal is to develop an up to 480MW Solar Photovoltaic Facility on Portion 1 of the farm Zwartwitpensbokfontein 434 KQ (the property):

- The property is approximately 375 hectares.
- The assessment focus area is 276 hectares.
- The potential Solar PV footprint area is approximately 230-hectares on the western portion of the property (flat area of property).
- The solar facility will connect to the existing 132 KV Spitskop Mamba power line crossing property.
- Electricity supply generated by the facility will be wheeled via the Eskom grid to potential private users (i.e., Cement mine, farmers) and the aim is to transmit the surplus into National Grid (to be decided)
- Not part of REIPPP programme or in any REDZ zones or transmission corridors.

The solar facility components will include:

- 480MW Solar PV arrays consisting of 1000-Watt mono-facial solar panels.
- Mounting structures and underground cabling (AC/DC).
- Inverters and transformers.
- 132kV Onsite substation.
- Short onsite 132kV power line connection to Eskom grid.
- Operations building and Guardhouse.
- Main entrance from the D1234 Northam - Koedoeskop Road including internal access roads.
- Security residence (existing building to be upgraded).
- Perimeter fence and stormwater infrastructure
- Laydown area.

The facility will exclude a Battery Energy Storage System (BESS).

The current solar panel sizes available locally are 500- 600 Watt/panel but technology is improving rapidly, therefore Allied Green Energy (AGE) will be able to install 1000-Watt panels.

Table 1: Description of Activities assessed for Visual Impact

ACTIVITY	DESCRIPTION
480MW Solar PV arrays consisting of 1000-Watt monofacial solar panels	• Consisting of 1000-Watt monofacial solar panels • Mounting structures and underground cabling (AC/DC).
Associated Infrastructure	• Inverters and transformers. • Operations building (control room) at guardhouse. • Short access road from the D1234 Northam/Koedoeskop gravel road. • Perimeter fence around the facility and stormwater infrastructure. • Security house (existing building outside the fenced area to be upgraded).
Short onsite 132kV power line connection to Eskom grid	• Existing power line already on site • 132kV Onsite substation.
Construction laydown area	• Initially, machines and construction materials will be housed in the cleared area where panels will be constructed. • Subsequently, an area of 1 hectare will be identified at the security house for these purposes.

3.2. PROJECT COMPONENTS AND ACTIVITIES

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

3.2.1. CONSTRUCTION CAMPS AND LAY-DOWN YARDS

Temporary construction camps will be present for the duration of the construction period. The appointed contractor will set up a construction camp where practical for each activity. The material lay-down yards are expected to be located adjacent to the construction camps and will serve as storage areas for the construction material and equipment.

3.2.2. ACCESS ROADS

An access road will be developed during construction but will remain for the lifetime of the project. Existing roads on the site can be used as far as possible, and the visual impact can be kept to a minimum.

3.3. VISUAL CHARACTERISTICS OF PROJECT COMPONENTS

The proposed development includes a solar field of solar arrays. The solar PV footprint area is approximately 230 hectares.

Photovoltaic (PV) panels are designed to generate electricity by absorbing the rays of the sun and are constructed of dark-coloured materials and are covered by anti-reflective coatings. The orientation and tilt of the PV panels can be designed to mitigate the visual impact of the solar farm.

4. DESCRIPTION OF THE AFFECTED ENVIRONMENT

Landscape and visual impacts may result from changes to the landscape. A distinction should be made between impacts on the visual resource (landscape) and on the viewers. The former are impacts on the physical landscape that may result in changes to landscape character while the latter are impacts on the viewers themselves and the views they experience.

4.1. VISUAL RESOURCE

Visual resource is an encompassing term relating to the visible landscape and its recognisable elements, which through their co-existence, result in a particular landscape character.

4.1.1. LANDSCAPE CHARACTER

The study area consists primarily of agricultural land, undisturbed bushveld landscape and small human settlements. The natural landscape is quite intact. There is some vacant undeveloped land that was previously cultivated, as well as land used for subsistence farming. Mining is one of the key land-uses and contributes significantly to the visual degradation of the study area.

The landscape character changes through the study area and there is change in elevation and topographical features. Landscape types are distinguished by differences in topographical features, vegetation communities and patterns, land use and human settlement patterns (Swanwick; 2002).

The broad scale vegetation type that has been identified in the study area is the Dwaalboom Thornveld (Figure 2).

4.1.2. VISUAL CHARACTER

Visual character is based on human perception and the observer's response to the relationships between and composition of the landscape, the land uses and identifiable elements in the landscape. The description of the visual character includes an assessment of the scenic attractiveness regarding those landscape attributes that have aesthetic value and contribute significantly to the visual quality of the views, vistas and/or viewpoints of the study area.

The overall landscape varies between agricultural landscape, which is undulating to flat, to pristine bushveld landscape and few degraded, polluted landscapes around homesteads and towns. Large mines in the larger study area present a negative effect on the visual character of the landscape. The proposed study area has historically been used for agriculture.

4.1.2.1 Visual Value

Visual value relates to those attributes of the landscape or elements in the landscape to which people attach values that though not visually perceivable, still contribute to the value of the visual resource. These visual values are derived from ecological, historical, social and/or cultural importance and are described in terms of their uniqueness, scarcity, and naturalness and/or conservation status. The importance of visual value of a landscape or element in the landscape is measured against its value on an international, national and local level.

Large areas around the site are pristine bushveld landscape, but the prime land-use is agriculture. These areas remain under pressure and are vulnerable due to human settlement expansion and mining activities.

4.1.2.2 Visual Quality

Visual quality is a qualitative evaluation of the composition of landscape components and their excellence in scenic attractiveness. Many factors contribute to the visual quality of the landscape and are grouped under the following main categories (Table 2) that are internationally accepted indicators of visual quality (FHWA, 1981):

Table 2: Criteria of Visual Quality (FHWA, 1981)

INDICATOR	CRITERIA
Vividness	The memorability of the visual impression received from contrasting landscape elements as they combine to form a striking and distinctive visual pattern.
Intactness	The integrity of visual order in the natural and man-built landscape, and the extent to which the landscape is free from visual encroachment.
Unity	The degree to which the visual resources of the landscape join together to form a coherent, harmonious visual pattern. Unity refers to the compositional harmony of inter-compatibility between landscape elements.

The landscape is allocated a rating from an evaluation scale of 1 to 7 and divided by 3 to get an average. The evaluation scale is as follows: Very Low =1; Low =2; Moderately Low =3; Moderate =4; Moderately High =5; High =6; Very High =7;

The regional landscape is assessed against each indicator separately. All three indicators should be *high* to obtain a *high* visual quality. The evaluation is summarised in Table 3.

Table 3: Visual Quality of the regional landscape

VIVIDNESS	INTACTNESS	UNITY	VISUAL QUALITY
5	4	4	Moderately-High

The visual quality of the landscape is Moderately-High and can be attributed to the pristine bushveld landscape and the remoteness of the site, away from large towns and developments.

4.1.2.3 Visual Absorption Capacity

Visual Absorption Capacity (VAC) signifies the ability of the landscape to accept additional human intervention without serious loss of character and visual quality or value. VAC is founded on the characteristics of the physical environment such as:

- Degree of visual screening:

A degree of visual screening is provided by landforms, vegetation cover and/or structures such as buildings. For example, a high degree of visual screening is present in an area that is mountainous and is covered with a forest compared to an undulating and mundane landscape covered in grass.

