PROPOSED METSIMATALA CSP TO MANGANORE SUBSTATION
132kV OVERHEAD POWER LINE
NORTHERN CAPE PROVINCE

VISUAL IMPACT ASSESSMENT
AS PART OF A BASIC ASSESSMENT REPORT

Produced for:
Metsimatala CSP Solar Energy Pty (Ltd)

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On behalf of:

- May 2016 -
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1. STUDY APPROACH

1.1. Qualification and Experience of the Practitioner

This visual impact assessment was undertaken by MetroGIS (Pty) Ltd, specialists in visual assessment and Geographic Information Systems.

Lourens du Plessis, the lead practitioner undertaking the assessment, has been involved in the application of Geographical Information Systems (GIS) in Environmental Planning and Management since 1990.

The team undertaking the visual assessment has extensive practical knowledge in spatial analysis, environmental modelling and digital mapping, and applies this knowledge in various scientific fields and disciplines. The expertise of these practitioners is often utilised in Environmental Impact Assessments, State of the Environment Reports and Environmental Management Plans.

The visual assessment team is familiar with the "Guidelines for Involving Visual and Aesthetic Specialists in EIA Processes" (Provincial Government of the Western Cape: Department of Environmental Affairs and Development Planning) and utilises the principles and recommendations stated therein to successfully undertake visual impact assessments. Although the guidelines have been developed with specific reference to the Western Cape province of South Africa, the core elements are more widely applicable (i.e. within the Northern Cape Province).

Enviroworks appointed MetroGIS (Pty) Ltd as an independent specialist consultant to undertake the visual impact assessment. Neither the author, nor MetroGIS will benefit from the outcome of the project decision-making.

1.2. Assumptions and Limitations

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

1.3. Level of Confidence

Level of confidence is determined as a function of:

- The information available, and understanding of the study area by the practitioner:
  - 3: A high level of information is available of the study area and a thorough knowledge base could be established during site visits, surveys etc. The study area was readily accessible.
  - 2: A moderate level of information is available of the study area 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.
  - 1: 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.

1 Adapted from Oberholzer (2005).
• The information available, understanding of the study area and experience of this type of project by the practitioner:
  
  ➢ 3: A high level of information and knowledge is available of the project and the visual impact assessor is well experienced in this type of project and level of assessment.
  ➢ 2: A moderate level of information and knowledge is available of the project and/or the visual impact assessor is moderately experienced in this type of project and level of assessment.
  ➢ 1: Limited information and knowledge is available of the project and/or the visual impact assessor has a low experience level in this type of project and level of assessment.

These values are applied as follows:

<table>
<thead>
<tr>
<th>Information on the study area</th>
<th>Information on the project &amp; experience of the practitioner</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
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<tr>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

The level of confidence for this assessment is determined to be 9 and indicates that the author’s confidence in the accuracy of the findings is high:

• The information available, and understanding of the study area by the practitioner is rated as 3 and
• The information available, understanding and experience of this type of project by the practitioner is rated as 3.

1.4. Methodology

The study was undertaken using Geographic Information Systems (GIS) technology as a tool to generate viewshed analyses and to apply relevant spatial criteria to the proposed power line alternatives. A detailed Digital Terrain Model (DTM) for the study area was created from 20m interval contours supplied by the Chief Directorate National Geo-Spatial Information.

The approach utilised to identify issues related to the visual impact included the following activities:

• The creation of a detailed digital terrain model (DTM) of the potentially affected environment;
• The sourcing of relevant spatial data. This included cadastral features, vegetation types, land use activities, topographical features, site placement, etc.
• The identification of sensitive environments upon which the proposed power line could have a potential impact;
• The creation of viewshed analyses from the proposed alignments in order to determine the visual exposure and the topography’s potential to absorb the potential visual impact. The viewshed analyses take into account the dimensions of the proposed structures.
This report (visual impact assessment) sets out to identify and quantify the possible visual impacts related to the proposed power line, as well as offer potential mitigation measures, where required.

The following methodology has been followed for the assessment of visual impact:

- **Determine Potential visual exposure**
  The visibility or visual exposure of any structure or activity is the point of departure for the visual impact assessment. It stands to reason that if the proposed power line was not visible, no impact would occur.

  Viewshed analyses of the proposed alignment indicate the potential visibility.

- **Determine Visual Distance/Observer Proximity to the power line**
  In order to refine the visual exposure of the power line on surrounding areas/receptors, the principle of reduced impact over distance is applied in order to determine the core area of visual influence for the structures.

  Proximity radii for the proposed alignment are created in order to indicate the scale and viewing distance of the structures and to determine the prominence of the structures in relation to their environment.

  The visual distance theory and the observer's proximity to the power line are closely related, and especially relevant, when considered from areas with a high viewer incidence and a predominantly negative visual perception of the proposed infrastructure.

- **Determine Viewer Incidence/Viewer Perception**
  The number of observers and their perception of a structure determine the concept of visual impact. If there are no observers, then there would be no visual impact. If the visual perception of the structure is favourable to all the observers, then the visual impact would be positive.

  It is therefore necessary to identify areas of high viewer incidence and to classify certain areas according to the observer's visual sensitivity towards the proposed infrastructure.

  It would be impossible not to generalise the viewer incidence and sensitivity to some degree, as there are many variables when trying to determine the perception of the observer; regularity of sighting, cultural background, state of mind, and purpose of sighting which would create a myriad of options.

- **Determine the Visual Absorption Capacity of the natural vegetation**
  This is the capacity of the receiving environment to absorb the potential visual impact of the proposed structures. The VAC is primarily a function of the vegetation, and will be high if the vegetation is tall, dense and continuous. Conversely, low growing sparse and patchy vegetation will have a low VAC.

  The VAC would also be high where the environment can readily absorb the structure in terms of texture, colour, form and light / shade characteristics.
of the structure. On the other hand, the VAC for a structure contrasting markedly with one or more of the characteristics of the environment would be low.

The VAC also generally increases with distance, where discernible detail in visual characteristics of both environment and structure decreases.

The digital terrain model utilised in the calculation of the visual exposure of the power line does not incorporate the potential visual absorption capacity (VAC) of the natural vegetation of the region. It is therefore necessary to determine the VAC by means of the interpretation of the vegetation cover, supplemented with field observations.

- **Determine the Visual impact index**

  The results of the above analyses are merged in order to determine where the areas of likely visual impact would occur. These areas are further analysed in terms of the previously mentioned issues (related to the visual impact) and in order to judge the magnitude of each impact.

- **Determine Impact significance**

  The potential visual impacts identified and described are quantified in their respective geographical locations in order to determine the significance of the anticipated impact. Significance is determined as a function of extent, duration, magnitude and probability.

