Appendix G.10 Visual Assessment

Igolide Wind Energy Facility Electrical Grid Infrastructure

Visual Impact Assessment Report

ENERTRAG South Africa (Pty) Ltd

Prepared by:

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SLR Project No.: 720.05085.00010

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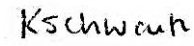
Report Sign Off and Approvals



(Project Manager and author) **(Reviewer)**

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National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) - Requirements for Specialist Reports (Appendix 6)

Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6	Section of Report
(a) details of the specialist who prepared the report; and the expertise of that specialist to compile a specialist report including a curriculum vitae;	Section 4.0 Appendix A
(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Appendix A
(c) an indication of the scope of, and the purpose for which, the report was prepared;	Section 5
(cA) an indication of the quality and age of base data used for the specialist report;	Section 7 Section 8
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 13 Section 14
(d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 6 Section 7.3
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 7 Appendix C & D
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 10.3
(g) an identification of any areas to be avoided, including buffers;	Section 10.3
(h) 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;	Section 10.3
(i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 6
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives on the environment or activities;	Sections 13, 14 & 15
(k) any mitigation measures for inclusion in the EMPr;	Section 15
(l) any conditions for inclusion in the environmental authorisation;	No specific conditions relating to the visual environment need to be included in the environmental authorisation (EA)
(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 15
(n) a reasoned opinion— i. whether the proposed activity, activities or portions thereof should be authorised; iA. Regarding the acceptability of the proposed activity or activities; and ii. if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr or Environmental Authorization, and where applicable, the closure plan;	Section 18.1
(o) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	No feedback has yet been received from the public participation process regarding the visual environment
(p) any other information requested by the competent authority	No information regarding the visual study has been requested from the

Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6	Section of Report
	competent authority to date.
(2) Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	N/A

Executive Summary

ENERTRAG South Africa (Pty) Ltd is proposing to develop an Electrical Grid Infrastructure (EGI) project comprising a 132kV switching station, a 132kV single or double circuit powerline, and termination point upgrades (as may be necessary), including possible expansion, to allow for the proposed new 132kV powerline connection (hereafter the Project). The Project is intended to feed the electricity generated by the approved 100MW Igolide Wind Energy Facility (WEF) (DFFE reference number: 14/12/16/3/3/2/2385, EA date 31 January 2024) to the national energy grid, with the point of connection being the existing East Drie Five Substation.

This proposed EGI project is currently the subject of a Basic Assessment (BA) process in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA) EIA Regulations (2014). The competent authority for this BA is the Gauteng Department of Agriculture and Rural Development (GDARD).

This Visual Impact Assessment (VIA) is being undertaken as part of the BA process.

The VIA has determined that the study area has a somewhat mixed visual character, transitioning from the heavily transformed mining landscape in the north to a more rural / pastoral character across the remainder of the study area. Hence, although the EGI development would alter the visual character and contrast with the rural / pastoral character, the location of the proposed EGI in relatively close proximity to the gold mining complex will significantly reduce the level of contrast.

A broad-scale assessment of visual sensitivity, based on the physical characteristics of the study area, economic activities and land use that is predominant, determined that the area would have a low visual sensitivity. An important factor contributing to the visual sensitivity of an area is the presence, or absence of visual receptors that may value the aesthetic quality of the landscape and depend on it to produce revenue and create jobs. No formal protected areas, leisure-based tourism activities or sensitive receptor locations were identified in the study area, and this factor in conjunction with the high levels of transformation in the north have reduced the overall visual sensitivity of the broader area.

A total of fifty-eight potentially sensitive receptor locations were identified within 5 km of the Igolide EGI assessment corridor, forty-six of which are inside the viewshed for the proposed EGI. Five receptor locations are however located within the Igolide WEF project area and it is known that these landowners have signed agreements with the Igolide WEF Project Company regarding the establishment of the proposed WEF and associated infrastructure. ***None of the receptor locations was found to be sensitive.***

Most of the receptor locations within the 5 km radius are assumed to be farmsteads and residences which could be regarded as *potentially* sensitive as they are located within a mostly rural setting with pastoral / natural vistas that will likely be altered by the proposed development. Although several accommodation / restaurant / wedding venue facilities were identified in the study area, these were not considered sensitive as the type of facilities provided are not expected to be detrimentally affected by changes in the landscape.

Only one of the identified receptor locations could potentially experience high levels of visual impact, namely Visual Receptor (VR) 36. Impacts are however expected to be reduced by the proximity of the farmstead to major road infrastructure in the area. Thirty-five receptor locations are expected to experience moderate levels of visual impact, while ten receptor locations will only be subjected to low levels of impact. The remaining twelve receptor locations were found to be outside the viewshed for the EGI and as such were removed from any further assessment.

Although the N12 and the R500 receptor roads traverse the study area, motorists travelling along these routes are only expected to experience moderate impacts from the proposed Igolide EGI.

A preliminary assessment of overall impacts revealed that impacts associated with the proposed Igolide EGI (post mitigation) are of LOW significance during the construction, operational and decommissioning phases of the project with relatively few mitigation / management measures available to reduce the visual impact.

Considering the presence of existing mining and associated industrial activity and proposals for the Igolide WEF and other renewable energy facilities in the broader area, the introduction of new renewable energy facilities and their associated EGI in the area will result in further change in the visual character of the area and alteration of the inherent sense of place, extending an increasingly industrial character into the broader area, and resulting in significant cumulative impacts. It is however anticipated that these impacts could be mitigated / managed to acceptable levels with the implementation of the recommended mitigation measures. Considering this, cumulative impacts have been rated as MODERATE.

From a visual perspective therefore, the proposed Igolide EGI is deemed acceptable and the Environmental Authorisation (EA) should be granted. SLR Consulting is of the opinion that the visual impacts associated with the construction, operation and decommissioning phases can be mitigated to acceptable levels provided the recommended mitigation measures are implemented.

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Acronyms and Abbreviations

BA	Basic Assessment
BESS	Battery Energy Storage System
DEM	Digital Elevation Model
DFFE	Department of Forestry, Fisheries and Environment
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
GIS	Geographical Information Systems
ha	Hectare
I&AP	Interested and Affected Party
IPP	Independent Power Producer
km	Kilometre
kV	Kilovolt
m	Metre
MW	Megawatt
NEMA	National Environmental Management Act
NGI	National Geo-Spatial Information
O&M	Operation and Maintenance
PV	Photovoltaic
REDZ	Renewable Energy Development Zone
SANBI	South African National Biodiversity Institute
SEF	Solar Energy Facility
VIA	Visual Impact Assessment
VR	Visual Receptor
WEF	Wind Energy Facility

Definitions

Anthropogenic feature: An unnatural feature resulting from human activity.

Cultural landscape: A representation of the combined worlds of nature and of man illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal (World Heritage Committee, 1992).

Scenic route: A linear movement route, usually in the form of a scenic drive, but which could also be a railway, hiking trail, horse-riding trail or 4x4 trail.

Sense of place: The unique quality or character of a place, whether natural, rural or urban. It relates to uniqueness, distinctiveness or strong identity.

Sensitive visual receptors: An individual, group or community that is subject to the visual influence of the proposed development and is adversely impacted by it. They will typically include locations of human habitation and tourism activities.

Study area / Visual Assessment Zone: The area with a zone of 5 km from the outer boundary of the proposed WEF application site.

Viewpoint: A point in the landscape from where a particular project or feature can be viewed.

Viewshed / Visual Envelope: The geographical area which is visible from a particular location.

Visual absorption capacity: The ability for topography and vegetation to provide a screening effect / conceal the proposed development.

Visual character: The pattern of physical elements, landforms and land use characteristics that occur consistently in the landscape to form a distinctive visual quality or character.

Visual contrast: The degree to which the development would be congruent with the surrounding environment. It is based on whether or not the development would conform with the land use, settlement density, forms and patterns of elements that define the structure of the surrounding landscape.

Visual exposure: The relative visibility of a project or feature in the landscape.

Visual impact: The effect of an aspect of the proposed development on a specified component of the visual, aesthetic or scenic environment within a defined time and space.

Visual intrusion: The level of compatibility or congruence of the project with the surrounding landscape or ‘sense of place’. It relates to the context of maintaining the unique quality or character of the inherent landscape.

Visual receptors: An individual, group or community that is subject to the visual influence of the proposed development but is not necessarily adversely impacted by it. They will typically include commercial activities, residents and motorists travelling along routes that are not regarded as scenic.

Visual sensitivity: The inherent sensitivity of an area to potential visual impacts associated with a proposed development. It is based on the physical characteristics of the area (visual character), spatial distribution of potential receptors, and the likely value judgements of these receptors towards the new development, which are usually based on the perceived aesthetic appeal of the area.

1.0 Introduction

ENERTRAG South Africa (Pty) Ltd (ENERTRAG) is proposing to develop an Electrical Grid Infrastructure (EGI) project comprising a 132kV switching station, a 132kV single or double circuit powerline, and termination point upgrades (as may be necessary), including possible expansion, to allow for the proposed new 132kV powerline connection (hereafter the Project). The Project is intended to feed the electricity generated by the approved 100MW Igolide Wind Energy Facility (WEF) (DFFE reference number: 14/12/16/3/3/2/2385, EA date 31 January 2024) to the national energy grid, with the point of connection being the existing East Drie Five Substation.

The proposed Igolide EGI is located approximately 6 km north-east of Fochville in the Merafong City Local Municipality in Gauteng Province (Figure 1 and Figure 2). The entire extent of the Project is located within the Central Corridor of the Strategic Transmission Corridors. The proposed development will be constructed on the following farm portions:

- Portion 20 of Kraalkop 147 IQ
- Portion 31 of Kraalkop 147 IQ
- Portion 45 of Kraalkop 147 IQ
- Porton 46 of Kraalkop 147 IQ
- Portion 53 of Kraalskop 147 IQ
- Portion 68 of Kraalkop 147 IQ
- Portion 11 of Leeuwpoort 356 IQ
- Portion 77 of Leeuwpoort 356 IQ

This proposed EGI project is currently the subject of a Basic Assessment (BA) process in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA) EIA Regulations (2014). The competent authority for this BA is the Gauteng Department of Agriculture and Rural Development (GDARD).

Specialist studies, including this Visual Impact Assessment (VIA), have been commissioned to assess and verify the proposed development under the new Gazetted specialist protocols[1].

[1] Formally gazetted on 20 March 2020 (GN No. 320)

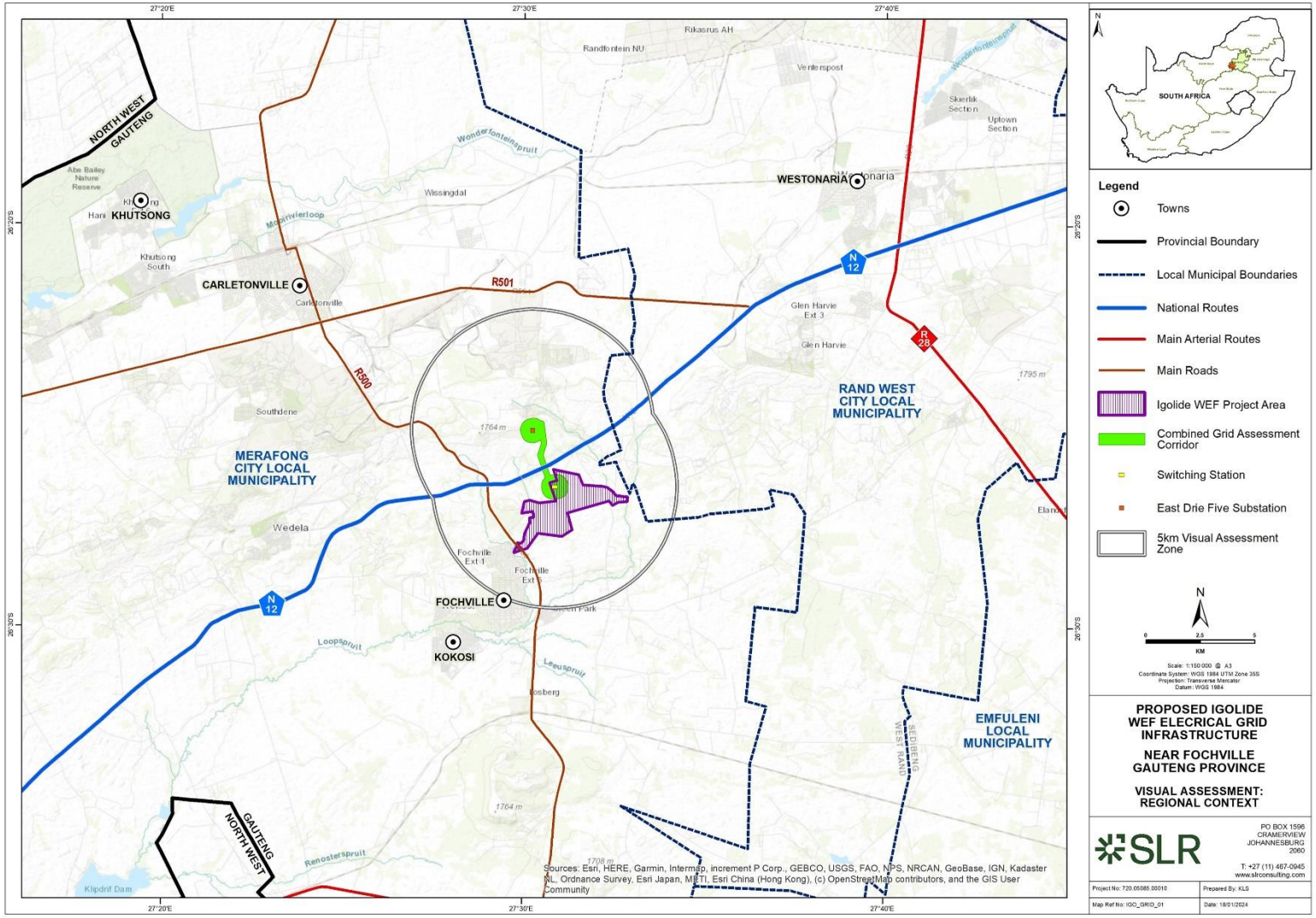

Figure 1: Regional Context

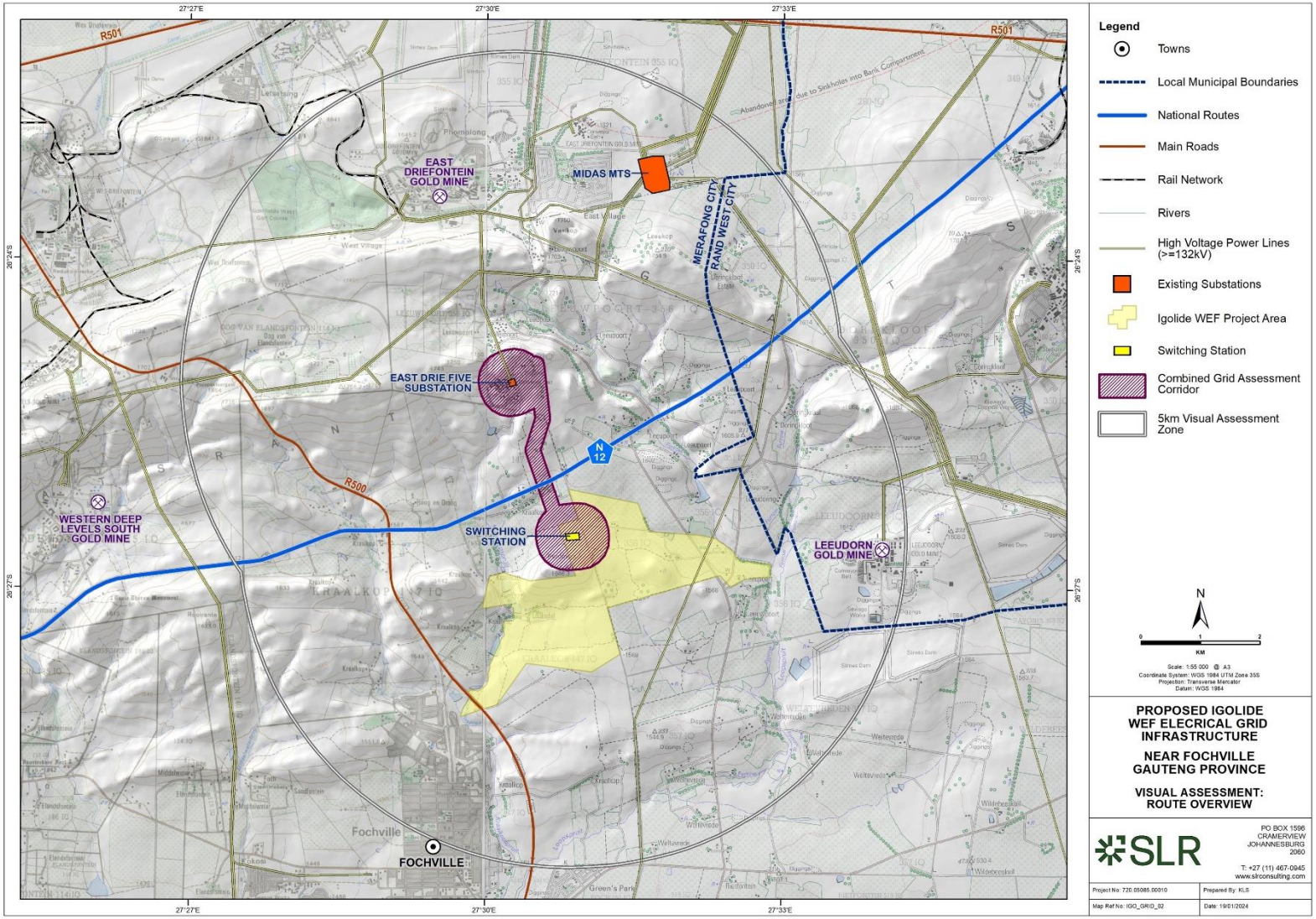

Figure 2: Route Overview

2.0 Technical Description

2.1 Project Components

The proposed Igolide EGI includes the following components :

- Construction of 1 x up to 132kV powerline (either single or double circuit). A corridor of up to 250m in width (125m on either side of the centre line), around each powerline alternative, has been identified for the placement of the up to 132kV single or double circuit power line to allow flexibility in the design of the final powerline route, and for the avoidance of sensitive environmental features (where possible).
- Construction of 1 x up to 132kV Eskom Switching Station. The Eskom Switching Station assessment site is ~2.5ha as the switching station will be located adjacent to the approved 33/132kV on-site Independent Power Producer (IPP) substation (DFFE reference number: 14/12/16/3/3/2/2385), EA dated 31 January 2024) which was assessed as part of the Igolide WEF Environmental Authorisation process. A 500m buffer around the Eskom Switching Station has been identified to ensure flexibility in routing the powerline. The Eskom Switching Station will include, but is not limited to:
    - A high voltage substation yard to allow for multiple 132kV feeder bays.
    - Standard substation electrical equipment, including but not limited to, busbars, office area, operation and control room, workshop and storage area, feeder bays, stringer strain beams, insulators, isolators, conductors, circuit breakers, lightning arrestors, relays, capacitor banks, batteries, wave trappers, switchyard, metering and indication instruments, equipment for carrier current, surge protection and outgoing feeders, as may be required.
    - Control building, telecommunication infrastructure, oil dam(s) etc.
    - Workshop and office area within the Eskom Switching Station footprint.
    - Fencing around the Switching Station.
    - All the access road infrastructure to and within the Switching Station.
    - Associated infrastructure, including but not limited to, lighting, fencing, and buildings required for operation (ablutions, office, workshop and control room, security fencing and gating, parking area, concrete batching plant (if required), waste storage/disposal and storerooms).
- Expansion of the East Drie Five Substation (with a footprint of approximately up to 4ha), including standard substation electrical equipment as may be needed (feeder bays, transformers, busbars, stringer strain beams, insulators, isolators, conductors, circuit breakers, lightning arrestors, relays, capacitor banks, batteries, wave trappers, switchyard, metering and indication instruments, equipment for carrier current, surge protection and outgoing feeders, as may be required).

Project technical details are provided in the summary table below (Table 1).

Table 1: Project Summary - Igolide WEF EGI

Facility Name:	Igolide WEF Electrical Grid Infrastructure
Applicant:	ENERTRAG South Africa (Pty) Ltd
Municipalities:	Merafong City Local Municipality in the Gauteng Province of South Africa

132kV powerline (single or double circuit):	- Single or double circuit 132kV between the proposed switching station and the existing East Drie Five Substation. The powerline design may include: o Intermediate self-supporting monopole; o Inline or angle-strain self-supporting monopole; o Suspension self-supporting monopole; o Triple pole structure; o Steel lattice structure; or o Similar powerline design at 132kV specification. - The above designs may require anchors with guy-wires or be anchorless. For up to 132kV structures, concrete foundation sizes may vary depending on design type up to 80m2, with depths reaching up to 3.5m typically in a rectangular 'pad' shape. - A working area of approximately 100m x 100m is needed for each of the proposed structures to be constructed. - Gridline length: approximately 4km - Height of powerline: up to 40m - Width of gridline servitude: 32m A 250m wide corridor (125m on either side of the centre line) has been identified for the assessment and micro-siting of the powerline to avoid sensitivities and ensure technical feasibility.
Switching Station:	- Development footprint (permanent infrastructure area): approximately 2.5ha as the switching station will be located adjacent to the approved 33/132kV on-site IPP substation (DFFE reference number: 14/12/16/3/3/2/2385), EA dated 31 January 2024)which was assessed as part of the Igolide WEF Environmental Authorisation process. - Capacity: 132kV - Standard substation electrical equipment, including, but not limited to, busbars, control building, telecommunication infrastructure, office area, operation and control room, workshop and storage area, feeder bays, stringer strain breams, insulators, arrestors, relays, capacitor banks, batteries, wave trappers, switchyard, metering and indication instruments, equipment for carrier current, surge protection and outgoing feeders, as may be required. - Associated infrastructure, including, but not limited to, lighting, fencing (~2m high), gating, parking area, and buildings required for operation (ablutions, office, workshop and control room, concrete batching plant (if required), waste storage/disposal and storerooms).
Termination point upgrades:	Upgrades to the existing East Drie Five Substation will also be required, including possible expansion within the yard, where required, with a footprint of up to 4ha. This includes the installation of additional feeders bays to accommodate the power being evacuated from the proposed Igolide WEF and transformer upgrades.
Access roads:	- During construction, a permanent access road along the length of the powerline corridor, between 4 – 6m wide will be established to allow for large crane movement. This track will then be utilised for maintenance during operation.

	- Permanent access roads to and within the substation, up to 8m wide, will be established.
Affected farm portion/s	- Portion 20 of Kraalkop 147 IQ - Portion 31 of Kraalkop 147 IQ - Portion 45 of Kraalkop 147 IQ - Porton 46 of Kraalkop 147 IQ - Portion 53 of Kraalkop 147 IQ - Portion 68 of Kraalkop 147 IQ - Portion 11 of Leeuwpoort 356 IQ - Portion 77 of Leeuwpoort 356 IQ

2.2 Alternatives

2.2.1 EGI Alternatives

No corridor alternatives are being considered for the EGI as the corridor alignment has been determined based on technical and environmental considerations (based on desktop screening of the site).

2.2.2 No-Go Alternative

The ‘no-go’ alternative is the option of not undertaking the proposed project. Hence, if the ‘no-go’ option is implemented, there would be no development. The area would thus retain its visual character and sense of place and no visual impacts would be experienced by any locally occurring receptors.

3.0 Legal Requirements and Guidelines

Further to NEMA and the EIA regulations, there is currently no legislation within South Africa that explicitly pertains to the assessment of visual impacts, however, the following legislation has relevance to the protection of scenic resources and has thus been taken into consideration:

- National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003), and
- National Heritage Resources Act, 1999 (Act No. 25 of 1999).

Based on these Acts, protected or conservation areas and sites or routes with cultural or symbolic value have been taken into consideration when identifying sensitive and potentially sensitive receptor locations and rating the sensitivity of the study area.

The "Guidelines for Involving Visual and Aesthetic Specialists in the EIA Processes" document by Oberholzer (2005) has been used as a guideline for this VIA. These guidelines provide criteria that determine potential visual impacts posed by proposed developments.

4.0 Specialist Credentials

SLR's VIA team is led by Kerry Schwartz, a GIS specialist with more than 25 years' experience in the application of GIS technology in various environmental, regional planning and infrastructural projects. Kerry's GIS and spatial analysis skills have been extensively utilised in projects throughout South Africa and in other Southern African countries. Kerry has also undertaken many VIAs in recent years and the relevant VIA project experience is listed in the table below (Table 2).

A Curriculum Vitae and a signed specialist statement of independence are included in Appendix A of this specialist assessment.