- Terrain variability:
  Terrain variability reflects the magnitude of topographic elevation and diversity in slope variation. A highly variable terrain will be recognised as one with great elevation differences and a diversity of slope variation creating talus slopes, cliffs and valleys. An undulating landscape with a monotonous and repetitive landform will be an example of a low terrain variability.
- Land cover:
  Land cover refers to the perceivable surface of the landscape and the diversity of patterns, colours and textures that are presented by the particular land cover (i.e., urbanised, cultivated, forested, etc.)

A basic rating system is used to evaluate the three VAC parameters. The values are relative and relate to the type of project that is proposed and how it may be absorbed in the landscape (Table 4). A three-value range is used; three (3) being the highest potential to absorb an element in the landscape and one (1) being the lowest potential. The values are counted together and categorised in a *high*, *medium* or *low* VAC rating.

Table 4: Regional Visual Absorption Capacity evaluation

ACTIVITY	VISUAL SCREENING	TERRAIN VARIABILITY	LAND COVER	VAC
480MW Solar PV arrays consisting of 1000-Watt monofacial solar panels	2	2	2	Moderate
Associated Infrastructure	2	3	2	Moderately high
Short onsite 132kV power line connection to Eskom grid	2	2	2	Moderate
Construction laydown area	2	3	2	Moderately high

The VAC of the study area is considered moderately high for the development of the proposed activities and a moderate overall screening capacity is expected for this project.

The moderate VAC relates to the slightly undulating topography (Figure 4) and agricultural landscape, and bushveld thornveld vegetation.

The new solar facility and associated structures will be seen as an additional development and will not blend in with the existing land-use and will be only partially absorbed into the landscape and topography. The short connection (tie-in) powerline to the 132kV Spitskop-Mamba power line will form part of the existing powerlines crossing the site.

Figure 2: Vegetation Map

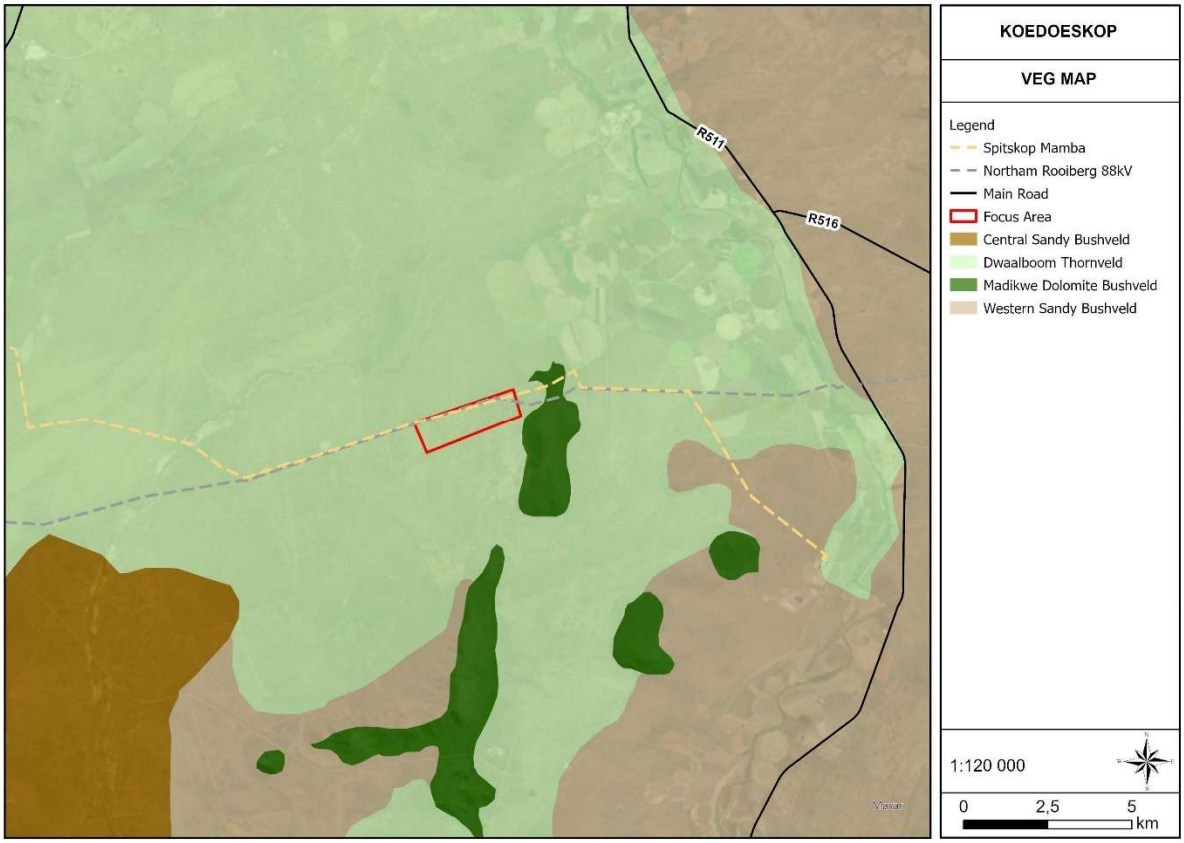


Figure 3: Site Sensitivity Map (by Conserva EMS)

