



**ESKOM NORTHERN KWA-ZULA NATAL  
STRENGTHENING IPHIVA SUBSTATION  
MKUZE  
KWA-ZULU NATAL PROVINCE  
FINAL VISUAL IMPACT ASSESSMENT REPORT**

June 2023

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**GENERAL INFORMATION**


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<b>Report name:</b>	Final Visual Impact Assessment Report for the proposed Eskom Northern Kwa-Zulu Natal Strengthening Iphiva Substation Project Revision 1 – April 2022 Revision 2 – October 2022 Revision 3 – December 2022 Final – June 2023
<b>Specialist:</b>	Green Tree Environmental Consulting  7 Dublin Street Rangeview Ext 2 Krugersdorp Gauteng  082 409 0405  <a href="mailto:yonanda@gtec.net.za">yonanda@gtec.net.za</a>
<b>Client:</b>	Eskom
<b>Environmental Consultant:</b>	Margen Industrial Services
<b>Report Compiled by:</b>	Yonanda Martin CV attached as Annexure A
<b>Date of the Site Visit:</b>	7 April 2022
<b>Date of Report:</b>	25 April 2022 14 October 2022 14 December 2022 22 June 2023

## DECLARATION OF INDEPENDENCE

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I, Yonanda Martin, appointed specialist responsible for compiling the Visual Impact Assessment Report declare that I: -

- act as an independent consultant, my conclusions are formed independently and without influence from external parties;
- I will perform the work relating to this report in an objective manner, even if the results and findings are not favourable to the applicant.
- have no financial interest in Margen Industrial Services and Mining or any of its subsidiaries;
- do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed;
- undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document. and
- based on information provided to me by the project proponent, and in addition to information obtained during the course of this study and the site visit, will present the results and conclusion within the associated document to the best of my professional judgment.

Signed:

A handwritten signature in blue ink, appearing to read 'Yonanda Martin', with a small blue dot to the right of the signature.

Date: 2022/04/18

## SPECIALIST REPORTING REQUIREMENTS

### Specialist Reporting Requirements According to Appendix 6 of the National Environmental Management Act (Act 107 of 1998), Environmental Impact Assessment Regulation 2014 (as amended on 7 April 2017)

Requirement	Relevant section in report
Details of the specialist who prepared the report	Appendix A
The expertise of that person to compile a specialist report including a curriculum vitae	Appendix A
A declaration that the person is independent in a form as may be specified by the competent authority	Page iii
An indication of the scope of, and the purpose for which, the report was prepared;	Page 1
An indication of the quality and age of base data used for the specialist report;	N/A
A description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Page 10 - 14
The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Page 6
A description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Appendix B
Details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure	Page 15 - 18
An identification of any areas to be avoided, including buffers	Page 21
A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Figure 2 & Figure 7
A description of any assumptions made and any uncertainties or gaps in knowledge;	Page 1
A description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Page 21 - 28
Any mitigation measures for inclusion in the EMPr;	Page 29
Any conditions for inclusion in the environmental authorisation	Page 29
Any monitoring requirements for inclusion in the EMPr or environmental authorisation	Page 29

A reasoned opinion whether the proposed activity, activities or portions thereof should be authorised regarding the acceptability of the proposed activity or activities; and	Page 34
If the opinion is that the proposed activity, or activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	Page 34
A description of any consultation process that was undertaken during the course of carrying out the study	Page 9
A summary and copies if any comments that were received during any consultation process	Page 9
Any other information requested by the competent authority.	N/A

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**ABBREVIATIONS, ACORNYMS AND GLOSSARY**

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DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
EMPr	Environmental Management Programme
NEMA	National Environmental Management Act, Act No. 107 of 1998
SACNASP	South African Council for Natural Scientific Profession
SAHRA	South African Heritage Resources Agency
SDF	Spatial Development Framework
VIA	Visual Impact Assessment
Zol	Zone of Influence or Zone of Potential Influence

<b>Change in Landscape</b>	<p><i>Fundamental change</i> – dominates the view frame and experience of the receptor;</p> <p><i>Noticeable change</i> – clearly visible within the view frame and experience of the receptor;</p> <p><i>Some change</i> – recognisable feature within the view frame and experience of the receptor;</p> <p><i>Limited change</i> – not particularly noticeable within the view frame and experience of the receptor;</p> <p><i>Generally compatible</i> – Practically not visible, or blends in with the surroundings.</p>
<b>Cumulative Effects</b>	The summation of effects that result from changes caused by a development in conjunction with the other past, present or reasonably foreseeable actions.
<b>Landscape Character</b>	The individual elements that make up the landscape, including prominent or eye-catching features such as hills, valleys, woods, trees, water bodies, buildings and roads. They are generally quantifiable and can be easily described.
<b>Landscape Impact</b>	Landscape effects derive from changes in the physical landscape, which may give rise to changes in its character and how this is experienced (Landscape Institute and the Institute of Environmental Management and Assessment, 2013).
<b>Landscape Integrity</b>	The compatibility or similarity of the project with the qualities of the existing landscape or the 'sense of place'.
<b>Study area</b>	For the purposes of this report the Project Study area refers to the proposed project footprint / project site as well as the 'zone of potential influence' (the area defined as the radius about the centre point of the project beyond which the visual impact of the most visible features will be insignificant) which is a 5,0km radius surrounding the proposed project footprint / site.
<b>Project Footprint / Site</b>	For the purposes of this report the Project <i>site / footprint</i> refers to the actual footprint of the new chute and coal stockpile and associated infrastructure.
<b>Sense of Place (genius loci)</b>	Sense of place is the unique value that is allocated to a specific place or area through the cognitive experience of the user or viewer. <i>A genius locus literally means 'spirit of the place'.</i>
<b>Sensitive Receptors/ Viewers</b>	Sensitivity of visual receptors (viewers) to a proposed development.

<b>Viewshed analysis/ Line of Sight</b>	The two-dimensional spatial pattern created by an analysis that defines areas, which contain all possible observation sites from which an object would be visible. The basic assumption for preparing a viewshed/line of sight analysis is that the observer eye height is 1,8m above ground level. This analysis is based on worst-case scenario and doesn't take vegetation buffers or other structures into consideration.
<b>Visual Absorption Capacity</b>	The potential of the landscape to conceal the proposed project. VAC depends upon general topography, aspect, tree cover or other visual obstruction, elevation and distance.
<b>Visual Exposure of the area</b>	The geographic area from which the project will be visible, or view catchment area.
<b>Visual Impact</b>	Visual effects relate to the changes that arise in the composition of available views because of changes to the landscape, to people's responses to the changes, and to the overall effects with respect to visual amenity.
<b>Visibility</b>	The visibility of the project is based on distance from the project to selected viewpoints.
<b>Worst-case Scenario</b>	Principle applied where the environmental effects may vary, for example, seasonally to ensure the most severe potential effect is assessed.
<b>Zone of Potential Visual Influence</b>	By determining the zone of potential visual influence, it is possible to identify the extent of potential visibility and views which could be affected by the proposed development. Its maximum extent is the radius around an object beyond which the visual impact of its most visible features will be insignificant primarily due to distance.



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**TABLE OF CONTENT**


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<b>GENERAL INFORMATION</b> .....	ii
<b>DECLARATION OF INDEPENDENCE</b> .....	iii
<b>ABBREVIATIONS, ACORNYMS AND GLOSSARY</b> .....	vi
<b>INTRODUCTION</b> .....	1
Objective of the Specialist Study.....	1
Terms and Reference.....	1
Assumption, Uncertainties and Limitations.....	1
<b>LEGISLATION AND GUIDELINES</b> .....	6
<b>METHODOLOGY</b> .....	7
Methodology .....	7
<b>PROJECT DESCRIPTION</b> .....	8
<b>VISUAL CONCERNS</b> .....	10
<b>VISUAL CHARACTER</b> .....	11
The Study Area.....	11
The Natural Landscape .....	11
Land Use.....	11
Landscape Character Types.....	12
<b>VISUAL RESOURCE</b> .....	17
Visual Resource Value / Scenic Quality.....	17
Sense of Place .....	20
<b>VISUAL RECEPTORS</b> .....	21
<b>LANDSCAPE IMPACT</b> .....	23
<b>VISUAL IMPACT</b> .....	24
Sensitive Viewers and Locations .....	24
Visual Exposure.....	25
Visual Absorption Capacity (VAC) .....	27
Landscape Integrity.....	27
Intensity of Impact.....	28
<b>MITIGATION MEASURES</b> .....	30
Planning and site development .....	30
Earthworks .....	30
Landscaping and ecological approach.....	30
Lighting.....	31

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<b>SIGNIFICANCE OF THE IMPACT</b> .....	32
<b>CUMULATIVE IMPACT</b> .....	34
Cumulative effect of the Project .....	34
<b>CONCLUSION AND RECOMMENDATIONS</b> .....	35
<b>REFERENCES</b> .....	36
<b>ANNEXURE A – CV OF INDEPENDENT AUDITOR</b> .....	37
<b>APPENDIX B: APPROACH FOR DETERMINING THE VISUAL IMPACT</b> .....	40
<b>APPENDIX C: CRITERIA FOR SIGNIFICANCE OF IMPACT ASSESSMENT</b> .....	43

**LIST OF TABLES**

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Table 1	Land Use within the Study Area
Table 2	Value of the Visual Resource
Table 3	Potential Sensitivity of Visual Receptors – the Project
Table 4	Sensitive Receptors – Visual Exposure
Table 5	Visual Intrusion
Table 6	Intensity of Impact of the proposed Project

**LIST OF FIGURES**

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Figure 1	Locality Map
Figure 2	Locality Map
Figure 3	Potential Sensitive Viewers & Viewpoints
Figure 4	Site Layout Plan
Figure 5	Landscape Character
Figure 6	Landscape Character
Figure 7	Landscape Character
Figure 8	Landscape Character
Figure 9	Land Use/ Aesthetic Quality
Figure 10	Line of sight/ Viewshed

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## INTRODUCTION

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Green Tree Environmental Consulting was appointed to conduct a Visual Impact Assessment (VIA) for the proposed Eskom Northern Kwa-Zulu Natal Strengthening Iphiva Substation (Figure 1 - 2: Locality Map and Figure 3: Aerial View).

The Environmental Impact Assessment was conducted in 2018 but the locality of the Iphiva Substation has subsequently changed and therefore the specialist studies need to be revised in order to assess the new project location. This VIA Report will form part of the environmental process in order to obtain authorisation for the proposed Project change.

### Objective of the Specialist Study

The main aim of the study is to ensure that the visual/aesthetic consequences of the proposed Project is understood and adequately considered in the impact assessment process. The VIA Report will be compiled in terms of Appendix 6 of the National Environmental Management Act (Act 107 of 1998): Environmental Impact Assessment Regulations 2014 (amended 2017).

### Terms and Reference

A specialist study is required to assess the potential visual impacts arising from the Project and therefore the following terms of reference was established:

- Conduct a field survey of the proposed project area and photograph the area from sensitive viewing points (site visit was undertaken on 16 August 2021);
- Comment on the potential impact of the proposed Project and its cumulative effects;
- Provide possible mitigation measures;
- Make a reasoned opinion whether the proposed activity, activities or portions thereof should be authorised regarding the acceptability of the proposed activity or activities.