Table 2: Relevant Project Experience

Visual Specialist	SLR Consulting – Kerry Schwartz
Contact Details	klschwartz@slrconsulting.com
Qualifications	BA (Geography), University of Leeds 1982
VIA Expertise	• VIAs (EIAs) for the proposed Camden Renewable Energy Complex (including Wind Energy, Solar Energy and Grid Connection Infrastructure) near Camden, Mpumalanga Province. • VIAs (EIAs) for the proposed Hendrina Renewable Energy Complex (including Wind Energy and Grid Connection Infrastructure) near Hendrina, Mpumalanga Province. • VIAs (EIAs) for the proposed Koup 1 and Koup 2 WEFs and associated Grid Connection Infrastructure, near Beaufort West, Western Cape Province. • VIA (EIA) for the proposed Oya Energy Facility near Matjiesfontein, Western Cape Province. • VIA (BA) for the proposed construction of 132kV power lines to serve the authorised Loeriesfontein 3 PV Solar Energy Facility near Loeriesfontein, Northern Cape Province. • VIA (BA) for the proposed construction of the Oya 132kV power line near Matjiesfontein, Northern and Western Cape Provinces. • VIA (BA) for the proposed Gromis WEF and associated Grid Connection Infrastructure, near Komaggas, Northern Cape Province.

	• VIA (BA) for the proposed Komas WEF and associated Grid Connection Infrastructure, near Komaggas, Northern Cape Province. • VIAs (Scoping and Impact Phase) for the proposed Mooi Plaats, Wonderheuvel and Paarde Valley Solar PV Plants near Noupoort in the Northern and Eastern Cape Provinces. • VIAs (Scoping and Impact Phase) for the proposed Sendawo 1, 2 and 3 Solar PV Energy Facilities near Vryburg, North West Province. • VIAs (Scoping and Impact Phase) for the proposed Tlisitseng 1 and 2 Solar PV Energy Facilities near Lichtenburg, North West Province. • VIA for the proposed Nokukhanya 75MW Solar PV Power Plant near Dennilton, Limpopo Province. • VIAs (Scoping and Impact Phase) for the proposed Helena 1, 2 and 3 75MW Solar PV Energy Facilities near Copperton, Northern Cape Province. • VIA (EIA) for the proposed Paulputs WEF near Pofadder in the Northern Cape Province. • VIA (EIA) for the proposed development of the Rondekop WEF near Sutherland in the Northern Cape Province. • VIA (BA) for the proposed development of the Tooverberg WEF near Touws Rivier in the Western Cape Province. • VIA (BA) for the proposed development of the Kudusberg WEF near Sutherland, Northern and Western Cape Provinces. • VIAs (Scoping and Impact Phase) for the proposed development of the Kuruman Wind Energy Facility near Kuruman, Northern Cape Province. • VIAs (Scoping and Impact Phase) for the proposed development of the Phezukomoya Wind Energy Facility near Noupoort, Northern Cape Province. • VIAs (Scoping and Impact Phase) for the proposed development of the San Kraal Wind Energy Facility near Noupoort, Northern Cape Province. • VIAs (Scoping and Impact Phase) for the proposed Graskoppies Wind Farm near Loeriesfontein, Northern Cape Province. • VIAs (Scoping and Impact Phase) for the proposed Hartebeest Leegte Wind Farm near Loeriesfontein, Northern Cape Province. • VIAs (Scoping and Impact Phase) for the proposed Ithemba Wind Farm near Loeriesfontein, Northern Cape Province. • VIAs (Scoping and Impact Phase) for the proposed Xha! Boom Wind Farm near Loeriesfontein, Northern Cape Province

5.0 Scope and Objectives

This VIA is being undertaken as part of the BA process. The aim of the VIA is to identify potential visual issues associated with the development of the proposed grid connection infrastructure, as well as to determine the potential extent of visual impacts. This will be achieved by determining the character of the visual environment and identifying areas of potential visual sensitivity that may be subject to visual impacts. The visual assessment focuses on the potentially sensitive visual receptor locations and provides an assessment of the magnitude and significance of the visual impacts associated with the proposed grid connection infrastructure.

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6.0 Assumptions and Limitations

- This visual study has been undertaken based on the updated project description dated January 2024 as provided by the Proponent and the Environmental Assessment Practitioner.
- Given the nature of the receiving environment and the height of the various components of the proposed grid infrastructure, the study area or visual assessment zone is assumed to encompass a zone of 5 km from the outer boundary of the combined grid assessment corridor. This limit on the visual assessment zone relates to the fact that visual impact decreases exponentially over distance. Thus, although the proposed development may still be visible beyond 5 km, the degree of visual impact will diminish considerably. As such, the need to assess the impact on potential receptors beyond this distance would not be warranted.
- The identification of visual receptors involved a combination of desktop assessment as well as field-based observation. Initially Google Earth imagery was used to identify potential receptors within the study area. Where possible, these receptor locations were verified and assessed in the early stages of the project by way of a site visit which was undertaken between the 9th and 10th of February 2022. Due to the extent of the study area however and the number of receptors that could potentially be sensitive to the proposed development, it was not possible to visit or verify every potentially sensitive visual receptor location. As such, several broad assumptions have been made in terms of the likely sensitivity of the receptors to the proposed development.
- It should be noted that not all receptor locations would necessarily perceive the proposed development in a negative way. This is usually dependent on the use of the facility, the economic dependency of the occupants on the scenic quality of views from the facility and on people's perceptions of the value of "Green Energy". Sensitive receptor locations typically include sites such as tourism facilities and scenic locations within natural settings which are likely to be adversely affected by the visual intrusion of the proposed development. Thus, the presence of a receptor in an area potentially affected by the proposed development does not necessarily mean that any visual impact will be experienced.
- The potential visual impact at each visual receptor location was assessed using a matrix developed for this purpose. The matrix is based on three main parameters relating to visual impact and, although relatively simplistic, it provides a reasonably accurate indicative assessment of the degree of visual impact likely to be experienced at each receptor location as a result of the proposed development. It is however important to note the limitations of quantitatively assessing a largely subjective or qualitative type of impact and as such the matrix should be seen merely as a representation of the likely visual impact at a receptor location.
- The exact status of all the receptors could not be verified during the field investigation and as such the receptor impact rating was largely undertaken via desktop means.
- Receptors that were assumed to be farmsteads were still regarded as being potentially sensitive to the visual impacts associated with the proposed development and were thus assessed as part of the VIA.
- Based on information provided by the project developer, all analysis for this VIA is based on a worst-case scenario where the height of the proposed pylons is assumed to be 40 m and other buildings and structures associated with the grid connection are assumed to be less than 40 m in height.
- Due to the varying scales and sources of information; maps may have minor inaccuracies. Terrain data for this area, derived from the National Geo-Spatial Information (NGI)'s 25m Digital Elevation Model (DEM), is fairly coarse and somewhat inconsistent and as such, localised topographic variations in the landscape may not be reflected on the DEM used to generate the viewshed and visibility analysis conducted in respect of the proposed development.

- In addition, the viewshed / visibility analysis does not consider any existing vegetation cover or built infrastructure which may screen views of the proposed development. This analysis should therefore be seen as a conceptual representation or a worst-case scenario.
- No feedback regarding the visual environment has been received from the public participation process to date. Any feedback from the public during the review period of the Draft Basic Assessment Report (BAR) for the EGI will however be incorporated into further drafts of this report, if relevant.
- This study includes a broad assessment of the potential cumulative impacts of other renewable energy developments on the existing landscape character and on the identified sensitive receptors.
- The site visit was undertaken in early February 2022, during mid-summer, which is characterised by higher levels of rainfall and increased vegetation cover. In these conditions, slightly reduced levels of visual impact will be experienced from receptor locations in the surrounding area. Accordingly, Google Earth Street View has been used in some instances to provide an indication of views during the drier season when vegetation cover provides less screening.
- In clear weather conditions, pylons, switching station and associated infrastructure would present a greater contrast with the surrounding environment than they would on an overcast day. The field investigation was conducted during clear to partly cloudy weather conditions.

7.0 Assessment Methodology

This VIA is based on a combination of desktop-level assessment supported by field-based observation.

7.1 Physical Landscape Characteristics

Physical landscape characteristics such as topography, vegetation and land use are important factors influencing the visual character and visual sensitivity of the study area. Baseline information about the physical characteristics of the study area was initially sourced from spatial databases provided by the NGI, the South African National Biodiversity Institute (SANBI) and the South African National Land Cover Dataset (Geoterraimage – 2020). The characteristics identified via desktop means were later verified during the site visit.

7.2 Identification of Sensitive Receptors

Visual receptor locations and routes that are sensitive and/or potentially sensitive to the visual intrusion of the proposed development were identified and assessed to determine the impact of the proposed development on these receptor locations.

7.3 Fieldwork and Photographic Review

A two-day site visit was undertaken between 9th and 10th of February 2022 (mid summer). The purpose of the site visit was to:

- verify the landscape characteristics identified via desktop means;
- conduct a photographic survey of the study area;
- verify, where possible, the sensitivity of visual receptor locations identified via desktop means;
- eliminate receptor locations that are unlikely to be influenced by the proposed development;
- identify any additional visually sensitive receptor locations within the study area; and
- inform the impact rating assessment of visually sensitive receptor locations (where possible).

It should be noted that the visual fieldwork was undertaken in the early stages of this project, although completion of the VIA has been subject to some lengthy delays. Notwithstanding this, the findings of the site visit are still considered relevant to the VIA and have been verified and updated where necessary via desktop means.

7.4 Visual / Landscape Sensitivity

GIS technology was used to identify any specific areas of potential visual sensitivity within the Igolide EGI assessment corridors. These would be areas where the placement of the powerline, switching station and associated infrastructure would result in the greatest probability of visual impacts on potentially sensitive visual receptors.

7.5 Impact Assessment

A rating matrix was used to provide an objective evaluation of the significance of the visual impacts associated with the proposed development, both before and after implementing mitigation measures. Mitigation measures were identified (where possible) to minimise the visual impact of the proposed development. The rating matrix considers several different factors including geographical extent, probability, reversibility, irreplaceable loss of resources, duration and intensity, in order to assign a level of significance to the visual impact of the project.

A separate rating matrix was used to assess the visual impact of the proposed EGI project on any potentially sensitive visual receptor locations identified. This matrix is based on three parameters, namely the distance of an identified visual receptor from the proposed development, the presence of screening factors and the degree to which the proposed development would contrast with the surrounding environment.

7.6 Consultation with I&APs

Continuous consultation with Interested and Affected Parties (I&APs) undertaken during the public participation process will be used (where available) to help establish how the proposed development will be perceived by the various receptor locations and the degree to which the impact will be regarded as negative. Although I&APs have not yet provided any feedback in this regard, the final report will be updated to include relevant information as and when it becomes available.

8.0 Sources of Information

The main sources of information utilised for this VIA included:

- Project description for the proposed development provided by the Proponent;
- Elevation data from 25 m Digital Elevation Model (DEM) from the National Geo-Spatial Information (NGI);
- 1:50 000 topographical maps of South Africa from the NGI;
- Land cover and land use data extracted from the 2020 South African National Land-Cover dataset provided by Geoterraimage;
- Vegetation classification data extracted from SANBI's Vegetation Map 2018 dataset;
- Google Earth Satellite imagery 2023;
- South African Renewable Energy EIA Application Database from DFFE (incremental release Quarter 4 2023), and
- The National Web-Based Environmental Screening Tool by the DFFE.

9.0 Factors Influencing Visual Impact

The degree of visibility of an object informs the level and intensity of the visual impact, but other factors also influence the nature of the visual impact. The landscape and aesthetic context of the environment in which the object is placed, as well as the perception of the viewer are also important factors.

9.1 Visual Environment

Powerlines, switching stations and other components of the EGI are not features of the natural environment but are rather a representation of human (anthropogenic) alteration. As such, these developments are likely to be perceived as visually intrusive when placed in largely undeveloped landscapes that have a natural scenic quality and where tourism activities are practised that are dependent on the enjoyment of, or exposure to, the scenic or aesthetic character of the area. Residents and visitors to these areas could potentially perceive the development to be highly incongruous in this context and may regard the development as an unwelcome intrusion which degrades the natural character and scenic beauty of the area, and which could potentially even compromise the practising of tourism activities in the area. In this instance however, the area is not typically valued for its tourism significance and no formal protected areas were identified in the broader area. In addition, no leisure-based tourism activities, and no recognised tourism routes were identified in the study area and significant transformation in parts of the study area has resulted in considerable degradation of the scenic quality of the landscape.

The presence of other anthropogenic features associated with the built environment may not only obstruct views but also influence the perception of whether a development is a visual impact. In industrial or mining areas for example, where other infrastructure and built form already exists, the visual environment could be considered to be ‘degraded’ and thus the introduction of EGI into this setting may be considered to be less visually intrusive than if there was no existing built infrastructure visible.

9.2 Subjective Experience of the Viewer

The perception of the viewer / receptor toward an impact is highly subjective and involves ‘value judgements’ on behalf of the receptor. The viewer’s perception is usually dependent on the age, gender, activity preferences, time spent within the landscape and traditions of the viewer (Barthwal, 2002). Thus, certain receptors may not consider grid connection infrastructure to be a negative visual impact as this type of development is often associated with employment creation, social upliftment and the general growth and progression of an area and could even have positive connotations.

9.3 Type of Visual Receptor

Visual impacts can be experienced by different types of receptors, including people living or working, or driving along roads within the viewshed of the proposed development. The receptor type in turn affects the nature of the typical ‘view’, with views being permanent in the case of a residence or other place of human habitation, or transient in the case of vehicles moving along a road. The nature of the view experienced affects the intensity of the visual impact experienced.

It is important to note that visual impacts are only experienced when there are receptors present to experience this impact. Thus, where there are no human receptors or viewers present, there are not likely to be any visual impacts experienced.

9.4 Viewing Distance

Viewing distance is a critical factor in the experiencing of visual impacts, as beyond a certain distance, even large developments tend to be much less visible, and difficult to differentiate from the surrounding landscape. The visibility of an object is likely to decrease exponentially as one moves away from the source of impact, with the impact at 1 000 m being considerably less than the impact at a distance of 500 m (Figure 3).

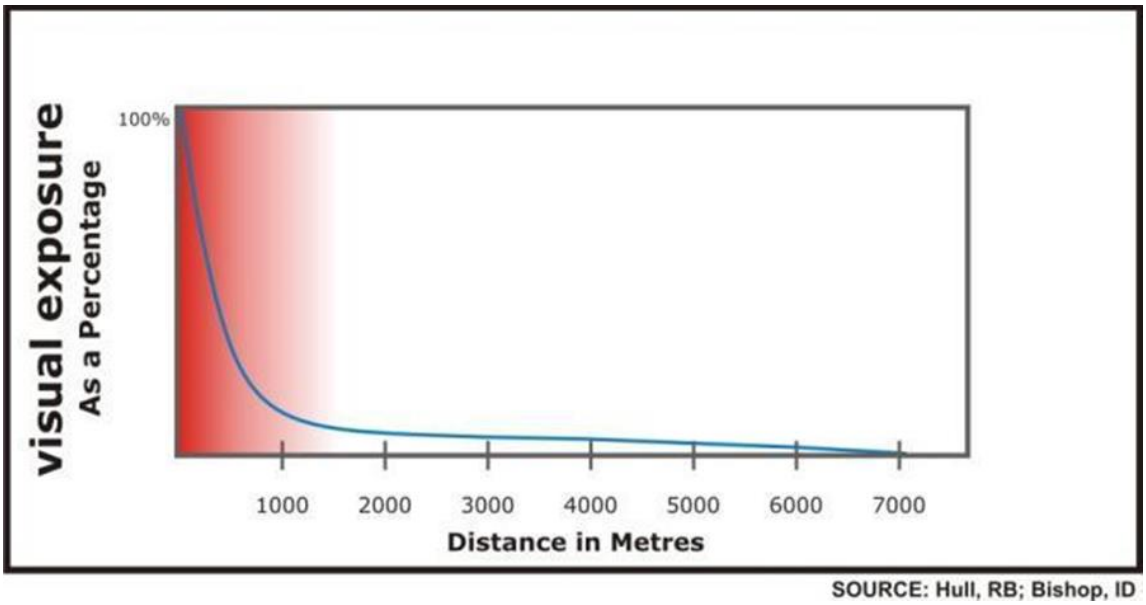

Figure 3: Conceptual representation of the diminishing visual exposure over distance.

10.0 Visual Character and Sensitivity of the Study Area

Defining the visual character of an area is an important part of assessing visual impacts as this establishes the visual baseline or existing visual environment in which the development would be constructed. The visual impact of a development is measured by establishing the degree to which the development would contrast with, or conform to, the visual character of the surrounding area. The inherent sensitivity of the area to visual impacts or visual sensitivity is thereafter determined, based on the visual character, the economic importance of the scenic quality of the area, inherent cultural value of the area and the presence of visual receptors.

Physical and land use related characteristics, as outlined below, are important factors contributing to the visual character of an area.

10.1 Physical and Land Use Characteristics

10.1.1 Topography

The broader area surrounding the proposed Igolide EGI project area is largely characterised by undulating plains (Figure 4). Elevation increases northwards across the visual assessment area with increasing topographic diversity including more incised river valleys, steeper slopes and more prominent ridges. Maps showing the topography and slopes within and in the immediate vicinity of the assessment area are provided in Figure 5 and Figure 6.

Figure 4: View west towards the southern end of the Igolide EGI assessment corridor.

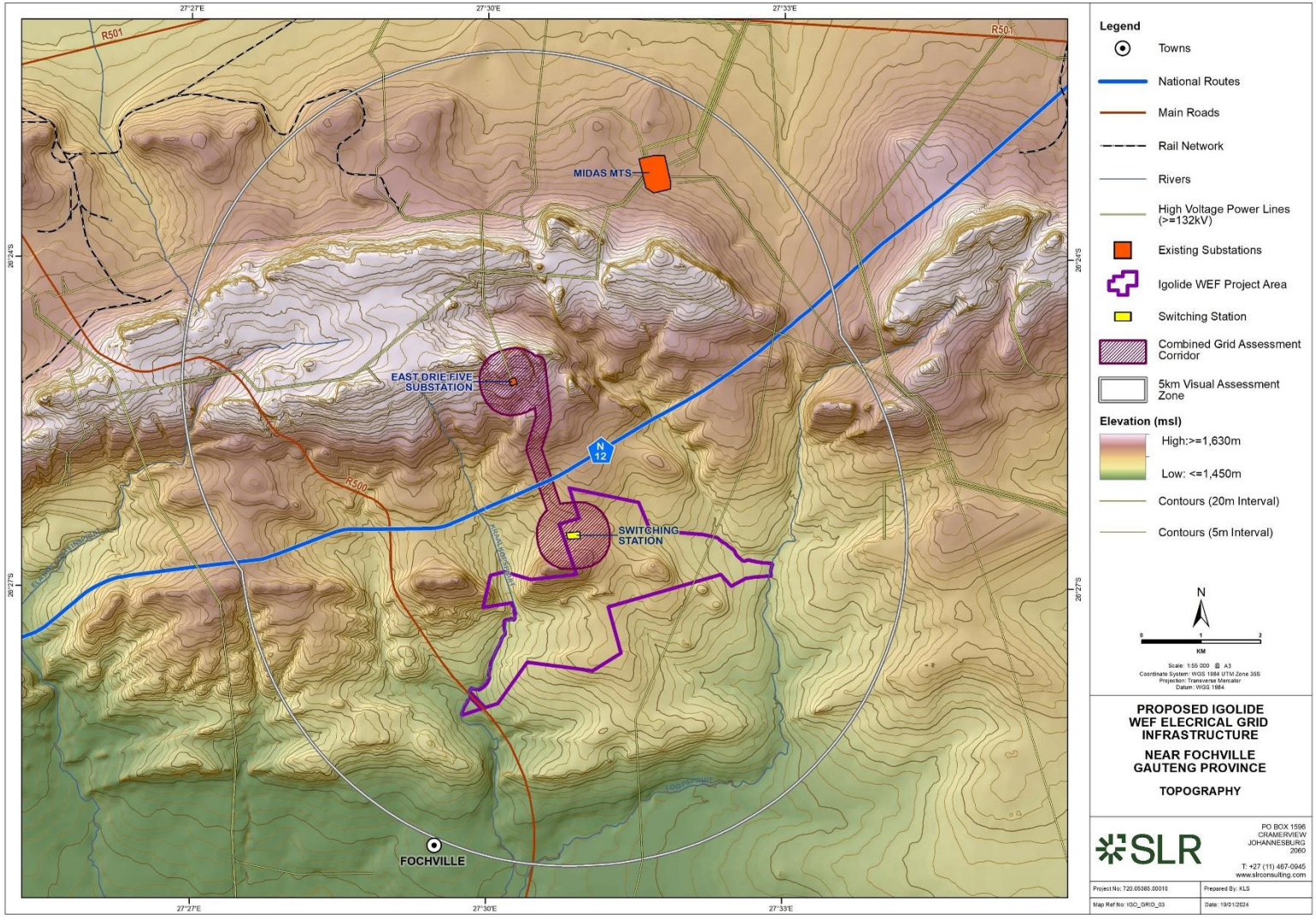

Figure 5: Topography across the Igolide EGI study area.

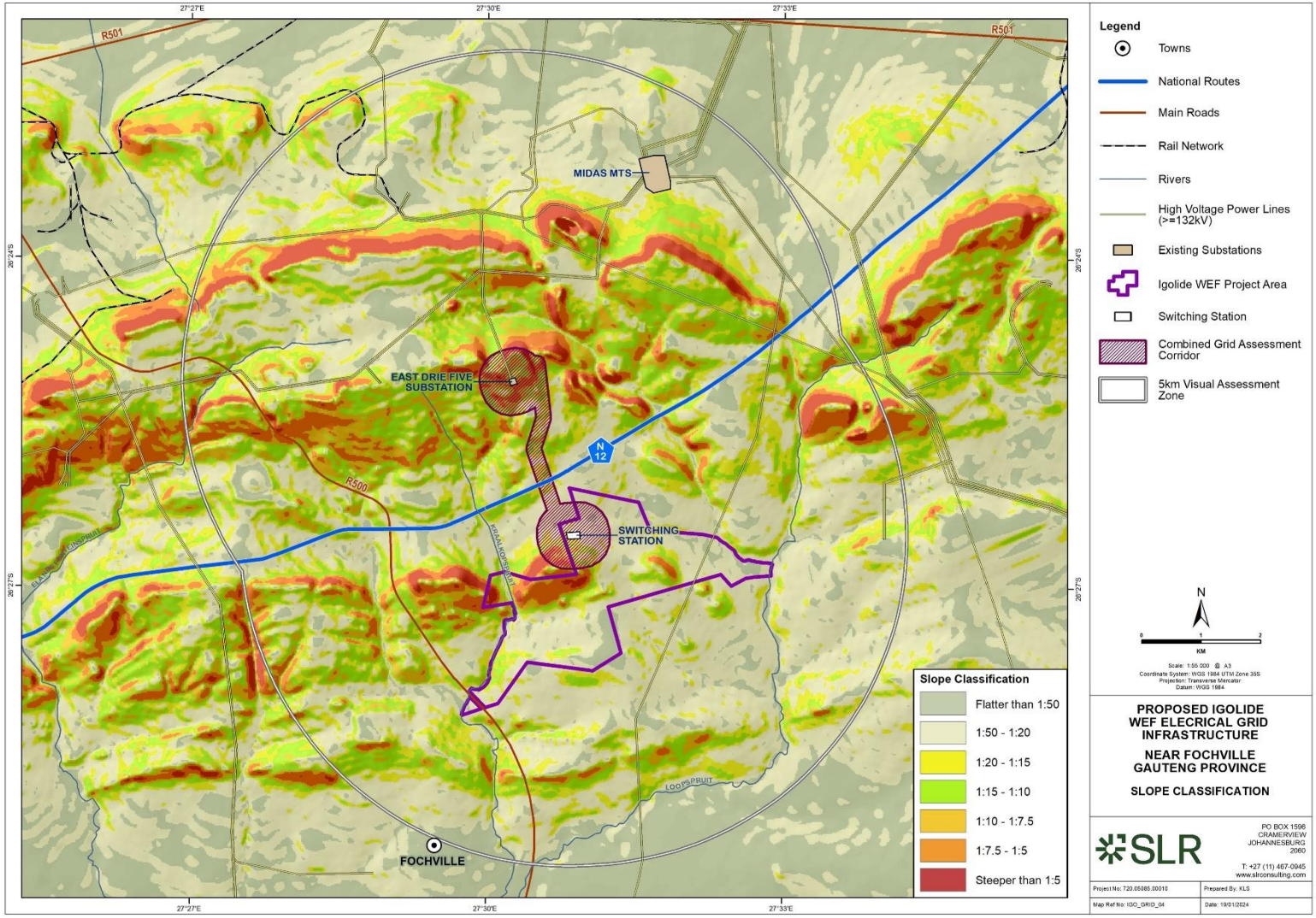

Figure 6: Slope Classification within the Igolide EGI Study Area

Visual Implications

The nature of the topography and the position of the viewer within the landscape are strong factors influencing the types of vistas typically present. Wider vistas will typically be experienced from higher-lying areas or hilltops and as such the view will be directly dependent on whether the viewer is within a valley bottom or in an area of higher elevation. Importantly in the context of this study, the same is true of objects placed at different elevations and within different landscape settings. Objects placed on high-elevation slopes or ridge tops would be highly visible, while those placed in valleys or enclosed plateaus would be far less visible.