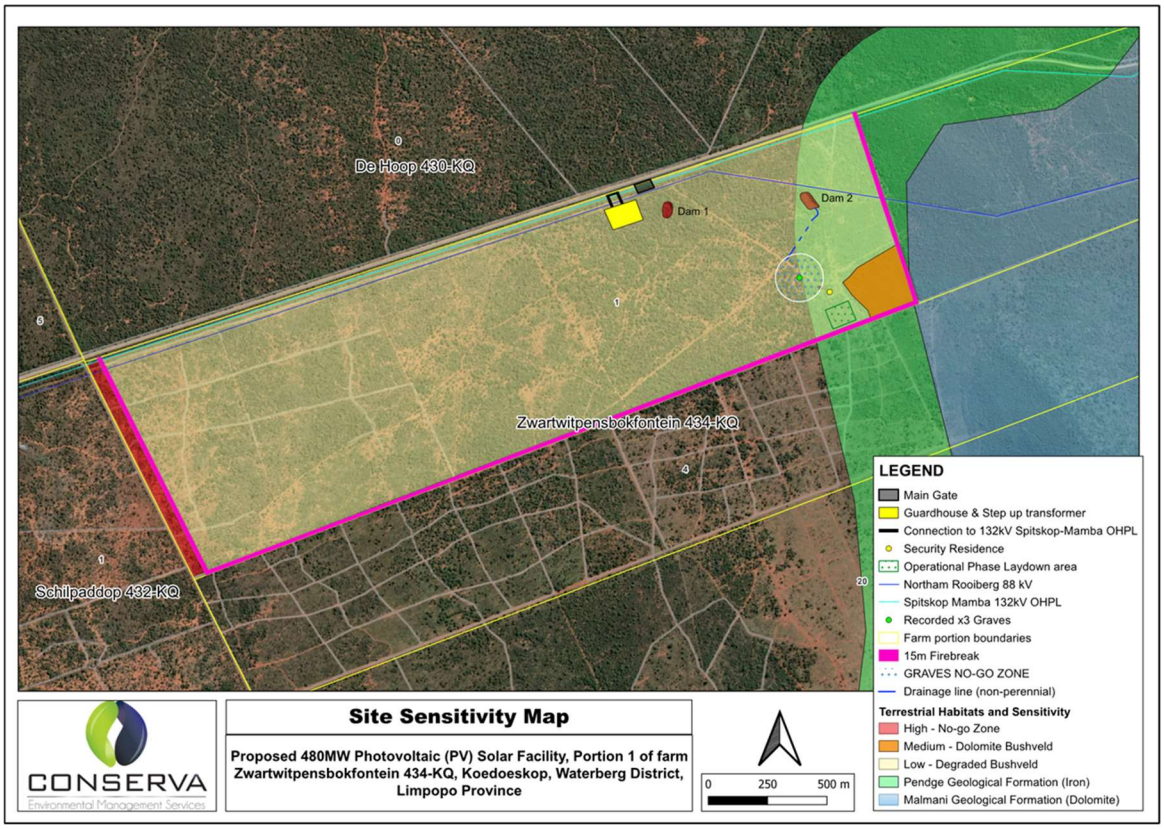


Figure 4: Land Cover Map

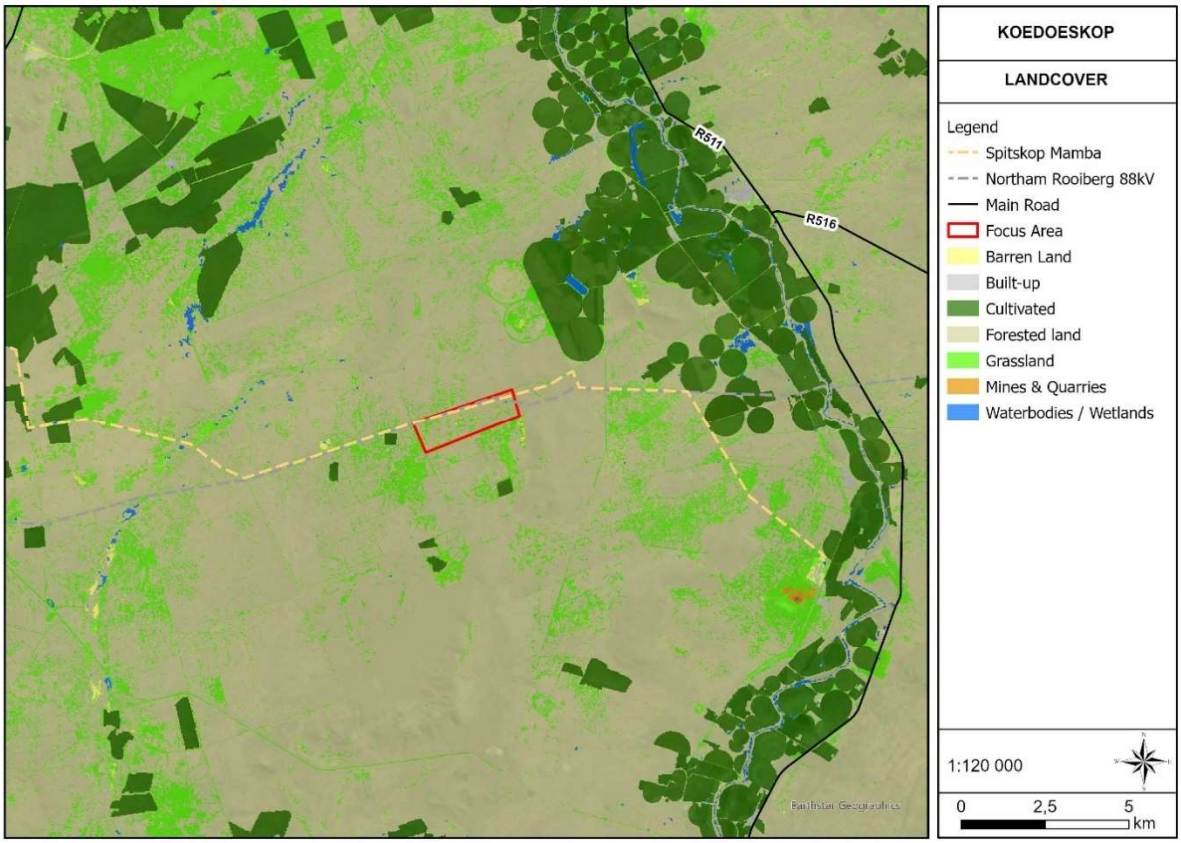


Figure 5: Landscape Elevation

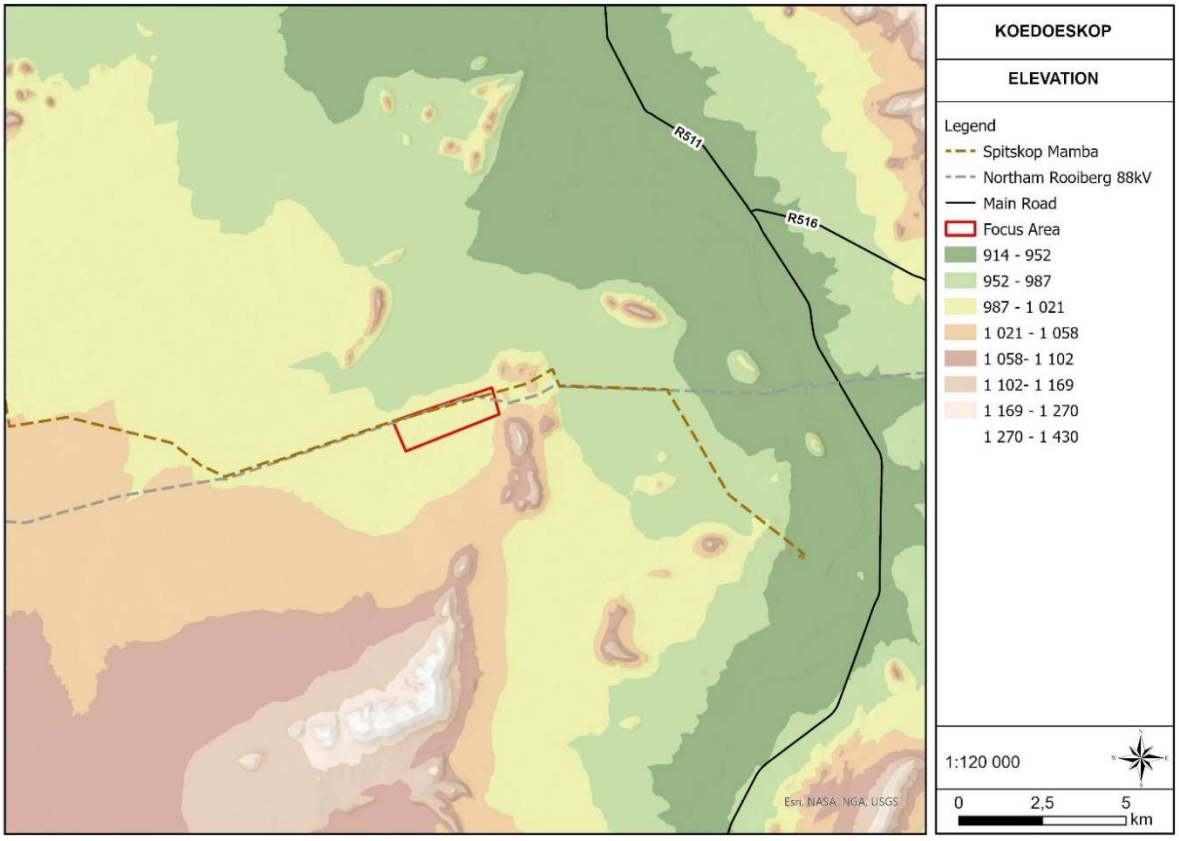


Figure 6: Landscape Character of Study Area

Agricultural landscapes to the north-east of the site

Bushveld Landscape

Figure 7: View towards the flat area proposed for the solar farm

Figure 8: Existing power lines on site

Figure 9: View towards site from the D1234

Figure 10: View from D1234 towards Northam

5. IMPACT ASSESSMENT

The significance of impacts is a comparative function relating to the severity of the identified impacts on the respective receptors. The significance of an impact is considered *high* should a *highly* sensitive receptor be exposed to a *highly* severe impact as indicated on Table 5 below.

Table 5: Significance of impacts

RECEPTOR SENSITIVITY	IMPACT SEVERITY		
	LOW	MEDIUM	HIGH
LOW	No significance	Low	Low
MEDIUM	Low	Medium	Medium
HIGH	Low	Medium	High

5.1. SIGNIFICANCE OF LANDSCAPE IMPACT

5.1.1. LANDSCAPE CHARACTER SENSITIVITY

The sensitivity of the landscape character is an indication of "…the degree to which a particular landscape can accommodate change from a particular development, without detrimental effects on its character" (GLVIA, 2002). A landscape with a *high* sensitivity would be one that is greatly valued for its aesthetic attractiveness and/or have ecological, cultural or social importance through which it contributes to the inherent character of the visual resource.

The majority of the study area is considered to have moderately high landscape character sensitivity due to the mostly undeveloped landscape, intact agricultural development and pockets of pristine bushveld landscape. The site falls within the summer rainfall zone, and during the winter months plants are dormant.

Previous human activities and interventions have impacted on the original landscape character. In this case, agricultural activities, existing infrastructure, including power lines, roads, etc., can be classified as landscape disturbances and elements that cause a reduction in the condition of the affected landscape type and negatively affect the quality of the visual resource.

The assessment of the landscape is substantiated through professional judgement and informed reasoning which is based on the landscape character assessment in Section 4 above. A landscape sensitivity rating was adapted from GOSW (2006) (Table 6) and applied in the classification of the study area into different sensitivity zones.

Table 6: Landscape character sensitivity rating (Adapted from GOSW, 2006)

	DESCRIPTION
Low sensitivity	These landscapes are likely to: ° Have distinct and well-defined landforms. ° Have a strong sense of enclosure. ° Provide a high degree of screening. ° Have been affected by extensive development or man-made features. ° Have reduced tranquillity. ° Are likely to have little inter-visibility with adjacent landscapes. ° Exhibit no or a low density of sensitive landscape features that bare visual value.
Moderate sensitivity	These landscapes are likely to: ° Have a moderately elevated topography with reasonably distinct landforms that provides some sense of enclosure. ° Have been affected by several man-made features. ° Have limited inter-visibility with adjacent landscapes. ° Exhibit a moderate density of sensitive landscape features that bare visual value.
High sensitivity	These landscapes are likely to: ° Consist mainly of undulating plains and poorly defined landforms. ° Be open or exposed with a remote character and an absence of man-made features. ° Are often highly visible from adjacent landscapes. ° Exhibit a high density of sensitive landscape features that bare visual value.

5.1.2. SEVERITY OF POTENTIAL LANDSCAPE IMPACTS