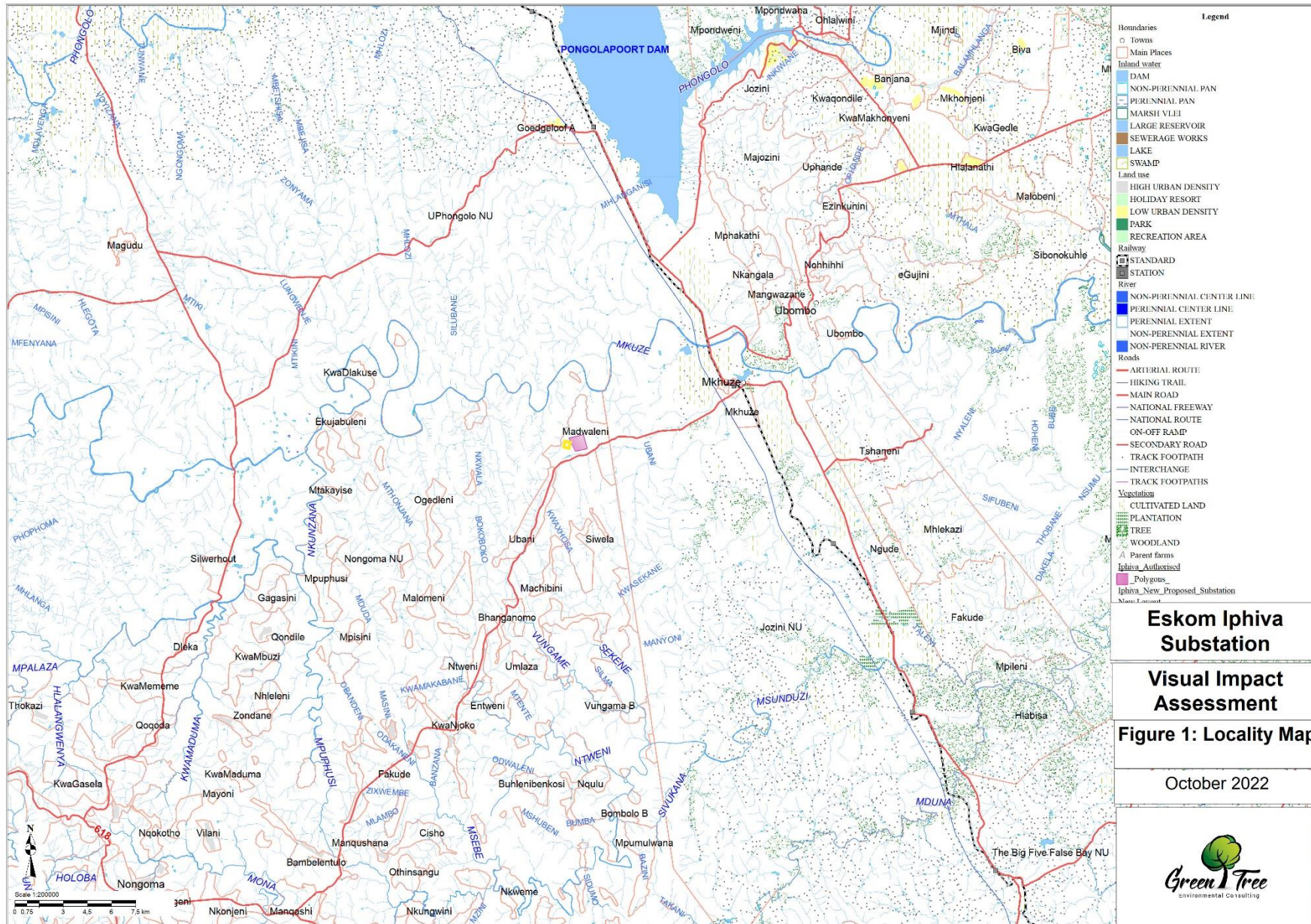
### Assumption, Uncertainties and Limitations

The following assumptions limitations have been made in the study:

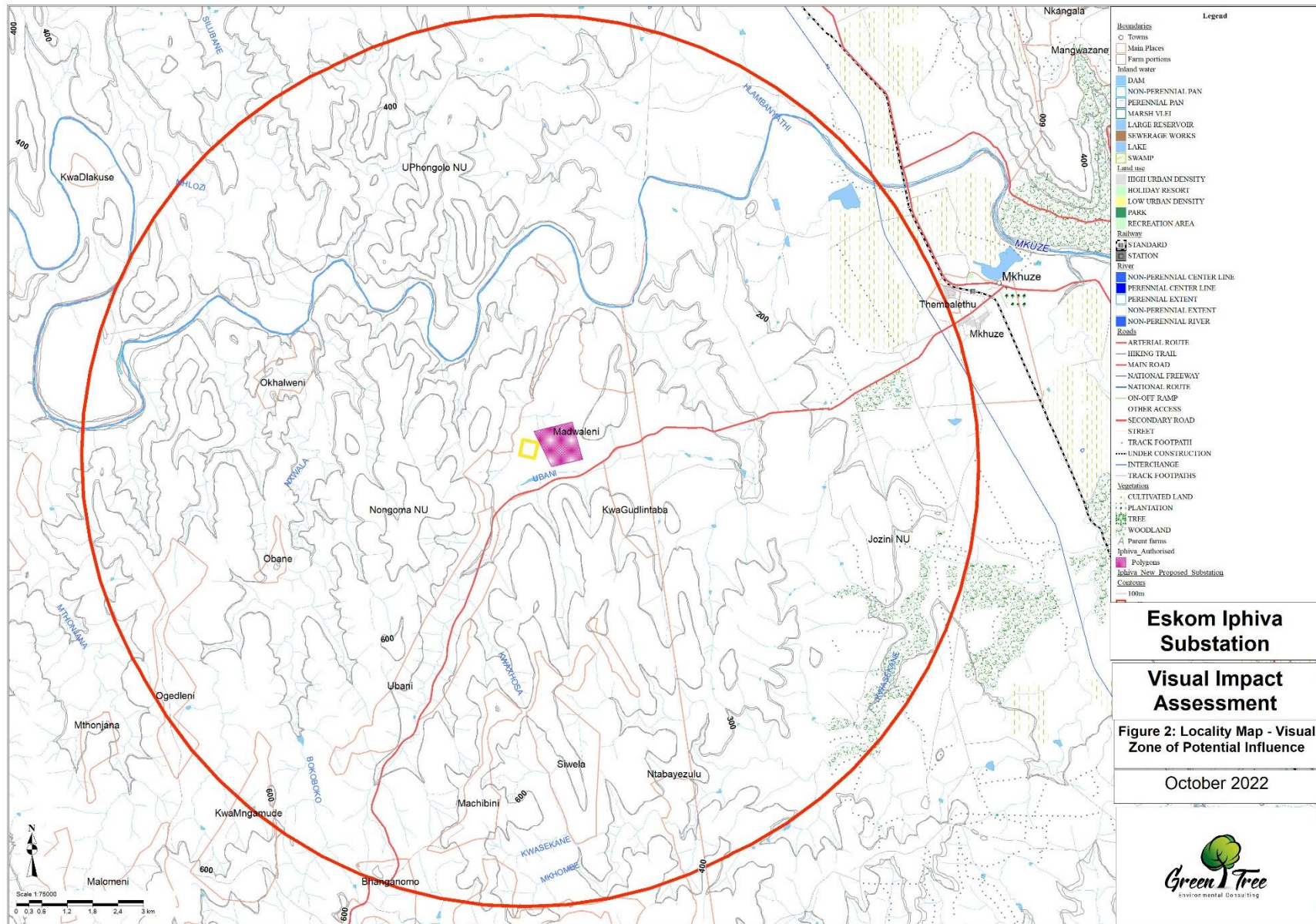
- The extent of the study area is determined by the zone of potential influence, which in this study relates to a radius of 10km around the Project site. At 10km and beyond the Project would recede into background views and or be screened by existing buildings, vegetation, topography or infrastructure;
- The viewshed analysis/ line of site was determined by looking at the topography of the area, the viewshed doesn't take the plant cover into consideration;
- It was assumed that the residential dwellings surrounding the proposed Project was occupied, unless otherwise confirmed during the site visit;
- There are no people located within the footprint of the substation. Should there be people located within the servitude or Eskom owned land, they will be relocated. At this stage there is however no indication that anybody will be relocated;

- The description of project components is as per the information provided by the Environmental Assessment Practitioner;
- During the compilation of this report the public participation has not yet commenced and therefore the interested and affected parties' comments and or concerns were not included. The comments from the interested and affected parties will be considered once received.

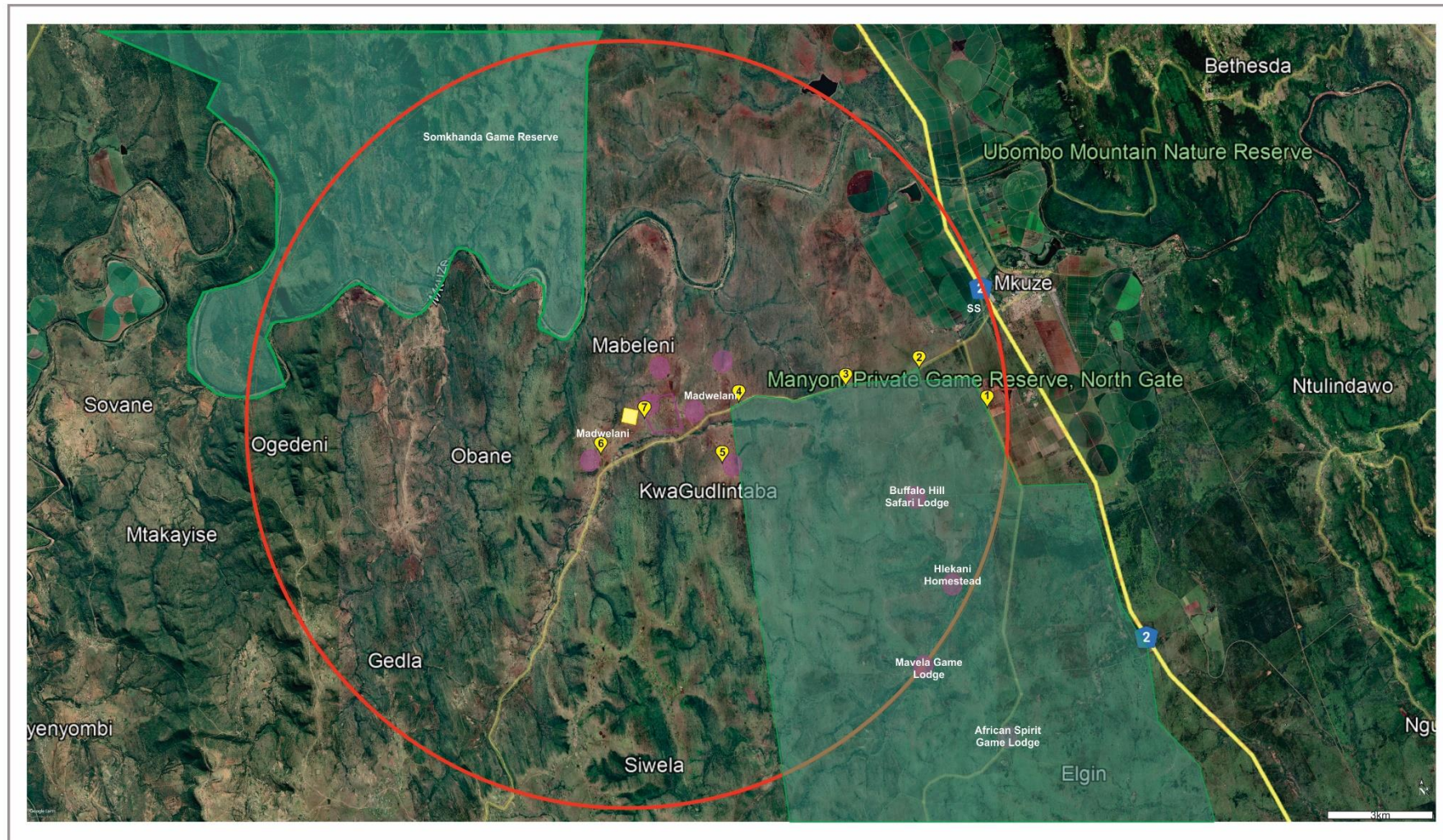












**Figure 3: POTENTIAL SENSITIVE VIEWERS & VIEWPOINTS**  
**Eskom Iphiva Substation**  
 October 2022



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## LEGISLATION AND GUIDELINES

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This report adheres to the following legal requirements and guideline documents.