GIS technology was used to undertake a preliminary visibility analysis for the proposed powerline route alignment. This analysis was based on points at 150 m intervals along the centre line of the combined assessment corridor, and assumes a pylon height of 40 m. The resultant viewshed is shown in Figure 7 and it indicates that elements of the EGI would be most visible from the central section of the 5 km assessment area, although large areas to the north, and south fall outside the viewshed. Localised topographic variations in these areas provide a screening effect, thereby limiting views of the EGI.

It is worth noting that the visibility analysis is based entirely on topography and **does not** consider any existing vegetation cover or built infrastructure which may screen views of the proposed development. In addition, detailed topographic data was not available for the broader study area and as such the visibility analysis may not include all possible localised topographic variations which may constrain views. This analysis should therefore be seen as a conceptual representation or a worst-case scenario.

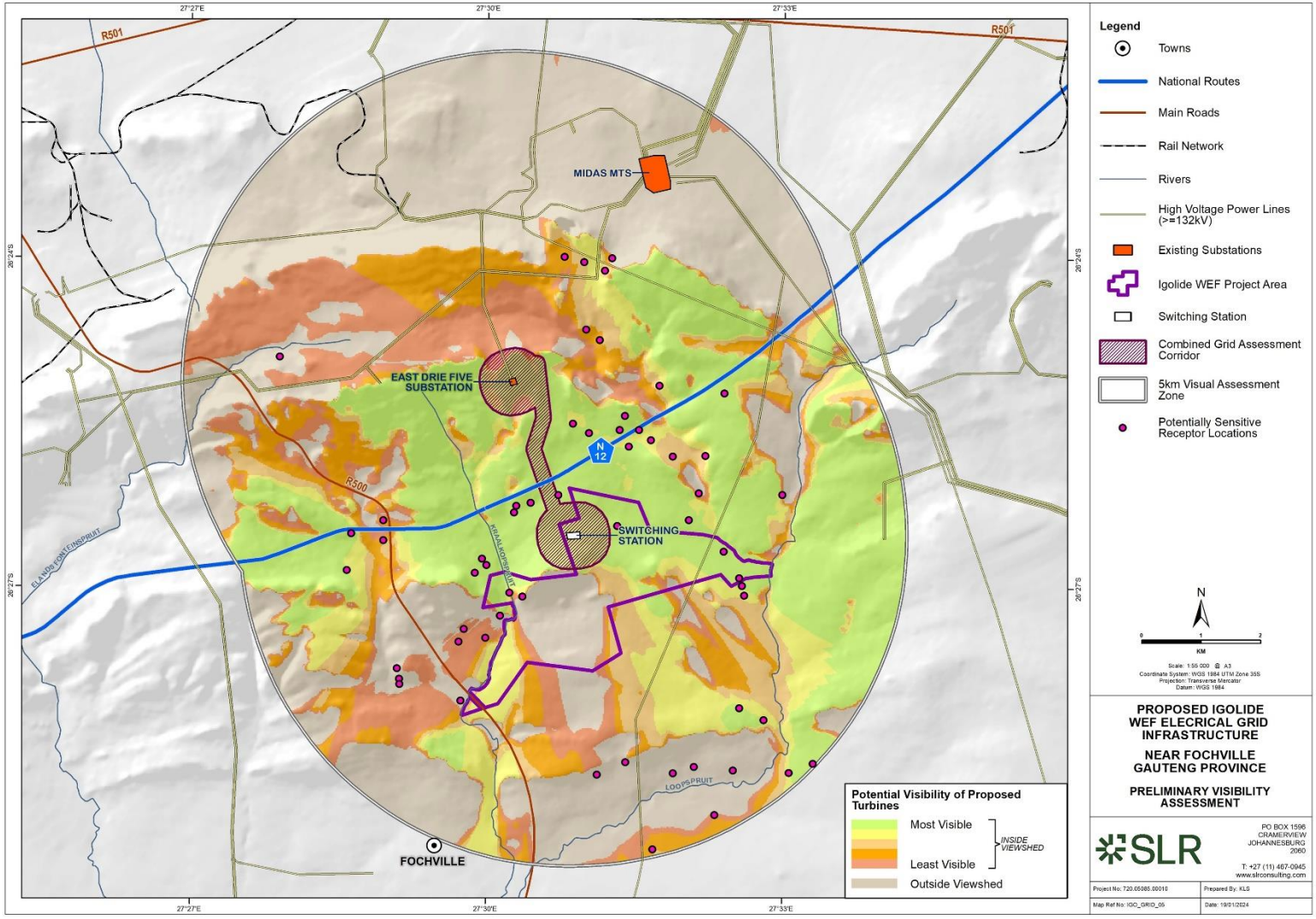

Figure 7: Potential visibility of EGI

10.1.2 Vegetation

According to Mucina and Rutherford (2006), the southern portion of the study area is dominated by Rand Highveld Grassland, with smaller areas of Carletonville Dolomite Grassland occurring in the north. Gauteng Shale Mountain Bushveld occurs in the central, hillier areas of the study area.

Accordingly, the natural vegetation can be broadly described as grassland with scattered small and medium-size trees on the plains and in the river basins, and denser shrub and tree cover on the hills and ridges (Figure 8).

Figure 8: Grassland and trees typically found in the EGI study area

Much of the natural vegetation cover has however been partly or entirely transformed by cultivation or mining, electricity and urban infrastructure. In addition, clusters of tall exotic trees species appear across the study area and are fairly common around farmsteads and along the roads (Figure 9).

Figure 9: Example of tall trees providing screening along main roads *(Google Earth Streetview 2024)*

Vegetation classification across the study area is shown in Figure 10.

Visual Implications

The dispersed shrubs, tall grasses and clumps of tall trees will provide some degree of visual screening within the receiving environment. In addition, tall trees planted around farmsteads in most instances will restrict views from receptor locations.

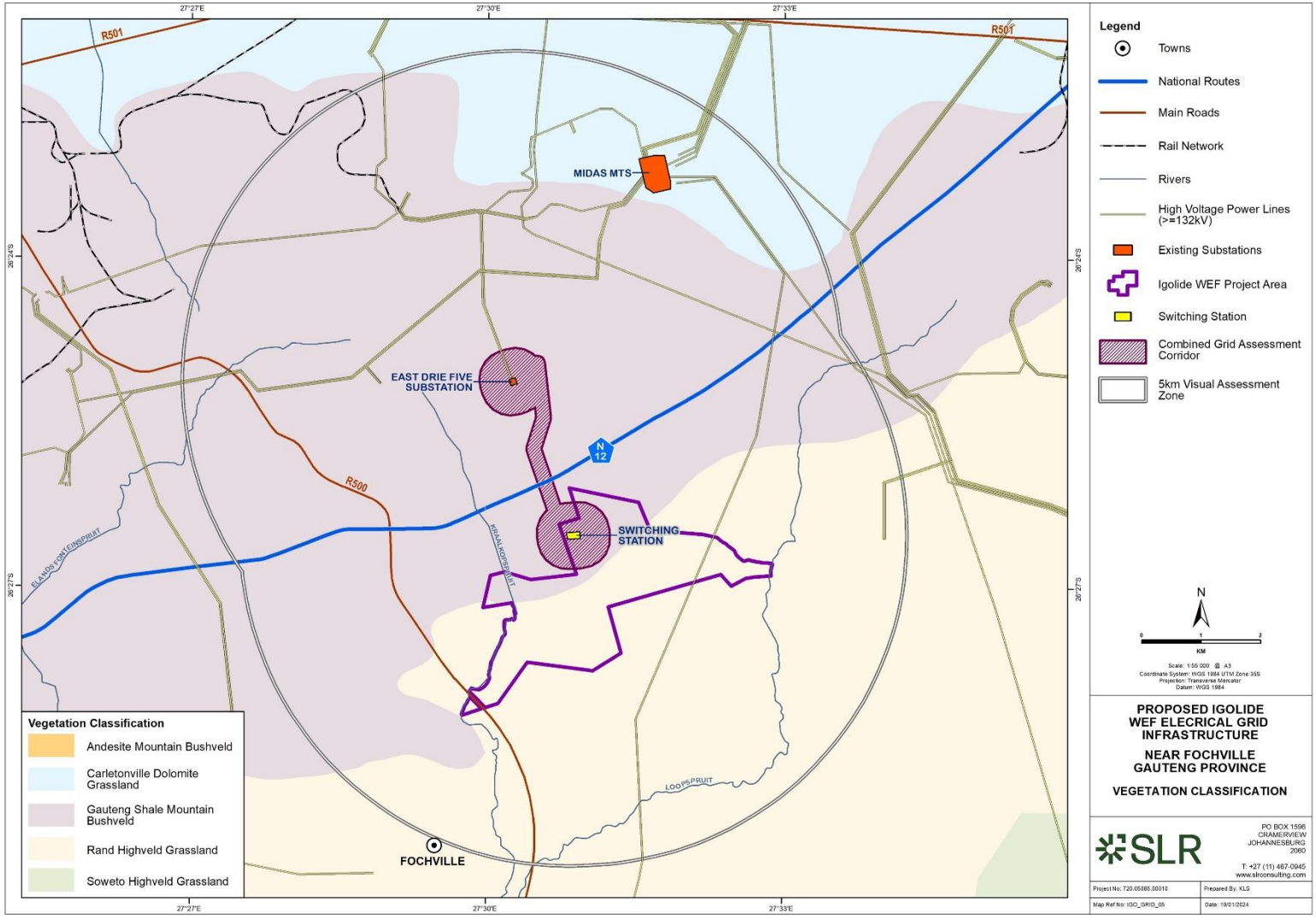

Figure 10: Vegetation Classification within the study area

10.1.3 Land Use

According to the South African National Land Cover dataset (Geoterraimage 2020), much of the visual assessment area is classified as “Grassland” interspersed with significant areas of Cultivated land. Small tracts of forested land and numerous water bodies are scattered throughout the study area (Figure 11).

Commercial agriculture is the dominant activity in the study area, the main focus being maize cultivation (Figure 12) with some limited livestock / dairy and game farming. There are multiple farm portions in the study area, resulting in a relatively moderate density of rural settlement with many scattered farmsteads in evidence. Built form in much of the study area comprises of farmsteads, ancillary farm buildings and workers’ dwellings, grain silos, gravel access roads, power and telephone lines and fences.

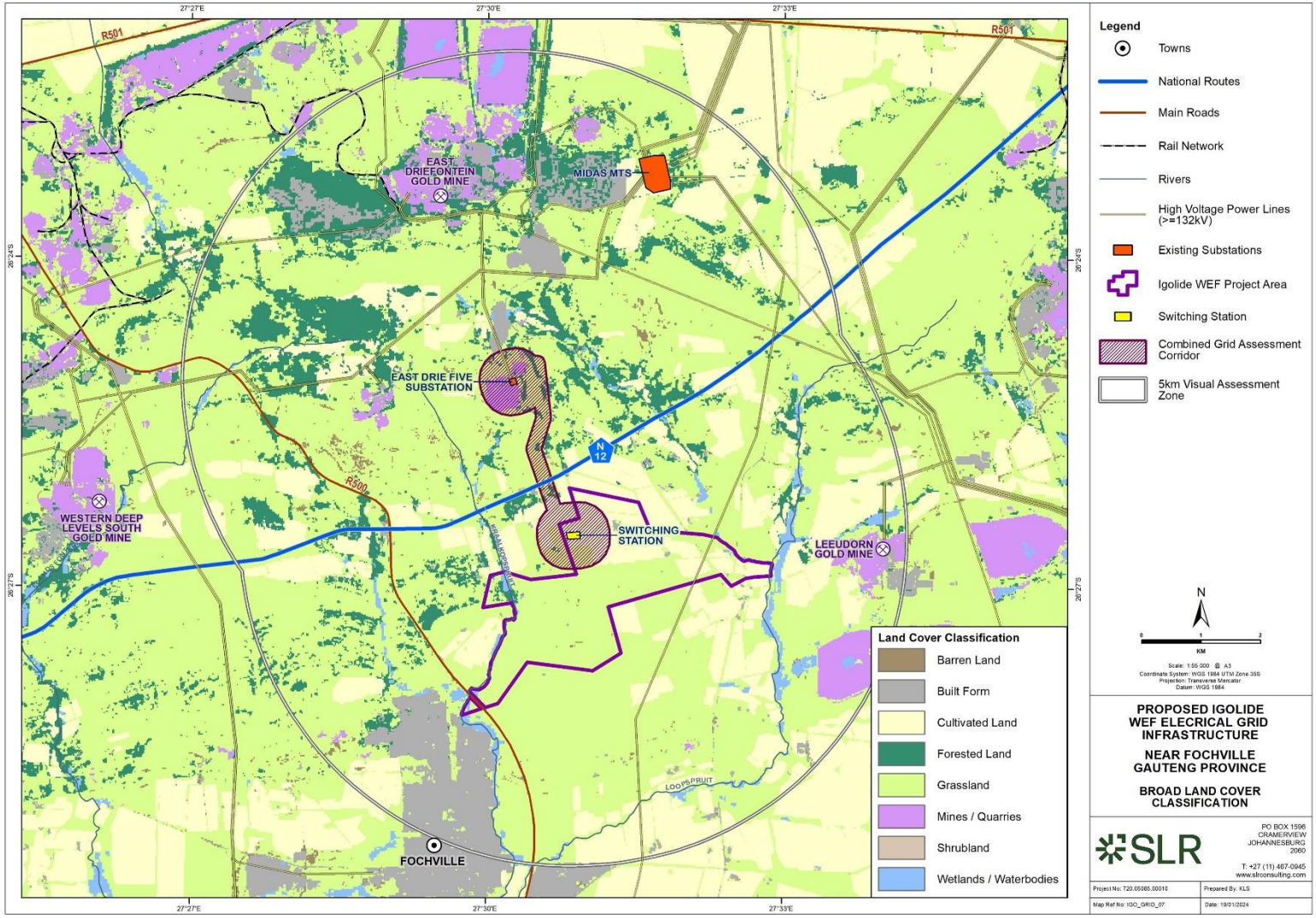

Figure 11: Land Cover Classification

Figure 12: Maize cultivation and agricultural infrastructure to the east of the Igolide EGI assessmet corridor.

High levels of human influence are however visible in parts of the study area which are dominated by mining activity related to several large mining operations, including the Western Deep Levels, Driefontein and Sibanye Stillwater mines in the north and Leeudorn Gold Mine in the east. Large slime dams, mine dumps, stockpiles and other elements of mining infrastructure (including asscociated residential development) have resulted in significant transformation in the landscape (Figure 13). This mining activity forms part of the greater gold mining complex centred around Carletonville to the north-west of the study area where mining activity and associated urban and industrial development dominate the landscape. High voltage power lines, contribute further to the overall transformation of the landscape in this area, with a network of 132kV, 275kV and 400kV lines and associated substations traversing the study area.

Further transformation has occurred in and around the small town of Fochville and the adjacent Greenspark Township, located on the south-west boundary of the study area. Urban development and associated road and electricity infrastructure has significantly altered the visual character of this sector of the study area (Figure 14).

Other significant anthropogenic features in the area include the N12 National Route (Figure 15) as well as the R500 Main Road.

Figure 13: East Driefontein Mine to the north of the Igolide EGI project area

Figure 14: View of Greenspark Township east of the R500

Figure 15: View south east from the N12 showing the national route and existing powerlines

Visual Implications

The predominance of cultivated land in conjunction with the remaining natural grassland cover across much of the study area would give the viewer the general impression of a largely rural / pastoral setting. Thus, the proposed Igolide EGI development would alter the visual character and contrast significantly with the typical land use and/or pattern and form of human elements present in these areas.

High levels of human transformation and visual degradation are however evident across the northern sector of the study area where mining activity and associated infrastructure dominate the landscape. In addition, urban development to the south-west and powerline and road infrastructure have further degraded the visual character of the study area to some degree. This transformation has already altered the visual character across these sectors of the study area, thus reducing the level of contrast of the proposed development.

10.2 Visual Character

The physical and land use-related characteristics of the study area as described above contribute to its overall visual character. Visual character largely depends on the level of change or transformation from a natural baseline in which there is little evidence of human transformation of the landscape. Varying degrees of human transformation of a landscape would engender differing visual characteristics to that landscape, with a highly modified urban or industrial landscape being at the opposite end of the scale to a largely natural undisturbed landscape. Visual character is also influenced by the presence of built infrastructure including buildings, roads, and other objects such as telephone or electrical infrastructure. The visual character of an area largely determines the sense of place relevant to the area. This is the unique quality or character of a place, whether natural, rural, or urban which results in a uniqueness, distinctiveness, or strong identity.

The predominant land use in the area (maize cultivation) has significantly transformed the natural landscape across much of the study area. In addition, the landscape becomes progressively more transformed towards the northern section of the study area where mining activities and high voltage powerlines have resulted in a high degree of visual degradation. The more industrial character of the landscape is an important factor in this context, as the introduction of the proposed grid connection infrastructure would result in less visual contrast where other anthropogenic elements are already present, especially where the scale of those elements is similar to that of the proposed development.

The scenic quality of the landscape is also an important factor that contributes to the visual character or inherent sense of place. Visual appeal is often associated with unique natural features or distinct variations in form. As such, although the pastoral landscape and undulating plains in parts of the study area are important features that could increase the visual appeal and visual interest in the area, this would be reduced by the degree of transformation already present in the landscape. In addition, there aren’t any tourism or nature-based facilities or recognised tourism routes in the study area.

Cultural landscapes are becoming increasingly important concepts in terms of the preservation and management of rural and urban settings across the world. The concept of ‘cultural landscape’ is a way of looking at a place that focuses on the relationship between human activity and the biophysical environment (Breedlove, 2002). In this instance, the rural / pastoral landscape represents how the environment has shaped the predominant land use and economic activity practised in the area, as well as the patterns of human habitation and interaction. Mining activity in the broader region has also played an important role in shaping the present-day landscape.

In light of this, it is important to assess whether the introduction of new grid connection infrastructure into the study area would be a degrading factor in the context of the prevailing character of the cultural landscape. Broadly speaking, visual impacts on the cultural landscape in the area around the proposed development would be reduced by the fact that the visual character in much of the area has been significantly transformed and degraded by mining and infrastructural development.

10.3 Visual Sensitivity Analysis and Verification

Visual sensitivity can be defined as the inherent sensitivity of an area to potential visual impacts associated with a proposed development. It is based on the physical characteristics of the area (i.e., topography, landform, and land cover), the spatial distribution of potential receptors, and the likely value judgements of these receptors towards a new development (Oberholzer, 2005). A viewer's perception is usually based on the perceived aesthetic appeal of an area and on the presence of economic activities (such as recreational or nature-based tourism) which may be based on this aesthetic appeal.

In order to assess the visual sensitivity of the area, a matrix has been developed based on the characteristics of the receiving environment which, according to the Guidelines for Involving Visual and Aesthetic Specialists in the EIA Processes, indicate that visibility and aesthetics are likely to be 'key issues' (Oberholzer, 2005).

Based on the criteria in the matrix (Table 3), the visual sensitivity of the area is classified according to the categories described below:

i. High - The introduction of a new development such as powerlines and switching stations is likely to be perceived negatively by receptors in this area. It would be considered to be a visual intrusion and may elicit opposition from these receptors.
ii. Moderate – Receptors are present, but due to the nature of the existing visual character of the area and likely value judgements of receptors, there would be limited negative perception towards the new development as a source of visual impact.
iii. Low - The introduction of a new development would not be perceived to be negative, there would be little opposition or negative perception towards it.

The table below outlines the factors used to rate the visual sensitivity of the study area. The ratings are specific to the visual context of the receiving environment within the study area.

Table 3: Environmental factors used to define visual sensitivity of the study area

FACTORS	DESCRIPTION	RATING									
		1	2	3	4	5	6	7	8	9	10
Pristine / natural / scenic character of the environment	Study area is largely pastoral with some areas of scenic value, although some areas are significantly transformed.										
Presence of sensitive visual receptors	No sensitive receptors have been identified in the study area, although potentially sensitive receptors are present										
Aesthetic sense of place / visual character	Visual character is a typical rural / pastoral landscape, although significantly transformed by mining activity.										
Irreplaceability / uniqueness / scarcity value	Few areas of scenic value were found within the study area.										
Cultural or symbolic meaning	Much of the area is a typical rural / pastoral landscape, although some areas are significantly transformed.										
Protected / conservation areas in the study area	No protected or conservation areas were identified in the study area.										
Sites of special interest present in the study area	No sites of special interest were identified in the study area.										
Economic dependency on scenic quality	No tourism / leisure-based facilities in the area										
International / regional / local status of the environment	Study area is typical of rural / pastoral landscapes, although significantly transformed by mining activity										
**Scenic quality under threat / at risk of change	Introduction of EGI will alter the visual character and sense of place, giving rise to significant cumulative impacts										
**Any rating above '5' for this specific aspect will trigger the need to undertake an assessment of cumulative visual impacts.											

LOW (<33)			MODERATE (34-66)				HIGH (67 – 100)		
0-10	11-20	21 -30	31 -40	41-50	51 -60	61 -70	71 -80	81-90	91 -100

Based on the above factors, the total score for the study area is 26, which according to the scale above, would result in the area being rated as having a **LOW** visual sensitivity. It should be stressed however that the concept of visual sensitivity has been utilised indicatively to provide a broad-scale indication of whether the landscape is likely to be sensitive to visual impacts and is based on the physical characteristics of the study area, economic activities and land use that predominates. An important factor contributing to the visual sensitivity of an area is the presence, or absence of visual receptors that may value the aesthetic quality of the landscape and depend on it to produce revenue and create jobs. No protected areas or sensitive receptor locations were identified in the study area (i.e., within 5 km of the EGI assessment corridor), however the presence of visual receptors is examined in more detail in **Section 12.0** of this report.

10.3.1 Specialist Sensitivity Assessment and Verification

As part of the visual sensitivity assessment, a screening exercise was undertaken with the aim of indicating any areas that should be precluded from the proposed development footprint. From a visual perspective, these are areas where the establishment of grid connection infrastructure would result in the greatest probability of visual impacts on any sensitive or potentially sensitive visual receptors. The results of the exercise undertaken in respect of the proposed Igolide EGI are provided below and the identified areas of sensitivity are shown in are shown in Figure 16.

Using GIS-based visibility analysis, it was possible to determine which sectors of the EGI assessment corridor would be visible to the highest numbers of receptors in the study area. This analysis confirmed that areas of higher elevation are visible to greater numbers of potentially sensitive receptors. Hence the visual prominence of a tall structure such as a powerline pylon would be exacerbated if located on any ridges or relatively higher-lying plateaus. It is noted that the northern section of the assessment corridor is located on an area of relatively higher elevation that could be seen as an area of potentially high visual sensitivity. However, due to the relatively low number of potentially sensitive receptors in the area, the presence of existing powerlines, road infrastructure and mining activity as well as the fact that the study area as a whole is rated as having a low visual sensitivity, the sensitivity rating of these areas would be reduced to “Medium”.

In determining visual sensitivity, consideration must be given to the direct visual impact of the EGI on any farmsteads or receptors located in, or within 500m of, the assessment corridor. Accordingly, a 500m zone of potential visual sensitivity has been delineated around six receptor locations that were found to be within 500m of the assessment corridor. However, one of these receptor locations, namely VR127 is within the Igolide WEF project area, and as the owners of this property are involved in the development, they are not expected to view the proposed EGI in a negative light. The remaining five receptor locations are all located in relatively close proximity to the N12 National Route. These factors are expected to reduce the visual impacts on these receptor locations resulting from the Igolide EGI project. Hence the zones of potential visual sensitivity, as shown in Figure 16: Potential visual sensitivity in relation to the , are not considered to be “no go areas”, but rather should be viewed as zones of potential visual sensitivity, with a sensitivity rating of “Medium”.