- **Motivate a preferred alternative**

  The preferred power line alternative(s) will be selected and motivated based on the significance of the envisaged visual impacts.

2. **BACKGROUND**

*Metsimatala CSP Solar Energy Pty (Ltd)* is proposing the construction of a new 132kV overhead power line connecting the Metsimatala Concentrating Solar Power (CSP) facility with the Manganore substation. The project further includes the diversion or re-routing of the existing *Blinkklip to Clifton 132kV* overhead power line where it traverses the CSP project site.

The proposed overhead power line alternatives and deviations are shown on Map 1.

There are two alternatives proposed for the CSP to Manganore substation power line:

- **Alternative 1** – (total length 31.4km) traverses north for 11.4km before veering north-west, adjacent to the *Manganore to Silverstreams 132kV* power line, following this alignment to the Manganore substation.

- **Alternative 2** - (total length 26km) traversing north-west for approximately 23km before joining the *Manganore to Silverstreams 132kV* power line (near the Klipfontein Hills) towards the Manganore substation.

There are two alternatives proposed for the *Blinkklip to Clifton 132kV* overhead power line diversion:
- **Alternative 1** – a 4.6km diversion along the eastern and northern boundaries of the CSP facility.

- **Alternative 2** – a 5.3km diversion along the R385 main road and then northwards along the western boundary of the CSP facility.

**Map 1:** Shaded relief map indicating the proposed overhead power line alternatives.
3. SCOPE OF WORK

The determination of the potential visual impacts is undertaken in terms of nature, extent, duration, magnitude, probability and significance of the construction and operation of the proposed infrastructure.

The study area for the visual assessment encompasses a geographical area of approximately 502km² (the extent of the maps displayed in this report) and includes a minimum 3km buffer zone from the proposed alignment alternatives.

Anticipated issues related to the potential visual impact of the proposed power line alternatives include the following:

- The visibility of the power line from, and potential visual impact on observers travelling along the main road (i.e. the R385) and secondary roads in close proximity² to the proposed alignment and within the region³.
- The visibility of the power line from, and potential visual impact on residents of settlements and homesteads in close proximity to the proposed power line.
- Potential visual impacts associated with the construction phase on observers in close proximity to the proposed power line.
- The potential visual impact of the proposed infrastructure on the visual quality of the landscape and sense of place region.
- The potential cumulative visual impact of the proposed power line in relation to other infrastructure and built forms.
- Potential residual visual impacts after the decommissioning of the proposed power line.
- The potential to mitigate visual impacts and inform the design process.

It is envisaged that the issues listed above may constitute a visual impact at a local and/or regional scale.

4. RELEVANT LEGISLATION AND GUIDELINES

The following legislation and guidelines have been considered in the preparation of this report:

- The Environmental Impact Assessment Amendment Regulations, 2010;
- Guideline on Generic Terms of Reference for EAPS and Project Schedules (DEADP, Provincial Government of the Western Cape, 2011).

5. THE AFFECTED ENVIRONMENT

The proposed Metsimatala CSP to Manganore substation power line is located within the Tsantsabane Local Municipality, Kimberley Registration Division, of the Northern Cape Province. The following farms or farm portions are expected to be affected by either of the proposed alternatives:

² For the purpose of this study, close proximity is considered to be within 500m of the proposed alignment. This would be a short to medium distance view where the structures may be easily and comfortably visible and may constitute a high visual prominence.

³ For the purpose of this study, the region is considered to be beyond the 500m radius of the proposed alignment. This would be a longer distance view where the structures would become part of the visual environment, but may still be visible and constitutes a medium to low visual prominence.
Land use and settlement patterns

The study area has a predominantly rural and natural character. The primary activity in the region is mining, cattle and sheep farming, and small scale cultivation occurs on some farms in the area. Agricultural potential is low due to dry climatic conditions. Prominent mines located within the study area include the Groenwater asbestos mine (near Jenn Haven), the Manganore mine and a number of old open cast mines located on the Klipfontein Hills (south of the Manganore substation).

The population density in the area is very low. Small towns and villages in the region are mainly associated with mining activity. Metsimatala village is situated adjacent (east) to the CSP site, whilst Jenn Haven is located further north at a distance of approximately 1km from the Alternative 2 power line. There are a limited number of homesteads (farm residences) in close proximity (within a 1.5km radius) to the power line alternatives. Homesteads along the Alternative 1 alignment include; Mimosa, Moedhou, Biesiepan and Seahon. Homesteads along the Alternative 2 alignment include; residences associated with the Groenwater asbestos mine, Kwaalitshand, Klipfontein and Swartmodder.

The R385 arterial road, passing south of the Metsimatala CSP site, is a main transportation route between Kimberley and Upington, and can be regarded as a tourist access route. Another transportation link is the secondary road traversing approximately 2km east and north of the CSP site. Both the Alternative 1 and 2 alignments will traverse this local road and the railway line running south of the road.

Figure 1: A view of Metsimatala settlement from the R385 main road.
Existing infrastructure within the region includes 132kV power lines (Manganore-Silverstreams, Blinkklip-Clifton and Blinkklip-Vaalbos), a railway line and assorted open cast mines (primarily asbestos mining). Some of the mines have been abandoned and are not actively mined at present.

There are no formally protected areas (conservation) within the study area and the region is not considered to be a major tourist end-destination. No tourist attractions or facilities were identified within close proximity to the proposed CSP site, or along any of the alignment alternatives.

Figure 2: Mining activity on the Klipfontein Hills as seen from the R325.

**Topography, vegetation and hydrology**

The topography is generally undulating, with the CSP site located on flat land between a range of two north-south lying ridges. The largest part of the study area has an even slope with the exception of the previously mentioned hills and the Klipfontein Hills near the Manganore substation. The elevation above sea level varies between 1320m (in the south-west) to approximately 1590m on top of the Klipfontein Hills.

Vegetation is described as Olifantshoek Plains Thornveld, consisting of thicket, bush clumps and low shrubland. Views of the landscape are characterised by open vistas with ridges prominent on the skyline.

Visual absorption capacity of the environment is relatively low, due to the sparse vegetation cover and open vistas.

No major perennial rivers are present and the Groenwaterspruit and a number of non-perennial pans are the most prominent hydrological features within the study area. Other water bodies include man-made dams, primarily located at farmsteads. Refer to Maps 1 and 2.
Figure 3: Typical thicket, bush clumps and low shrubland within the study area.