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

The specialist report is in accordance to the specification on conducting specialist studies as per Government Gazette (GN) R 982 of the National Environmental Management Act (NEMA) Act 107 of 1998. The mitigation measures as stipulated in the specialist report can be used as part of the Environmental Management Programme (EMPr) and will be in support of the Environmental Impact Assessment (EIA) and Appendix 6 of the EIA Regulations 2014 (amended 2017).

### The National Heritage Resources Act (25 of 1999)

The Act is applicable to the protection of heritage resources and includes the visual resources such as cultural landscapes, nature reserves, proclaimed scenic routes and urban conservation areas.

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

Although the guidelines were specifically compiled for the Province of the Western Cape, they provide guidance that is appropriate for any EIA process. The Guideline document also seeks to clarify instances when a visual specialist should get involved in the EIA process.

## METHODOLOGY

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### Methodology

The following method was used:

- Site visit: A field survey was undertaken (7 April 2022) in order to document the receiving environment
- Project components: The physical characteristics of the project components will be described and illustrated based on information supplied by the Environmental Assessment Practitioner.
- The landscape character of the study area will be described. The description of the landscape focused on the nature and character of the landscape rather than the response of a viewer.
- The visual resource/ scenic quality of the area will be determined by looking at the quality of the landscape.
- The sense of place of the study area will be described as to the uniqueness and distinctiveness of the landscape.
- The visual impact will be determined looking at the sensitivity of the visual receptors/ viewers, the visual exposure, visibility and the visual absorption capacity.
- The significance of the visual impact will be determined by using the criteria provided by the Environmental Assessment Practitioner.
- A line of sight/ viewshed analysis will be generated in order to illustrate the visibility and visual exposure of the proposed project.
- Mitigation measures will be suggested that will form part of the EMPr.

The Approach and Methodology used for the Visual Impact assessment is based on work and research done by Graham Young, the Guidelines for Landscape and Visual Impact Assessment (Landscape Institute and Institute of Environmental Management, 2013) and the Guidelines issued by Western Cape Province (2005), Refer to Appendix B.

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## PROJECT DESCRIPTION

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The following Project description was provided by the Environmental Assessment Practitioner.

In order to strengthen and alleviate current and future network constraints in northern Kwa-Zulu Natal, it is proposed that the Iphiva 400/132 kV Substation be introduced in the area, which will de-load the main sub-transmission network and improve the voltage regulation in the area. The Iphiva Substation will be integrated with the existing electricity network with one 400 kV powerline and seven 132 kV powerlines that enter and leave the substation in various locations.

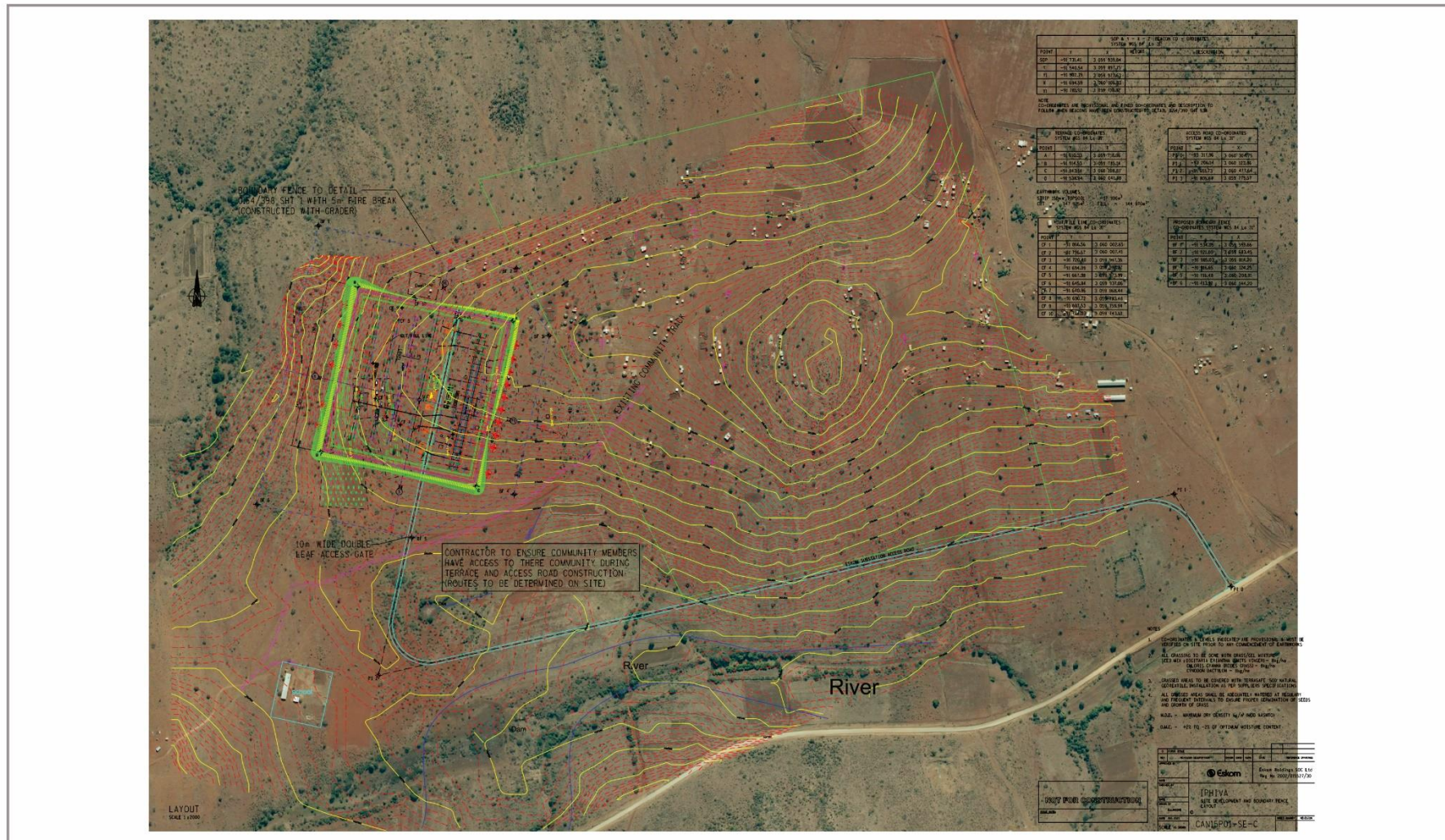
The proposed substation will comprise of the following:

- A total footprint of 600 x 600 m (i.e., 36 ha) will be required for the development, within a site-specific study area of 1km x 1 km. This footprint will include construction requirements and will be rehabilitated and fenced theoff.
- The 36-ha development footprint area includes provisions for an
  - 80 m high microwave radio communication mast,
  - oil and fuel storage facilities, and an oil bund to contain any accidental transformer oil spills.
- The proposed substation will comprise standard electrical equipment, including transformers, reactors, busbars, and isolators.

A new main access road will be established to provide access to the Iphiva Substation. The proposed road will be as follows:

- The main access road (gravel) will be approximately 6 - 7m wide and approximately 2.1km in length.

It should be noted that the proposed project site will be accessed via a new proposed road from the P234 Gravel Road which branches off the N2 National Road. The proposed project location is approximately 9km north-west of the N2 National Road.



Site layout plan as provided by the Environmental Consultant - August 2022

Figure 4: SITE LAYOUT PLAN

Eskom Iphiva Substation  
June 2023



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## **VISUAL CONCERNS**

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The public participation process will be conducted by Margen Industrial Services. At this stage no visual concerns were received, but should there be any visual concerns it will be addressed accordingly.



## VISUAL CHARACTER

### The Study Area

The study area is characterised by mountains, rivers and smaller streams, villages and agricultural fields. The mountains, rivers and streams create a rolling topography which is evident in the views captured in Figures 5 - 8 (Landscape Character). The vegetation on site is characterised by Mucina and Rutherford (2006) as Zululand Lowveld. Refer to Figures 5 – 8 for the panoramas illustrating the character and nature of the study area and Figure 3: Potential Sensitive Viewers and Viewpoints, which indicates the location of the viewing points.

### The Natural Landscape

The study area is characterised by a rolling topography with mountains located to the south and the west of the study site and smaller koppies to the east of the study site. The vegetation is a combination of grassland and bushveld trees with a medium height. In some sections the vegetation cover is dense but the vegetation cover surrounding the site is not as dense and is more a combination of grassland with a few trees. This could mainly be due to the small villages surrounding the study site. The non-perennial Ubani River flows along the southern boundary of the study site.

### Land Use

The primary land-uses within the study area/ zone of potential influence are described in the table below.

**Table 1: Land Use within the Study Area**

Land Use	Description
Residential	The residential component of the study area mainly consists of small villages. There are a few farmsteads scattered throughout the study area as well as lodges that provide accommodation. The bigger towns is Mkuze and Pongola, which is located beyond the 10km radius of the project area.
Industrial/ Mining	There are no industrial or mining related activities within the project area.
Infrastructure	The access road to the project site is a gravel road. Other roads include the N2, R69 and the R66 which are all tarred roads. The infrastructure includes the existing Eskom lines that traverse the study area as well as the substation located at the entrance to the Senekal Boerdery.

Institutional/Recreational	There are no institutional or recreational facilities, except for the school located within the village.
Tourism	The section of the N2 is used by tourist to travel to tourist destinations such as Jozini, Sodwana Bay, St Lucia and other holiday destinations. The area is also well known for its game lodges and nature reserves that are spread out through the study area but also surrounding areas. The Somkhanda Game Reserve and the Zululan Rhino Reserve falls within the study area. These reserves host a few lodges such as the Manyoni Game Lodge, the Zimanga Game Lodge, Buffalo Hill Safari Lodge and the Hlekani Homestead.