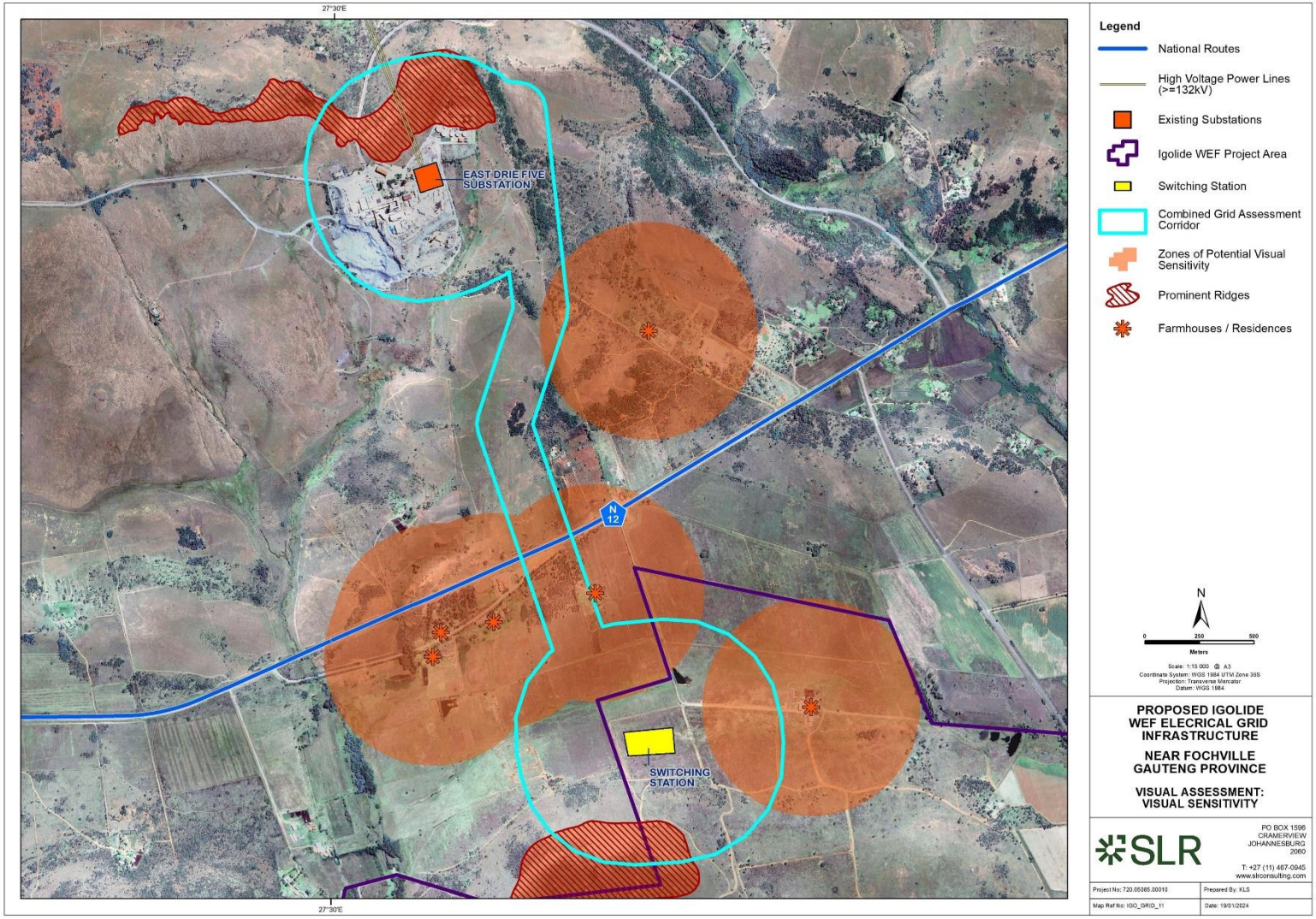

Figure 16: Potential visual sensitivity in relation to the proposed Igolide EGI assessment corridor

10.3.2 Sensitivities Identified by the National Screening Tool

In assessing visual sensitivity, the proposed development was examined in relation to the Landscape Theme of the National Environmental Screening Tool to determine the relative landscape sensitivity for the development of grid connection infrastructure. The tool does not however identify any landscape sensitivities in respect of the proposed OHL or switching substation.

10.3.3 Sensitivity Analysis Summary

A site sensitivity verification exercise (Appendix B) has been conducted in respect of the VIA for the proposed Igolide EGI based on a desktop-level assessment supported by field-based observation. This exercise has verified the absence of any areas identified as visually sensitive during the course of the specialist VIA.

10.4 Visual Absorption Capacity

Visual absorption capacity is the ability of the landscape to absorb a new development without any significant change in the visual character and quality of the landscape. The level of absorption capacity is largely based on the physical characteristics of the landscape (topography and vegetation cover) and the level of transformation present in the landscape.

Although the undulating topography and the areas of cultivation and grassland would reduce the visual absorption capacity, this would be offset to some degree by the presence of mining activity and urban and infrastructural development in the vicinity of the proposed Igolide EGI project.

Visual absorption capacity in the study area is therefore rated as **Moderate**.

11.0 Typical Visual Impacts Associated with Grid Connection Infrastructure

In this section, the typical visual issues related to the establishment of grid connection infrastructure as proposed are discussed.

11.1 132kV powerlines and Switching Stations

Powerline pylons and switching substations are large structures and are thus highly visible. According to the project description as outlined above, the maximum pylon height envisaged for the proposed powerline is 40 m (equivalent in height to a thirteen-storey building). Although a pylon structure would be less visible than a building, the height of the structure means that the tower would still typically be visible from a considerable distance. Visibility would be increased by the fact that the proposed powerline comprises a series of towers typically spaced approximately 200 m to 250 m apart in a linear alignment.

The degree of visibility of an object informs the level and intensity of the visual impact, but other factors also influence the nature of the visual impact. The landscape and aesthetic context of the environment in which the object is placed, as well as the perception of the viewer are also important factors. In the context of an OHL, the type of pylon used as well as the degree to which the pylons would impinge upon or obscure a view is also a factor that will influence the experience of the visual impacts.

As described above, a powerline or a switching station could be perceived to be highly incongruous in the context of a largely natural landscape. The height and linear nature of the powerline will exacerbate this incongruity, as the pylons may impinge on views within the landscape and the industrial nature of the switching substation results in a change in local aesthetics. In addition, the practice of clearing any taller vegetation from areas within the grid connection servitude can increase the visibility and incongruity of the infrastructure. In a largely natural, bushier setting, vegetation clearance will cause fragmentation of the natural vegetation cover, thus making the infrastructure more visible and drawing the viewer's attention to the servitude.

Sensitivity to visual impacts is typically most pronounced in areas set aside for conservation of the natural environment (such as protected natural areas or conservancies), or in areas in where the natural character or scenic beauty of the area attracts visitors (tourists). In this instance however, the area is not typically valued for its tourism significance and no formal protected areas, leisure-based tourism activities or recognised tourism routes were identified in the area.

Conversely, the presence of other anthropogenic objects associated with the built environment may "degrade" the visual environment and thus the introduction of a new powerline and switching station into this setting may be considered to be less of a visual impact than if there was no existing built infrastructure visible. In this context therefore, the presence of existing high voltage powerlines traversing the study area is expected to lessen the visual contrast associated with the introduction of new grid connection infrastructure. Other factors, as listed below, can also affect the nature and intensity of a potential visual impact associated with grid connection infrastructure:

- The location of the development in the landform setting – i.e., in a valley bottom or on a ridge top. In the latter example the development would be much more visible and would "break" the horizon;
- The presence of macro- or micro-topographical features, built form or vegetation that would screen views of the development from a receptor location;

- The presence of existing, similar features in the area and their alignment in relation to the proposed new development; and
- Temporary factors such as weather conditions (presence of haze, rainfall or heavy mist) which would affect visibility.

In this instance, the proposed powerline and switching station are intended to serve the proposed Igolide WEF. As such, the grid infrastructure will only be built if the WEF is developed. The grid infrastructure is therefore likely to be perceived to be part of the greater the overall WEF project and the visual impact will be relatively minor when compared to the visual impact associated with the facility as a whole.

11.2 Associated Infrastructure

Infrastructure associated with the proposed EGI includes termination point upgrades (expansion of facilities at East Drie Five Substation), lighting, fencing, operations buildings, security fencing and gating, parking area, concrete batching plant (if required), waste storage/disposal and storerooms). and access roads. Visual impacts associated with this infrastructure largely result from surface clearance during construction that could increase the visual prominence of these features, thus increasing the level of contrast with the surrounding landscape.

As with the powerlines and switching station, the additional infrastructure is likely to be perceived as part of the greater Igolide WEF project and the visual impact will be relatively minor when compared to the visual impact associated with the development as a whole.

12.0 Sensitive Visual Receptors

A sensitive visual receptor location is defined as a location where receptors would potentially be impacted by a proposed development. Adverse impacts often arise where a new development is seen as an intrusion which alters the visual character of the area and affects the 'sense of place'. The degree of visual impact experienced will however vary from one receptor to another, as it is largely based on the viewer's perception.

A distinction must be made between a receptor location and a sensitive receptor location. A receptor location is a site from where the proposed development may be visible, but the receptor may not necessarily be adversely affected by any visual intrusion associated with the development. Less sensitive receptor locations include locations of commercial activities and certain movement corridors, such as roads that are not tourism routes. More sensitive receptor locations typically include sites that are likely to be adversely affected by the visual intrusion of the proposed development. They include tourism facilities, scenic sites and residential dwellings in natural settings.

The identification of sensitive receptors is typically based on a number of factors which include:

- the visual character of the area, especially taking into account visually scenic areas and areas of visual sensitivity;
- the presence of leisure-based (especially nature-based) tourism in an area;
- the presence of sites or routes that are valued for their scenic quality and sense of place;
- the presence of homesteads / farmsteads in a largely natural setting where the development may influence the typical character of their views; and
- feedback from I&APs, as raised during the public participation process conducted as part of the EIA study.

As the visibility of the development would diminish exponentially over distance (Section 9.4), receptor locations which are closer to the EGI would experience greater adverse visual impacts than those located further away.

The degree of visual impact experienced will however vary from one inhabitant to another, as it is largely based on the viewer's perception. Factors influencing the degree of visual impact experienced by the viewer include the following:

- Value placed by the viewer on the natural scenic characteristics of the area.
- The viewer's sentiments toward the proposed development. These may be positive (a symbol of progression toward a less polluted future) or negative (foreign objects degrading the natural landscape).
- Degree to which the viewer will accept a change in the typical character of the surrounding area.

12.1 Receptor Identification

Preliminary desktop assessment of the study area for the proposed Igolide EGI did not identify any formal protected areas or leisure-based tourism activities in the study area for the proposed development. Although several accommodation / restaurant / wedding venue facilities were identified in the study area, these were not considered sensitive due to the type of services being offered and the location of the facilities in relation to areas of existing transformation.

Multiple farmsteads and residences were however identified within a five km radius of the Igolide EGI assessment corridor. In general, farmsteads and residences could be regarded as potentially sensitive visual receptors as they are located within a mostly rural setting with pastoral / natural vistas that will likely be altered by the proposed development. However, not all of these homesteads and residences would be sensitive to the proposed development and given the number of farmsteads, it was not possible to confirm the presence of receptors at all the identified locations. Notwithstanding these limitations, all the identified receptor locations were assessed as part of the VIA as they are still regarded as being potentially sensitive to the visual impacts associated with the proposed development. ***None of these receptor locations was found to be sensitive.***

As a result, the receptor assessment includes fifty-eight potentially sensitive receptor locations, forty-six of which are inside the viewshed for the proposed EGI. Five receptor locations are within the Igolide WEF project area and it is known that these landowners have signed agreements with the Igolide WEF Project Company regarding the establishment of the proposed WEF and associated infrastructure. ***None of the receptor locations was found to be sensitive.***

It was noted that residential areas within and adjacent to the town of Fochville and also the residential area of East Village are located within the Igolide EGI study area. While these could be considered as receptors, they are not considered to be sensitive due to their location within built-up, heavily transformed areas.

In many cases, roads along which people travel, are regarded as sensitive receptors. The primary thoroughfares in the study area are the N12 National Route and the R500 Main Road. The N12 is a major route, linking Johannesburg in the east with Kimberley in the west, before travelling south to the Western Cape Province. The R500 traverses the study area in a north-east to-south-west direction, linking Carletonville with Parys to the south.

The sections of these roads traversing the study area are not considered part of designated scenic routes, although these routes are important links and are likely to be utilised, to some extent, by tourists en route to the Northern Cape or to the resorts located in Parys or along the Vaal River. As a result, they are considered to be potentially sensitive receptor roads – i.e., roads being used by motorists who may object to the potential visual intrusion of the proposed EGI.

Other thoroughfares in the study area, including the Losberg Road are primarily used as local access roads and do not form part of any scenic tourist routes. These roads are not specifically valued or utilised for their scenic or tourism potential and are therefore not regarded as visually sensitive.

Potentially sensitive visual receptor locations identified within the study area for the proposed Igolide EGI are indicated in Figure 17.

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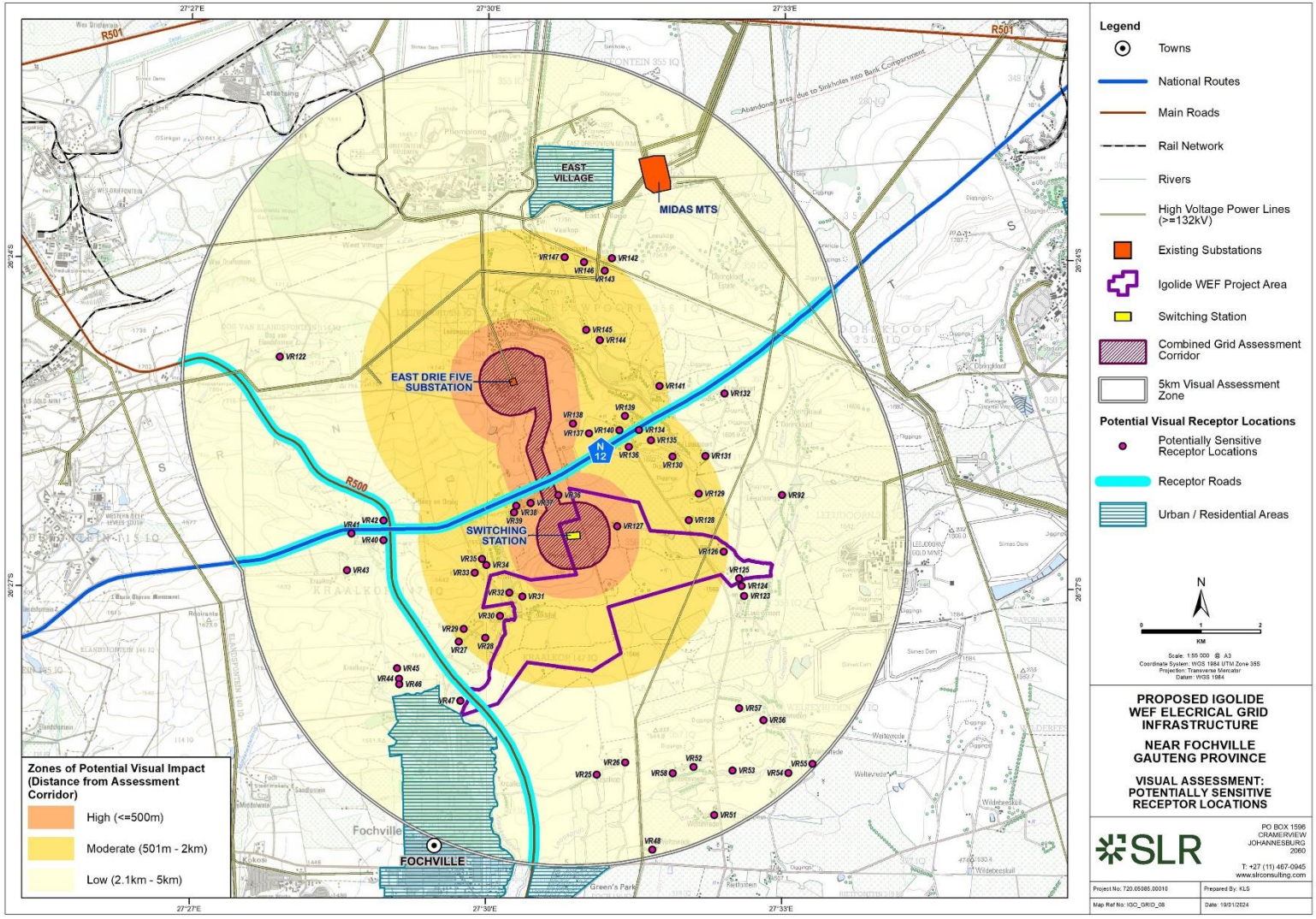

Figure 17: Potentially sensitive receptor locations within 5km of the Igolide EGI

13.0 Impact Assessment

13.1 Receptor Impact Rating

In order to assess the impact of the proposed EGI on the identified potentially sensitive receptor locations, a matrix that takes into account a number of factors has been developed and is applied to each receptor location.

The matrix is based on the factors listed below:

- Distance of a receptor location away from the proposed development (zones of visual impact).
- Presence of screening elements (topography, vegetation etc.).
- Visual contrast of the development with the landscape pattern and form.

These are considered to be the most important factors when assessing the visual impact of a proposed development on a potentially sensitive receptor location in this context. It should be noted that this rating matrix is a relatively simplified way of assigning a likely representative visual impact, which allows a number of factors to be considered. Experiencing visual impacts is however a complex and qualitative phenomenon and is thus difficult to quantify accurately. The matrix should therefore be seen as a representation of the likely visual impact at a receptor location. Part of its limitation lies in the quantitative assessment of what is largely a qualitative or subjective impact.

13.1.1 Distance

As described above, the distance of the viewer / receptor location from the development is an important factor in the context of experiencing visual impacts which will have a strong bearing on mitigating the potential visual impact. A high impact rating has been assigned to receptor locations that are located within 500m of the EGI assessment corridor. The visual impact of a powerline or switching station will diminish beyond 5 km as the structures would appear to merge with the elements on the horizon. Any visual receptor locations beyond this distance limit have therefore not been assessed as they fall outside the study area and would not be visually influenced by the proposed development.

At this stage of the process, zones of visual impact for the proposed EGI have been delineated according to distance from the EGI assessment corridor. Based on the height and scale of the project, the distance intervals chosen for the zones of visual impact, as shown in Figure 17 are as follows:

- 0 – 500 m (high impact zone)
- 500 m – 2 km (moderate impact zone)
- 2 km – 5 km (low impact zone)

13.1.2 Screening Elements

The presence of screening elements is an equally important factor in this context. Screening elements can be vegetation, buildings and topographic features. For example, a grove of trees, a series of low hills or a mine dump located between a receptor location and an object could completely shield the object from the receptor.

13.1.3 Visual Contrast

The visual contrast of a development refers to the degree to which the proposed development would be congruent with the surrounding environment. This is based on whether or not the development would conform to the land use, settlement density, structural scale, form and pattern of natural elements that define the structure of the surrounding landscape. Visual compatibility is an important factor to be considered when assessing the impact of the development on visual receptors within a specific context. A development that is incongruent with the surrounding area could have a significant visual impact on visual receptors as it may change the visual character of the landscape.

In order to determine the likely visual compatibility of the proposed development, the study area was classified into the following zones of visual contrast (Figure 18):

- **High –**
  - undeveloped / natural / rural areas.
- **Moderate –**
  - areas within 500m of existing power lines (>=132kV);
  - areas within 500m of main roads;
  - areas within 500m of railway infrastructure;
  - areas within 500m of cultivated land, commercial forest plantations and urban smallholdings.
- **Low** –
  - areas within 500m of urban / industrial / built-up areas; and
  - areas within 500m of mines / quarries etc

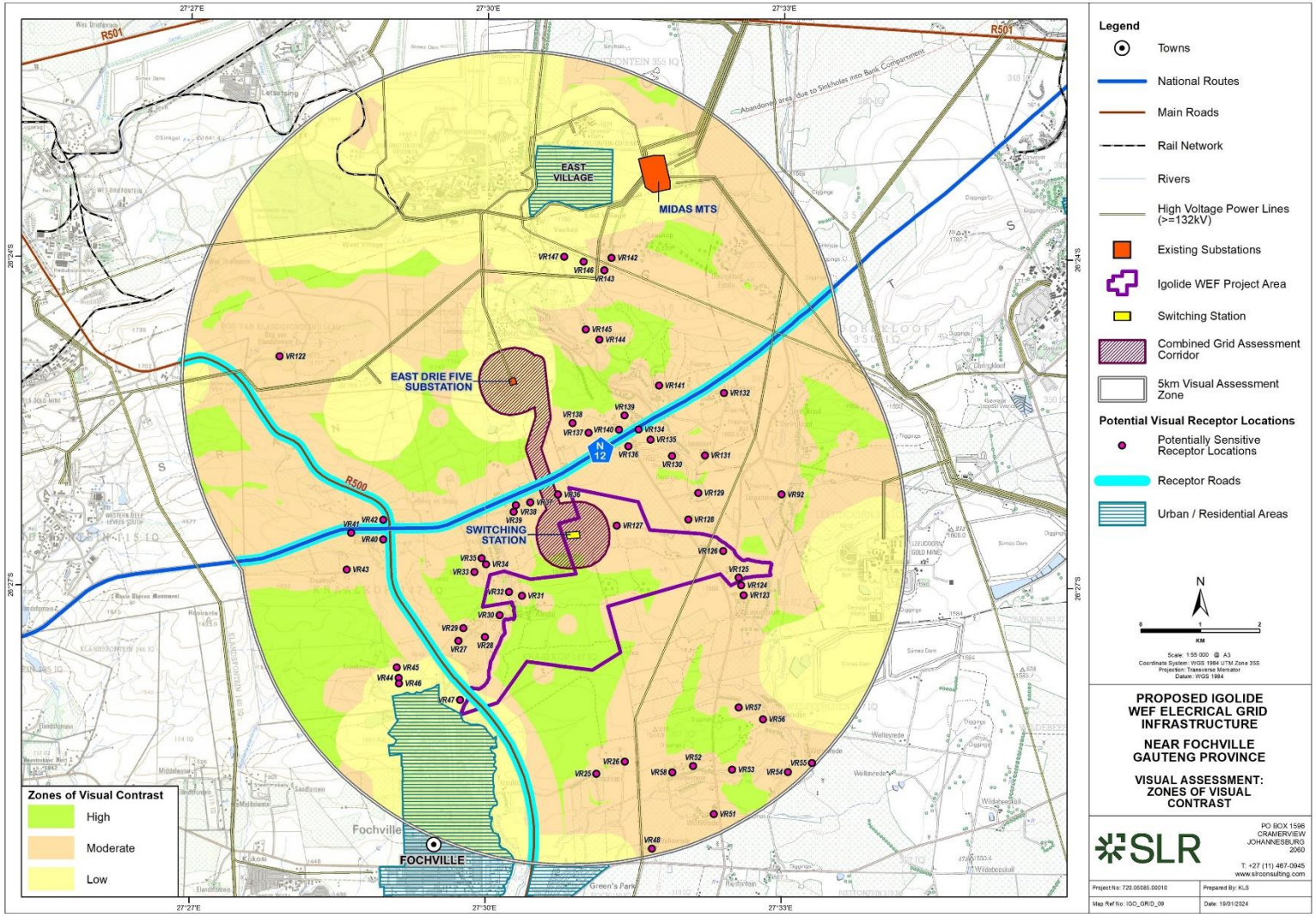

Figure 18: Zones of visual contrast within the study area

13.1.4 Impact Rating Matrix

The receptor impact rating matrix returns a score which in turn determines the visual impact rating assigned to each receptor location (Table 4) below.

Table 4: Rating Scores

Rating	Overall Score
High Visual Impact	8 – 9
Moderate Visual Impact	5 – 7
Low Visual Impact	3 – 4
Negligible Visual Impact	(overriding factor)

An explanation of the matrix is provided in Table 5 below.

Table 5: Visual assessment matrix used to rate the impact of the proposed development on potentially sensitive receptors

	Visual Impact Rating			
Visual Factor	**High**	**Moderate**	**Low**	**Overriding Factor: Negligible**
Distance of receptor away from proposed development	EGI: <= 500 m **Score 3**	EGI: 500 m - 2 km **Score 2**	EGI: 2 km - 5 km **Score 1**	EGI: > 5 km
Presence of screening factors	No / almost no screening factors – development highly visible **Score 3**	Screening factors partially obscure the development **Score 2**	Screening factors obscure most of the development **Score 1**	Screening factors completely block any views towards the development, i.e. the development is not within the viewshed
Visual Contrast	**High contrast** with the pattern and form of the natural landscape elements (vegetation and landform), typical land use and/or human elements (infrastructural form) **Score 3**	**Moderate contrast** with the pattern and form of the natural landscape elements (vegetation and landform), typical land use and/or human elements (infrastructural form) **Score 2**	**Corresponds** with the pattern and form of the natural landscape elements (vegetation and landform), typical land use and/or human elements (infrastructural form) **Score 1**	

The full receptor impact rating for the Igolide EGI is provided in Appendix C. However Table 6 below presents a summary of the overall visual impacts of the proposed EGI on each of the potentially sensitive visual receptor locations identified within 5 km of the Igolide EGI assessment corridor.

Table 6: Summary receptor impact rating for the proposed Igolide EGI

OVERALL IMPACT RATING	NUMBER OF SENSITIVE RECEPTORS	NUMBER OF POTENTIALLY SENSITIVE RECEPTORS
HIGH	0	1
MODERATE	0	35
LOW	0	10
TOTAL INCLUDED IN ASSESSMENT	**0**	**46**
OUTSIDE VIEWSHED	*0*	*12*

Table 6 shows that only one of the identified receptor locations could potentially experience high levels of visual impact, namely VR36. Impacts are however expected to be reduced by the proximity of this farmstead to major road infrastructure in the area. Thirty-five receptor locations are expected to experience moderate levels of visual impact, while ten receptor locations will only be subjected to low levels of impact. The remaining twelve receptor locations were found to be outside the viewshed for the EGI and as such were removed from any further assessment.