Landscape impacts are alterations to the fabric, character, visual quality and/or visual value which will either positively or negatively affect the landscape character. During the construction and operational phases, the project components are expected to impact on the landscape character of the landscape types it traverses. The magnitude/severity of this intrusion is measured against the scale of the project, the permanence of the intrusion and the loss in visual quality, -value and/or VAC.

Table 7: Landscape impact – Altering the landscape character.

LANDSCAPE IMPACT								
Activity	**Nature of Impact**	**Extent of Impact**	**Duration of Impact**	**Severity of Impact**	**Probability of Impact**	**Significance without Mitigation**	**Significance with Mitigation**	**Level of Confidence**
Construction phase								
480MW Solar PV arrays consisting of 1000-Watt monofacial solar panels	Negative Impacting on the visual quality of the landscape due to the presence of foreign elements and a loss of vegetation cover.	Localised impacts over an extensive area	Permanent if not mitigated	High	Definite	High	Moderate	High
Associated Infrastructure				Moderate	Definite	Moderate	Low	High
Short onsite 132kV power line connection to Eskom grid				Moderate	Definite	Moderate	Low	High
Construction laydown area				Moderate	Definite	Moderate	Low	High
Operational phase								
Solar PV farm of approximately 230-hectares	Negative Impacting on the visual quality of the landscape.	Localised impact	Permanent if not mitigated	High	Definite	High	Moderate	High
Associated Infrastructure				Moderate	Definite	Moderate	Low	High
Short onsite 132kV power line connection to Eskom grid				High	Definite	High	Moderate	High
Construction laydown area				Moderate	Definite	Moderate	Low	High

Construction phase

The activities that are expected to cause landscape impacts are the establishment of construction camps, clearing for solar panels, panel mounting structures, and the construction of the access roads. These activities will create surface disturbances which will result in the removal of vegetation and the exposure of the underlying soil. The exposed soil and change in texture will contrast severely with the intact vegetation around the disturbance footprint. The extent of the disturbances will affect a large footprint area.

The construction camps and lay-down yards are anticipated to disturb a much larger area. The size and location of the construction camps will play a major role in the severity of the landscape impact. Initially machines and construction material will be housed in the cleared area where panels will be constructed. Then, an area of one hectare will be identified at the security house for storage purposes.

Considering the moderately high VAC throughout most of the study area, and the relatively high recovery rate of the endemic vegetation, the *severity of landscape impact* during the construction stage is expected to be *moderate* for the proposed development.

The *severity of the landscape impact* can be mitigated to a moderate to low severity for all the proposed items. Sensitive placement of the construction camps, limited surface disturbance and prompt rehabilitation are prerequisite conditions if the severity of impact is to be reduced.

There may be a noticeable increase in heavy vehicles utilising the roads to the development site that may cause a visual nuisance to road users and landowners in the area.

Operational phase

Once the Solar Farm has been established, the visual impact of the operational activities is moderate.

Solar glint and glare create the highest visual impact during the operational phase. Very few residents look on to the site. It is not anticipated that these residents will be affected by the glint and glare.

Surface disturbances that occur during construction may remain for an extended period during the operational phase. These are seen as residual effects carried forward from the construction phase and can be substantially mitigated if treated appropriately during the construction phase.

Closure phase

Upon closure, rehabilitation of affected areas will take place and visual aesthetics will be improved. Minimal negative residual impact is expected on visual aspects.