Sources: DEAT (ENPAT Northern Cape), NBI (Vegetation Map of South Africa, Lesotho and Swaziland) and NLC2000 (ARC/CSIR).
Map 2: Land cover and broad land use patterns.
6. RESULTS

6.1. Potential visual exposure

The results of the viewshed analyses for the proposed power line Alternatives 1 and 2 are shown on Maps 3 and 4. The visibility analyses were undertaken along the alignments at an offset of 32m above average ground level (i.e. the maximum height of the power line structures), for a distance of 3km from the centre line. The viewshed analyses were restricted to a 3km radius due to the fact that visibility beyond this distance is expected to be negligible/highly unlikely for the relatively constrained vertical dimensions of this type of power line (i.e. a 132kV power line).

The viewshed analysis does not include the effect of vegetation cover or existing structures on the exposure of the proposed power line, therefore signifying a worst-case scenario.

General

Both the power line alternatives have the potential to be visually exposed within their respective 3km corridors. This is due to the fact that they traverse mainly flat terrain, with very limited undulation or topographical features to shield observers from the proposed power line. The only exception occurs where the alignments exit the CSP site where the terrain is strongly undulating and at the Manganore substation, where the Klipfontein Hills create a visual barrier to the south.

Alternative 1 132kV power line

The power line (at the Metsimatala CSP) is expected to be visible from the R385 main road and the Metsimatala settlement. The power line will however not be viewed in isolation, as the CSP project infrastructure is expected to largely dominate the observer's field of view.

As the alignment traverses northwards, across the hilly terrain, it will be viewed by observers travelling along the secondary road near the railway line. Visual exposure along the alignment, between this road and up to the point where the power line joins the Manganore-Silverstreams power line, there are very limited observers or sensitive visual receptors.

Once the Alternative 1 alignment joins the existing power line alignment, it may be visible from the Mimoso homestead, the Moedhou homestead and a number of farm residences located north of the alignment (Bellevue, Biesiespan and Seahon). The power line will however not be viewed in isolation as it will traverse adjacent to the existing Manganore-Silverstreams power line.

Alternative 2 132kV power line

The power line (at the Metsimatala CSP) is expected to be visible from the R385 main road and the Metsimatala settlement. The power line will however not be viewed in isolation, as the CSP project infrastructure is expected to largely dominate the observer's field of view.

As the alignment traverses in a north-westerly direction, it will be visible where it crosses over the secondary road, from the Groenwater mine settlement and the Jenn Haven settlement. Further along the alignment, it may be viewed from the Kwaait sand, Klipfontein and Swartmodder homesteads.

Diversion Alternative 1 of the 132kV power line

The diversion of the Blinkklip to Clifton 132kV overhead power line along the eastern and northern boundaries of the CSP plant is expected to be visible from
the Metsimatale settlement. The power line will however not be viewed in isolation, as the CSP project infrastructure is expected to largely dominate the observer’s field of view.

**Diversion Alternative 2 of the 132kV power line**
The diversion of the Blinkklip to Clifton 132kV overhead power line along the R385 and the western boundary of the CSP plant is expected to be visible mainly from the R385 main road. The CSP plant will form the backdrop for observers travelling along this road, and is generally expected to dominate the field of view.

![Map 3: Visibility analysis – Alternative 1](image-url)
6.2. Visual distance / observer proximity to the power line

MetroGIS determined the proximity radii based on the anticipated visual experience of the observer over varying distances. The distances are adjusted upwards for larger power line structures (e.g. 400kV) and downwards for smaller power lines (e.g. 132kV). MetroGIS developed this methodology in the absence of any known and/or acceptable standards for South African power line infrastructure.

The proximity radii (calculated from the proposed project infrastructure) are shown on Map 5 and are as follows:

- 0 – 0.5km - Short distance view where the structures would dominate the frame of vision and constitute a very high visual prominence.
- 0.5 – 1.5km - Medium distance views where the structures would be easily and comfortably visible and constitute a high visual prominence.
• 1.5 - 3km - Medium to longer distance view where the structures would become part of the visual environment, but would still be visible and recognisable. This zone constitutes a medium visual prominence.

• Greater than 3km - Long distance view where the structures may still be visible though not as easily recognisable. This zone constitutes a low visual prominence for the power line.

6.3. Viewer incidence / viewer perception

Refer to Map 5. Viewer incidence is calculated to be the highest in the outlying residential areas of Metsimatala and Jenn Haven. In addition, a higher incidence of visual receptors is expected along the arterial road (the R385) as well as along the secondary roads within the study area. Commuters using these roads could be negatively impacted upon by visual exposure to the power line, and are thus considered to be sensitive to visual intrusion.

Other than the above, viewer incidence (and expected negative viewer perception) will be concentrated within the homesteads and farm residences within the study area. Refer to section 6.1 (Potential visual exposure).
6.4. Visual absorption capacity

The broader study area receives between 185 mm and 248 mm of rainfall per year (i.e. a semi-arid climate) and the proposed alignment is situated primarily within shrubland and grassland land cover types. Shrubland is described as: communities dominated by low, woody, self-supporting, multi-stemmed plants, branching at or near the ground, between 0.2m and 2m in height.

Overall, the Visual Absorption Capacity (VAC) of the receiving environment and especially the area in close proximity to the proposed alignment is deemed low by virtue of the nature of the vegetation and the low occurrence of urban development.

The significant height of power line structures adds to the potential visual intrusion of the power line, with the tall towers (pylons) against the background of the horizon. In addition, the scale and form of the structures mean that it is unlikely that the environment will visually absorb them in terms of texture, colour, form and light/shade characteristics.
Where homesteads and settlements occur, some more significant vegetation and trees may have been planted, which would contribute to visual absorption. As this is not a consistent occurrence, however, VAC will not be taken into account for any of the homesteads or settlements, thus assuming a worst case scenario in the impact assessment.

Within the built-up areas of Metsimatala and Jenn Haven, as well as some mining areas, VAC will be of relevance, due to the presence of buildings, structures and equipment, referred to as visual clutter. In this respect, the presence of the built-up environment will ‘absorb’ the visual impact to some extent.

VAC will be taken into account within the built up area of Metsimatala and Jenn Haven only. In areas where no VAC is present, especially in close proximity of the alignment, no VAC will be considered. This would ultimately simulate a worst case scenario.

![Figure 4: The low VAC of the study area.](image_url)

**6.5. Visual impact index**

The combined results of the visual exposure, viewer incidence/perception and visual distance of the proposed power line are displayed on Maps 6 and 7. Here the weighted impact and the likely areas of impact have been indicated as a visual impact index. Values have been assigned for each potential visual impact per data category and merged in order to calculate the visual impact index.

An area with short distance visual exposure to the proposed power line, a high viewer incidence and a predominantly negative perception would therefore have a higher value (greater impact) on the index. This helps in focussing the attention to the critical areas of potential impact when evaluating the issues related to the visual impact.