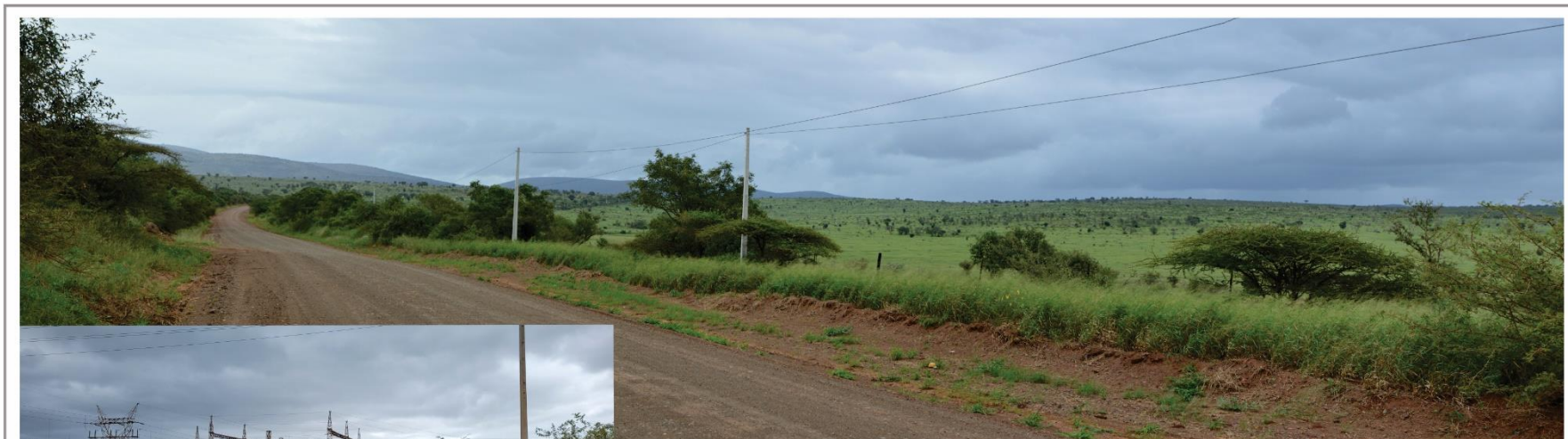
### Landscape Character Types

Landscape character types are landscape units refined from Mucina and Rutherford (2009) vegetation types, the regional physiographic and cultural data derived from 1:50 000 topographical maps, aerial photographs and information gathered on the site visit. Dominant landform and land use features (e.g., hills, rolling plains, valleys and mining areas) of similar physiographic and visual characteristics, typically define landscape character types.

Photographic panoramas are presented in Figures 5 – 8 (Landscape Character) to illustrate the nature and character of the study area's landscape. Figure 3: Sensitive Viewer Location and Viewpoints illustrates the location of the viewing points and Figure 8: Aesthetic Quality shows the spatial distribution of the various landscape types identified within the study area. These are:

- Mountains
- Rivers/ streams
- Agricultural Holdings/ Grassland
- Residential (Villages)
- Lodges or tourist accommodation
- Infrastructure (roads, railway and power lines)

The landscape types are discussed in terms of their visual appeal in the Section below to determine the baseline (i.e. quality of the visual resource) of the study area.



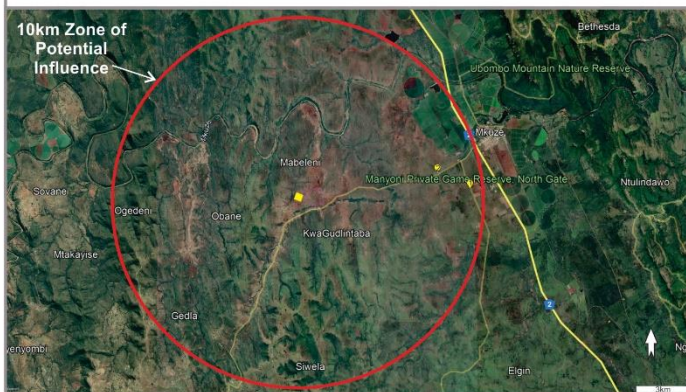
View 2: From a local road (Mkuze Road), approximately 7.4km east of the project site.



Photo A: Example of a substation located within the ZOI of the Project.



View 1: From a local road (D240 - Monyani Lodge), approximately 8.6km east of the site.



Refer to Figure 3 for the location of the viewpoints

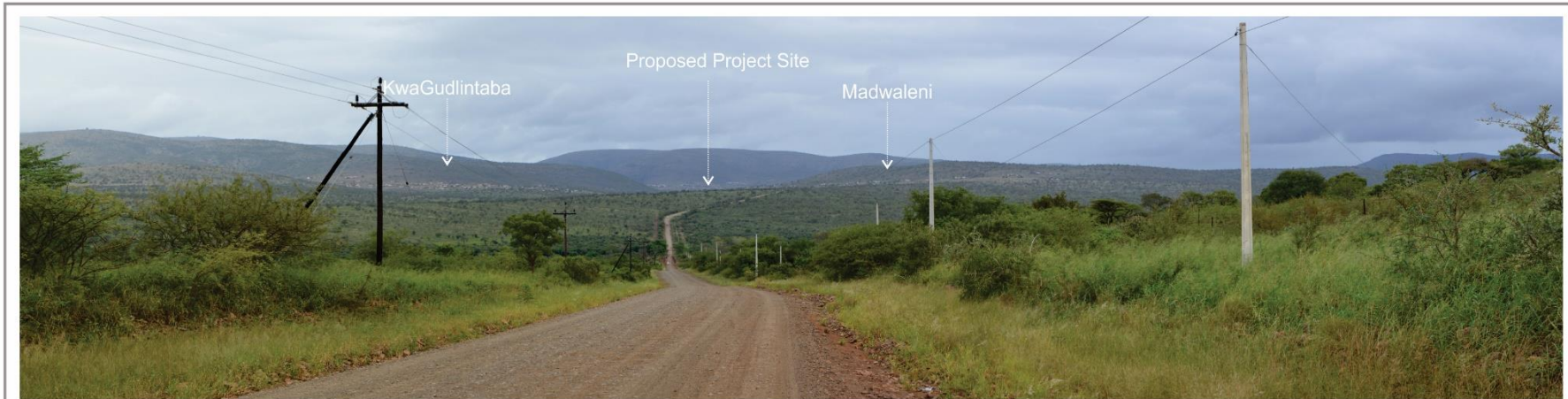
## Figure 5: LANDSCAPE CHARACTER

### Eskom Iphiva Substation

June 2023







View 3: From a local road (between Mkuze and Ntweni), approximately 5.8km east of the site boundary.



View 5: From the KwaGudlintaba community, approximately 1.8km south-east of the site boundary.



Refer to Figure 3 for the location of the viewpoints

## Figure 6: LANDSCAPE CHARACTER

### Eskom Iphiva Substation

June 2023







View 4a: From a local road (between Mkuze and Ntweni), approximately 5.8km east of the site boundary.



View 4b: From a local road (between Mkuze and Ntweni) towards the Manyoni Game Reserve, approximately 5.8km east of the site boundary.



Refer to Figure 3 for the location of the viewpoints

## Figure 7: LANDSCAPE CHARACTER

### Eskom Iphiva Substation

June 2023



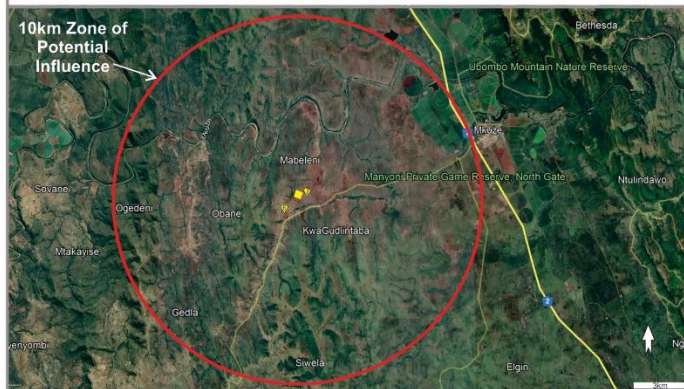




View 6: From the Madwaleni community towards the project site, approximately 0.6km from the project boundary.



View 7: From the Madwaleni community towards the project site.



Refer to Figure 3 for the location of the viewpoints

## Figure 8: LANDSCAPE CHARACTER Eskom Iphiva Substation

June 2023



## VISUAL RESOURCE

### Visual Resource Value / Scenic Quality

The scenic/aesthetic quality of the study area is primarily derived from the combination of land-uses described above and the rolling topography created by the mountains and rivers, as illustrated in Figures 5 - 8 (Landscape Character). There are small villages and some infrastructure that attributes to the man-made impacts of the area. Refer to Figure 9: Aesthetic Quality.

When considering the criteria as listed in Table 2: Value of Visual Resource below, an overall rating of *high* is allocated to the study area. The natural/pastoral landscape has not been compromised by the implementation of existing infrastructure and still gives the area a rural feel with the mountains, rivers, savanna and small villages. A summary of the study area's visual resource values is tabulated in Table 2: Value of Visual Resource below.

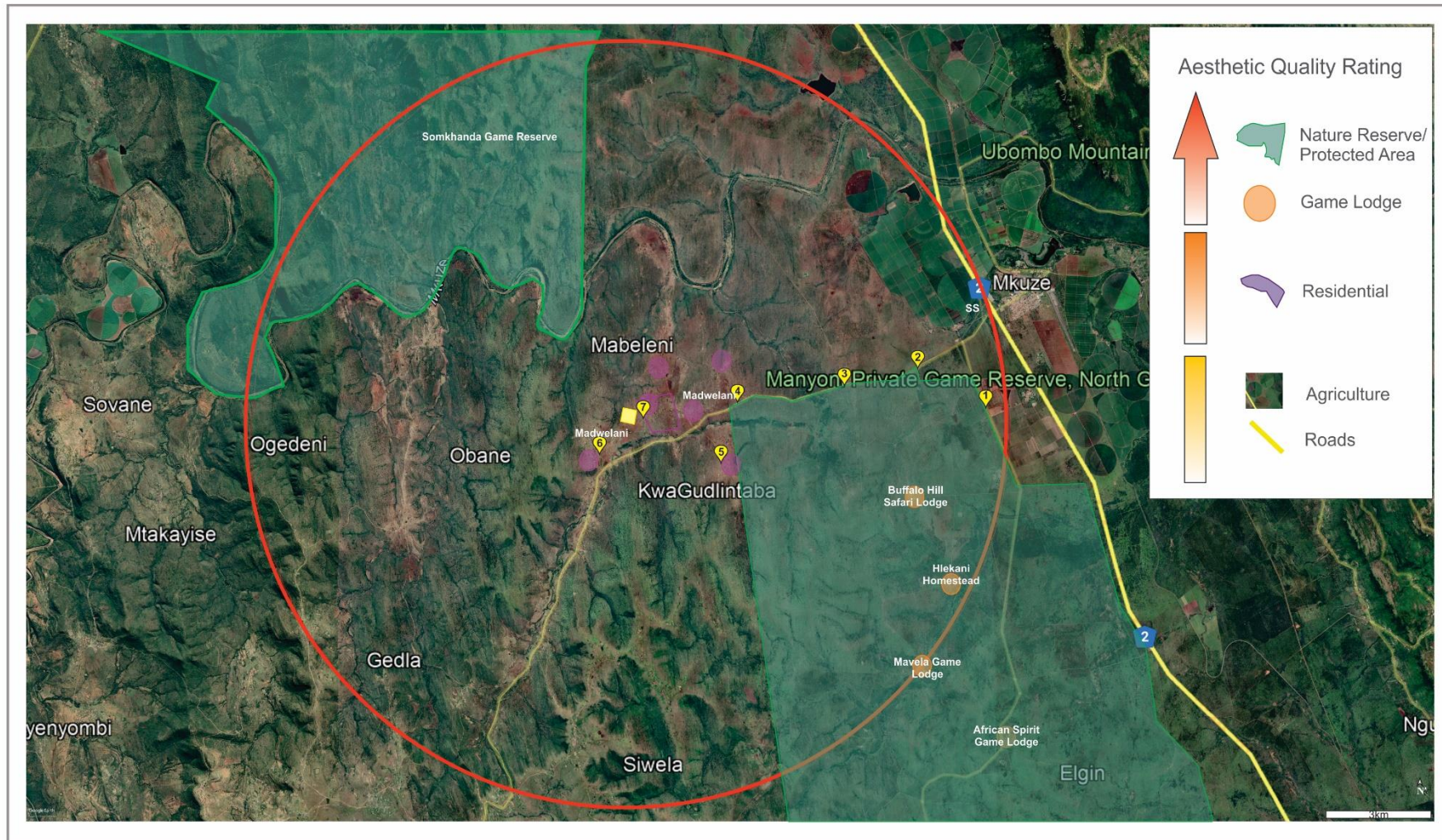
**Table 2: Value of the Visual Resource**