5.2. SIGNIFICANCE OF VISUAL IMPACTS

5.2.1. VIEWER SENSITIVITY

Within the receiving environment, specific viewers (visual receptors) experience different views of the visual resource and value it differently. They will be affected because of alterations to their views due to the proposed project. The visual receptors are grouped according to their similarities. The visual receptors included in this study are:

- Residents.
- Tourists and Game Farm Visitors.
- Air and Road Travel.

To determine visual receptor sensitivity a commonly used rating system is utilised. This is a generic classification of visual receptors and enables the visual impact specialist to establish a logical and consistent visual receptor sensitivity rating for viewers who are involved in different activities without engaging in extensive public surveys.

5.2.1.1 Residents

Residents of the affected environment are classified as visual receptors of *high* sensitivity owing to their sustained visual exposure to the proposed development as well as their attentive interest towards their living environment.

5.2.1.2 Tourists and Game Farm Visitors

These are regarded as visual receptors of exceptional *high* sensitivity. Their attention is focused on the landscape which they essentially utilise for enjoyment purposes and appreciation of the quality of the landscape.

5.2.1.3 Air and Road Travel

Motorists are generally classified as visual receptors of *low* sensitivity due to their momentary view and experience of the proposed development. As a motorist's speed increases, the sharpness of lateral vision declines, and the motorist tends to focus on the line of travel (USDOT, 1981). This adds weight to the assumption that under normal conditions, motorists will show *low* levels of sensitivity as their attention is focused on the road and their exposure to roadside objects is brief.

The potential visual impact of solar glint and glare could be a visual distraction and possible air travel hazard. Glint and glare occur when the sun reflects on surfaces with specular properties.

5.2.2. SEVERITY OF POTENTIAL VISUAL IMPACTS

Severity of visual impact refers to the magnitude of change to specific visual receptor's views and/or experience of the landscape. Severity of visual impact is influenced by the following factors:

- The **viewer's exposure** to the project:
  - Distance of observers from the proposed project.
  - The visibility of the proposed project (ZVI).
  - Number of affected viewers.
  - Duration of views to development experienced by affected viewers.
- Degree of **visual intrusion** created by the project.

Empirical research indicates that the visibility of the proposed solar farm and hence the severity of the visual impact, decreases as the distance between the observer and the solar farm increases. The landscape type, within which the solar farm exists, can mitigate the severity of visual impact through topographical or vegetative screening. Bishop *et al* (1988) noted that in some cases the solar farm may dominate the view for example, silhouetted against the skyline, or in some cases be absorbed in the landscape. A complex landscape setting with a diverse land cover and topographical variation has the ability to decrease the severity of visual impact more than a mundane landscape (Bishop *et al*, 1985).

The Zone of Visual Influence (ZVI) is determined through a Geographical Information System (GIS). The result reflects a shaded pattern which identifies the areas that are expected to experience views of the proposed solar park developments. The ZVI is limited to 5 km from the proposed solar farm.

A visibility analysis and viewer sensitivity has been completed for the proposed solar park. According to Bishop *et al* (1988), visual receptors within 1 km from the structures are most likely to experience the highest degree of visual intrusion, hence contributing to the severity of the visual impact. This is considered as the zone of highest visibility after which the degree of visual intrusion decreases rapidly at distances further away.

In order to assess the extent and degree of visibility in the visual envelope, a Geographical Information System (GIS) was utilized. A visibility analysis was performed which provides the following information on Figure 11 below:

- The areas within the visual envelope that may experience views of the proposed project; and
- The degree of visibility in terms of the percentage of the proposed project that will be visible from a specific location.

The GIS performs an analysis for a series of elevated observer points which represent the height of the proposed new structures and the proposed solar arrays in a digital elevation model (DEM). This results in a visibility map with the degree of visibility illustrated by a colour.

The visibility analysis considers worst-case scenarios, using line-of-sight, based on topography alone. The screening capability of vegetation is not captured in the base model of the DEM and is therefore not considered in these results.

5.2.2.1 Potential visual impacts on Residents

Table 8: Potential visual impacts on residents

VISUAL IMPACT ON RESIDENTS								
Activity	**Nature of Impact**	**Extent of Impact**	**Duration of Impact**	**Severity of Impact**	**Probability of Impact**	**Significance without Mitigation**	**Significance with Mitigation**	**Level of Confidence**
Construction phase								
480MW Solar PV arrays consisting of 1000-Watt monofacial solar panels	Negative – Construction camp and lay-down yard may cause unsightly views	Local	Lifetime of Solar Farm	Moderate	Probable	Low	Low	High
Associated Infrastructure				Moderate	Probable	Low	Low	High
Short onsite 132kV power line connection to Eskom grid				Moderate	Probable	Low	Low	High
Construction laydown area				Low	Improbable	Low	Low	High
Operational phase								
480MW Solar PV arrays consisting of 1000-Watt monofacial solar panels	Negative – The presence of the proposed solar farm and associated infrastructure that intrude on existing views and spoil the views of the landscape.	Local	Lifetime of Solar Farm	High	Definite	High	Moderate	High
Associated Infrastructure				Low	Probable	Low	Low	High
Short onsite 132kV power line connection to Eskom grid				Moderate	Probable	Moderate	Low	High
Construction laydown area				Low	Improbable	Low	Low	High

The study area is sparsely populated, with a higher population in the small settlement of Koedoeskop.

Residents of the homesteads on surrounding Private Nature Reserves will be most affected. These property owners rely on uninterrupted views with the absence of visual intrusions. Key observation points (KOP) have been marked on the Visibility Analysis (Figure 11). Homesteads at KOP1 and KOP2 are on the farm Schildpaddop 432KQ, which is a private nature reserve. KOP1 will be visually affected by the solar farm. The homestead at KOP3 on the farm Zwartwitpensbokfontein 434KQ is within the area of visibility. The homesteads on Klipfontein 429KQ (KOP4) and De Hoop 430KQ (KOP5) will be visually affected.

Construction phase

During the construction phase, unsightly views may be created by the presence of the construction camp and the lay-down yards. The duration of the potential visual impact will be temporary which will result in an anticipated *low* significance of visual impact. The visual exposure to the construction activity will be limited.

The cleared site, construction camp and material lay-down yards will appear unsightly and out of character. The visual intrusion caused during the construction stage will be moderate but will be temporary in nature.

Operational phase

The residents of the homesteads and farming communities near the solar farm may experience a degree of visual intrusion.

The Visual Absorption Capacity (VAC) of the landscape plays a role in the visibility of the proposed new solar farm. The landscape is gently undulating with some tall rocky outcrops. In summer when vegetation is higher, the VAC is higher than dry winter months when vegetation will be scarce.

Mitigation measures can be put in place to reduce the visual impact of the solar arrays, such as screening with vegetation. A 50m corridor between Schildpaddop 432KQ and the solar farm is proposed on the western periphery. Small endemic tree and shrub species, such as *Searsia* species, *Euclea* species, and *Ziziphus* species can be used for screening.

Closure phase

The duration of the impact will only be as long as the solar plant is operational up to 20-25 years. Upon closure, rehabilitation of all areas is anticipated, and the visual aesthetics will be improved. No negative residual impacts are expected on visual aspects.