**General**
The visual impact index indicates a potentially moderate area of visual impact within a 500m radius of the power line, along the entire length of the alignments. This area generally represents a zone within close proximity of the power line structures, where observers are absent. Where sensitive visual receptors are present the visual impact may potentially be high. These areas are indicated on the map as likely areas of potential visual impact and are described per power line alternative below.

**Alternative 1 132kV power line**
This alignment may have a high visual impact on the following observers (see Map 6):

- **Area 1** – observers travelling along the secondary road
- **Area 2** – residents of the Moedhou homestead

This alignment may have a moderate visual impact on the following observers (see Map 6):

- **Area 3** – residents of the Metsimatale settlement (west)
- **Area 4** – Mimosa homestead
- **Area 5** – Seahon homestead

**Alternative 2 132kV power line**
This alignment may have a high visual impact on the following observers (see Map 7):

- **Area 1** – observers travelling along the secondary road
- **Area 2** – residents of the Swartmodder homestead

This alignment may have a moderate visual impact on the following observers (see Map 7):

- **Area 3** – residents of the Metsimatale settlement (west)
- **Area 4** – residents of the Jenn Have settlement
- **Area 5** – Klipfontein homestead
- **Area 6** – Kwaaitsand homestead

**Diversion Alternative 1 of the 132kV power line**
The diversion of the Blinkklip to Clifton 132kV overhead power line along the eastern and northern boundaries of the CSP plant is expected to have a moderate visual impact on observers residing at the Metsimatale settlement (west).

**Diversion Alternative 2 of the 132kV power line**
The diversion of the Blinkklip to Clifton 132kV overhead power line along the R385 and the western boundary of the CSP plant is expected to have a moderate visual impact on observers travelling along the R385 main road.

The previous section of the report identified specific areas where likely visual impacts would occur. This section will attempt to quantify these potential visual impacts in their respective geographical locations and in terms of the identified issues (see Chapter 3: SCOPE OF WORK) related to the visual impact.

The methodology for the assessment of potential visual impacts states the nature of the potential visual impact (e.g. the visual impact on users of major roads in the vicinity of the proposed alignment) and includes a table quantifying the potential significance of visual impact according to the following criteria:

- **Duration** of the impact (time scale);
- **Extent** of the impact (spatial scale);
- Degree to which the impact may cause **irreplaceable loss of resources**;
- Degree to which the impact can be **reversed**;
- **Magnitude** (or Nature) of negative or positive impacts;
- **Probability** of the impact occurring;
- **Cumulative impacts**; and the
- Degree to which the impact can be **mitigated**.

The scales to be used to assess these variables and to define the rating categories are tabulated in the tables below.

<table>
<thead>
<tr>
<th>Evaluation component</th>
<th>Ranking scale and description (criteria)</th>
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<tbody>
<tr>
<td><strong>DURATION</strong></td>
<td>5 - Permanent&lt;br&gt;4 - Long term: Impact ceases after operational phase/life of the activity (&gt; 20 years).&lt;br&gt;3 - Medium term: Impact might occur during the operational phase/life of the activity (5 to 20 years).&lt;br&gt;2 - Short term: Impact might occur during the construction phase (&lt; 5 years).&lt;br&gt;1 - Immediate</td>
</tr>
<tr>
<td><strong>EXTENT</strong>&lt;br&gt;(or spatial scale / influence of impact)</td>
<td>0 - None&lt;br&gt;1 - International: Beyond National boundaries.&lt;br&gt;2 - National: Beyond Provincial boundaries and within National boundaries.&lt;br&gt;3 - Regional: Beyond 5 km of the proposed development and within Provincial boundaries.&lt;br&gt;4 - Local: Within 5 km of the proposed development.&lt;br&gt;5 - Site-specific: On site or within 100 m of the site boundary.</td>
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<tr>
<td><strong>IRREPLACEABLE</strong>&lt;br&gt;loss of resources</td>
<td>5 - Definite loss of irreplaceable resources.&lt;br&gt;4 - High potential for loss of irreplaceable resources.&lt;br&gt;3 - Moderate potential for loss of irreplaceable resources.&lt;br&gt;2 - Low potential for loss of irreplaceable resources.&lt;br&gt;1 - Very low potential for loss of irreplaceable resources.&lt;br&gt;0 - None</td>
</tr>
<tr>
<td><strong>REVERSIBILITY</strong>&lt;br&gt;of impact</td>
<td>5 - Impact <strong>cannot</strong> be reversed.&lt;br&gt;4 - Low potential that impact might be reversed.&lt;br&gt;3 - Moderate potential that impact might be reversed.&lt;br&gt;2 - High potential that impact might be reversed.&lt;br&gt;1 - Impact <strong>will be</strong> reversible.&lt;br&gt;0 - No impact.</td>
</tr>
</tbody>
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4 Due to the declining visual impact over distance, the **extent** (or spatial scale) rating is reversed (i.e. a localised visual impact has a higher value rating than a national or regional value rating). This implies that the visual impact is highly unlikely to have a national or international extent, but that the local or site-specific impact could be of high significance.
<table>
<thead>
<tr>
<th>Evaluation component</th>
<th>Ranking scale and description (criteria)</th>
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<tr>
<td>MAGNITUDE of negative impact (at the indicated spatial scale)</td>
<td><strong>10 - Very high</strong>: Bio-physical and/or social functions and/or processes might be severely altered. <strong>8 - High</strong>: Bio-physical and/or social functions and/or processes might be considerably altered. <strong>6 - Medium</strong>: Bio-physical and/or social functions and/or processes might be notably altered. <strong>4 - Low</strong>: Bio-physical and/or social functions and/or processes might be slightly altered. <strong>2 - Very Low</strong>: Bio-physical and/or social functions and/or processes might be negligibly altered. <strong>0 - Zero</strong>: Bio-physical and/or social functions and/or processes will remain unaltered.</td>
</tr>
<tr>
<td>MAGNITUDE of POSITIVE IMPACT (at the indicated spatial scale)</td>
<td><strong>10 - Very high (positive)</strong>: Bio-physical and/or social functions and/or processes might be substantially enhanced. <strong>8 - High (positive)</strong>: Bio-physical and/or social functions and/or processes might be considerably enhanced. <strong>6 - Medium (positive)</strong>: Bio-physical and/or social functions and/or processes might be notably enhanced. <strong>4 - Low (positive)</strong>: Bio-physical and/or social functions and/or processes might be slightly enhanced. <strong>2 - Very Low (positive)</strong>: Bio-physical and/or social functions and/or processes might be negligibly enhanced. <strong>0 - Zero (positive)</strong>: Bio-physical and/or social functions and/or processes will remain unaltered.</td>
</tr>
<tr>
<td>PROBABILITY (of occurrence)</td>
<td><strong>5 - Definite</strong>: &gt;95% chance of the potential impact occurring. <strong>4 - High probability</strong>: 75% - 95% chance of the potential impact occurring. <strong>3 - Medium probability</strong>: 25% - 75% chance of the potential impact occurring. <strong>2 - Low probability</strong>: 5% - 25% chance of the potential impact occurring. <strong>1 - Improbable</strong>: &lt;5% chance of the potential impact occurring.</td>
</tr>
<tr>
<td>CUMULATIVE impacts</td>
<td><strong>High</strong>: The activity is one of several similar past, present or future activities in the same geographical area, and might contribute to a very significant combined impact on the natural, cultural, and/or socio-economic resources of local, regional or national concern. <strong>Medium</strong>: The activity is one of a few similar past, present or future activities in the same geographical area, and might have a combined impact of moderate significance on the natural, cultural, and/or socio-economic resources of local, regional or national concern. <strong>Low</strong>: The activity is localised and might have a negligible cumulative impact. <strong>None</strong>: No cumulative impact on the environment.</td>
</tr>
</tbody>
</table>