Value	Description	Visual Resource
<b>High</b>	<p>This landscape type is considered to have a <i>high</i> value because it is a:</p> <p>Distinct landscape that exhibits a very positive character with valued features that combine to give the experience of unity, richness and harmony. It is a landscape that may be of particular importance to conserve and which has a strong sense of place.</p> <p><u>Sensitivity:</u></p> <p>It is sensitive to change in general and will be detrimentally affected if change is inappropriately dealt with.</p>	<p>Water bodies:</p> <ul style="list-style-type: none"> <li>Rivers such as the Mkuze, Ubani and Kwaxhosa</li> </ul> <p>Nature Reserve/ Protected Area:</p> <ul style="list-style-type: none"> <li>Zululand Rhino Reserve</li> <li>Somkhanda Game Reserve</li> </ul> <p>Lodges:</p> <ul style="list-style-type: none"> <li>Manyoni Private Game Reserve</li> <li>Zimanga Game Lodge</li> <li>Buffalo Hill Safari Lodge</li> <li>Hlekani Homestead</li> </ul>
<b>Moderate</b>	<p>This landscape type is considered to have a <i>moderate</i> value because it is a:</p> <p>Common landscape that exhibits some positive character, but which has evidence of alteration / degradation/ erosion of features resulting in areas of more mixed character.</p>	<p>Agricultural Activities</p> <ul style="list-style-type: none"> <li>Grassland or grazing veld</li> <li>Crops (Senekal Boerdery)</li> </ul>

	<p><u>Sensitivity:</u> It is potentially sensitive to change in general and change may be detrimental if inappropriately dealt with</p>	<p>Villages (residential component)</p>
<p><b>Low</b></p>	<p>This landscape type is considered to have a <i>low</i> value because it is a: Minimal landscape generally negative in character with few, if any, valued features.</p> <p><u>Sensitivity:</u> It is not sensitive to change in general and change</p>	<p>Infrastructure</p> <ul style="list-style-type: none"> <li>• Substation</li> <li>• Power lines</li> <li>• Roads</li> </ul>

(After: The Landscape Institute with the Institute of Environmental Management and Assessment, 2013)





**Aesthetic Quality Rating**

- Nature Reserve/Protected Area
- Game Lodge
- Residential
- Agriculture
- Roads

- New Proposed Project Site
- Authorised Project Site
- ZoPI (10km)
- Potential Sensitive Viewer Areas
- Viewpoints

**Figure 9: LANDSCAPE CHARACTER**  
**Eskom Iphiva Substation**  
 June 2023

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### Sense of Place

According to Lynch (1992) sense of place is the extent to which a person can recognize or recall a place as being distinct from other places - as having a vivid, or unique, or at least particular, character of its own. The sense of place for the study area derives from the combination of all landscape types and their impact on the senses. The sense of place of the study area is a rural/ natural or pastoral sense of place. The dominant landscape character is still the natural elements such as the mountains, rivers, grassland and trees. There are a few villages, farmsteads and crops but this all contributes to the rural sense of place of the area.

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## VISUAL RECEPTORS

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The sensitivity of the visual receptors/ viewers is determined by looking at the susceptibility of the visual receptors to the change that the proposed Project will bring to their views. The susceptibility of the visual receptor is a function of:

- Occupation or activity of people experiencing the view at particular locations; and
- The extent to which their attention or interest may therefore be focused on the views and the visual amenity they experience at particular locations.

The Landscape Institute with the Institute of Environmental Management and Assessment (2013) therefore suggest that the visual receptors most susceptible to change are generally likely to include:

- Residents at home;
- People who are engaged in outdoor recreation, including use of public rights of way, whose attention or interest is likely to be focused on the landscape and or particular views;
- Visitors to heritage assets or other attractions, where views of the surroundings are an important contributor to the experience;
- Communities where views contribute to the landscape setting and enjoyed by residents in the area.

Visual receptors with a moderate susceptibility to change will include:

- Travellers on road, rail or other transport routes.

Visual receptors that are likely less sensitive to change would include:

- People engaged in outdoor sport or recreation which does not involve or depend on appreciation of views of the landscape;
- People at their place of work whose attention may be on their work and not on their surroundings.

When considering the proposed project, the visual receptors identified during the site visit will include the following, also refer to Table 3: Potential Sensitivity of Visual Receptors below:

- Receptors located in the residential areas (villages or farmsteads);
- People visiting tourist destinations (nature reserve as well as tourist venues);
- people travelling along the local roads located within the study area;
- people traveling to and from work.



**Table 3: Potential Sensitivity of Visual Receptors – the Project**

<b>Value</b>	<b>Type of viewer</b>	<b>Potential Sensitive Receptors</b>
<b>High</b>	Residents staying within the villages that surround the study site.  View 5 – Figure 6 View 6 and 7 – Figure 8	Residents bordering the project site are considered to be more sensitive since the project will be in their foreground view.  Other potential sensitive viewers include viewers from neighbouring farms.
	Tourist  View 1 and 2 – Figure 5	People visiting the Somkhanda Game Reserve and the Zululand Rhino Reserve, as well as lodges such as the Manyoni Private Game Reserve, Zimanga Game Lodge, Buffalo Hill Safari Lodge and Hlekani Homestead.
<b>Moderate</b>	Locals and visitors travelling through the study area on the local roads.  View 2 – Figure 5 View 3 – Figure 6	
<b>Low</b>	People working within the study area and travelling along local roads whose attention may be focused on their work or activity and who therefore may be potentially less susceptible to changes in the view.	

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## LANDSCAPE IMPACT

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The *landscape impact* (i.e. the change to the fabric and character of the landscape caused by the physical presence of the intervention) of the proposed Project is considered **high**. The development/construction of the proposed Project will be out of context of the existing rural activities such as the village and natural landscape and grazing fields. The proposed substation forms part of the Eskom Northern Kwa-Zulu Natal Strengthening Project and will be out of context once the rest of the infrastructure has been implemented. The negative impact will contribute to the cumulative nature of the overall Eskom Project.

As stated in the approach section, the physical change to the landscape at the Project site must be understood in terms of the Project's visibility (impact on sensitive views) and its effect on the visual aesthetics of the area (impact on the baseline resource). The following sections discuss the effect that the Project could have on the visual and aesthetic environment.

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## VISUAL IMPACT

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The visual impact of the proposed project will be determined by first looking at the *severity/magnitude* of the visual impact. This is determined using visibility, visual absorption capacity, landscape integrity, visual exposure and viewer sensitivity criteria. When the *severity/magnitude* of the impact is qualified with spatial, duration and probability criteria the significance of the impact can be predicted. This is done by using the Impact Assessment Criteria as provided by the Environmental Assessment Practitioner.

The visual impact of the project will be caused during the construction, when vegetation is cleared for the purpose of site establishment, stockpiling of material, the movement of heavy vehicles and machinery on site, the site office or camp site and the construction of the substation and associated infrastructure. During the operational phase the entire Project will have an impact on the visual resource of the area. It is not anticipated that the proposed Project will be decommissioned and therefore the decommissioning of the project has not been considered as part of this impact assessment. Activities associated with the Project will mostly be visible during day time and at night the security lights associated with the Project will be absorbed with the current lighting of the village.

### Sensitive Viewers and Locations

The most prominent views to the Project site would be from the villages that surround the Project site, this would include Madwaleni (both east and west of the site) and KwaGudlintaba (south of the site). Views from Madwaleni would be foreground views which is mostly open and unobstructed, Views 6 and 7- Figures 8. Refer to Figure 3: Potential Sensitive Viewer and Viewpoints, which illustrates the view sites of the panoramas in Figures 5 - 8 and the nature of potentially sensitive viewing areas. Views from Kwagudlintaba will mostly be middle-ground views with some obstruction of the substation due to the topography of the area.

Other viewers with a potentially *high* sensitivity toward the Project include people visiting the area due to the aesthetic beauty of the area, this would include tourist destinations such as the lodges and the nature/ game reserves in the area. Although these viewers are sensitive viewers it should be noted that the Project would be mostly obstructed and will fall in the background of their views.

### Visibility

The visibility of the proposed project is based on the distance from the proposed project to selected viewpoints. The 'zone of potential influence' was established at 10km, over 10km the impact of the Project's activities would have diminished as the project will recede into an urban background and/or views to the site would be screened by vegetation, the rolling topography and existing residential/urban structures.

It is clear from Figure 9 that the rolling topography, created by the mountains and the rivers/ streams traversing the study area, assist in screening or partially screening the proposed project from viewers

located beyond these landscape structures.

There are sections within the study site that is located on a more elevated area and from where the project site could be visible. The dense tree cover in some of these areas will however contribute to screening the proposed Project, as illustrated in View 1 Figure 5.

### Visual Exposure

Visual exposure is determined by qualifying the visibility with a distance rating to indicate the degree of intrusion and visual acuity. The following criteria was used to describe the visual exposure:

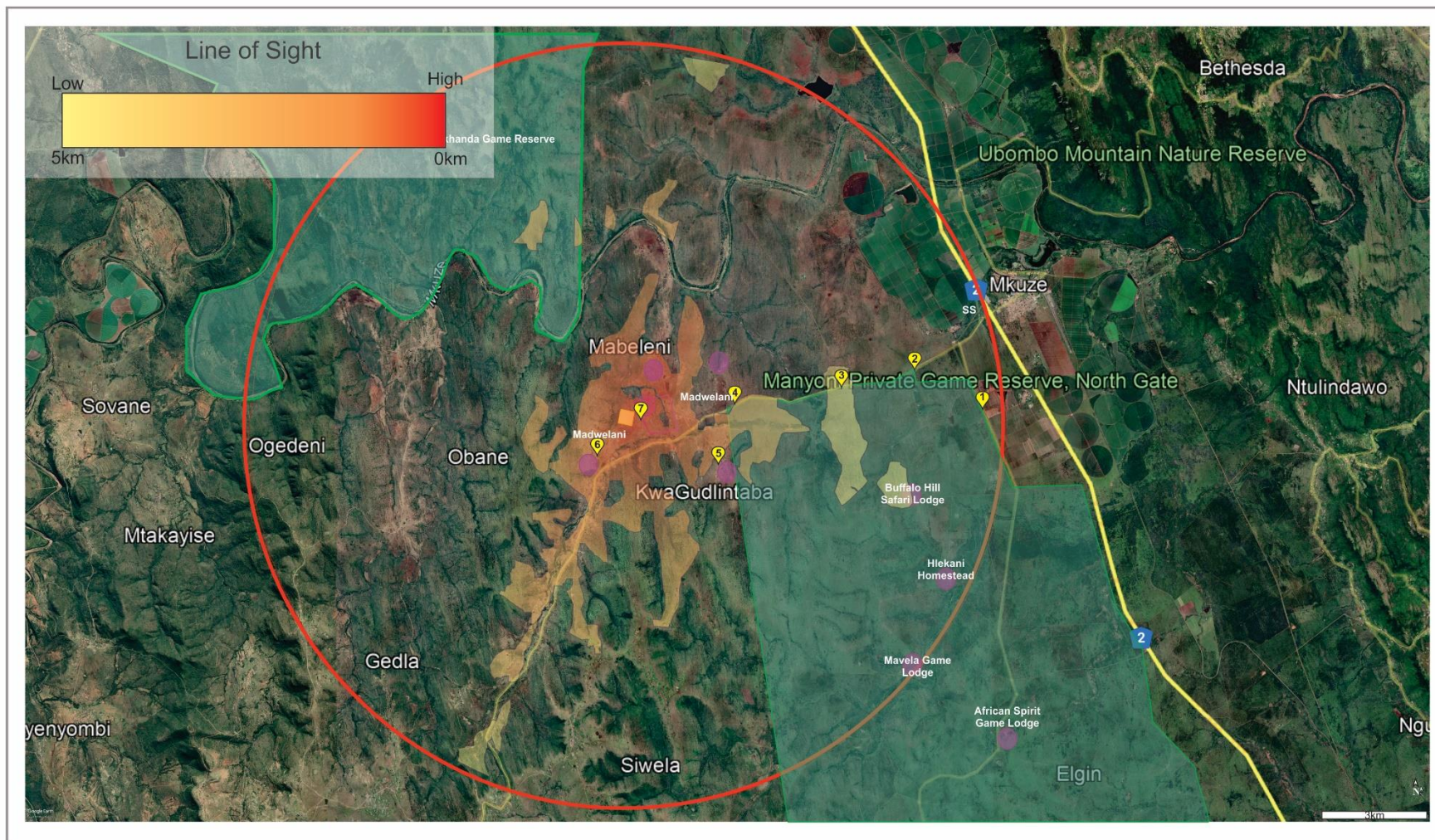
- Highly visible – dominant or clearly noticeable, foreground view (0 – 0.8km)
- Moderately visible – recognisable to the viewer, middle-ground view (0.8km – 2km)
- Marginally visible – not particularly noticeable to the viewer, background view (2km – 5km)






Table 5 below indicates the exposure of the various sensitive viewing areas.

**Table 6: Sensitive Receptors – Visual Exposure**


	<b>Foreground view i.e. 0 – 800m from Project Site</b>	<b>Middle-ground view i.e.800m to – 2km from Project Site</b>	<b>Background view i.e. 2km - 5km from Project Site and beyond</b>
Residential – Madwaleni (east of site)	<b>X clear to partially obstructed</b>	<b>X clear to partially obstructed</b>	
Residential – Madwaleni (west of site)	<b>X clear to partially obstructed</b>		
Residential – KwaGudlintaba (south of site)		<b>X clear to partially obstructed</b>	
Somkhanda Game Reserve (Zimanga Game Lodge)			<b>X partially obstructed to screened view</b>
Zululand Rhino Reserve (Buffalo Hill Safari Lodge and Hlekani Homestead)			<b>X partially obstructed to screened view</b>
Manyoni Private Game Reserve,			<b>X partially obstructed to screened view</b>
Local roads	<b>X clear to partially obstructed</b>	<b>X clear to partially obstructed</b>	<b>X clear to partially obstructed</b>





 New Proposed Project Site	 ZoPI (10km)
 Authorised Project Site	 Potential Sensitive Viewer Areas
	 Viewpoints

**Figure 10: LINE of SIGHT/ VIEWSHED ANALYSIS**  
**Eskom Iphiva Substation**  
 June 2023



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### Visual Absorption Capacity (VAC)

The visual absorption capacity is the potential of the landscape to absorb or conceal the proposed project:

- *High VAC* – e.g. effective screening by topography and vegetation;
- *Moderate VAC* - e.g. partial screening by topography and vegetation;
- *Low VAC* - e.g. little screening by topography or vegetation

The visual absorption capacity of the landscape was considered to be low and, in some instances, depending on where the viewer is located, it can be said to be moderate to high. The area has a rolling topography and therefore the views from areas that are located closer to the rivers/ streams and beyond the mountains/ koppies, are partially obstructed to completely obstructed or screened. This is specifically true for villages located further along the local road, moving south and west of the study site. Viewers located to the north of the project site will experience a high visual absorption capacity since the Mkuze River and the surrounding mountains will screen the view towards the project site.

The vegetation in the study area is a combination of grassland, agricultural fields and bushveld trees that varies from scattered to densely grouped. The vegetation within the immediate vicinity of the project site is mostly a combination of grassland and sparsely scattered trees, this is mainly due to the establishment of the villages. In these areas the vegetation will not contribute to screening or obstructing views and the substation will be clear. As you move further east of the project site the vegetation becomes a bit denser and will aid in screening views towards the project site.

### Landscape Integrity

Landscape integrity refers to the compatibility or similarity of the project with the qualities of the existing landscape, or the 'sense of place'.

- *Low compatibility* – visually intrudes, or is discordant with the surroundings;
- *Medium compatibility* – partially fits into the surroundings, but clearly noticeable;
- *High compatibility* – blends in well with the surroundings.

The landscape integrity of the proposed project was considered to be low compatible. As previously discussed, the main land uses in the area are the villages (residential), grazing field and the natural elements such as the non-perennial river and the mountains or koppies. Although there are infrastructure in the area, the area is still very rural and the substation will not be compatible with the current land uses.



### Intensity of Impact

Referring to discussions above and using the criteria listed in Table 4, the intensity of visual impact of the Project is rated in Table 5 below. To assess the intensity of visual impact four main factors are considered.

- Visual Absorption Capacity: The visual absorption capacity is the potential of the landscape to absorb or conceal the proposed project.
- Landscape Integrity: Landscape integrity refers to the compatibility or similarity of the project with the qualities of the existing landscape, or the 'sense of place'
- Visibility: The area / points from which project components will be visible.
- Visual exposure: Visibility and visual intrusion qualified with a distance rating to indicate the degree of intrusion.
- Sensitivity of the Receptors: Sensitivity of visual receptors to the proposed development

In synthesising the criteria used to establish the intensity of visual impact, a numerical or weighting system is avoided. Attempting to attach a precise numerical value to qualitative resources is rarely successful, and should not be used as a substitute for reasoned professional judgement (Landscape Institute and the Institute of Environmental Management and Assessment, 2013).

According to the results tabulated below in Table 5 the intensity of visual impact (based on the worst case scenario) of the proposed Project will be high as it will cause a major loss to the key elements/features/characteristics of the baseline environment.

**Table 5: Intensity of Impact of the proposed Project**

High	Moderate	Low	Negligible
Total loss of or major alteration to key elements / features / characteristics of the baseline.  i.e. Pre-development landscape or view and / or introduction of elements considered to be totally uncharacteristic when set within the attributes of the receiving landscape.	Partial loss of or alteration to key elements / features / characteristics of the baseline.  i.e. Pre-development landscape or view and / or introduction of elements that may be prominent but may not necessarily be substantially uncharacteristic when set within the attributes of the receiving landscape.	Minor loss of or alteration to key elements / features / characteristics of the baseline.  i.e. Pre-development landscape or view and / or introduction of elements that may not be uncharacteristic when set within the attributes of the receiving landscape.	Very minor loss or alteration to key elements/features/ characteristics of the baseline.  i.e. Pre-development landscape or view and / or introduction of elements that is not uncharacteristic with the surrounding landscape – approximating the 'no change' situation.
High scenic quality impacts would result.	Moderate scenic quality impacts would result	Low scenic quality impacts would result.	Negligible scenic quality impacts would result.

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The intensity of impact is predicted to be high (during construction and operational phases) on sensitive viewers for the following reasons:

- The proposed Project will have a high negative effect on the visual quality of the landscape since it is not compatible with the patterns that define the study area's landscape. The study area is characterised by the natural landscape, rural villages and grazing field; the project is therefore contrasting to the existing land uses.
- The proposed Project will have a low compatibility with the existing land uses.
- The visual absorption capacity of the landscape is moderate due to the rolling topography of the study area.
- The proposed Project will have a high effect on sensitive viewing areas, specifically the residents located along the northern, western and eastern boundary of the project site. The project will be in their foreground view and will change their immediate view/ landscape quality.
- Other sensitive viewers such as KwaGudlintaba will experience less of an intrusion and the effect on these viewers were considered to be moderate.
- Viewers from Somkhanda Game Reserve, Zululand Rhino Reserve, Manyoni Private Game Reserve, Buffalo Hill Safari, Hlekani Homestead and Mavela Game Lodge, although they fall within the Zone of Potential Influence, are not considered sensitive to the change since their views are completely blocked or screened, due to the topography of the area. Their sensitivity is therefore considered to be low.



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## MITIGATION MEASURES

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In considering mitigating measures three rules are considered - the measures should be feasible (economically), effective (how long will it take to implement and what provision is made for management / maintenance) and acceptable (within the framework of the existing landscape and land use policies for the area). To address these, the following principles have been established:

- Mitigation measures should be designed to suit the existing landscape character and needs of the locality. They should respect and build upon landscape distinctiveness.
- It should be recognized that many mitigation measures, especially the establishment of planted screens and rehabilitation, are not immediately effective.

The following mitigation measures are suggested and should be included as part of the Environmental Management Programme (EMPr). The following general actions are recommended:

### Planning and site development

- With the construction of the substation and associated activities (site camp office, stockpiling area and material laydown area), the minimum amount of existing vegetation and topsoil should be removed. Ensure, wherever possible, natural grassland vegetation is retained and incorporated into the site rehabilitation. All top-soil that occurs within the proposed footprint of an activity must be removed and stockpiled for later use.
- Good housekeeping will be required and it is recommended that shade net be used to block views towards the construction site.
- Waste management is essential and can contribute to an untidy and aesthetically displeasing construction site.

### Earthworks

- Earthworks should be executed in such a way that only the footprint and a small 'construction buffer zone' around the proposed activities is exposed. In all other areas, the natural occurring vegetation, more importantly the indigenous vegetation should be retained, especially along the periphery of the site. Dust suppression techniques should be in place always during all phases of the project, where required.

### Landscaping and ecological approach

- Should new vegetation be introduced to the site, an ecological approach to rehabilitation and vegetative screening measures, as opposed to a horticultural approach to landscaping should be adopted.
- Vegetation screens along the east, west and northern boundaries will screen the direct views towards the substation but will not mitigate the visual impact completely since the structures will be visible above the tree line and the power lines connecting the substation with the rest of the Eskom Project will still be visible.

### Lighting

Light pollution is largely the result of bad lighting design, which allows artificial light to shine outward and upward into the sky, where it's not wanted, instead of focusing the light downward, where it is needed. Ill designed lighting washes out the darkness of the night sky and radically alters the light levels in rural areas where light sources shine as 'beacons' against the dark sky and are generally not wanted.

Of all the pollutions faced, light pollution is perhaps the most easily remedied. Simple changes in lighting design and installation yield immediate changes in the amount of light spilled into the atmosphere. The following are measures that must be considered in the lighting design of the Project:

- Install light fixtures that provide precisely directed illumination to reduce light "spillage" beyond the immediate surrounds of the site.
- Avoid high pole top security lighting along the periphery of the site and use only lights that are activated on illegal entry to the site.
- Minimise the number of light fixtures to the bare minimum, including security lighting.
- With the construction of the proposed substation, security lighting should only be used where necessary and carefully directed, preferably away from sensitive viewing areas.