As stated above, the N12 National Route and the R500 main road could be considered as potentially sensitive receptor roads. Although elements of the EGI are expected to be highly visible to motorists travelling along the N12 and the R500, the likely visual impacts of the proposed development on motorists would however be reduced by the level of transformation and landscape degradation, already present in the broader area around the EGI assessment corridor. Considering this, visual impacts affecting the N12 and R500 are rated as moderate.

13.2 Night-Time Impacts

The visual impact of lighting on the nightscape is largely dependent on the existing lighting present in the surrounding area at night. The night scene in areas where there are numerous light sources will be visually degraded by the existing light pollution and therefore additional light sources are unlikely to have a significant impact on the nightscape. In contrast, introducing new light sources into a relatively dark night sky will impact on the visual quality of the area at night. It is thus important to identify a night-time visual baseline before exploring the potential visual impact of the proposed EGI at night.

The town of Fochville, located approximately 6 km south-west of the Igolide EGI assessment corridor, together with the adjacent townships of Greenspark and Kokosi are the main source of light within the study area. In addition, the large mining operations and associated residential areas to the north of the EGI assessment corridor are expected to have a significant impact on the night scene in the northern sector of the study area. Other light spill in the broader area would largely emanate from the many farmsteads dotted across the study area, and from vehicles travelling along the main roads.

Overall, the visual character of the night environment within the study area is considered to be affected by a moderate level of light pollution and will therefore not be regarded as pristine.

Powerlines and associated pylons are not generally lit up at night and, thus light spill associated with the proposed EGI is only likely to emanate from the proposed switching station. Lighting from this facility is therefore expected to intrude on the nightscape to some degree. As the EGI will only be constructed if the associated Igolide WEF is developed, the lighting impacts from the proposed switching station would be subsumed by the glare and contrast of the lights associated with the WEF. As such, the grid infrastructure alone is not expected to result in significant lighting impacts.

13.3 Cumulative Impacts

Although it is important to assess the visual impacts of the proposed Igolide EGI specifically, it is equally important to assess the cumulative visual impact that could materialise as a result of this development. Cumulative impacts occur where existing or planned developments, in conjunction with the proposed development, result in significant incremental changes in the broader study area. In this instance, such developments would include:

- existing mining / quarrying activities, and
- other existing / proposed renewable energy facilities within a 30km radius.

Existing mining / quarrying and associated industrial development have already resulted in large scale visual impacts, especially to the north and east of the Igolide EGI assessment corridor. These developments have significantly altered the sense of place and visual character in the broader region.

Renewable energy facilities have the potential to cause large-scale visual impacts, and although the level of transformation already present in the landscape will reduce the contrast and overall visual impact of the new development, the incremental change in the landscape will be increased and the visual impacts on surrounding visual receptors would be exacerbated. The South African Renewable Energy EIA Application Database from DFFE (REEA_OR_2023_Q4) records only one approved renewable energy project within 30kms of the Igolide EGI area, this being a 200MW Solar Photovoltaic (PV) facility located adjacent to Sibanye Gold Mine. This project is however located some 6.5 km north-east of the Igolide EGI assessment corridor (Figure 19) , in close proximity to extensive, well-established mining infrastructure and as such it is not anticipated that this development will result in any significant cumulative impacts affecting the landscape or the visual receptors within the visual assessment zone for the Igolide EGI. The cumulative assessment must however include the proposed Igolide WEF located at the southern end of the EGI assessment corridor. The combined EGI / WEF project will affect a significant portion of the landscape between Fochville in the south-west and the mining complex to the north.

From a visual perspective, the concentration of renewable energy facilities in close proximity to existing mining development as proposed will further change the visual character of the area on the periphery of Fochville and alter the inherent sense of place, extending an increasingly industrial character into the broader area, and resulting in significant cumulative impacts. It is however anticipated that these impacts could be mitigated to acceptable levels with the implementation of the recommended mitigation measures.

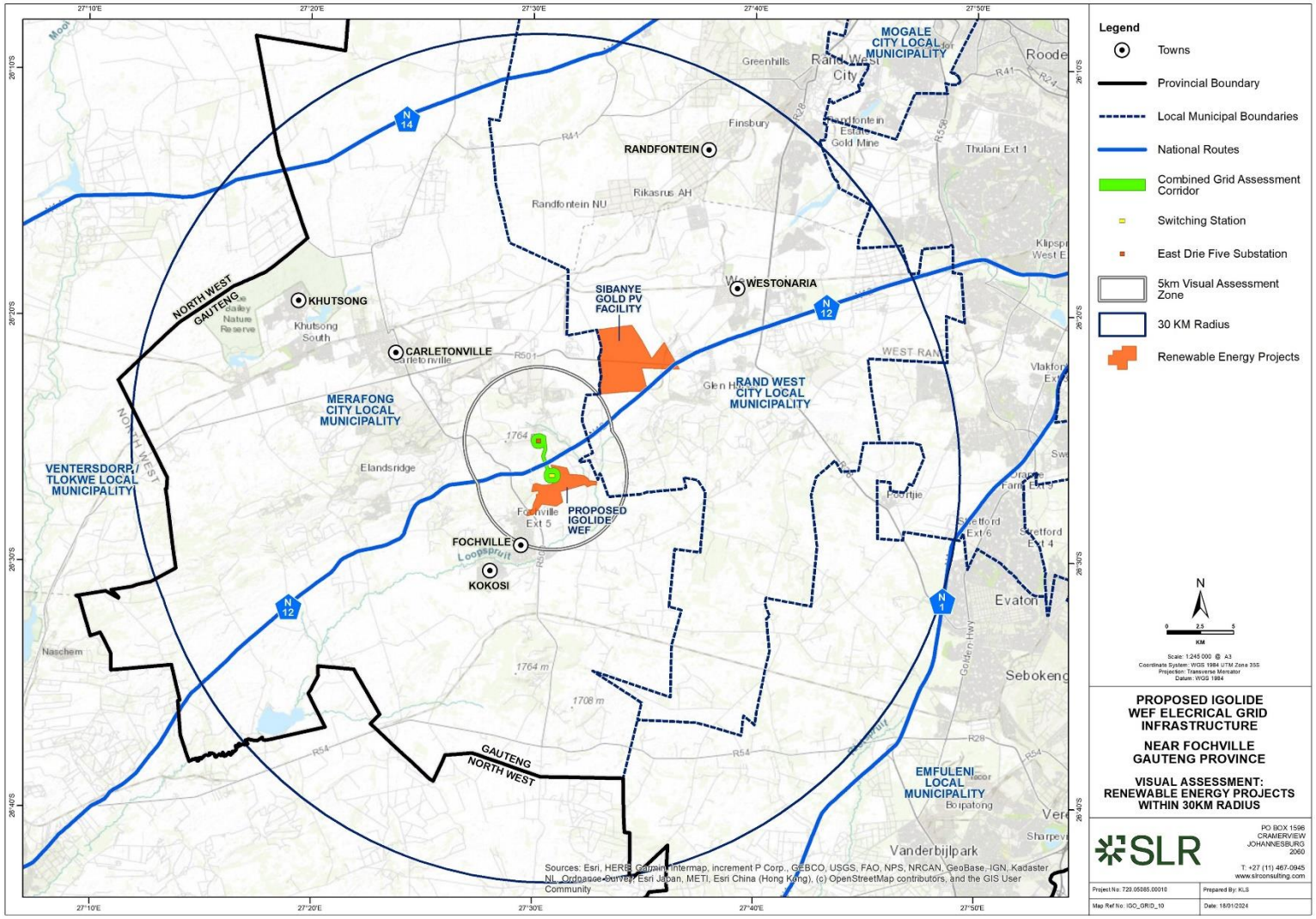

Figure 19: Renewable Energy Projects within 30 kms of the Igolide EGI

14.0 Summary Of Potential Impacts

Potential visual issues / impacts resulting from the proposed Igolide EGI are outlined below.

14.1 Construction Phase

- Potential alteration of the visual character and sense of place resulting from construction activities.
- Potential visual impacts of construction affecting receptors in the study area, including:
  - visual intrusion resulting from large construction vehicles and equipment;
  - visual effect of construction laydown areas and material stockpiles.
  - impacts of increased dust emissions from construction activities and related traffic;
  - visual scarring of the landscape as a result of site clearance and earthworks; and
  - visual pollution resulting from littering on the construction site.

14.2 Operational Phase

- Potential alteration of the visual character and sense of place of the area;
- Potential visual impacts affecting receptors in the study area, including:
  - visual intrusion resulting from the presence of grid connection infrastructure, particularly in more natural undisturbed settings;
  - impacts of increased dust emissions from maintenance vehicles accessing the powerline servitude and switching station site via gravel roads;
  - potential alteration of the night-time visual environment as a result operational and security lighting associated with the switching station.

14.3 Decommissioning Phase

- Potential visual impacts of decommissioning affecting receptors in the study area, including:
  - visual intrusion resulting from vehicles and equipment involved in the decommissioning process;
  - impacts of increased dust emissions resulting from decommissioning activities and related traffic;
  - visual scarring of the landscape as a result of decommissioning activities; and
  - visual intrusion of any remaining infrastructure on the site.

14.4 Cumulative Impact

- Combined visual impacts from renewable energy development and associated grid connection infrastructure in the broader area could potentially alter the sense of place and visual character of the area; and
- Combined visual impacts from renewable energy development and associated grid connection infrastructure in the broader area could potentially exacerbate visual impacts on visual receptors.

15.0 Overall Visual Impact Rating

The EIA Regulations, 2014 require that an overall rating for visual impact is provided to allow the visual impact to be assessed alongside other environmental parameters. The impact matrices for visual impacts associated with the proposed construction, operation and decommissioning of the proposed Igolide EGI are presented below together with recommended mitigation measures. The mitigation measures have been determined based on best practice and literature reviews.

Please refer to Appendix D for an explanation of the impact rating methodology.

15.1 Direct Visual Impacts during Construction

Table 7: Impact Rating for the Igolide EGI during the construction phase

CONSTRUCTION PHASE: DIRECT IMPACTS																		
Impact number	**Aspect**	**Description**	**Stage**	**Character**	**Ease of Mitigation**	**Pre-Mitigation**							**Post-Mitigation**						
						(M+	**E+**	**R+**	**D)x**	**P=**	**S**	**Rating**	**(M+**	**E+**	**R+**	**D)x**	**P=**	**S**	**Rating**
Impact 1:	Visual impacts	▪ Large construction vehicles, equipment and construction material stockpiles will alter the natural character of the study area and expose visual receptors to impacts associated with construction. ▪ Construction activities may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. ▪ Temporary stockpiling of soil during construction may alter the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact. ▪ Dust emissions and dust plumes from increased traffic on the gravel roads serving the construction site may evoke negative sentiments from surrounding viewers. ▪ Surface disturbance during construction would expose bare soil resulting in visual scarring of the landscape and increasing the level of visual contrast with the surrounding environment. ▪ Potential visual pollution resulting from littering on the construction site.	Construction	Negative	Moderate	3	2	3	2	3	**30**	**N2**	2	2	3	2	2	**18**	**N2**
					Significance	**N2 - Low**							**N2 - Low**						

15.2 Construction Phase Mitigation Measures

- Carefully plan to minimise the construction period and avoid construction delays.
- Inform receptors within 500m of the proposed powerline and / or switching station of the construction programme and schedules.
- Maintain a neat construction site by removing rubble, litter and waste materials regularly.
- Minimise vegetation clearing and rehabilitate cleared areas as soon as possible.
- Position storage / stockpile areas in unobtrusive positions in the landscape, where possible.
- Make use of existing gravel access roads where possible.
- Limit the number of vehicles and trucks travelling to and from the construction site, where possible.
- Ensure that dust suppression techniques are implemented:
  - on all access roads;
  - in all areas where vegetation clearing has taken place;
  - on all soil stockpiles.

15.3 Direct Visual Impacts during Operation

Table 8: Impact Rating for the Igolide EGI during the operation phase

OPERATION PHASE: DIRECT IMPACTS																		
Impact number	**Aspect**	**Description**	**Stage**	**Character**	**Ease of Mitigation**	**Pre-Mitigation**							**Post-Mitigation**						
						(M+	**E+**	**R+**	**D)x**	**P=**	**S**	**Rating**	**(M+**	**E+**	**R+**	**D)x**	**P=**	**S**	**Rating**
Impact 1:	Visual impacts	▪ The proposed development will alter the visual character of the surrounding area and expose potentially sensitive visual receptor locations to visual impacts. ▪ Dust emissions and dust plumes from maintenance vehicles accessing the site via gravel roads may evoke negative sentiments from surrounding viewers. ▪ The night time visual environment could be altered as a result of operational and security lighting at the proposed switching station.	Operation	Negative	Moderate	2	3	3	4	2	**24**	**N2**	2	3	3	4	2	**24**	**N2**
					Significance	**N2- Low**							**N2 - Low**						

15.4 Operation Phase Mitigation / Management Measures

- Where possible, limit the number of maintenance vehicles using access roads.
- Ensure that dust suppression techniques are implemented on all gravel access roads.
- As far as possible, limit the amount of security and operational lighting present on the switching station site.
- Where feasible, light fittings for security at night should reflect the light toward the ground to reduce light spill.
- Lighting fixtures should make use of minimum lumen or wattage.
- Mounting heights of lighting fixtures should be limited, or alternatively foot-light or bollard level lights should be used.
- If possible, make use of motion detectors on security lighting.
- The buildings on the substation site should not be illuminated at night and should be painted in natural tones that fit with the surrounding environment.
- Non-reflective surfaces should be used where possible.

15.5 Direct Visual Impacts during Decommissioning

Table 9: Impact Rating for the Igolide EGI during the decommissioning phase

DECOMMISSIONING PHASE: DIRECT IMPACTS																		
Impact number	**Aspect**	**Description**	**Stage**	**Character**	**Ease of Mitigation**	**Pre-Mitigation**							**Post-Mitigation**						
						(M+	**E+**	**R+**	**D)x**	**P=**	**S**	**Rating**	**(M+**	**E+**	**R+**	**D)x**	**P=**	**S**	**Rating**
Impact 1:	Visual impacts	▪ Vehicles and equipment required for decommissioning will alter the natural character of the study area and expose visual receptors to visual impacts. ▪ Decommissioning activities may be perceived as an unwelcome visual intrusion. ▪ Dust emissions and dust plumes from increased traffic on the gravel roads serving the decommissioning site may evoke negative sentiments from surrounding viewers. ▪ Surface disturbance during construction would expose bare soil resulting in visual scarring of the landscape and increasing the level of visual contrast with the surrounding environment. ▪ Temporary stockpiling of soil during decommissioning may alter the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact. ▪ Decommissioned infrastructure left on the site may be visually intrusive.	Decommissioning	Negative	Moderate	3	2	3	2	3	**30**	**N2**	2	2	3	2	2	**18**	**N2**
					Significance	**N2- Low**							**N2 - Low**						

15.6 Decommissioning Phase Mitigation Measures

- All infrastructure that is not required for post-decommissioning use should be removed.
- Carefully plan to minimize the decommissioning period and avoid delays.
- Maintain a neat decommissioning site by removing rubble and waste materials regularly.
- Position storage / stockpile areas in unobtrusive positions in the landscape, where possible.
- Ensure that dust suppression procedures are maintained on all gravel access roads throughout the decommissioning phase.
- Impose speed limits on gravel access roads to reduce dust emissions.
- All cleared areas should be rehabilitated as soon as possible.

15.7 Cumulative Impact Rating

Table 10: Cumulative Impact Rating for Igolide EGI.

CUMULATIVE IMPACTS																		
Impact number	**Aspect**	**Description**	**Stage**	**Character**	**Ease of Mitigation**	**Pre-Mitigation**							**Post-Mitigation**						
						(M+	**E+**	**R+**	**D)x**	**P=**	**S**	**Rating**	**(M+**	**E+**	**R+**	**D)x**	**P=**	**S**	**Rating**
Impact 1:	Visual impacts	▪ Additional renewable energy and associated infrastructure developments in the broader area will alter the natural character of the study area towards a more industrial landscape and expose a greater number of receptors to visual impacts. ▪ Visual intrusion of multiple renewable energy developments may be exacerbated, particularly in more natural undisturbed settings. ▪ Additional renewable energy facilities in the area would generate additional traffic on gravel roads thus resulting in increased impacts from dust emissions and dust plumes. ▪ The night-time visual environment could be altered as a result of operational and security lighting at multiple renewable energy facilities in the broader area.	All stages	Negative	Moderate	5	3	3	5	4	**64**	**N4**	4	3	3	4	4	**56**	**N3**
					Significance	**N4- High**							**N3 - Moderate**						

15.8 Cumulative Impact Mitigation / Management Measures

- Implementation of the mitigation measures as recommended above.

16.0 Impact Assessment Summary

An impact assessment summary is provided in Table 11 below.

Table 11: Overall Impact Significance (Post Mitigation)

Phase	Overall Impact Significance
Construction	Low (2)
Operational	Low (2)
Decommissioning	Low (2)
Cumulative (All phases)	Moderate (3)

17.0 Conclusion

A visual study was conducted to assess the magnitude and significance of the potential visual impacts associated with the development of the proposed Igolide EGI near Fochville in Gauteng Province. The VIA has demonstrated that the study area has a somewhat mixed visual character, transitioning from the heavily transformed mining landscape in the north to a more rural / pastoral character across the remainder of the study area. Hence, although EGI development would alter the visual character and contrast with this rural / pastoral character, the location of the proposed EGI in relatively close proximity to the gold mining complex will significantly reduce the level of contrast.

A broad-scale assessment of visual sensitivity, based on the physical characteristics of the study area, economic activities and land use that predominates, determined that the area would have a low visual sensitivity. An important factor contributing to the visual sensitivity of an area is the presence, or absence of visual receptors that may value the aesthetic quality of the landscape and depend on it to produce revenue and create jobs. No formal protected areas, leisure-based tourism activities or sensitive receptor locations were identified in the study area, and this factor in conjunction with the high levels of transformation in the north have reduced the overall visual sensitivity of the broader area.

A total of fifty-eight potentially sensitive receptor locations were identified within 5 km of the Igolide EGI assessment corridor, forty-six of which are inside the viewshed for the proposed EGI. Five receptor locations are however located within the Igolide WEF project area and it is known that these landowners have signed agreements with Igolide regarding the establishment of the proposed WEF and associated infrastructure. ***None of the receptor locations was found to be sensitive.***

Most of the receptor locations within the 5 km radius are assumed to be farmsteads and residences which could be regarded as *potentially* sensitive as they are located within a mostly rural setting with pastoral / natural vistas that will likely be altered by the proposed development. Although several accommodation / restaurant / wedding venue facilities were identified in the study area, these were not considered sensitive as the type of facilities provided are not expected to be detrimentally affected by changes in the landscape.

Only one of the identified receptor locations could potentially experience high levels of visual impact, namely VR36. Impacts are however expected to be reduced by the proximity of this farmstead to major road infrastructure in the area. Thirty-five receptor locations are expected to experience moderate levels of visual impact, while ten receptor locations will only be subjected to low levels of impact. The remaining twelve receptor locations were found to be outside the viewshed for the EGI and as such were removed from any further assessment.

Although the N12 and the R500 receptor roads traverse the study area, motorists travelling along these routes are only expected to experience moderate impacts from the proposed Igolide EGI.

A preliminary assessment of overall impacts revealed that impacts associated with the proposed Igolide EGI (post mitigation) are of LOW significance during the construction, operational and decommissioning phases of the project with relatively few mitigation / management measures available to reduce the visual impact.

Considering the presence of existing mining and associated industrial activity and proposals for other renewable energy facilities in the broader area, the introduction of new renewable energy facilities and their associated EGI in the area will result in further change in the visual character of the area and alteration of the inherent sense of place, extending an increasingly industrial character into the broader area, and resulting in significant cumulative impacts. It is however anticipated that these impacts could be mitigated / managed to acceptable levels with the implementation of the recommended mitigation measures. Considering this, cumulative impacts have been rated as MODERATE.

17.1 Visual Impact Statement

It is SLR Consulting's opinion that the potential visual impacts associated with the proposed Igolide EGI are negative and of moderate significance. Given the absence of sensitive receptors and the significant level of human transformation and landscape degradation in areas near the proposed Igolide EGI, the project is deemed acceptable from a visual perspective and the EA should be granted. SLR Consulting is of the opinion that the impacts associated with the construction, operation and decommissioning phases can be mitigated to acceptable levels provided the recommended mitigation measures are implemented.

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APPENDIX A Specialist CV

Igolide Wind Energy Facility Electrical Grid Infrastructure

Visual Impact Assessment

ENERTRAG South Africa (Pty) Ltd

SLR Project No.: 720.05085.00010

15 April 2024

Kerry is a highly focused and dedicated Spatial Professional with strong technical skills and some 27 years' experience in the application and use of geographic analysis and geospatial technologies in support of a range of environmental and development planning projects.

While Kerry's expertise is largely centred on the management and presentation of geospatial data for environmental impact assessments, her GIS skills are frequently utilised in support of a range of other projects, including:

- Strategic environmental assessments and management plans;
- Visual and landscape assessments;
- Wetland / surface water assessments;
- Catchment delineation for floodline analysis;
- Urban and Rural Development Planning;
- Transport Assessments; and
- Infrastructure Development Planning.

Kerry has extended her skills base to include the undertaking of specialist Visual Impact Assessments (VIAs) for a range of projects, including renewable energy, power line and residential / mixed-use developments.

Education

- BA (Geography), Leeds Trinity University, UK (1982)

Project Experience

Built Infrastrucure

Kerry has been responsible for GIS analysis and mapping in support of multiple built infrastructure projects over the years, key projects include:

- EIA and EMP for 5x 440kV Transmission Lines between Thyspunt (proposed nuclear power station site) and several substations in the Port Elizabeth area – Eskom (Eastern Cape Province).
- Initial Scoping for the proposed 750km multi petroleum products pipeline from Durban to Gauteng/Mpumalanga – Transnet Pipelines.
- Detailed EIA for multi petroleum products pipeline from Kendall Waltloo, and from Jameson Park to Langlaagte Tanks farms –Transnet Pipelines.
- Environmental Management Plan for copper and cobalt mine (Democratic Republic of Congo).
- EIA and Agricultural Feasibility study for Miwani Sugar Mill (Kenya).
- EIAs for Concentrated Solar and Photovoltaic power plants and associated infrastructure (Northern Cape, Free State, Limpopo and North West Province).
- EIAs for Wind Farms and associated infrastructure (Northern Cape and Western Cape).
- Basic Assessments for 132kV Distribution Lines (Free State, KwaZulu-Natal, Mpumalanga and North West Province).
- Environmental Assessment for the proposed Moloto Development Corridor (Limpopo).

- Environmental Advisory Services for the Gauteng Rapid Rail Extensions Feasibility Project.
- Environmental Screening for the Strategic Logistics and Industrial Corridor Plan for Strategic Infrastructure Project 2, Durban-Free State-Gauteng Development Region.

Renewable Energy Development

Kerry has been responsible for GIS analysis, mapping and spatial data management in support of multiple Environmental Impact Assessments for renewable energy projects, the most recent of these being:

- Hoogland Wind Farms, Northern and Southern Clusters, Redcap 2022.
- Jessa 1, 2 & 3 WEFs, ENERTRAG South Africa, 2022.
- Ceres WEF Suite (Karee and Patatskloof), South Africa Mainstream Renewable Power Developments, 2021.
- Beaufort West WEF Suite (Heuweltjies and Kraaltjies), South Africa Mainstream Renewable Power Developments, 2021.
- Koup 1 and Koup 2 WEFs, Genesis Energy, 2021.
- Oya Energy Facility, G7 Renewable Energies, 2020.
- Mooi Plaats, Wonderheuvel and Paarde Valley Solar PV Plants, EDF Renewable Energy, 2019.
- Rondekop WEF, G7 Renewable Energies, 2019.
- Tooverberg WEF, ENERTRAG South Africa, 2019.

State of the Environment Reporting

Kerry was responsible for GIS analysis, mapping and spatial data management in support of State of the Environment Reports for the City of Johannesburg.

- 2008 State of the Environment Report for City of Johannesburg.
- Biodiversity Assessment (2008) for City of Johannesburg.

Strategic Environmental Assessments and Environmental Management Frameworks

Kerry was responsible for GIS analysis, mapping and spatial data management in support of several Strategic Environmental Assessment (SEA) and Environmental Management Framework (EMF) projects, including:

- SEA for Greater Clarens – Maloti-Drakensberg Transfrontier Park (Free State).
- SEA for the Marula Region of the Kruger National Park, SANParks.
- SEA for Thanda Private Game Reserve (KwaZulu-Natal).
- SEA for KwaDukuza Local Municipality (KwaZulu-Natal).
- EMF for proposed Renishaw Estate (KwaZulu-Natal).
- EMF for Mogale City Local Municipality, Mogale City Local Municipality (Gauteng).