Once the evaluation components have been ranked for each potential impact, the significance of each potential impact will be assessed (or calculated) using the following formula:

\[
SP \text{ (significance points)} = (\text{duration} + \text{extent} + \text{irreplaceable} + \text{reversibility} + \text{magnitude}) \times \text{probability}
\]

The maximum value is 150 significance points (SP). The unmitigated and mitigated scenarios for each potential environmental impact should be rated as per the table below.

**Table 3:** Definition of significance ratings (positive and negative).
<table>
<thead>
<tr>
<th>Significance Points</th>
<th>Environmental Significance</th>
<th>Definition</th>
</tr>
</thead>
</table>
| 100 – 150           | High (H)                  | An impact of high significance which could influence a decision about whether or not to proceed with the proposed project, regardless of available mitigation options.  
Cumulative Impact:  
The activity is one of several similar past, present or future activities in the same geographical area, and might contribute to a very significant combined impact on the natural, cultural, and/or socio-economic resources of local, regional or national concern. |
| 40 – 99             | Moderate (M)              | If left unmanaged, an impact of moderate significance could influence a decision about whether or not to proceed with a proposed project.  
Cumulative Impact:  
The activity is one of a few similar past, present or future activities in the same geographical area, and might have a combined impact of moderate significance on the natural, cultural, and/or socio-economic resources of local, regional or national concern. |
| <40                 | Low (L)                   | An impact of low is likely to contribute to positive decisions about whether or not to proceed with the project. It will have little real effect and is unlikely to have an influence on project design or alternative motivation.  
Cumulative impact:  
The activity is localised and might have a negligible cumulative impact. |
| +                   | Positive impact (+)       | A positive impact is likely to result in a positive consequence/effect, and is likely to contribute to positive decisions about whether or not to proceed with the project. |
6.7. Visual impact assessment

The primary visual impacts of the proposed power line are further assessed as follows:

6.7.1. Potential visual impact on sensitive visual receptors located within a 500m radius of the power line structures

The construction of the power line (both alternatives) could have a moderate visual impact (significance rating = 51) on observers traveling along local access roads or residents within a 500m radius of the power line structures.

No mitigation of this impact is possible (i.e. the power line structures may be visible regardless), but measures are recommended as best practice. The table below illustrates this impact assessment.

Table 4: Visual impact on observers in close proximity to the proposed power line structures.

<table>
<thead>
<tr>
<th>Evaluation component</th>
<th>Ranking scale and description (criteria)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DURATION</td>
<td>5 - Permanent</td>
</tr>
<tr>
<td>EXTENT (or spatial scale / influence of impact)</td>
<td>5 - Site-specific: On site or within 500m of the site boundary.</td>
</tr>
<tr>
<td>IRREPLACEABLE loss of resources</td>
<td>1 - Very low potential for loss of irreplaceable resources.</td>
</tr>
<tr>
<td>REVERSIBILITY of impact</td>
<td>2 - High potential that impact might be reversed.</td>
</tr>
<tr>
<td>MAGNITUDE of negative impact (at the indicated spatial scale)</td>
<td>4 – Low: Bio-physical and/or social functions and/or processes might be slightly altered.</td>
</tr>
<tr>
<td>MAGNITUDE of POSITIVE IMPACT (at the indicated spatial scale)</td>
<td>0 - Zero (positive): Bio-physical and/or social functions and/or processes will remain unaltered.</td>
</tr>
<tr>
<td>PROBABILITY (of occurrence)</td>
<td>3 - Medium probability: 25% - 75% chance of the potential impact occurring</td>
</tr>
<tr>
<td>CUMULATIVE impacts</td>
<td>Medium: The activity is one of a few similar past, present or future activities in the same geographical area, and might have a combined impact of moderate significance on the natural, cultural, and/or socio-economic resources of local, regional or national concern.</td>
</tr>
</tbody>
</table>

Table 5: Definition of significance ratings (positive and negative).

<table>
<thead>
<tr>
<th>Significance Points</th>
<th>Environmental Significance</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 – 150</td>
<td>High (H)</td>
<td>N.A.</td>
</tr>
<tr>
<td>40 - 99</td>
<td>Moderate (M)</td>
<td>If left unmanaged, an impact of moderate significance could influence a decision about whether or not to proceed with a proposed project. <strong>Cumulative Impact:</strong></td>
</tr>
</tbody>
</table>

24
The activity is one of a few similar past, present or future activities in the same geographical area, and might have a combined impact of moderate significance on the natural, cultural, and/or socio-economic resources of local, regional or national concern.

<table>
<thead>
<tr>
<th>Significance Points</th>
<th>Environmental Significance</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;40</td>
<td>Low (L)</td>
<td>N.A.</td>
</tr>
<tr>
<td>+</td>
<td>Positive impact (+)</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

### 6.7.2. Potential visual impact on sensitive visual receptors within the region.

The construction of the power line (both alternatives) could have a **moderate visual impact** (significance rating = 48) on observers traveling along the R385 main road or residents located beyond a 500m radius of the power line structures.

No mitigation of this impact is possible, but measures are recommended as best practice. The table below illustrates this impact assessment.