5.2.2.2 Potential visual impacts on tourists and game farm visitors

Table 9: Potential visual impacts on tourists and game farm visitors

VISUAL IMPACT ON TOURISTS								
Activity	**Nature of Impact**	**Extent of Impact**	**Duration of Impact**	**Severity of Impact**	**Probability of Impact**	**Significance without Mitigation**	**Significance with Mitigation**	**Level of Confidence**
Construction phase								
480MW Solar PV arrays consisting of 1000-Watt monofacial solar panels	Negative – Construction camp and lay-down yard may cause unsightly views	Local	Lifetime of Solar Farm	Low	Low Probability	Low	Low	High
Associated Infrastructure				Low	Low Probability	Low	Low	High
Short onsite 132kV power line connection to Eskom grid				Low	Low Probability	Low	Low	High
Construction laydown area				Low	Low Probability	Low	Low	High
Operational phase								
480MW Solar PV arrays consisting of 1000-Watt monofacial solar panels	Negative – The presence of the proposed solar farm and associated infrastructure that intrude on existing views and spoil the views of the landscape.	Local	Lifetime of Solar Farm	High	Low Probability	High	Moderate	High
Associated Infrastructure				Low	Low Probability	Low	Low	High
Short onsite 132kV power line connection to Eskom grid				Moderate	Low Probability	Moderate	Low	High
Construction laydown area				Low	Low Probability	Low	Low	High

The study area has very little tourist activity with interspersed pockets of natural bushveld landscapes used for game farms, hunting and lodges. The surrounding roads are not a main thoroughfare road used to reach prominent tourist destinations further to the north and west, where many Bushveld resorts exist.

There are, however, Private Nature Reserves bordering the site. The Tortoiseshell Private Nature Reserve on Schildpaddop 432KQ, Koerooi Private Nature Reserve on Klipfontein 429KQ , a lodge/homestead on Zwartwitpensbokfontein 434KQ, and De Hoop 430KQ may be visually affected by the proposed solar structures (Figure 11). The number of visitors is expected to be low.

Construction phase

The temporary duration of the construction phase is not expected to cause major visual impacts. The location, number and size of the construction camps and lay-down yards will be crucial in regulating the impact. It is anticipated that the visual impact will occur localised and that a very small number of tourists will be adversely affected during construction. The exposure to possible unsightly views of the construction camps and the associated activity will however be minimal and localised.

Operational phase

Very few tourists will be affected by the proposed solar farm and the associated infrastructure, considering the low numbers of tourists and visitors to the private game farms that visit the study area or pass through the study area.

Closure phase

Upon closure, rehabilitation of all areas is anticipated, and the visual aesthetics will be improved. No negative residual impacts are expected on visual aspects.

5.2.2.3 Potential visual impacts on air and road travel

Table 10: Potential visual impacts on air and road travel

VISUAL IMPACT ON AIR AND ROAD TRAVEL								
Activity	**Nature of Impact**	**Extent of Impact**	**Duration of Impact**	**Severity of Impact**	**Probability of Impact**	**Significance without Mitigation**	**Significance with Mitigation**	**Level of Confidence**
Construction phase								
480MW Solar PV arrays consisting of 1000-Watt monofacial solar panels	Negative – Construction camp and lay-down yard may cause unsightly views	Local	Lifetime of Solar Farm	Moderate	Low Probability	Low	Low	High
Associated Infrastructure				Low	Probable	Low	Low	High
Short onsite 132kV power line connection to Eskom grid				Moderate	Low Probability	Low	Low	High
Construction laydown area				Low	Probable	Low	Low	High
Operational phase								
480MW Solar PV arrays consisting of 1000-Watt monofacial solar panels	Negative – The presence of the proposed solar park and associated infrastructure that intrude on existing views and spoil the views of the landscape.	Local	Lifetime of Solar Farm	Moderate	Definite	Moderate	Low	High
Associated Infrastructure				Low	Probable	Low	Low	High
Short onsite 132kV power line connection to Eskom grid				Moderate	Probable	Moderate	Low	High
Construction laydown area				Low	Probable	Low	Low	High

The major routes within the study area are the R511 and R516 connecting the towns, mines and farms. The secondary road network, the P20/2 and the D1234 in the study area carries a much lower volume of motorists. Many of the roads are gravel roads which are utilized by the local residents. Their duration of views will be temporary, and it is expected that the visual intrusion that they will experience will be low.

Construction phase

The potential visual impact that may be experienced by motorists during the construction phase is considered to be minimal. The construction camp will be within the proposed solar farm site and there are no through roads. The severity of visual impact will be *low*.

Operational phase

The road passing the solar farm directly is the D1234 and it connects Koedoeskop and Northam but is no major thoroughfare. The speed at which motorists travel has a moderating effect on the severity of the visual impact and reduces visual exposure.

Glint and glare of the solar panels could be a potential visual distraction and a possible air travel hazard. The proposed solar farm is not located near any airport or airfield. The significance of the potential visual impact is expected to be *low.*

Closure phase

The duration of the impact will only be as long as the solar farm is operational. Upon closure, rehabilitation of all areas is anticipated, and the visual aesthetics will be improved. No negative residual impacts are expected on visual aspects.

6. RECOMMENDED MITIGATION MEASURES

The aim of mitigation is to reduce or alleviate the intrusive contrast between the proposed project components and activities, and the receiving landscape to a point where it is acceptable to visual and landscape receptors.

6.1. GENERAL

- Where areas are going to be disturbed through the destruction of vegetation, for example the establishment of the construction camp, the vegetation occurring in the area to be disturbed must be replanted with endemic, indigenous species, especially veld-grass and trees. A hydroseeding application is recommended in the disturbed areas as a measure of rehabilitation.
- Retain existing vegetation adjacent to the development footprint to minimise the visual impact caused by clearing vegetation and exposing soil areas.
- Plant fast-growing endemic trees along the boundaries of the solar farm. The trees will with time create a screen and increase the biodiversity of the area.
- Create a 50m vegetation corridor on the western boundary of the site.

6.2. ACCESS ROUTES

- Make use of existing access roads where possible.
- Where new access roads are required, the disturbance area should be kept to a minimum. A two-track dirt road will be the most preferred option.
- Locate access routes so as to limit modification to the topography and to avoid the removal of established vegetation.

- Avoid crossing over or through ridges, rivers, pans or any natural features that have visual value. This also includes centres of floral endemism and areas where vegetation is not resilient and takes extended periods to recover.
- Road verges that need to be cleared should be kept to a minimum.
- Access routes should be located on the perimeter of disturbed areas such as cultivated/fallow lands as not to fragment intact vegetated areas.
- If it is necessary to clear vegetation for a road, avoid doing so in a continuous straight line. Alternatively, curve the road in order to reduce the visible extent of the cleared corridor.

6.3. CLEARED SERVITUDES

- Avoid a continuous linear path of cleared vegetation that would strongly contrast with the surrounding landscape character. Feather the edges of the cleared corridor to avoid a clearly defined line through the landscape.

6.4. CONSTRUCTION CAMPS AND LAY DOWN YARDS

- If practically possible, locate construction camps in areas that are already disturbed or where it isn't necessary to remove established vegetation like for example naturally bare areas.
- Utilise existing screening features such as dense vegetation stands or topographical features to place the construction camps and lay-down yards out of the view of sensitivity visual receptors.
- Keep the construction sites and camps neat, clean and organised in order to portray a tidy appearance.