- SEA for Molemole Local Municipality, Capricorn District Municipality (Limpopo).
- SEA for Blouberg Local Municipality, Capricorn District Municipality (Limpopo).
- SEA for the Bishopstowe study area in the Msunduzi Local Municipality (KwaZulu-Natal).

Visual Impact Assessments

Kerry has been responsible for undertaking specialist visual impact assessments for various infrastructure development projects in South Africa, Namibia and Zimbabwe. Recent projects include:

- VIA (EIA) for the HDF Energy Renewstable® Swakopmund Project, in Swakopmund, Namibia.
- VIA (EIA) for the Vhuvhili SEF, near Secunda, Mpumalanga Province.
- VIA (EIA) for the Mkondeleli WEF, near Secunda, Mpumalanga Province.
- VIA (EIA) for the Impumelelo WEF, near Secunda, Mpumalanga Province.
- VIAs (EIAs) for the Camden Renewable Energy Complex (REF), including wind, solar and green hydrogen facilities, and grid connection infrastructure, near Camden, Mpumalanga Province.
- VIAs (EIAs) for the Hendrina Renewable Energy Complex (REF), including wind, solar and green hydrogen facilities, and grid connection infrastructure, near Hendrina, Mpumalanga Province.
- VIAs (BAs) for the Ceres WEF Suite, near Touws River, Western Cape Province.
- VIAs (EIAs) for the Beaufort West WEF Suite, near Beaufort West, Western Cape Province.
- VIAs (EIAs) for the proposed Koup 1 and Koup 2 WEFs and associated Grid Connection Infrastructure, near Beaufort West, Western Cape Province.
- VIA (EIA) for the proposed Oya Energy Facility near Matjiesfontein, Western Cape Province.
- VIA (BA) for the proposed construction of 132kV power lines to serve the authorised Loeriesfontein 3 PV Solar Energy Facility near Loeriesfontein, Northern Cape Province.
- VIA (BA) for the proposed construction of the Oya 132kV power line near Matjiesfontein, Northern and Western Cape Provinces.
- VIAs (BA) for the proposed Gromis and Komas WEFs and associated Grid Connection Infrastructure, near Komaggas, Northern Cape Province.
- VIAs (Scoping and Impact Phase) for the proposed Mooi Plaats, Wonderheuvel and Paarde Valley Solar PV Plants near Noupoort in the Northern and Eastern Cape Provinces.
- VIA (EIA) for the proposed Paulputs WEF near Pofadder in the Northern Cape Province.
- VIA (EIA) for the proposed development of the Rondekop WEF near Sutherland in the Northern Cape Province.
- VIA (BA) for the proposed development of the Tooverberg WEF near Touws Rivier in the Western Cape Province.

- VIA (BA) for the proposed development of the Kudusberg WEF near Sutherland, Northern and Western Cape Provinces.

Memberships and Associations

- Geo-Information Society of South Africa (GISSA)
- South African Geomatics Council (SAGC) – GTc GISc 1187

APPENDIX B Site Sensitivity Verification Report

Igolide Wind Energy Facility Electrical Grid Infrastructure

Visual Impact Assessment

ENERTRAG South Africa (Pty) Ltd

SLR Project No.: 720.05085.00010

15 April 2024

Igolide Wind Energy Facility Electrical Grid Infrastructure

Visual Impact Assessment: Site Sensitivity Verification Report

ENERTRAG South Africa (Pty) Ltd

Prepared by:

SLR Consulting (South Africa) Pty Ltd

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SLR Project No.: 720.05085.00010

8 March 2024

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Title	Igolide Wind Energy Facility Electrical Grid Infrastructure
Project Manager	Kerry Schwartz
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Author	Kerry Lianne Schwartz
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01	8 March 2024	Kerry Schwartz		Liandra Scott-Shaw

Report Sign Off and Approvals

KSchwartz

LScott-Shaw

(Author) **(Reviewer)**

Basis of Report

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Tables in Text

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Acronyms and Abbreviations

BA	Basic Assessment
BESS	Battery Energy Storage System
DEM	Digital Elevation Model
DFFE	Department of Forestry, Fisheries and Environment
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
GIS	Geographical Information Systems
ha	Hectare
I&AP	Interested and Affected Party
IPP	Independent Power Producer
km	Kilometre
kV	Kilovolt
m	Metre
MW	Megawatt
MWh	Megawatt Hour
NEMA	National Environmental Management Act
NGI	National Geo-Spatial Information
OHL	Overhead Powerline
O&M	Operation and Maintenance
PV	Photovoltaic
REDZ	Renewable Energy Development Zone
SANBI	South African National Biodiversity Institute
SEF	Solar Energy Facility
VIA	Visual Impact Assessment
VR	Visual Receptor

Visual Impact Assessment: Site Sensitivity Verification Report

1.0 Introduction

ENERTRAG South Africa (Pty) Ltd is proposing to develop Electrical Grid Infrastructure (EGI) comprising a 132kV switching station, a 132kV single or double circuit powerline, and termination point upgrades (as may be necessary), including possible expansion, to allow for the proposed new 132kV powerline connection (hereafter the "Project"). The Project is intended to feed the electricity generated by the 100MW Igolide Wind Energy Facility ("WEF") (part of a separate application for Environmental Authorisation) to the national energy grid, with the point of connection being the existing East Drie Five Substation.

The proposed Igolide EGI is located approximately 6 km north-east of Fochville in the Merafong City Local Municipality in Gauteng Province (**Error! Reference source not found.** and **Error! Reference source not found.**). The proposed proposed development will be constructed on the following farm portions:

- Portion 20 of Kraalkop 147 IQ
- Portion 31 of Kraalkop 147 IQ
- Portion 40 of Kraalkop 147 IQ
- Portion 45 of Kraalkop 147 IQ
- Porton 46 of Kraalkop 147 IQ
- Portion 68 of Kraalkop 147 IQ
- Portion 11 of Leeuwpoort 356 IQ
- Portion 77 of Leeuwpoort 356 IQ

This proposed EGI project is currently the subject of Basic Assessment (BA) process in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA) EIA Regulations (2014). The competent authority for this BA is the Gauteng Department of Agriculture and Rural Development (GDARD).

Specialist studies, including this Visual Impact Assessment (VIA), have been commissioned to assess and verify the proposed development under the new Gazetted specialist protocols[1].

[1] Formally gazetted on 20 March 2020 (GN No. 320)

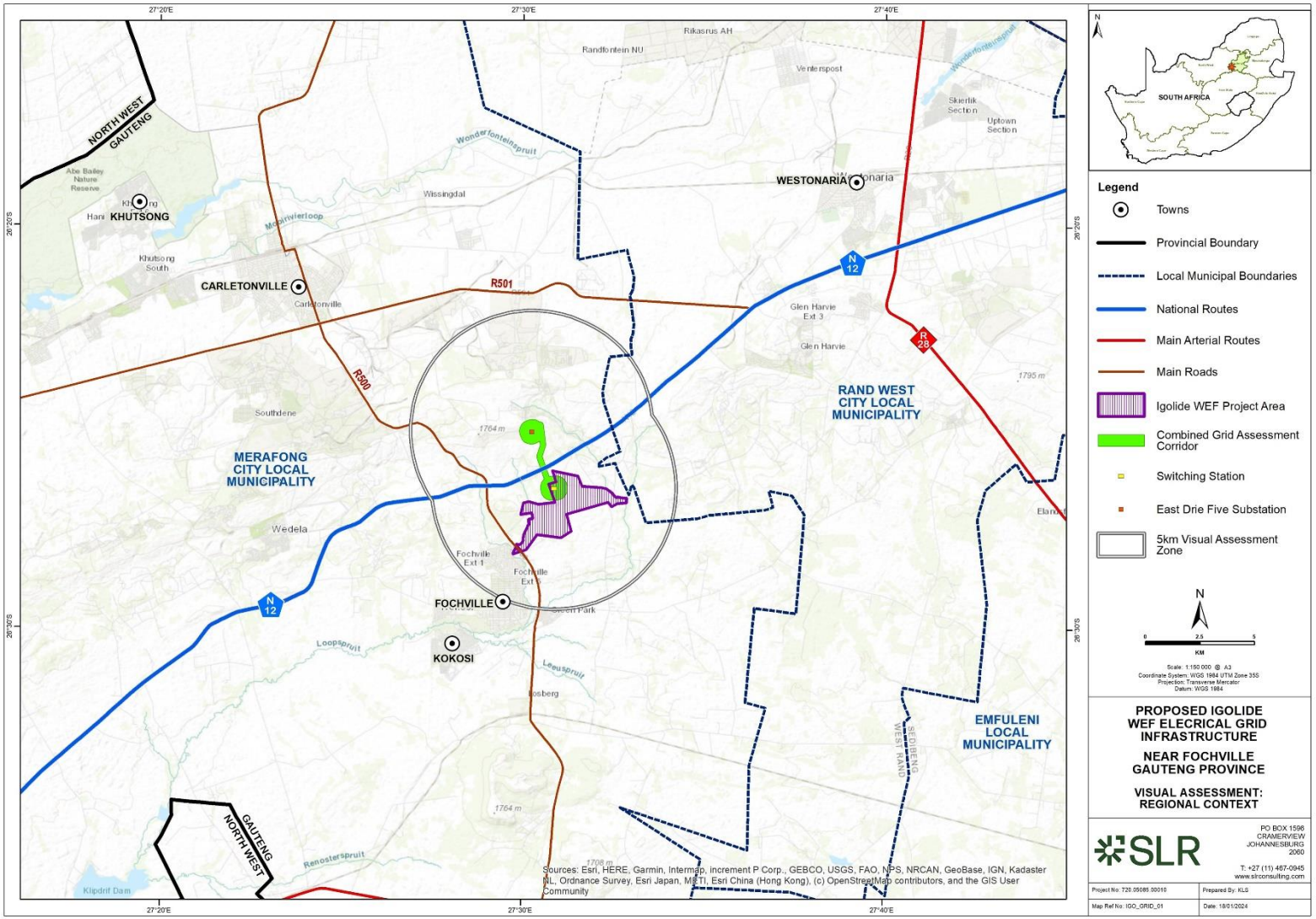


Figure 1: Regional Context

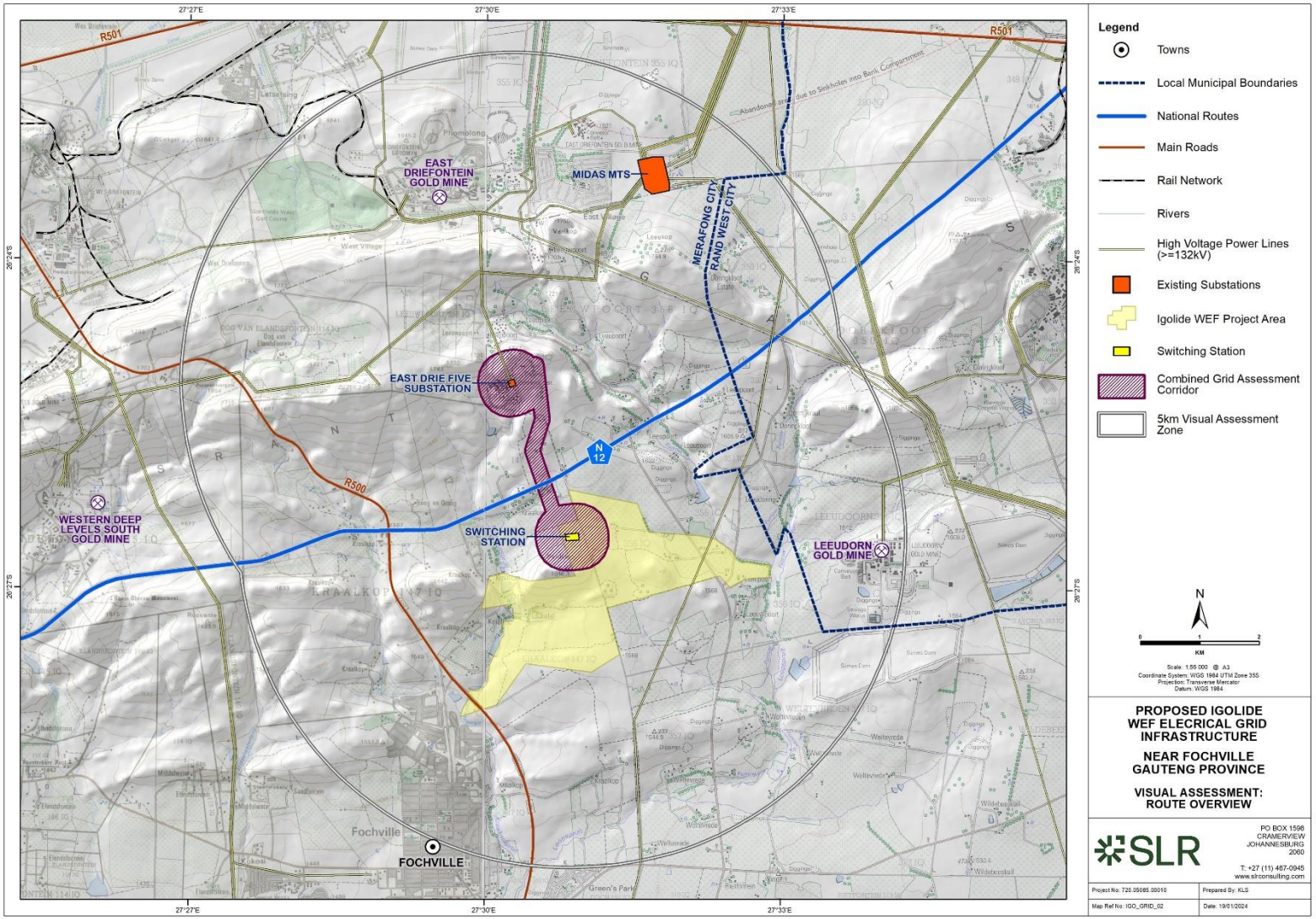


Figure 2: Route Overview

2.0 Project Technical Details

The proposed Igolide EGI includes the following components :

- Construction of 1 x up to 132kV powerline (either single or double circuit). A corridor of up to 250m in width (125m on either side of the centre line), around each powerline alternative, has been identified for the placement of the up to 132kV single or double circuit power line to allow flexibility in the design of the final powerline route, and for the avoidance of sensitive environmental features (where possible).
- Construction of 1 x up to 132kV Eskom Switching Station. The Eskom Switching Station assessment site is ~4ha as the switching station will be located adjacent to the 33/132kV on-site IPP substation which is being assessed as part of the Igolide WEF Environmental Authorisation process. A 500m buffer around the Eskom Switching Station has been identified to ensure flexibility in routing the powerline. The Eskom Switching Station will include, but is not limited to:
    - A high voltage substation yard to allow for multiple 132kV feeder bays.
    - Standard substation electrical equipment, including but not limited to, busbars, office area, operation and control room, workshop and storage area, feeder bays, stringer strain beams, insulators, isolators, conductors, circuit breakers, lightning arrestors, relays, capacitor banks, batteries, wave trappers, switchyard, metering and indication instruments, equipment for carrier current, surge protection and outgoing feeders, as may be required.
    - Control building, telecommunication infrastructure, oil dam(s) etc.
    - Workshop and office area within the Eskom Switching Station footprint.
    - Fencing around the Switching Station.
    - All the access road infrastructure to and within the Switching Station.
    - Associated infrastructure, including but not limited to, lighting, fencing, and buildings required for operation (ablutions, office, workshop and control room, security fencing and gating, parking area, concrete batching plant (if required), waste storage/disposal and storerooms).
- Expansion of the Midas MTS (with a footprint of approximately up to 4ha), including standard substation electrical equipment as may be needed (feeder bays, transformers, busbars, stringer strain beams, insulators, isolators, conductors, circuit breakers, lightning arrestors, relays, capacitor banks, batteries, wave trappers, switchyard, metering and indication instruments, equipment for carrier current, surge protection and outgoing feeders, as may be required).

Project technical details are provided in the summary table below (Table 1).

Table 1: Project Summary - Igolide WEF EGI

Facility Name:	Igolide WEF Electrical Grid Infrastructure
Applicant:	ENERTRAG South Africa (Pty) Ltd
Municipalities:	Merafong City Local Municipality in the Gauteng Province of South Africa
132kV powerline (single or double circuit):	- Single or double circuit 132kV between the proposed switching station and the existing East Drie Five Substation. The powerline design may include: o Intermediate self-supporting monopole; o Inline or angle-strain self-supporting monopole; o Suspension self-supporting monopole; o Triple pole structure; o Steel lattice structure; or o Similar powerline design at 132kV specification. - The above designs may require anchors with guy-wires or be anchorless. For up to 132kV structures, concrete foundation sizes may vary depending on design type up to 80m^2, with depths reaching up to 3.5m typically in a rectangular 'pad' shape. - A working area of approximately 100m x 100m is needed for each of the proposed structures to be constructed. - Gridline length: approximately 4km - Height of powerline: up to 40m - Width of gridline servitude: 32m A 250m wide corridor (125m on either side of the centre line) has been identified for the assessment and micro-siting of the powerline to avoid sensitivities and ensure technical feasibility.
Switching Station:	- Development footprint (permanent infrastructure area): approximately 2.5ha as the switching station will be located adjacent to the 33/132kV on-site IPP substation which is being assessed as part of the Igolide WEF Environmental Authorisation process. - Capacity: 132kV - Standard substation electrical equipment, including, but not limited to, busbars, control building, telecommunication infrastructure, office area, operation and control room, workshop and storage area, feeder bays, stringer strain breams, insulators, arrestors, relays, capacitor banks, batteries, wave trappers, switchyard, metering and indication instruments, equipment for carrier current, surge protection and outgoing feeders, as may be required. - Associated infrastructure, including, but not limited to, lighting, fencing (~2m high), gating, parking area, and buildings required for operation (ablutions, office, workshop and control room, concrete batching plant (if required), waste storage/disposal and storerooms).
Termination point upgrades:	Upgrades to the existing East Drie Five Substation will also be required, including possible expansion within the yard, where required, with a footprint of up to 4ha. This includes the installation of additional feeders bays to accommodate the power being evacuated from the proposed Igolide WEF and transformer upgrades.
Access roads:	- During construction, a permanent access road along the length of the powerline corridor, between 4 – 6m wide will be established to

	allow for large crane movement. This track will then be utilised for maintenance during operation. - Permanent access roads to and within the substation, up to 8m wide, will be established.
Affected farm portion/s	- Portion 20 of Kraalkop 147 IQ - Portion 31 of Kraalkop 147 IQ - Portion 40 of Kraalkop 147 IQ - Portion 45 of Kraalkop 147 IQ - Porton 46 of Kraalkop 147 IQ - Portion 68 of Kraalkop 147 IQ - Portion 11 of Leeuwpoort 356 IQ - Portion 77 of Leeuwpoort 356 IQ

3.0 Site Sensitivity Verification

Prior to commencing with the specialist assessment in accordance with Appendix 6 of the NEMA (Act 107 of 1998) EIA Regulations of 2014, a site sensitivity verification was undertaken in order to confirm the current land use and environmental sensitivity of the proposed Igolide EGI project as identified by the National Web-Based Environmental Screening Tool (Screening Tool). This site sensitivity verification was undertaken in adherence to the gazetted Environmental Assessment Protocols, specifically with 'Part A - General Protocol for the Site Sensitivity Verification and Minimum Report Content Requirements where a Specialist Assessment is required but no specific Environmental Theme Protocol has been prescribed' (GG 43110 / GNR 320, 20 March 2020).

3.1 Site Sensitivity Verification Methodology

A site sensitivity verification has been conducted in support of the VIA for the Igolide EGI. The verification exercise is based on a desktop-level assessment supported by field-based observation and involved an assessment of factors as outlined below.

3.1.1 Physical Landscape Characteristics

Physical landscape characteristics such as topography, vegetation and land use are important factors influencing the visual character and visual sensitivity of the study area. Baseline information about the physical characteristics of the study area was sourced from spatial databases provided by National Geo-Spatial Information (NGI), the South African National Biodiversity Institute (SANBI) and the South African National Land Cover Dataset (Geoterraimage – 2020). The characteristics identified via desktop analysis were then checked against the findings of the site visit.

3.1.2 Identification of Sensitive Receptors

Visual receptor locations and routes that are sensitive and / or potentially sensitive to the visual intrusion of the proposed development were identified by way of a desktop assessment as well as field-based investigation. Google Earth imagery (2023) was used to identify potential receptors within the study area and where possible, these receptor locations were then checked against the findings of the field investigation.

3.1.3 Fieldwork and Photographic Review

A two day site visit was originally undertaken between the 9th and 10th February 2022 (mid-summer). The purpose of the site visit was to:

- verify the landscape characteristics identified via desktop means;
- conduct a photographic survey of the study area;
- verify, where possible, the sensitivity of visual receptor locations identified via desktop means;
- eliminate receptor locations that are unlikely to be influenced by the proposed development;
- identify any additional visually sensitive receptor locations within the study area; and

- inform the impact rating assessment of visually sensitive receptor locations (where possible).

It should be noted that the visual fieldwork was undertaken in the early stages of this project, although completion of the VIA has been subject to some lengthy delays. Notwithstanding this, the findings of the site visit are still considered relevant to the VIA and have been verified and updated where necessary via desktop means.

3.1.4 Sources of Information

The main sources of information utilised for this site sensitivity verification exercise included:

- Project description for the proposed development provided by the Proponent;
- Elevation data from 25 m Digital Elevation Model (DEM) from the National Geo-Spatial Information (NGI);
- 1:50 000 topographical maps of South Africa from the NGI;
- Land cover and land use data extracted from the 2020 South African National Land-Cover dataset provided by Geoterraimage;
- Vegetation classification data extracted from SANBI's Vegetation Map 2018 dataset;
- Google Earth Satellite imagery 2023;
- South African Renewable Energy EIA Application Database from DFFE (incremental release Quarter 3 2023), and
- The National Web-Based Environmental Screening Tool by the DFFE.
-

3.2 Outcome of Site Sensitivity Assessment

The sensitivity assessment determined that the study area has a somewhat mixed visual character, transitioning from the heavily transformed mining landscape in the north to a more rural / pastoral character across the remainder of the study area. Hence, although EGI development would alter the visual character and contrast with the rural / pastoral character, the location of the proposed EGI in relatively close proximity to the gold mining complex will significantly reduce the level of contrast.

A broad-scale assessment of visual sensitivity, based on the physical characteristics of the study area, economic activities and land use that predominates, determined that the area would have a low visual sensitivity. An important factor contributing to the visual sensitivity of an area is the presence, or absence of visual receptors that may value the aesthetic quality of the landscape and depend on it to produce revenue and create jobs. No formal protected areas, leisure-based tourism activities or sensitive receptor locations were identified in the study area, and this factor in conjunction with the high levels of transformation in the north have reduced the overall visual sensitivity of the broader area.

A site sensitivity assessment was undertaken with the aim of indicating any areas that should be precluded from the proposed development footprint. From a visual perspective, these are areas where the establishment of grid connection infrastructure would result in the greatest probability of visual impacts on any sensitive or potentially sensitive visual receptors.

Using GIS-based visibility analysis, it was possible to determine which sectors of the EGI assessment corridor would be visible to the highest numbers of receptors in the study area. This analysis confirmed that areas of higher elevation are visible to greater numbers of potentially sensitive receptors. Hence the visual prominence of a tall structure such as a powerline pylon would be exacerbated if located on any ridges or relatively higher-lying plateaus. It is noted that the northern section of the assessment corridor is located on an area of relatively higher elevation that could be seen as an area of potentially high visual sensitivity. However, due to the relatively low number of potentially sensitive receptors in the area, the presence of existing powerlines, road infrastructure and mining activity as well as the fact that the study area as a whole is rated as having a low visual sensitivity, the sensitivity rating of these area would be reduced to “Medium”.

In determining visual sensitivity, consideration must be given to the direct visual impact of the EGI on any farmsteads or receptors located in, or within 500m of, the assessment corridor. Accordingly, a 500m zone of potential visual sensitivity has been delineated around six receptor locations that were found to be within 500m of the assessment corridor. However, one of these receptor locations, namely VR127 is within the Igolide WEF project area, and as the owners of this property are involved in the development, they are not expected to view the proposed EGI in a negative light. The remaining five receptor locations are all located in relatively close proximity to the N12 National Route. These factors are expected to reduce the visual impacts on these receptor locations resulting from the Igolide EGI project. Hence the zones of potential visual sensitivity, as shown in **Error! Reference source not found.**, are not considered to be “no go areas”, but rather should be viewed as zones of potential visual sensitivity, with a sensitivity rating of “Medium”.