**Table 6:** Visual impact on sensitive visual receptors within the region.

<table>
<thead>
<tr>
<th>Evaluation component</th>
<th>Ranking scale and description (criteria)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DURATION</td>
<td>5 - Permanent</td>
</tr>
<tr>
<td>EXTENT (or spatial scale / influence of impact)</td>
<td>4 - Local: Within 5 km of the proposed development.</td>
</tr>
<tr>
<td>IRREPLACEABLE loss of resources</td>
<td>1 - Very low potential for loss of irreplaceable resources.</td>
</tr>
<tr>
<td>REVERSIBILITY of impact</td>
<td>2 - High potential that impact might be reversed.</td>
</tr>
<tr>
<td>MAGNITUDE of negative impact (at the indicated spatial scale)</td>
<td>4 - Low: Bio-physical and/or social functions and/or processes might be slightly altered.</td>
</tr>
<tr>
<td>MAGNITUDE of POSITIVE IMPACT (at the indicated spatial scale)</td>
<td>0 - Zero (positive): Bio-physical and/or social functions and/or processes will remain unaltered.</td>
</tr>
<tr>
<td>PROBABILITY (of occurrence)</td>
<td>3 - Medium probability: 25% - 75% chance of the potential impact occurring</td>
</tr>
<tr>
<td>CUMULATIVE impacts</td>
<td>Medium: The activity is one of a few similar past, present or future activities in the same geographical area, and might have a combined impact of moderate significance on the natural, cultural, and/or socio-economic resources of local, regional or national concern. Low: The activity is localised and might have a negligible cumulative impact. None: No cumulative impact on the environment.</td>
</tr>
</tbody>
</table>
**Table 7:** Definition of significance ratings (positive and negative).

<table>
<thead>
<tr>
<th>Significance Points</th>
<th>Environmental Significance</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 – 150</td>
<td>High (H)</td>
<td>N.A.</td>
</tr>
<tr>
<td>40 - 99</td>
<td>Moderate (M)</td>
<td>If left unmanaged, an impact of moderate significance could influence a decision about whether or not to proceed with a proposed project. <strong>Cumulative Impact:</strong> The activity is one of a few similar past, present or future activities in the same geographical area, and might have a combined impact of moderate significance on the natural, cultural, and/or socio-economic resources of local, regional or national concern.</td>
</tr>
<tr>
<td>&lt;40</td>
<td>Low (L)</td>
<td>N.A.</td>
</tr>
<tr>
<td>+</td>
<td>Positive impact (+)</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

**6.7.3. Construction Impacts**

**Potential visual impact of construction on sensitive visual receptors in close proximity to the proposed power line.**

During construction, there may be a noticeable increase in heavy vehicles utilising the roads to the development site that may cause, at the very least, a visual nuisance to other road users and land owners in the area.

Construction activities along both alternative alignments may potentially result in a low (significance rating = 26), temporary visual impact.

**Table 8:** Visual impact of construction on sensitive visual receptors in close proximity to the proposed power line.

<table>
<thead>
<tr>
<th>Evaluation component</th>
<th>Ranking scale and description (criteria)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DURATION</strong></td>
<td>2 - Short term: Impact might occur during the construction phase (&lt; 5 years).</td>
</tr>
<tr>
<td><strong>EXTENT</strong> (or spatial scale/influence of impact)</td>
<td>5 - Site-specific: On site or within 100 m of the site boundary.</td>
</tr>
<tr>
<td><strong>IRREPLACEABLE loss of resources</strong></td>
<td>1 - Very low potential for loss of irreplaceable resources.</td>
</tr>
<tr>
<td><strong>REVERSIBILITY of impact</strong></td>
<td>1 - Impact will be reversible.</td>
</tr>
<tr>
<td><strong>MAGNITUDE of NEGATIVE IMPACT</strong> (at the indicated spatial scale)</td>
<td>4 - Low: Bio-physical and/or social functions and/or processes might be slightly altered.</td>
</tr>
<tr>
<td><strong>MAGNITUDE of POSITIVE IMPACT</strong> (at the indicated spatial scale)</td>
<td>0 - Zero (positive): Bio-physical and/or social functions and/or processes will remain unaltered.</td>
</tr>
</tbody>
</table>
### Table 9: Definition of significance ratings (positive and negative).

<table>
<thead>
<tr>
<th>Significance Points</th>
<th>Environmental Significance</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 – 150</td>
<td>High (H)</td>
<td>N.A.</td>
</tr>
<tr>
<td>40 – 99</td>
<td>Moderate (M)</td>
<td>N.A.</td>
</tr>
<tr>
<td>&lt;40</td>
<td>Low (L)</td>
<td>An impact of low is likely to contribute to positive decisions about whether or not to proceed with the project. It will have little real effect and is unlikely to have an influence on project design or alternative motivation. <strong>Cumulative impact:</strong> The activity is localised and might have a negligible cumulative impact.</td>
</tr>
<tr>
<td>+</td>
<td>Positive impact (+)</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

#### 6.7.4. Visual impact assessment summary tables

The tables below summarise the potential impacts as identified, and provide the significance ratings for these impacts, without and with the implementation of the prescribed mitigation measures.

**Table 10:** Visual impact assessment summary tables
<table>
<thead>
<tr>
<th>Project Phase</th>
<th>Potential Environmental Impact</th>
<th>Environmental Significance</th>
<th>Mitigation Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Before Mitigation</td>
<td>After Mitigation</td>
</tr>
<tr>
<td></td>
<td>Duration</td>
<td>Extent</td>
<td>Irreplaceability</td>
</tr>
<tr>
<td>Planning</td>
<td>N.A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td>During construction, there may be a noticeable increase in heavy vehicles utilising the roads to the development site that may cause, at the very least, a visual nuisance to other road users and land owners in the area.</td>
<td>2 5 1 1 4 2 26 L L</td>
<td>2 5 1 1 4 2 26 L L</td>
</tr>
<tr>
<td>PROJECT PHASE</td>
<td>POTENTIAL ENVIRONMENTAL IMPACT</td>
<td>BEFORE MITIGATION</td>
<td>AFTER MITIGATION</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------------</td>
<td>------------------</td>
<td>------------------</td>
</tr>
<tr>
<td><strong>Operational</strong></td>
<td>The construction of the power line could have a visual impact on observers traveling along local access roads or residents within a 500m radius of the power line structures.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aspect:</th>
<th>Primary Visual Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Alternative:</strong></td>
<td>Power Line Alternative 2</td>
</tr>
<tr>
<td><strong>Planning</strong></td>
<td>N.A.</td>
</tr>
</tbody>
</table>
### Potential Environmental Impact

<table>
<thead>
<tr>
<th>Project Phase</th>
<th>Potential Environmental Impact</th>
<th>Before Mitigation</th>
<th>After Mitigation</th>
<th>Mitigation Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>During construction, there may be a noticeable increase in heavy vehicles utilising the roads to the development site that may cause, at the very least, a visual nuisance to other road users and land owners in the area.</td>
<td>Duration: 2, Extent: 5, Irreplaceability: 1, Reversibility: 1, Magnitude: 4, Probability: 2</td>
<td>Duration: 2, Extent: 5, Irreplaceability: 1, Reversibility: 1, Magnitude: 4, Probability: 2</td>
<td><strong>The primary visual impact, namely the appearance of the power line is not possible to mitigate. The functional design of the structures cannot be changed in order to reduce visual impacts. Best practise mitigation measures are listed below (6.9)</strong></td>
</tr>
<tr>
<td>PROJECT PHASE</td>
<td>POTENTIAL ENVIRONMENTAL IMPACT</td>
<td>BEFORE MITIGATION</td>
<td>AFTER MITIGATION</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------------</td>
<td>------------------</td>
<td>------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>DURATION</td>
<td>EXTENT</td>
<td>IRREPLACEABILITY</td>
</tr>
<tr>
<td>Operational</td>
<td>The construction of the power line could have a visual impact on observers traveling along local access roads or residents within a 500m radius of the power line structures.</td>
<td>5</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

The primary visual impact, namely the appearance of the power line is not possible to mitigate. The functional design of the structures cannot be changed in order to reduce visual impacts. Best practise mitigation measures are listed below (6.9).