7. CONCLUSION

The proposed activities for the solar farm have been evaluated against internationally accepted criteria to determine the impact they will have on the landscape character and the viewers that have been identified in the study area.

The construction and operation of the proposed solar farm may have a visual impact to users within a close proximity of the site. After mitigation, the visual impact for most users is expected to be low.

An advantage for the solar farm is that it utilises a renewable energy source to generate electricity. It does not emit any harmful by-products or pollutants that may pose health risks to users or observers.

If mitigation is undertaken as recommended it can be concluded that the visual significance will remain low, and the impact can be reduced to acceptable levels.

Table 11: Evaluation of activities for the proposed solar farm

Visual Impact of Activities	Corrective Measures	Impact Rating Criteria					
		Nature	Extent	Duration	Magnitude	Probability	Significance
480MW Solar PV arrays consisting of 1000-Watt monofacial solar panels	No	Negative	2	4	6	3	36 medium
	Yes	Negative	2	4	4	3	30 medium
Associated Infrastructure	No	Negative	2	4	4	3	30 medium
	Yes	Negative	2	4	4	2	20 low
Short onsite 132kV power line connection to Eskom grid	No	Negative	2	4	4	3	30 medium
	Yes	Negative	2	4	4	2	20 low
Construction laydown area	No	Negative	2	2	4	3	24 low
	Yes	Negative	2	2	2	2	12 low

The activities for the Visual Impact Assessment Criteria for all impacts as indicated in Table 11 applies are rated as per below:

Status of Impact:
The visual impact is assessed as either having a:
Negative effect (i.e. at a cost to the environment),
Positive effect (i.e. a benefit to the environment), or
Neutral effect on the environment.

Extent of the Impact:
(1) Site (site only),
(2) Local (site boundary and immediate surrounds),
(3) Regional,
(4) National, or
(5) International.

Duration of the Impact:
The length that the impact will last for is described as either:
(1) Immediate (<1 year)
(2) Short term (1-5 years),
(3) Medium term (5-15 years),
(4) Long term (ceases after the operational life span of the project),
(5) Permanent.

Magnitude of the Impact:
The intensity or severity of the impacts is indicated as either:
(0) none,
(2) Minor,

(4) Low,
(6) Moderate (environmental functions altered but continue),
(8) High (environmental functions temporarily cease), or
(10) Very high / unsure (environmental functions permanently cease).

Probability of Occurrence:
The likelihood of the impact actually occurring is indicated as either:
(0) None (the impact will not occur),
(1) Improbable (probability very low due to design or experience)
(2) Low probability (unlikely to occur),
(3) Medium probability (distinct probability that the impact will occur),
(4) High probability (most likely to occur), or
(5) Definite.

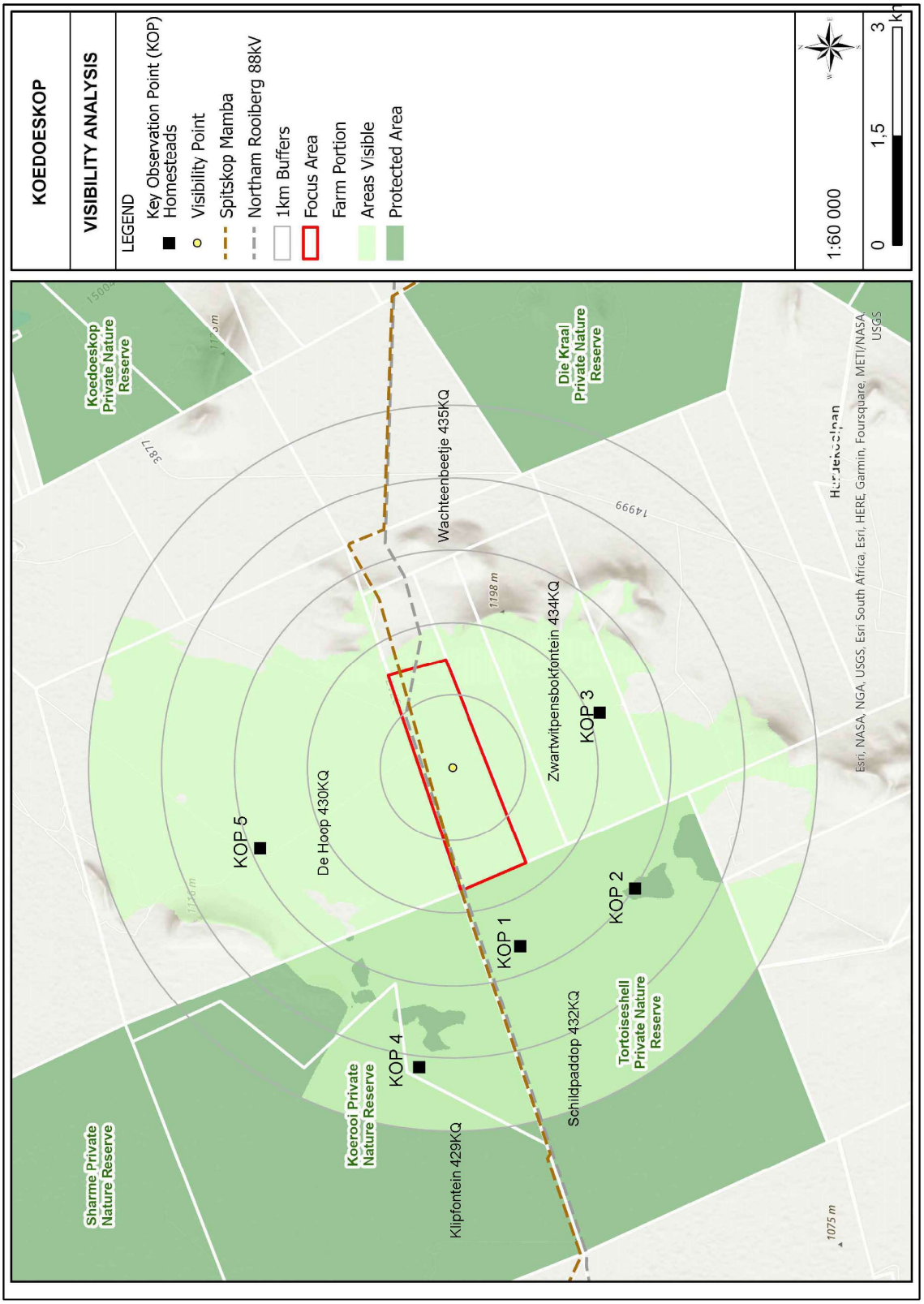
Significance of the Impact:
Based on the information contained in the points above, the potential impacts are assigned a significance rating (S). This rating is formulated by adding the sum of the numbers assigned to extent (E), duration (D) and magnitude (M) and multiplying this sum by the probability (P) of the impact.
S= (E+D+M) P

The significance ratings are given below
(<30) low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
(30-60) medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated), (>60) high (i.e. where the impact must have an influence on the decision process to develop in the area).

APPENDIX 1

Figure 11 reflects the results of a viewer sensitivity visibility assessment, carried out using GIS software. The results provide a clear interpretation of the extent of the visual influence and also provide an indication of the land use that can be expected in the affected areas.