## SIGNIFICANCE OF THE IMPACT

The following tables summarises the consequence and significance of the visual impact. These results are based on worst-case scenario when the impacts of all aspects of the Project are taken together using the impact criteria in Appendix C. Consequence of impact is a function of intensity, spatial extent and duration.

**Table 6: Determining the CONSEQUENCE**

Project Activity	Before Mitigation				After Mitigation:			
	I	SS	D	C	I	SS	D	C
<b>Construction</b>	M	M	L	M	M	M	L	M
<b>Operational</b>	M	M	M	M	L	M	M	M

Note:

I = Intensity      SS = Spatial Scale      D = Duration      C = Consequence

The intensity of impact, rated in Table 5, is further qualified with *extent*, *duration* and *probability* criteria to determine the *significance* of the visual impact. Significance = consequence x probability

**Table 7: SIGNIFICANCE of Visual Impact**

Potential Visual Impact	ENVIRONMENTAL SIGNIFICANCE							
	Before mitigation				After mitigation			
	C	x	P	SIG	C	x	P	SIG
<b>Proposed Project – Construction</b>								
Alteration to the visual quality of the residents staying in the villages surrounding the study site, due to the physical presence and construction activities. The Project and its associated infrastructure will have a high impact on key residential areas such as the bordering villages. Mitigation measures are difficult to implement but good housekeeping measures would result in a reduction in impacts that could cause a nuisance, such as dust, proper waste collection and a clean and neat site camp/office.	M		H	<b>Medium</b>	M		H	<b>Medium</b>
<b>Proposed Project – Operational</b>								
Alteration to the visual quality of the residents staying in the villages surrounding the study site, due to the physical presence of the substation. Mitigation measures are possible but will not be able to hide/screen the proposed activities completely. Although mitigation is possible it will be expensive and it should be remembered that the upper levels of Project structures break the horizon, which makes it more visible. The project will be bordering a residential area (villages) and will therefore be intrusive for residents from that villages.	M		H	<b>Medium</b>	M		H	<b>Medium</b>

Note:  
 C = Consequence                      P = Probability                      Sig = Significance

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## CUMULATIVE IMPACT

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Cumulative landscape and visual effects (impacts) result from additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments (associated with or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future. They may also affect the way in which the landscape is experienced. Cumulative effects may be positive or negative. Where they comprise a range of benefits, they may be considered to form part of the mitigation measures.

Cumulative effects can also arise from the indivisibility of a range of developments and /or the combined effects of individual components of the proposed development occurring in different locations or over a period of time. The separate effects of such individual components or developments may not be significant, but together they may create an unacceptable degree of adverse effect on visual receptors within their combined visual envelopes. Indivisibility depends upon general topography, aspect, tree cover or other visual obstruction, elevation and distance, as this affects visual acuity, which is also influenced by weather and light conditions (Landscape Institute and the Institute of Environmental Management and Assessment, 2013).

### Cumulative effect of the Project

The construction of the Iphiva substation will have a negative impact on the visual quality of the study area. The substation forms part of the Eskom Northern Kwa-Zulu Natal Strengthening Project and will therefore contribute to the *negative* impact of the overall Eskom Project on the landscape aesthetics of the area.

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## CONCLUSION AND RECOMMENDATIONS

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The existing visual condition of the landscape that may be affected by the proposed Project has been described. The study areas scenic quality has been rated moderate within the context of the sub-region and sensitive viewing areas and landscape types identified and mapped indicating potential sensitivity to the proposed development within a 10 km radius of the project site (Zone of potential Influence).

Impacts to views are the highest when viewers are identified as being sensitive to change in the landscape, and their views are focused on and dominated by the change. Visual impacts occur when changes in the landscape are noticeable to viewers looking at the landscape from their homes or travel routes, and important cultural features and historic sites, especially in foreground views. Sensitivity to the project was considered to be high primarily due to the distance of the villages to the substation and its associated infrastructure, and the change it will bring in their immediate foreground views.

The proposed project will be contrasting to the existing land use and will not be absorbed by the surrounding landscape. It will therefore be in the foreground view of residents staying along the north, west and eastern boundary of the project site and the visibility and the intrusion of the project was considered to be high for these sensitive viewers. Viewers that are not located within the direct vicinity of the project site will not experience a high visual impact since the topography and the vegetation in the surrounding area obstruct views towards the project site. The project might be visible from elevated areas but will form part of the background views of these viewers.

During construction the significance of visual impact will be moderate and will remain moderate as the Project enters the operational phase. The significance during the construction period could however become high due to the nuisances that are created by vehicles driving up and down, dust, waste on site and the site or construction yard, if not managed properly.

Mitigation measures will be viable during the first phases of construction but as the substation and other infrastructure is implemented the mitigation measures will be less effective. Good housing keeping will be essential as this will mitigate visual impacts such as dust.



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## **ANNEXURE A – CV OF INDEPENDENT AUDITOR**

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**YONANDA MARTIN**  
**GREEN TREE ENVIRONMENTAL CONSULTING**

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### **EXPERIENCE:**

#### **2006 – 2012**

Environmental Assessment practitioner, **NEWTOWN LANDSCAPE ARCHITECTS**

Responsible for writing up of environmental projects, which includes:

- Basic Assessments,
- Environmental Impact Assessments (Scoping & EIA),
- Environmental Management Programmes (EMPr),
- Environmental Monitoring,
- Water Use Licenses,
- Visual Impact Assessments.

#### **2012 – 2017**

Associate and Senior Environmental Assessment Practitioner, **NEWTOWN LANDSCAPE ARCHITECTS**

- Manager of the Environmental Division at NLA
- Management of junior staff
- Management of specialist
- Management of the proposals and invoices of the Environmental Division
- Responsible for writing up of environmental projects, which includes:
- Basic Assessments,
  - Environmental Impact Assessments (Scoping & EIA),
  - Environmental Management Programmes (EMPr),
  - Environmental Monitoring,
  - Water Use Licenses,
  - Visual Impact Assessments.

### **EDUCATION:**

#### **2003**

BSc. Environmental Sciences, **NORTH WEST UNIVERSITY – POTCHEFSTROOM CAMPUS**

2007

MSc. Ecological Remediation and Sustainable Utilization, **NORTH WEST UNIVERSITY – POTCHEFSTROOM CAMPUS**

Thesis: Tree vitality along the urbanization gradient in Potchefstroom, South Africa

- 2016 Environmental Law Training, Business Success Solutions
- 2016 Invasive Species Training: Module 1 – Introduction to Legislation, South African Green Industries Council (SAGIC)
- 2016 Invasive Species Training: Module 2 – Developing and Implementing Control Plans, South African Green Industries Council (SAGIC)
- 2015 Invasive Species Identification Training Workshop, South African Green Industries Council (SAGIC)
- 2014 Sharpening the Tool: New techniques and methods in Environmental Impact Assessment, SE Solutions
- 2014 First Aid Level 1, Action Training Academy
- 2011 Supervisory Management, ISIMBI
- 2009 Public Participation Course, International Association for Public Participation, Golder Midrand
- 2008 Wetland Training Course on Delineation, Legislation and Rehabilitation, University of Pretoria
- 2008 Environmental Impact Assessment: NEMA Regulations – A practical approach, Centre for Environmental Management: University of North West
- 2008 Effective Business Writing Skills, ISIMBI
- 2007 Short course in Geographic Information Systems (GIS), Planet GIS

**EXPERIENCE:****Environmental Projects**

Diepsloot East Residential Development, Diepsloot. Environmental Impact Assessment, Environmental Management Programme, Water Use License and management of specialist.

Lindley Waste Water Treatment Works, Mogale City Local Municipality project located in Lindley / Lanseria. Environmental Screening, Environmental Impact Assessment, Environmental Management Programme and Water Use License Application and management of specialist.

African Leadership Academy, Laser Park, Johannesburg. This project entails the rectification of activities undertaken by ALA as well as the compilation of an overall Environmental Management Programme (EMPr) that addresses current environmental concerns on campus but also future projects such as recycling, rain water harvesting, vegetable gardens and events.

Orchards Extension 50-53, Orchards. The project includes the construction of a residential development. The project includes monitoring of the environmental conditions as well as the appointment of sub-consultants for rehabilitation purposes.

Kareekloof Oxidation Ponds, Suikerbosrand. This project entails the environmental monitoring during construction and rehabilitation of the project

**Visual Impact Assessments**

Holfontein Integrated Waste Management Facility Project (SLR Consulting (Pty) Ltd), Holfontein, Gauteng Province

Eskom Arnot Ash Dump Project (Environmental Impact Management Services), Rietkuil, Mpumalanga Province

Kalkheuwel Housing Development (ECO Assessments), Kalkheuwel, NorthWest Province

Kyasand Light Industrial Project (Terre Pacis Environmental), Kyasand, Gauteng Province

**AFFILIATIONS:**

Registered Professional Natural Scientist – 400204/09 (September 2009)

Member of IAIAAsa

IAIAAsa Gauteng Branch Chair 2016/17, 2017/18 and 2018/19

## APPENDIX B: APPROACH FOR DETERMINING THE VISUAL IMPACT

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The Approach and Methodology used for the Visual Impact Assessment is based on work and research done by Graham Young, the Guidelines for Landscape and Visual Impact Assessment (Landscape Institute and Institute of Environmental Management, 2013) and the Guidelines issued by Western Cape Province (2005), Refer to Appendix B.

### Approach

The assessment of likely effects on a landscape resource and on visual amenity is complex, since it is determined through a combination of quantitative and qualitative evaluations. When assessing visual impact, the worst-case scenario is considered. Landscape and visual assessments are separate, although linked, procedures.

The landscape, its analysis and the assessment of impacts on the landscape all contribute to the baseline for visual impact assessment studies. The assessment of the potential impact on the landscape is carried out as an impact on an environmental resource, i.e. the physical landscape. Visual impacts, on the other hand, are assessed as one of the interrelated effects on people (i.e. the viewers and the impact of an introduced object into a view or scene).

### The Visual Resource

Landscape character, landscape quality (Warnock & Brown 1998) and “sense of place” (Lynch 1992) are used to evaluate the visual resource i.e. the receiving environment. A qualitative evaluation of the landscape is essentially a subjective matter. In this study the aesthetic evaluation of the study area is determined by the professional opinion of the author based on site observations and the results of contemporary research in perceptual psychology.

Aesthetic value is the emotional response derived from the experience of the environment with its natural and cultural attributes. The response is usually to both visual and non-visual elements and can embrace sound, smell and any other factor having a strong impact on human thoughts, feelings and attitudes (Ramsay 1993). Thus, aesthetic value is more than the combined factors of the seen view, visual quality or scenery. It includes atmosphere, landscape character and sense of place (Schapper 1993).

Studies for perceptual psychology have shown human preference for landscapes with higher visual complexity, for instance scenes with water or topographic interest. Based on contemporary research, landscape quality increases where:

- Topographic ruggedness and relative relief increase;
- Water forms are present;
- Diverse patterns of grassland and trees occur;
- Natural landscape increases and man-made landscape decreases;
- Where land use compatibility increases (Crawford 1994).

Aesthetic appeal (value) is therefore considered high when the following are present (Ramsay 1993):

- Abstract qualities: such as the presence of vivid, distinguished, uncommon or rare features or abstract attributes;
- Evocative responses: the ability of the landscape to evoke particularly strong responses in community members or visitors;
- Meanings: the existence of a long-standing special meaning to a group of people or the ability of the landscape to convey special meanings to viewers in general;
- Landmark quality: a feature that stands out and is recognized by the broader community.