Potential visual impact of the proposed power line on the visual quality of the landscape and sense of place of the region.

Sense of place refers to a unique experience of an environment by a user, based on his or her cognitive experience of the place. Visual criteria, specifically the visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.), play a significant role.

An impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light.

The greater environment has a rural, undeveloped character and a natural appearance. These generally undeveloped landscapes are considered to have a high visual quality, except where urban development represents existing visual disturbances.

The anticipated visual impact of the proposed power line alignments on the regional visual quality, and by implication, on the sense of place, is difficult to quantify, but is generally expected to be of low significance. This is due to the relatively low viewer incidence along this alignment and the presence of existing power line infrastructure.

6.9. The potential to mitigate visual impacts

The primary visual impact, namely the appearance of the power line is not possible to mitigate. The functional design of the structures cannot be changed in order to reduce visual impacts.

Secondary impacts anticipated as a result of the proposed power line (i.e. visual character and sense of place) are also not possible to mitigate.

The following mitigation is, however possible:

- Retain/re-establish and maintain natural vegetation in all areas outside of the development footprint/servitude. This measure will help to soften the appearance of the power line within its context.

- Mitigation of visual impacts associated with the construction phase, albeit temporary, would entail proper planning, management and rehabilitation of the construction site. Recommended mitigation measures include the following:
  - Ensure that vegetation is not unnecessarily cleared or removed during the construction period.
  - Reduce the construction period through careful logistical planning and productive implementation of resources.
  - Plan the placement of lay-down areas and any potential temporary construction camps in order to minimise vegetation clearing (i.e. in already disturbed areas) wherever possible.
  - Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads.
Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed regularly at licensed waste facilities.

- Reduce and control construction dust through the use of approved dust suppression techniques as and when required (i.e. whenever dust becomes apparent).
- Restrict construction activities to daylight hours in order to negate or reduce the visual impacts associated with lighting.
- Rehabilitate all disturbed areas, construction areas, roads, slopes etc. immediately after the completion of construction works. If necessary, an ecologist should be consulted to assist or give input into rehabilitation specifications.

- During operation, the maintenance of the power line structures will ensure that the power line does not degrade, thus aggravating visual impact.

- Roads must be maintained to forego erosion and to suppress dust, and rehabilitated areas must be monitored for rehabilitation failure. Remedial actions must be implemented as a when required.

- Once the power line has exhausted its life span, all associated infrastructure not required for the post rehabilitation use of the site/servitude should be removed and all disturbed areas appropriately rehabilitated. An ecologist should be consulted to give input into rehabilitation specifications.

- All rehabilitated areas should be monitored for at least a year following decommissioning, and remedial actions implemented as and when required.

Good practice requires that the mitigation of both primary and secondary visual impacts as listed above be implemented and maintained on an ongoing basis.

7. **PREFERRED POWER LINE ALTERNATIVE(S)**

A comparative assessment of the potential visual impacts of each of the proposed alternatives, as reflected by the impact tables in the previous chapter, gave no clear indication as to the preferred alternative(s). None of alternatives displayed any potential fatal flaws or any particular impact mitigating factors that could elevate their preference.

The Alternative 1 power line does however have the greatest potential to consolidate the linear infrastructure within the region as it traverses adjacent to the existing **Magnanore-Silverstreams 132kV** power line for a considerable distance. This section of the alignment therefor qualifies as a “brown fields” development site, due to the existing visual disturbance. Virtually the entire Alternative 2 alignment would constitute a “green fields” (or new visual disturbance), thereby spreading the visual impact across the region. The preferred alternative, based on this premise, is thus the Alternative 1 alignment.

The deviation of the **Blinkkilp-Clifton 132kV** favours the Re-route Alternative 1, as this alternative, along the perimeter of the CSP site, tends to contain the visual impact within close proximity of the CSP development. The Re-route Alternative 2 traverses alongside the R385, potentially exposing it to observers travelling along this road. The preferred Deviation Alternative is thus the Re-route Alternative 1.
8. CONCLUSION AND RECOMMENDATIONS

The visual impact assessment acknowledges that there may be potential visual impacts associated with the construction of the new Metsimatala CSP to Manganore 132kV overhead power line and Blinkklip to Clifton 132kV power line deviation. These visual impacts may influence observers travelling along the secondary roads within the region, or a limited number of observers residing at homesteads along the alignments.

The greater environment is generally considered to have a high visual quality and a specific sense of place related to the natural and rural characteristics of the region. There is however a number of existing structures (e.g. the existing power lines, railway line, etc.) and a number of applications for future renewable energy facilities. It is expected that the region may come under increasing pressure from similar developments, especially due to the high solar resource present in the Northern Cape.

Although neither of the proposed alignments or deviation alternatives is considered to be fatally flawed, the visual impact assessment favours the construction of the Alternative 1 power line along the existing power line servitude and the Alterative 1 Deviation. It is expected that the potential visual impacts associated with these options would be within acceptable limits.

A number of mitigation measures are proposed (Section 6.9). Regardless of whether or not mitigation measures will reduce the significance of the anticipated visual impacts, they are considered to be good practice and should all be implemented and maintained throughout the construction and operational life span of the proposed power line.

9. IMPACT STATEMENT

The following is a summary of impacts remaining, assuming mitigation as recommended is exercised:

- The potential visual impact on sensitive visual receptors located within a 500m radius of the power line structures (both alternatives) is expected to be of moderate significance (significance rating = 51).

- The potential visual impact on sensitive visual receptors within the region is expected (both alternatives) to be of moderate significance (significance rating = 48).