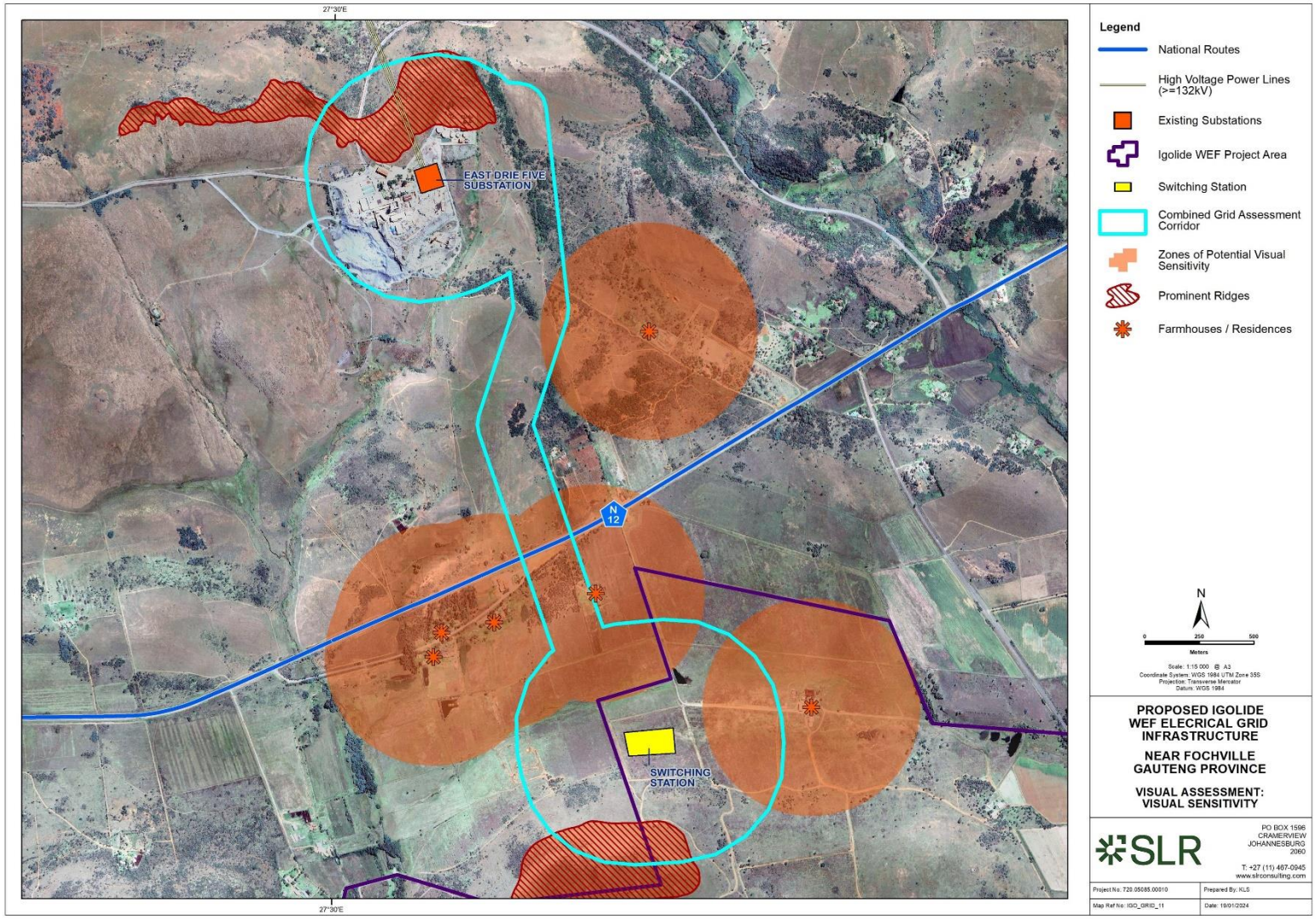


Figure 3: Potential visual sensitivity in relation to the proposed Igolide EGI assessment corridor

3.3 National Environmental Screening Tool

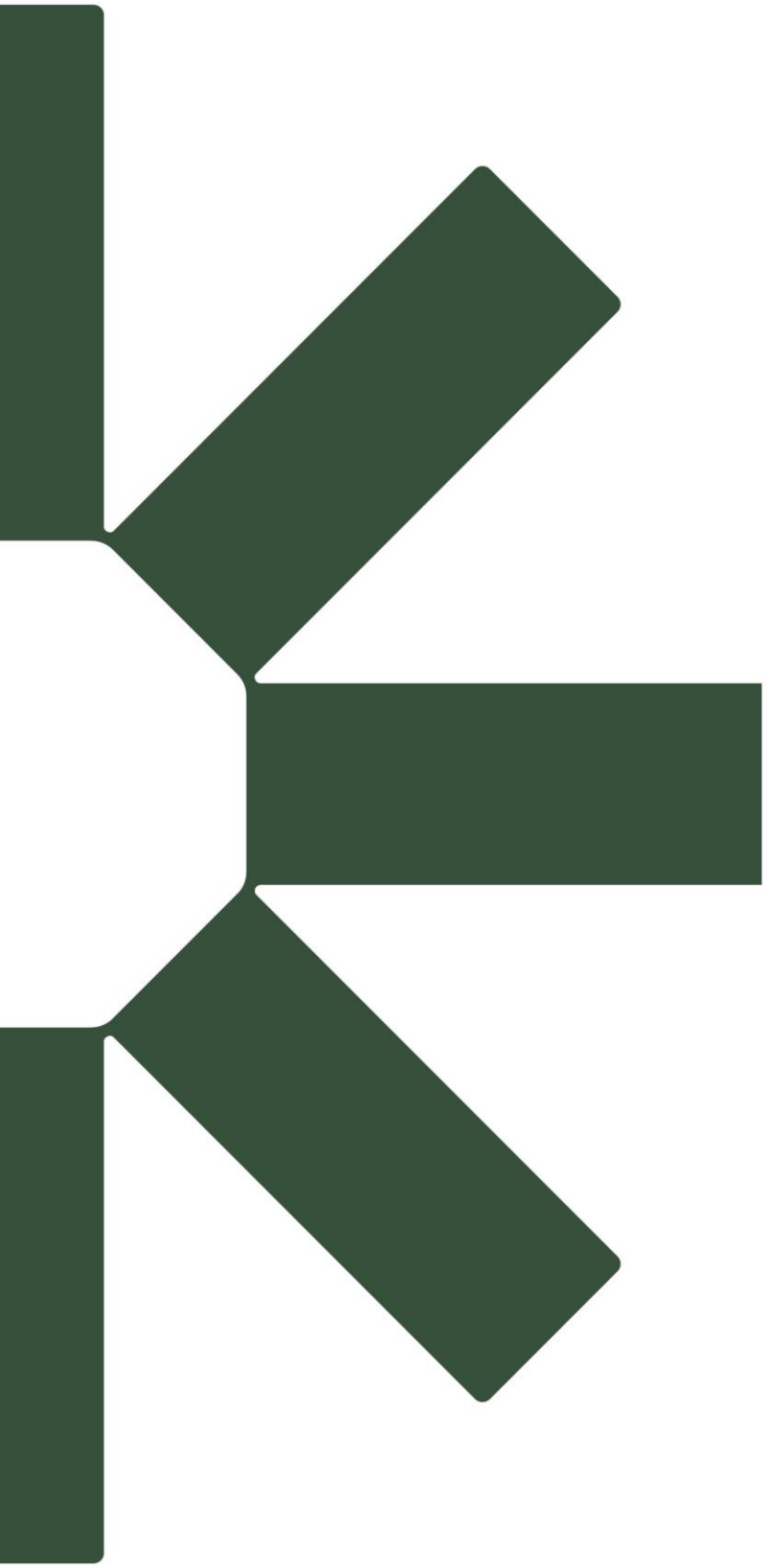
In assessing visual sensitivity, the proposed development was examined in relation to the Landscape Theme of the National Environmental Screening Tool to determine the relative landscape sensitivity for the development of grid connection infrastructure. The tool does not however identify any landscape sensitivities in respect of the proposed powerline or switching station.

4.0 Conclusion

A site sensitivity verification has been conducted in respect of the VIA for the proposed Igolide EGI near Fochville in Gauteng Province. This verification has been based on a desktop-level assessment supported by field-based observation.

As stated above, the National Environmental Screening Tool does not identify any Landscape Sensitivities in respect of grid connection infrastructure development in the area. As such, a preliminary sensitivity rating was not provided that could then be confirmed or altered based on further assessment.

Nevertheless, this report provides an assessment of site sensitivity as verified by the site visit undertaken between the 9th and 10th February 2022.



Making Sustainability Happen

APPENDIX C Receptor Impact Rating Table

Igolide Wind Energy Facility Electrical Grid Infrastructure

Visual Impact Assessment

ENERTRAG South Africa (Pty) Ltd

SLR Project No.: 720.05085.00010

15 April 2024

APPENDIX C: RECEPTOR IMPACT RATING

RECEPTOR IMPACT RATING FOR IGOLIDE EGI

Receptor Location	Distance to EGI Assessment Corridor			Screening		Contrast		OVERALL IMPACT RATING	
	KMs	Rating		Rating		Rating		Rating	
INSIDE VIEWSHED									
VR27 - Farmstead	2.0	Low	1	Mod	2	Mod	2	MODERATE	5
VR28 - Farmstead	1.7	Mod	2	Mod	2	Mod	2	MODERATE	6
VR29 - Farmstead	1.8	Mod	2	Low	1	Mod	2	MODERATE	5
VR31 - Farmstead*	***0.7***	***Mod***	***2***	***Mod***	***2***	***Mod***	***2***	***MODERATE***	***6***
VR32 - Farmstead*	***0.8***	***Mod***	***2***	***Low***	***1***	***Mod***	***2***	***MODERATE***	***5***
VR33 - Farmstead	1.2	Mod	2	Mod	2	Mod	2	MODERATE	6
VR34 - Farmstead	0.9	Mod	2	High	3	Mod	2	MODERATE	7
VR35 - Farmstead	1.0	Mod	2	Mod	2	Mod	2	MODERATE	6
VR36 - Farmstead	0.0	High	3	High	3	Mod	2	HIGH	8
VR37 - Farmstead	0.2	High	3	Low	1	Mod	2	MODERATE	6
VR38 - Kraalkop Hotel	0.5	High	3	Mod	2	Mod	2	MODERATE	7
VR39 - Farmstead	0.4	High	3	Mod	2	Mod	2	MODERATE	7
VR40 - Farmstead	2.6	Low	1	Mod	2	Mod	2	MODERATE	5
VR41 - Farmstead	3.1	Low	1	Low	1	Mod	2	LOW	4
VR42 - Farmstead	2.6	Low	1	Mod	2	Mod	2	MODERATE	5
VR43 - Farmstead	3.2	Low	1	Mod	2	Mod	2	MODERATE	5
VR48 - Farmstead	4.9	Low	1	Low	1	Mod	2	LOW	4
VR51 - Crocodilian Exquisite Hotel	4.7	Low	1	Low	1	Mod	2	LOW	4
VR54 - Farmstead	4.8	Low	1	Mod	2	Mod	2	MODERATE	5
VR55 - Farmstead	5.0	Low	1	Mod	2	Mod	2	MODERATE	5
VR56 - Farmstead	3.8	Low	1	Low	1	Mod	2	LOW	4
VR57 - Farmstead	3.4	Low	1	Low	1	Mod	2	LOW	4
VR92 - Farmstead	3.0	Low	1	Low	1	Mod	2	LOW	4
VR123 - Farmstead	2.4	Low	1	Low	1	Mod	2	LOW	***4***
VR124 - Farmstead	2.3	Low	1	Low	1	Mod	2	LOW	***4***
VR125 - Farmstead*	***2.3***	***Low***	***1***	***Low***	***1***	***Mod***	***2***	***LOW***	***4***
VR126 - Farmstead*	***1.9***	***Mod***	***2***	***Low***	***1***	***Mod***	***2***	***MODERATE***	***5***

VR127 - Farmstead*	***0.1***	***High***	***3***	***Mod***	***2***	***Mod***	***2***	***MODERATE***	***7***
VR128 - Farmstead	1.4	Mod	2	Mod	2	Mod	2	MODERATE	***6***
VR129 - Farmstead	1.6	Mod	2	Mod	2	Mod	2	MODERATE	***6***
VR130 - Farmstead	1.5	Mod	2	Low	1	Mod	2	MODERATE	***5***
VR131 - Farmstead	2.0	Mod	2	Low	1	Mod	2	MODERATE	***5***
VR132 - Farmstead	2.9	Low	1	High	3	Mod	2	MODERATE	***6***
VR134 - Farmstead	1.5	Mod	2	Mod	2	Mod	2	MODERATE	***6***
VR135 - Farmstead	1.5	Mod	2	Low	1	Mod	2	MODERATE	***5***
VR136 - Farmstead	1.2	Mod	2	Low	1	Mod	2	MODERATE	***5***
VR137 - Farmstead	0.7	Mod	2	Low	1	Mod	2	MODERATE	***5***
VR138 - Farmstead	0.4	High	3	Mod	2	Mod	2	MODERATE	***7***
VR139 - Farmstead	1.2	Mod	2	Low	1	Mod	2	MODERATE	***5***
VR140 - Farmstead	1.2	Mod	2	Low	1	Mod	2	MODERATE	5
VR141 - Farmstead	1.9	Mod	2	Low	1	Mod	2	MODERATE	5
VR143 - Farmstead	1.8	Mod	2	Low	1	Mod	2	MODERATE	5
VR144 - Farmstead	1.0	Mod	2	Mod	2	Mod	2	MODERATE	6
VR145 - Farmstead	0.9	Mod	2	Low	1	Mod	2	MODERATE	5
VR146 - Farmstead	1.8	Mod	2	Low	1	Low	1	LOW	4
VR147 - Farmstead	1.7	Mod	2	Mod	2	Low	1	MODERATE	5
OUSIDE VIEWSHED									
VR25 - Farmstead	*3.5*	*NIL*							
VR26 - Farmstead	*3.3*	*NIL*							
VR30 - Farmstead	*1.2*	*NIL*							
VR44 - Farmstead	*3.2*	*NIL*							
VR45 - Farmstead	*3.1*	*NIL*							
VR46 - Farmstead	*3.2*	*NIL*							
VR47 - Memento Restaurant	*2.8*	*NIL*							
VR52 - Farmstead	*3.8*	*NIL*							
VR53 - Farmstead	*4.2*	*NIL*							
VR58 - Farmstead	*3.7*	*NIL*							
VR122 - Farmstead	*3.4*	*NIL*							
VR142 - Farmstead	*2.0*	*NIL*							

** Receptor is inside the Igolide WEF project area*

APPENDIX D Impact Rating Methodology

Igolide Wind Energy Facility Electrical Grid Infrastructure

Visual Impact Assessment

ENERTRAG South Africa (Pty) Ltd

SLR Project No.: 720.05085.00010

15 April 2024

IMPACT ASSESSMENT METHODOLOGY

SCOPING PHASE

REPORTING REQUIREMENTS

- Project Description
- Legislative Context (as applicable)
- Assumptions and limitations
- Description of Baseline Environment – including sensitivity mapping
- Identification and high-level screening of impacts
- Plan of Study for EIA

HIGH-LEVEL SCREENING OF IMPACTS AND MITIGATION

Appendix 2 of GNR 982, as amended, requires the identification of the significance of potential impacts during scoping. To this end, an impact screening tool has been used in the scoping phase. The screening tool is based on two criteria, namely probability; and, consequence (**Table 0-3**), where the latter is based on general consideration to the intensity, extent, and duration.

The scales and descriptors used for scoring probability and consequence are detailed in **Table 0-3** and **Table 0-2** respectively.

Table 0-1: Probability Scores and Descriptors

SCORE	DESCRIPTOR
4	**Definite**: The impact will occur regardless of any prevention measures
3	**Highly Probable**: It is most likely that the impact will occur
2	**Probable**: There is a good possibility that the impact will occur
1	**Improbable:** The possibility of the impact occurring is very low

Table 0-2: Consequence Score Descriptions

SCORE	NEGATIVE	POSITIVE
4	Very severe: An irreversible and permanent change to the affected system(s) or party(ies) which cannot be mitigated.	Very beneficial: A permanent and very substantial benefit to the affected system(s) or party(ies), with no real alternative to achieving this benefit.

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3	Severe: A long term impacts on the affected system(s) or party(ies) that could be mitigated. However, this mitigation would be difficult, expensive or time consuming or some combination of these.	Beneficial: A long term impact and substantial benefit to the affected system(s) or party(ies). Alternative ways of achieving this benefit would be difficult, expensive or time consuming, or some combination of these.
2	Moderately severe: A medium to long term impacts on the affected system(s) or party (ies) that could be mitigated.	Moderately beneficial: A medium to long term impact of real benefit to the affected system(s) or party(ies). Other ways of optimising the beneficial effects are equally difficult, expensive and time consuming (or some combination of these), as achieving them in this way.
1	Negligible: A short to medium term impacts on the affected system(s) or party(ies). Mitigation is very easy, cheap, less time consuming or not necessary.	Negligible: A short to medium term impact and negligible benefit to the affected system(s) or party(ies). Other ways of optimising the beneficial effects are easier, cheaper and quicker, or some combination of these.

Table 0-3: Significance Screening Tool

CONSEQUENCE SCALE

PROBABILITY SCALE		1	2	3	4
	1	Very Low	Very Low	Low	Medium
	2	Very Low	Low	Medium	Medium
	3	Low	Medium	Medium	High
	4	Medium	Medium	High	High

The nature of the impact must be characterised as to whether the impact is deemed to be positive (+ve) (i.e. beneficial) or negative (-ve) (i.e. harmful) to the receiving environment/receptor. For ease of reference, a colour reference system (**Table 0-4**) has been applied according to the nature and significance of the identified impacts.

Table 0-4: Impact Significance Colour Reference System to Indicate the Nature of the Impact

Negative Impacts (-ve)	Positive Impacts (+ve)
Negligible	Negligible
Very Low	Very Low
Low	Low
Medium	Medium
High	High

EIA PHASE

REPORTING REQUIREMENTS

- Project Description
- Legislative Context (as applicable)
- Assumptions and limitations
- Description of methodology (as required)
- Update and/or confirmation of Baseline Environment – including update and / or confirmation of sensitivity mapping
- Identification and description of Impacts
- Full impact assessment (including Cumulative)
- Mitigation measures
- Impact Statement

Ensure that all reports fulfil the requirements of the relevant Protocols.

ASSESSMENT OF IMPACTS AND MITIGATION

The assessment of impacts and mitigation evaluates the likely extent and significance of the potential impacts on identified receptors and resources against defined assessment criteria, to develop and describe measures that will be taken to avoid, minimise or compensate for any adverse environmental impacts, to enhance positive impacts, and to report the significance of residual impacts that occur following mitigation.

The key objectives of the risk assessment methodology are to identify any additional potential environmental issues and associated impacts likely to arise from the proposed project, and to propose a significance ranking. Issues / aspects will be reviewed and ranked against a series of significance criteria to identify and record interactions between activities and aspects, and resources and receptors to provide a detailed discussion of impacts. The assessment considers direct[1], indirect[2], secondary[3] as well as cumulative[4] impacts.

A standard risk assessment methodology is used for the ranking of the identified environmental impacts pre-and post-mitigation (i.e. residual impact). The significance of environmental aspects is determined and ranked by considering the criteria[5] presented in **Table 0-5**.

Table 0-5: Impact Assessment Criteria and Scoring System

CRITERIA	SCORE 1	SCORE 2	SCORE 3	SCORE 4	SCORE 5
Impact Magnitude (M) The degree of alteration of the affected environmental receptor	Very low: No impact on processes	Low: Slight impact on processes	Medium: Processes continue but in a modified way	High: Processes temporarily cease	Very High: Permanent cessation of processes

[1] Impacts that arise directly from activities that form an integral part of the Project.
[2] Impacts that arise indirectly from activities not explicitly forming part of the Project.
[3] Secondary or induced impacts caused by a change in the Project environment.
[4] Impacts are those impacts arising from the combination of multiple impacts from existing projects, the Project and/or future projects.
[5] The definitions given are for guidance only, and not all the definitions will apply to all the environmental receptors and resources being assessed. Impact significance was assessed with and without mitigation measures in place.

CRITERIA	SCORE 1	SCORE 2	SCORE 3	SCORE 4	SCORE 5
Impact Extent (E) The geographical extent of the impact on a given environmental receptor	Site: Site only	Local: Inside activity area	Regional: Outside activity area	National: National scope or level	International: Across borders or boundaries
Impact Reversibility (R) The ability of the environmental receptor to rehabilitate or restore after the activity has caused environmental change	Reversible: Recovery without rehabilitation		Recoverable: Recovery with rehabilitation		Irreversible: Not possible despite action
Impact Duration (D) The length of permanence of the impact on the environmental receptor	Immediate: On impact	Short term: 0-5 years	Medium term: 5-15 years	Long term: Project life	Permanent: Indefinite
Probability of Occurrence (P) The likelihood of an impact occurring in the absence of pertinent environmental management measures or mitigation	Improbable	Low Probability	Probable	Highly Probability	Definite
Significance (S) is determined by combining the above criteria in the following formula:	$[S = (E + D + R + M) \times P]$ $Significance = (Extent + Duration + Reversibility + Magnitude) \times Probability$				
IMPACT SIGNIFICANCE RATING					
Total Score	**4 to 15**	**16 to 30**	**31 to 60**	**61 to 80**	**81 to 100**
Environmental Significance Rating (Negative (-))	**Very low**	**Low**	**Moderate**	**High**	**Very High**
Environmental Significance Rating (Positive (+))	**Very low**	**Low**	**Moderate**	**High**	**Very High**

IMPACT MITIGATION

The impact significance without mitigation measures will be assessed with the design controls in place. Impacts without mitigation measures in place are not representative of the proposed development's actual extent of impact and are included to facilitate understanding of how and why mitigation measures were identified. The residual impact is what remains following the application of mitigation and management measures and is thus the final level of impact associated with the development. Residual impacts also serve as the focus of management and monitoring activities during Project implementation to verify that actual impacts are the same as those predicted in this report.

The mitigation measures chosen are based on the mitigation sequence/hierarchy which allows for consideration of five (5) different levels, which include avoid/prevent, minimise, rehabilitate/restore, offset and no-go in that order. The idea is that when project impacts are considered, the first option should be to avoid or prevent the impacts from occurring in the first place if possible, however, this is not always feasible. If this is not attainable, the impacts can be allowed, however they must be minimised as far as possible by considering reducing the footprint of the development for example so that little damage is encountered. If impacts are unavoidable, the next goal is to rehabilitate or restore the areas impacted back to their original form after project completion. Offsets are then considered if all the other measures described above fail to remedy high/significant residual negative impacts. If no offsets can be achieved on a potential impact, which results in full destruction of any ecosystem for example, the no-go option is considered so that another activity or location is considered in place of the original plan.

The mitigation sequence/hierarchy is shown in **Figure 1** below.