And conversely, it would be low where:

- Limited patterns of grasslands and trees occur;
- Natural landscape decreases and man-made landscape increases;
- And where land use compatibility decreases (Crawford 1994).

In determining the quality of the visual resource for the Project site, both the objective and the subjective or aesthetic factors associated with the landscape are considered. Many landscapes can be said to have a keen sense of place, regardless of whether they are considered to be scenically beautiful. However, where landscape quality, aesthetic value and a strong sense of place coincide, the visual resource or perceived value of the landscape is considered to be very high.

#### Sensitivity of Visual Resource

The sensitivity of a landscape or visual resource is the degree to which a landscape type or area can accommodate change arising from a development, without detrimental effects on its character. Its determination is based upon an evaluation of each key elements or characteristics of the landscape likely to be affected. The evaluation will reflect such factors as its “quality, value, contribution to landscape character, and the degree to which the particular element or characteristic can be replaced or substituted” (Landscape Institute and the Institute of Environmental Management and Assessment, 2013).

#### Sense of Place

Central to the concept of sense of place is that the landscape requires uniqueness and distinctiveness. The primary informant of these qualities is the spatial form and character of the natural landscape taken together with the cultural transformations and traditions associated with the historic use and habitation of the area. According to Lynch (1992), sense of place is the extent to which a person can recognize or recall a place as being distinct from other places – as having a vivid, unique, or at least particular, character of its own. Sense of place is the unique value that is allocated to a specific place or area through the cognitive experience of the user or viewer. In some cases, the values allocated to the place are similar for a wide spectrum of users or viewers, giving the place a universally recognized and therefore, keen sense of place.

The study area’s sense of place is derived from the emotional, aesthetic and visual response to the environment, and therefore it cannot be experienced in isolation. The landscape context must be considered. The combination of the natural landscape (highveld) together with the manmade structures (residential areas, roads, and utilities) contribute to the sense of place for the study area. It is this combination that define the study area, and which establish its visual and aesthetic identity.



Sensitive Viewer Locations

The sensitivity of visual receptors and views are dependent on the location and context of the viewpoint, the expectations and occupation or activity of the receptor or the importance of the view, which may be determined with respect to its popularity or numbers of people affected, its appearance in guidebooks, on tourist maps, and in the facilities provided for its enjoyment and references to it in literature or art.

Typically, sensitive receptors may include:

- Users of all outdoor recreational facilities including public rights of way, whose intention or interest may be focused on the landscape;
- Communities where development results in negative changes in the landscape setting or valued views enjoyed by the community;
- Occupiers of residential properties with views negatively affected by the development.

Views from residences and tourist facilities/routes are typically the most sensitive, since they are frequent and of long duration.

Other, less sensitive, receptors include:

- People engaged in outdoor sport or recreation (other than appreciation of the landscape, as in landscapes of acknowledged importance or value);
- People traveling through or past the affected landscape in cars or other transport modes;
- People at their place of work.

Image 1 below, graphically illustrates the visual impact process used to determine the significance of visual impact of the Project.

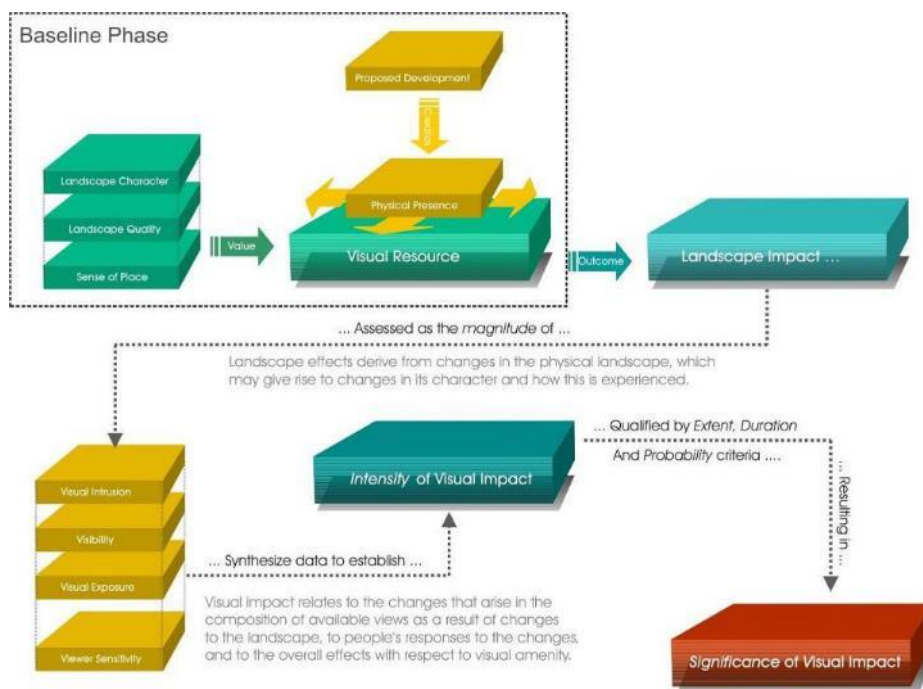


Image 1: Visual Impact Process

## APPENDIX C: CRITERIA FOR SIGNIFICANCE OF IMPACT ASSESSMENT

<b>PART A: DEFINITIONS AND CRITERIA*</b>		
<b>Definition of SIGNIFICANCE</b>	<b>Significance = consequence x probability</b>	
<b>Definition of CONSEQUENCE</b>	<b>Consequence is a function of intensity, spatial extent and duration</b>	
<b>Criteria for ranking of the INTENSITY of environmental impacts</b>	<b>VH</b>	Severe change, disturbance or degradation. Associated with severe consequences. May result in severe illness, injury or death. Targets, limits and thresholds of concern continually exceeded. Substantial intervention will be required. Vigorous/widespread community mobilization against project can be expected. May result in legal action if impact occurs.
	<b>H</b>	Prominent change, disturbance or degradation. Associated with real and substantial consequences. May result in illness or injury. Targets, limits and thresholds of concern regularly exceeded. Will require intervention. Threats of community action. Regular complaints can be expected when the impact takes place.
	<b>M</b>	Moderate change, disturbance or discomfort. Associated with real but not substantial consequences. Targets, limits and thresholds of concern may occasionally be exceeded. Likely to require some intervention. Occasional complaints can be expected.
	<b>L</b>	Minor (Slight) change, disturbance or nuisance. Associated with minor consequences or deterioration. Targets, limits and thresholds of concern rarely exceeded. Require only minor interventions or clean-up actions. Sporadic complaints could be expected.
	<b>VL</b>	Negligible change, disturbance or nuisance. Associated with very minor consequences or deterioration. Targets, limits and thresholds of concern never exceeded. No interventions or clean-up actions required. No complaints anticipated.
	<b>VL+</b>	Negligible change or improvement. Almost no benefits. Change not measurable/will remain in the current range.
	<b>L+</b>	Minor change or improvement. Minor benefits. Change not measurable/will remain in the current range. Few people will experience benefits.
	<b>M+</b>	Moderate change or improvement. Real but not substantial benefits. Will be within or marginally better than the current conditions. Small number of people will experience benefits.
	<b>H+</b>	Prominent change or improvement. Real and substantial benefits. Will be better than current conditions. Many people will experience benefits. General community support.
	<b>VH+</b>	Substantial, large-scale change or improvement. Considerable and widespread benefit. Will be much better than the current conditions. Favourable publicity and/or widespread support expected.
<b>Criteria for ranking the DURATION of impacts</b>	<b>VL</b>	Very short, always less than a year. Quickly reversible
	<b>L</b>	Short-term, occurs for more than 1 but less than 5 years. Reversible over time.
	<b>M</b>	Medium-term, 5 to 10 years.
	<b>H</b>	Long term, between 10 and 20 years. (Likely to cease at the end of the operational life of the activity)
	<b>VH</b>	Very long, permanent, +20 years (Irreversible. Beyond closure)
<b>Criteria for ranking the EXTENT of impacts</b>	<b>VL</b>	A part of the site/property.
	<b>L</b>	Whole site.
	<b>M</b>	Beyond the site boundary, affecting immediate neighbours
	<b>H</b>	Local area, extending far beyond site boundary.
	<b>VH</b>	Regional/National

PART B: DETERMINING CONSEQUENCE							
		EXTENT					
		A part of the site/property	Whole site	Beyond the site, affecting neighbours	Local area, extending far beyond site.	Regional/ National	
		VL	L	M	H	VH	
INTENSITY = VL							
DURATION	Very long	VH	Low	Low	Medium	Medium	High
	Long term	H	Low	Low	Low	Medium	Medium
	Medium term	M	Very Low	Low	Low	Low	Medium
	Short term	L	Very low	Very Low	Low	Low	Low
	Very short	VL	Very low	Very Low	Very Low	Low	Low
INTENSITY = L							
DURATION	Very long	VH	Medium	Medium	Medium	High	High
	Long term	H	Low	Medium	Medium	Medium	High
	Medium term	M	Low	Low	Medium	Medium	Medium
	Short term	L	Low	Low	Low	Medium	Medium
	Very short	VL	Very low	Low	Low	Low	Medium
INTENSITY = M							
DURATION	Very long	VH	Medium	High	High	High	Very High
	Long term	H	Medium	Medium	Medium	High	High
	Medium term	M	Medium	Medium	Medium	High	High
	Short term	L	Low	Medium	Medium	Medium	High
	Very short	VL	Low	Low	Low	Medium	Medium
INTENSITY = H							
DURATION	Very long	VH	High	High	High	Very High	Very High
	Long term	H	Medium	High	High	High	Very High
	Medium term	M	Medium	Medium	High	High	High
	Short term	L	Medium	Medium	Medium	High	High
	Very short	VL	Low	Medium	Medium	Medium	High
INTENSITY = VH							
DURATION	Very long	VH	High	High	Very High	Very High	Very High
	Long term	H	High	High	High	Very High	Very High
	Medium term	M	Medium	High	High	High	Very High
	Short term	L	Medium	Medium	High	High	High
	Very short	VL	Low	Medium	Medium	High	High
		VL	L	M	H	VH	
		A part of the site/property	Whole site	Beyond the site, affecting neighbours	Local area, extending far beyond site.	Regional/ National	
EXTENT							

PART C: DETERMINING SIGNIFICANCE							
PROBABILITY (of exposure to impacts)	Definite/ Continuous	VH	Very Low	Low	Medium	High	Very High
	Probable	H	Very Low	Low	Medium	High	Very High
	Possible/ frequent	M	Very Low	Very Low	Low	Medium	High
	Conceivable	L	Insignificant	Very Low	Low	Medium	High
	Unlikely/ improbable	VL	Insignificant	Insignificant	Very Low	Low	Medium
			VL	L	M	H	VH
CONSEQUENCE							

PART D: INTERPRETATION OF SIGNIFICANCE	
<b>Significance</b>	<b>Decision guideline</b>
Very High	Potential fatal flaw unless mitigated to lower significance.
High	It must have an influence on the decision. Substantial mitigation will be required.
Medium	It should have an influence on the decision. Mitigation will be required.
Low	Unlikely that it will have a real influence on the decision. Limited mitigation is likely to be required.
Very Low	It will not have an influence on the decision. Does not require any mitigation
Insignificant	Inconsequential, not requiring any consideration.