- The potential visual impact of construction on sensitive visual receptors in close proximity to the proposed power line is expected to be of low significance (significance rating = 26)

The anticipated visual impacts listed above (i.e. post mitigation impacts) are not considered to be fatal flaws from a visual perspective. It is therefore recommended that the development of the power line as proposed (i.e. the proposed alignments) be supported, subject to the implementation of the recommended mitigation measures (section 6.9) and management actions (Chapter 10).
10. MANAGEMENT PROGRAMME

The following management plan tables aim to summarise the key findings of the visual impact report and to suggest possible management actions in order to mitigate the potential visual impacts.

(Refer to tables overleaf).
**Table 11:** Management Programme: Planning.

<table>
<thead>
<tr>
<th>Project component/s</th>
<th>Potential Impact</th>
<th>Activity/risk source</th>
</tr>
</thead>
<tbody>
<tr>
<td>The power line and associated infrastructure.</td>
<td>Primary visual impact of the infrastructure due to the presence of the power line and the associated infrastructure in the landscape.</td>
<td>The viewing of the above mentioned by observers near the infrastructure as well as within the region.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mitigation: Target/Objective</th>
<th>Mitigation: Action/control</th>
<th>Responsibility</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimal planning of infrastructure so as to minimise visual impact.</td>
<td>Implement an environmentally responsive planning approach to roads and infrastructure to limit cut and fill requirements. Plan with due cognisance of the topography.</td>
<td>Project proponent / design consultant</td>
<td>Planning phase.</td>
</tr>
<tr>
<td></td>
<td>Consolidate infrastructure and make use of already disturbed sites rather than pristine areas.</td>
<td>Project proponent / design consultant</td>
<td>Planning phase.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>No access roads and other associated infrastructure are visible from surrounding areas.</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

**Table 12:** Management Programme: Construction.

<table>
<thead>
<tr>
<th>Project component/s</th>
<th>Potential Impact</th>
<th>Activity/risk source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction activities along the power line</td>
<td>Visual impact of general construction activities, and the potential scarring of the landscape due to vegetation clearing.</td>
<td>The viewing of the above mentioned by observers near the infrastructure.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mitigation: Target/Objective</th>
<th>Mitigation: Action/control</th>
<th>Responsibility</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal visual intrusion by construction activities and intact vegetation cover outside of immediate works areas.</td>
<td>Ensure that vegetation is not unnecessarily cleared or removed during the construction period.</td>
<td>Project proponent / contractor</td>
<td>Early in the construction phase.</td>
</tr>
<tr>
<td></td>
<td>Reduce the construction period through careful logistical planning and productive implementation of resources.</td>
<td>Project proponent / contractor</td>
<td>Early in the construction phase.</td>
</tr>
<tr>
<td></td>
<td>Plan the placement of lay-down areas and temporary construction equipment camps in order to minimise vegetation clearing (i.e. in already disturbed areas) wherever possible.</td>
<td>Project proponent / contractor</td>
<td>Early in and throughout the construction phase.</td>
</tr>
<tr>
<td></td>
<td>Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads.</td>
<td>Project proponent / contractor</td>
<td>Throughout the construction phase.</td>
</tr>
<tr>
<td></td>
<td>Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed regularly at licensed waste facilities.</td>
<td>Project proponent / contractor</td>
<td>Throughout the construction phase.</td>
</tr>
</tbody>
</table>
Reduce and control construction dust through the use of approved dust suppression techniques as and when required (i.e. whenever dust becomes apparent).

Project proponent / contractor
Throughout the construction phase.

Restrict construction activities to daylight hours in order to negate or reduce the visual impacts associated with lighting.

Project proponent / contractor
Throughout the construction phase.

Rehabilitate all disturbed areas, construction areas, servitudes etc. immediately after the completion of construction works. Consult an ecologist to give input into rehabilitation specifications.

Project proponent / contractor
Throughout and at the end of the construction phase.

Performance Indicator
Vegetation cover within the servitudes and in the vicinity of the infrastructure is intact with no evidence of degradation or erosion.

Monitoring
Monitoring of vegetation clearing during construction.
Monitoring of rehabilitated areas post construction.

Table 13: Management Programme: Operation.

OBJECTIVE: The mitigation and possible negation of visual impacts associated with the operation of the proposed power line.

<table>
<thead>
<tr>
<th>Project component/s</th>
<th>Power line and associated infrastructure.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity/risk source</td>
<td>The viewing of the above mentioned by observers near the infrastructure.</td>
</tr>
<tr>
<td>Mitigation: Target/Objective</td>
<td>Well-rehabilitated and maintained servitudes.</td>
</tr>
<tr>
<td>Mitigation: Action/control</td>
<td>Responsibility</td>
</tr>
<tr>
<td>Maintain roads to forego erosion and to suppress dust.</td>
<td>Project proponent / operator</td>
</tr>
<tr>
<td>Monitor rehabilitated areas, and implement remedial action as and when required.</td>
<td>Project proponent / operator</td>
</tr>
<tr>
<td>Performance Indicator</td>
<td>Intact vegetation within servitudes and in the vicinity of the infrastructure.</td>
</tr>
<tr>
<td>Monitoring</td>
<td>Monitoring of rehabilitated areas.</td>
</tr>
</tbody>
</table>

Table 14: Management Programme: Decommissioning.

OBJECTIVE: The mitigation and possible negation of visual impacts associated with the decommissioning of the proposed power line.

<table>
<thead>
<tr>
<th>Project component/s</th>
<th>Power line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential Impact</td>
<td>Visual impact of residual visual scarring and vegetation rehabilitation failure.</td>
</tr>
<tr>
<td>Activity/risk source</td>
<td>The viewing of the above mentioned by observers along or near the corridors.</td>
</tr>
<tr>
<td>Mitigation: Target/Objective</td>
<td>Rehabilitated vegetation in all disturbed areas.</td>
</tr>
<tr>
<td>Mitigation: Action/control</td>
<td>Responsibility</td>
</tr>
<tr>
<td>Remove infrastructure not required for the post-decommissioning use of the site/servitude.</td>
<td>Project proponent / operator</td>
</tr>
<tr>
<td>Rehabilitate access roads and servitudes not required for the post-decommissioning use of the sites. Consult an ecologist to give</td>
<td>Project proponent / operator</td>
</tr>
</tbody>
</table>
input into rehabilitation specifications.

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitor rehabilitated areas quarterly for at least a year following decommissioning, and implement remedial action as and when required.</td>
<td>Project proponent / operator Post decommissioning.</td>
</tr>
</tbody>
</table>

**11. REFERENCES/DATA SOURCES**

Chief Directorate National Geo-Spatial Information, varying dates. *1:50 000 Topo-cadastral Maps and Data*.


DEADP, Provincial Government of the Western Cape, 2011. *Guideline on Generic Terms of Reference for EAPS and Project Schedules*

Department of Environmental Affairs and Tourism (DEA&T), 2001. *Environmental Potential Atlas (ENPAT) for the Northern Cape Province*