Figure 11: Visibility Analysis



GLOSSARY OF TERMS

Aesthetics	The science or philosophy concerned with the quality of sensory experience. (ULI, 1980)
Horizon contour	A line that encircles a development site and that follows ridgelines where the sky forms the backdrop and no landform is visible as a background. This is essentially the skyline that when followed through the full 360-degree arc as viewed from a representative point on the site defines the visual envelope of the development. This defines the boundary outside which the development would not be visible.
Landscape characterisation/ character	This covers the gathering of information during the desktop study and field survey work relating to the existing elements, features, and extent of the landscape (character). It includes the analysis and evaluation of the above and the supporting illustration and documentary evidence.
Landscape condition	Refers to the state of the landscape of the area making up the site and that of the study area in general. Factors affecting the condition of the landscape can include the level maintenance and management of individual landscape elements such as buildings, woodlands etc and the degree of disturbance of landscape elements by non-characteristics elements such as invasive tree species in grassland or car wrecks in a field.
Landscape impact	Changes to the physical landscape resulting from the development that include; the removal of existing landscape elements and features, the addition of new elements associated with the development and altering of existing landscape elements or features in such as way as to have a detrimental effect on the value of the landscape.
Landscape unit	A landscape unit can be interpreted as an “outdoor room” which are enclosed by clearly defined landforms or vegetation. Views within a landscape unit are contained and face inward.
Sense of place	That distinctive quality that makes a particular place memorable to the visitor, which can be interpreted in terms of the visual character of the landscape. A more emotive sense of place is that of local identity and attachment for a place “*which begins as undifferentiated space* [and] *becomes place as we get to know it better and endow it with value*” (Tuan 1977)[1].
Viewer exposure	The extent to which viewers are exposed to views of the landscape in which the proposed development will be located. Viewer exposure considers the visibility of the site, the viewing conditions, the viewing distance, the number of viewers affected the activity of the viewers (tourists or workers) and the duration of the views.
Viewer sensitivity	The assessment of the receptivity of viewer groups to the visible landscape elements and visual character and their perception of visual quality and value. The sensitivity of viewer groups depends on their activity and awareness within the affected landscape, their preferences, preconceptions and their opinions.
Visual absorption capacity (VAC)	The inherent ability of a landscape to accept change or modification to the landscape character and/or visual character without diminishment of the visual quality or value, or the loss of visual amenity. A high VAC rating implies a high ability to absorb visual impacts while a low VAC implies a low ability to absorb or conceal visual impacts.

[1] Cited in Climate Change and Our 'Sense of Place', http://www.ucsusa.org/greatlakes/glimpactplace.html

Visual amenity The notable features such as hills or mountains or distinctive vegetation cover such as forests and fields of colour that can be identified in the landscape and described. Also included are recognised views and viewpoints, vistas, areas of scenic beauty and areas that are protected in part for their visual value.

Visual character This addresses the viewer response to the landscape elements and the relationship between these elements that can be interpreted in terms of aesthetic characteristics such as pattern, scale, diversity, continuity and dominance.

Visual contour The outer perimeter of the visual envelope determined from the site of the development. The two-dimensional representation on plan of the horizon contour.

Visual contrast The degree to which the physical characteristics of the proposed development differ from that of the landscape elements and the visual character. The characteristics affected typically include:

- Volumetric aspects such as size, form, outline and perceived density;
- Characteristics associated with balance and proportion such scale, diversity, dominance, continuity;
- Surface characteristics such as colour, texture, reflectivity; and
- Luminescence or lighting.

Visual envelope The approximate extent within which the development can be seen. The extent is often limited to a distance from the development within which views of the development are expected to be of concern.

Visual impact Changes to the visual character of available views resulting from the development that include: obstruction of existing views; removal of screening elements thereby exposing viewers to unsightly views; the introduction of new elements into the view shed experienced by visual receptors and intrusion of foreign elements into the view shed of landscape features thereby detracting from the visual amenity of the area.

Visual impact assessment A specialist study to determine the visual effects of a proposed development on the surrounding environment. The primary goal of this specialist study is to identify potential risk sources resulting from the project that may impact on the visual environment of the study area, and to assess their significance. These impacts include landscape impacts and visual impacts.

Visual quality An assessment of the aesthetic excellence of the visual resources of an area. This should not be confused with the value of these resources where an area of low visual quality may still be accorded a high value. Typical indicators used to assess visual quality are vividness, intactness and unity. For more descriptive assessments of visual quality attributes such as variety, coherence, uniqueness, harmony, and pattern can be referred to.

Visual receptors Includes viewer groups such as the local community, residents, workers, the broader public and visitors to the area, as well as public or community areas from which the development is visible. The existing visual amenity enjoyed by the viewers can be considered a visual receptor such that changes to the visual amenity would affect the viewers.

Zone of visual influence The extent of the area from which the most elevated structures of the proposed development could be seen and may be considered to be of interest (see visual envelope).

LEVEL OF CONFIDENCE

Table 12: Confidence level chart and description

CONFIDENCE LEVEL CHART				
	Information, knowledge and experience of the **project**			
Information, and knowledge of the **study area**		3b	2b	1b
	3a	9	6	3
	2a	6	4	2
	1a	3	2	1

3a – A *high* level of information is available of the **study area** in the form of recent aerial photographs, GIS data, documented background information and a thorough knowledge base could be established during site visits, surveys etc. The study area was readily accessible.

2a – A *moderate* level of information is available of the **study area** in the form of aerial photographs GIS data and documented background information and a moderate knowledge base could be established during site visits, surveys etc. Accessibility to the study area was acceptable for the level of assessment.

1a – *Limited* information is available of the **study area** and a poor knowledge base could be established during site visits and/or surveys, or no site visit and/or surveys were carried out.

3b – A *high* level of information and knowledge is available of the **project** in the form of up-to-date and detailed engineering/architectural drawings, site layout plans etc. and the visual impact assessor is well experienced in this type of project and level of assessment.

2b – A *moderate* level of information and knowledge is available of the **project** in the form of conceptual engineering/architectural drawings, site layout plans etc. and/or the visual impact assessor is moderately experienced in this type of project and level of assessment.

1b – *Limited* information and knowledge is available of the **project** in the form of conceptual engineering/architectural drawings, site layout plans etc. and/or the visual impact assessor has a low experience level in this type of project and level of assessment. (Adapted from Oberholzer. B, 2005)

VISUAL RECEPTOR SENSITIVITY

Table 13: Visual receptor sensitivity

VISUAL RECEPTOR SENSITIVITY	DEFINITION (BASED ON THE GLVIA 2ND ED PP90-91)
Exceptional	Views from major tourist or recreational attractions or viewpoints promoted for or related to appreciation of the landscape, or from important landscape features.
High	Users of all outdoor recreational facilities including public and local roads or tourist routes whose attention or interest may be focussed on the landscape; Communities where the development results in changes in the landscape setting or valued views enjoyed by the community; Residents with views affected by the development.
Moderate	People engaged in outdoor sport or recreation (other than appreciation of the landscape);
Low	People at their place of work or focussed on other work or activity; Views from urbanised areas, commercial buildings or industrial zones; People travelling through or passing the affected landscape on transport routes.
Negligible (Uncommon)	Views from heavily industrialised or blighted areas

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