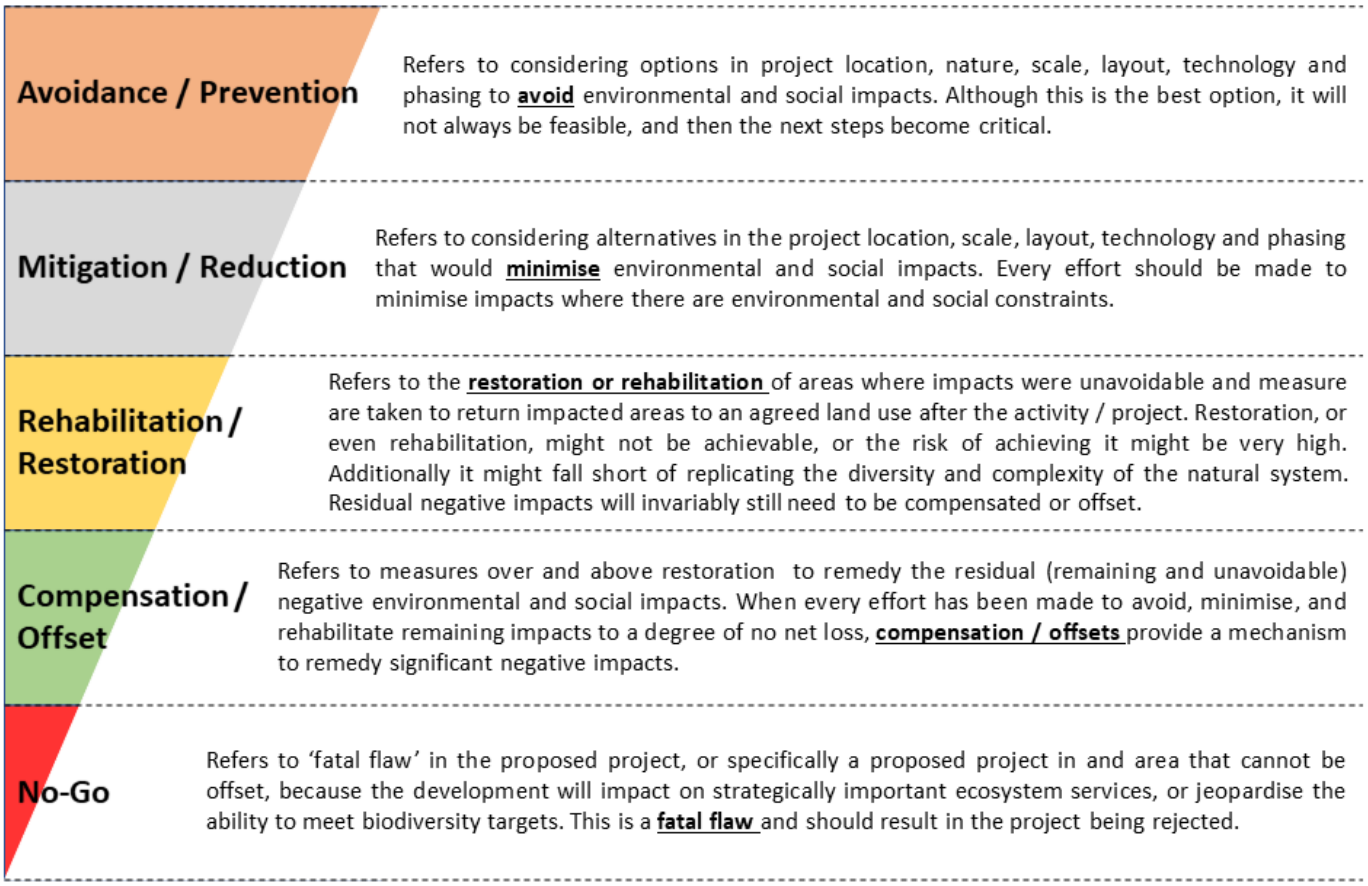


Figure 1: Mitigation Sequence/Hierarchy

APPENDIX E Maps

Igolide Wind Energy Facility Electrical Grid Infrastructure

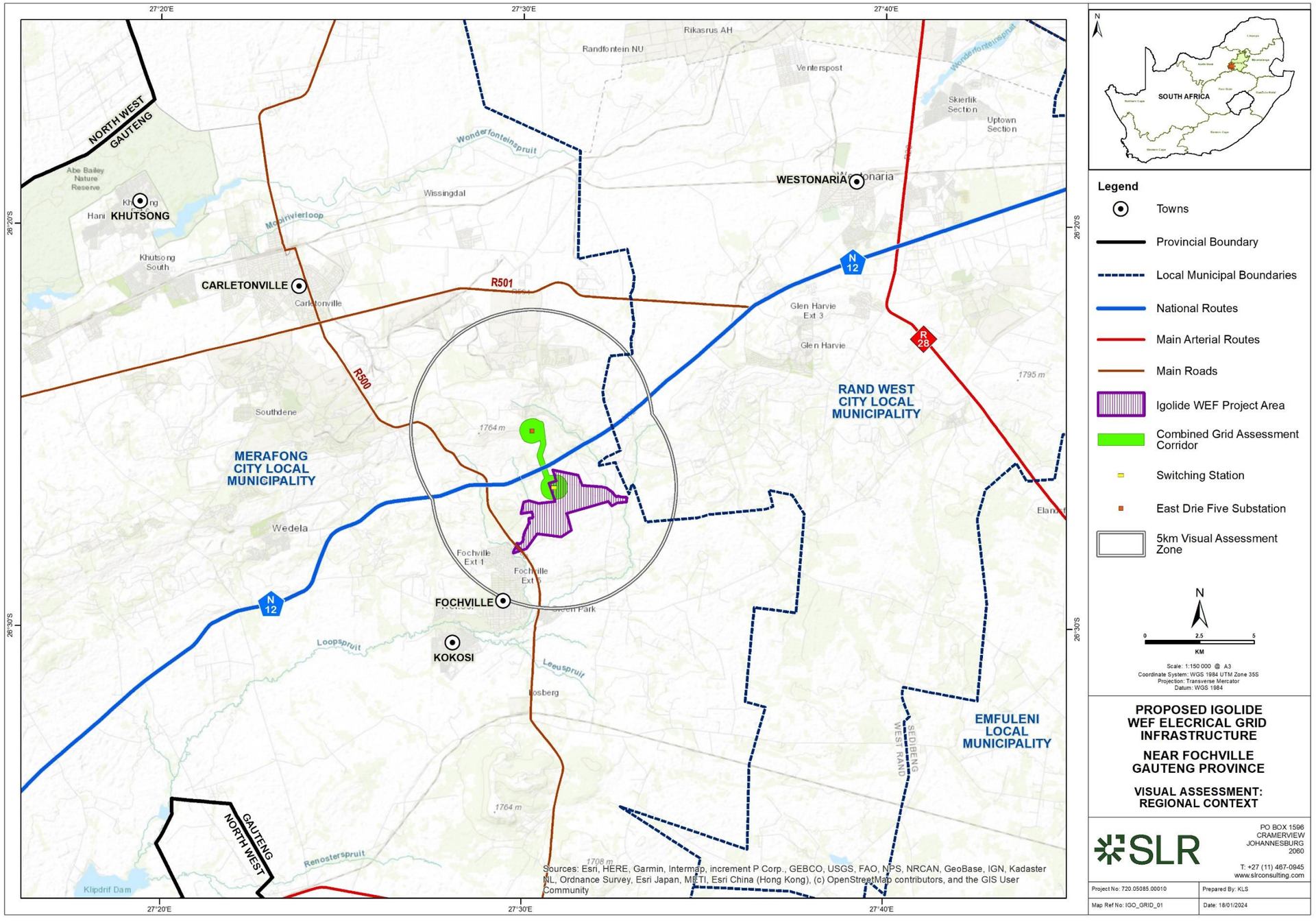
Visual Impact Assessment

ENERTRAG South Africa (Pty) Ltd

SLR Project No.: 720.05085.00010

15 April 2024

Map 1:Regional Setting



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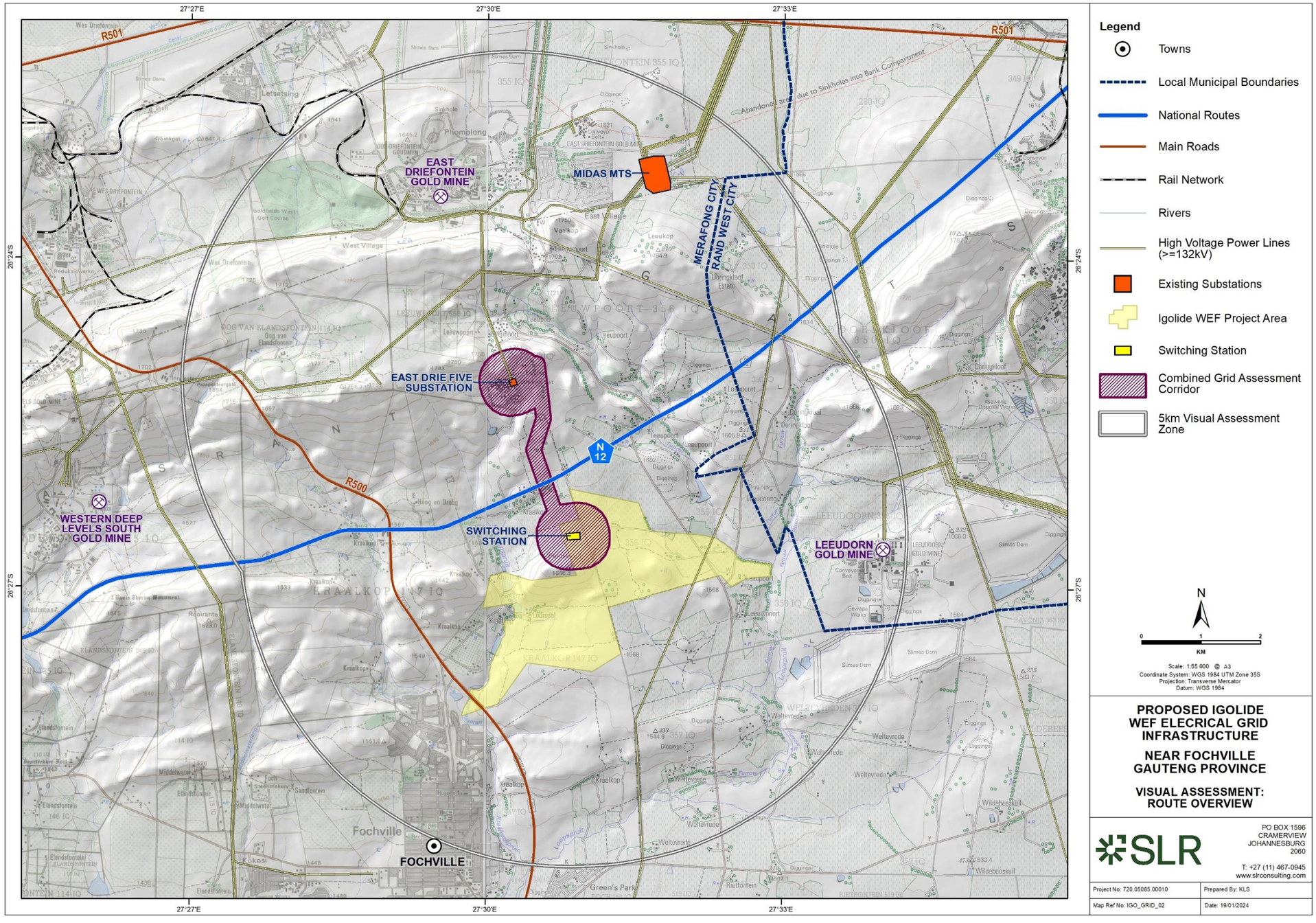
Map 2: Route Overview



PROPOSED IGOLIDE WEF ELECRICAL GRID INFRASTRUCTURE

NEAR FOCHVILLE GAUTENG PROVINCE

VISUAL ASSESSMENT: ROUTE OVERVIEW

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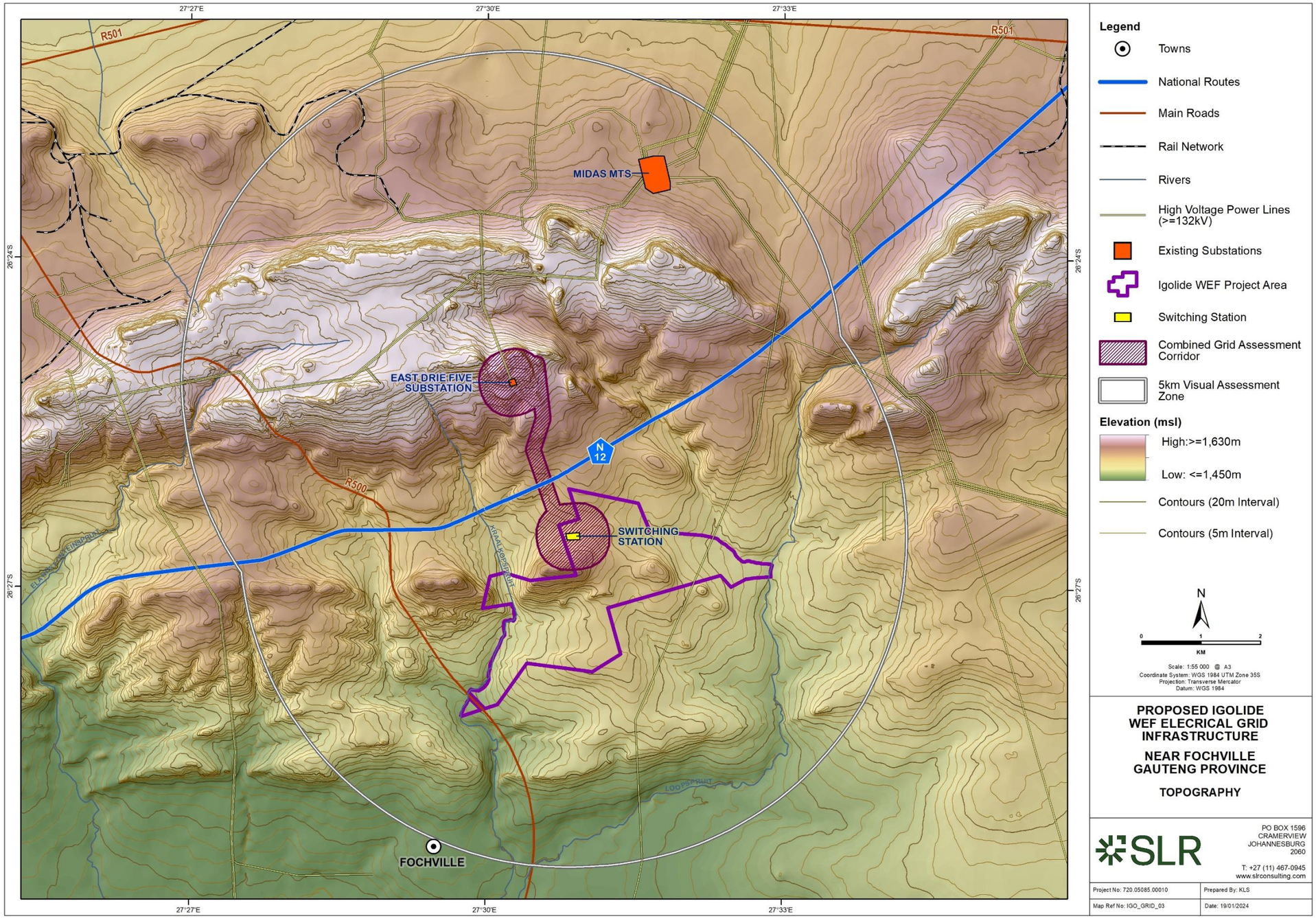
Project No: 720.05085.00010	Prepared By: KLS
Map Ref No: IGO_GRID_02	Date: 19/01/2024

Map 3:Topography



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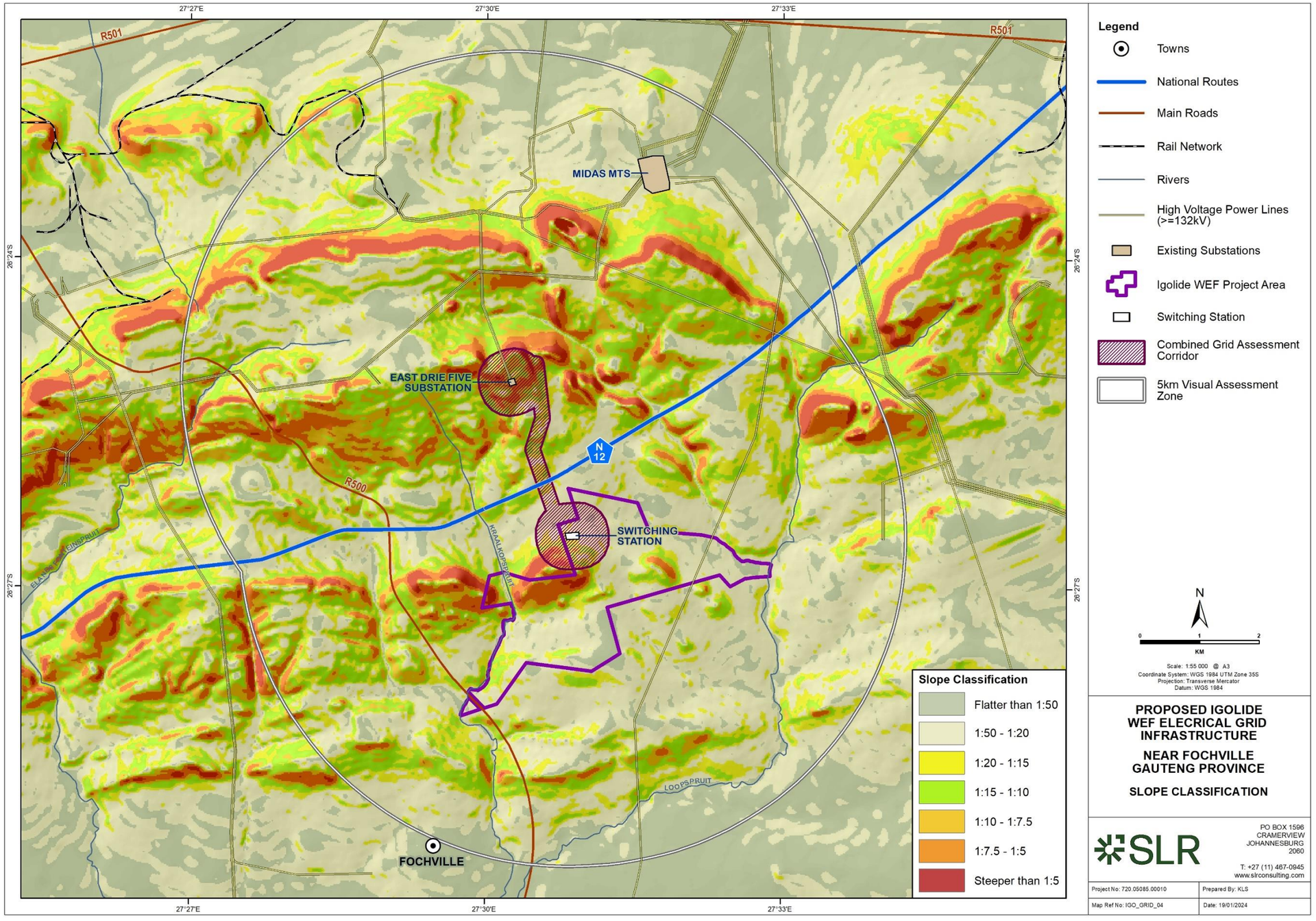
Map 4:Slope Classification



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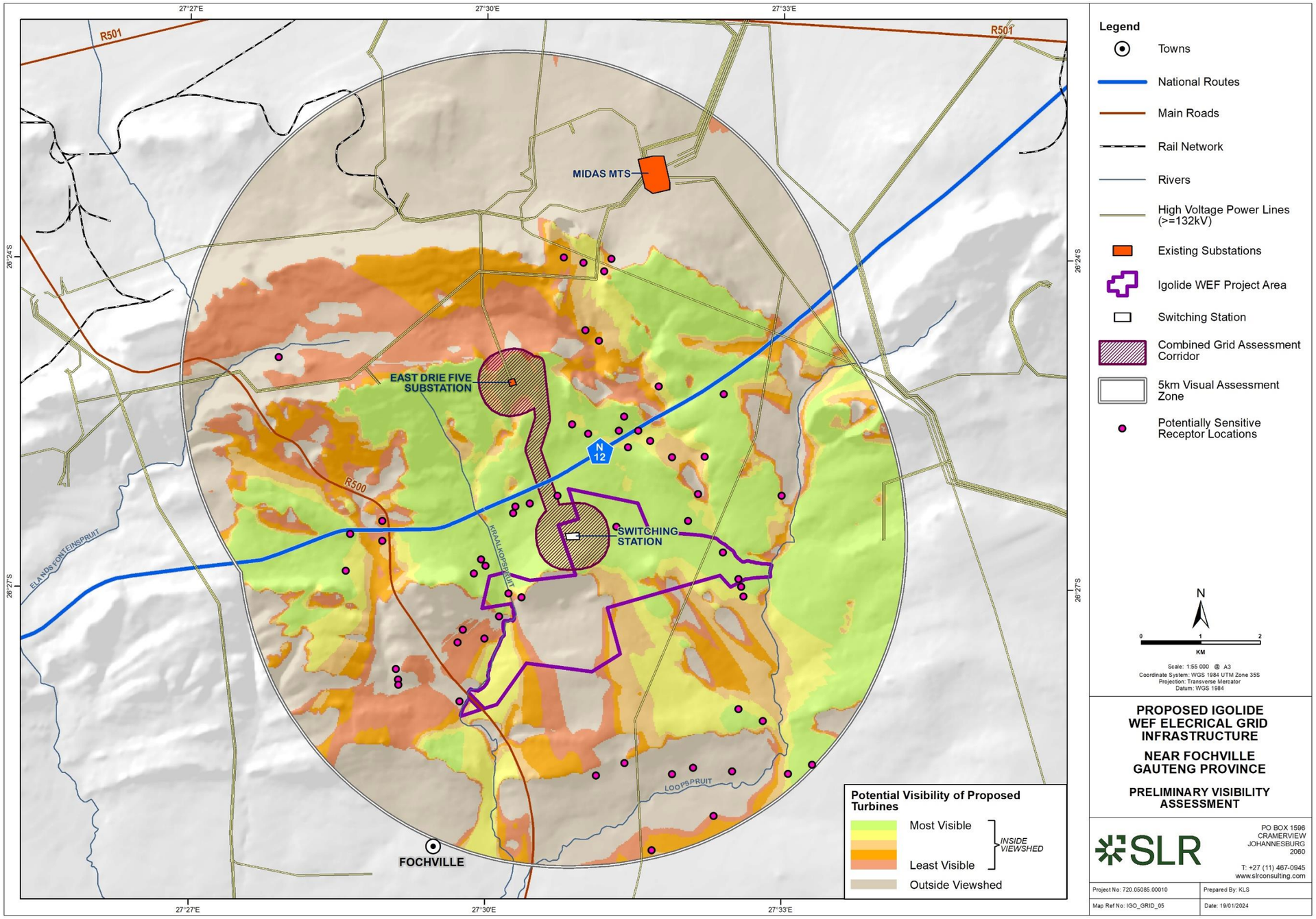
Map 5: Potential Visibility of the EGI



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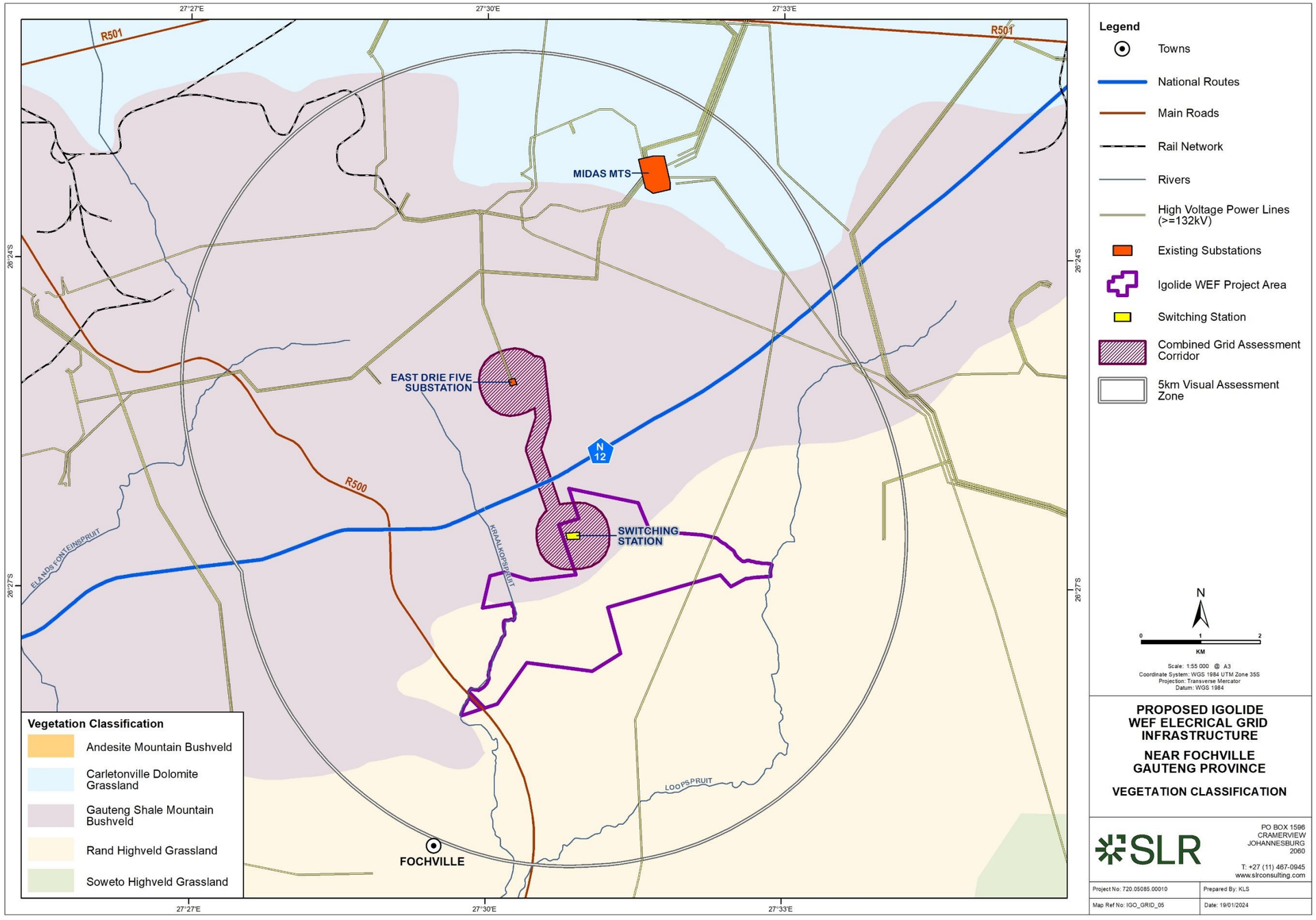
Map 6: Vegetation Classification



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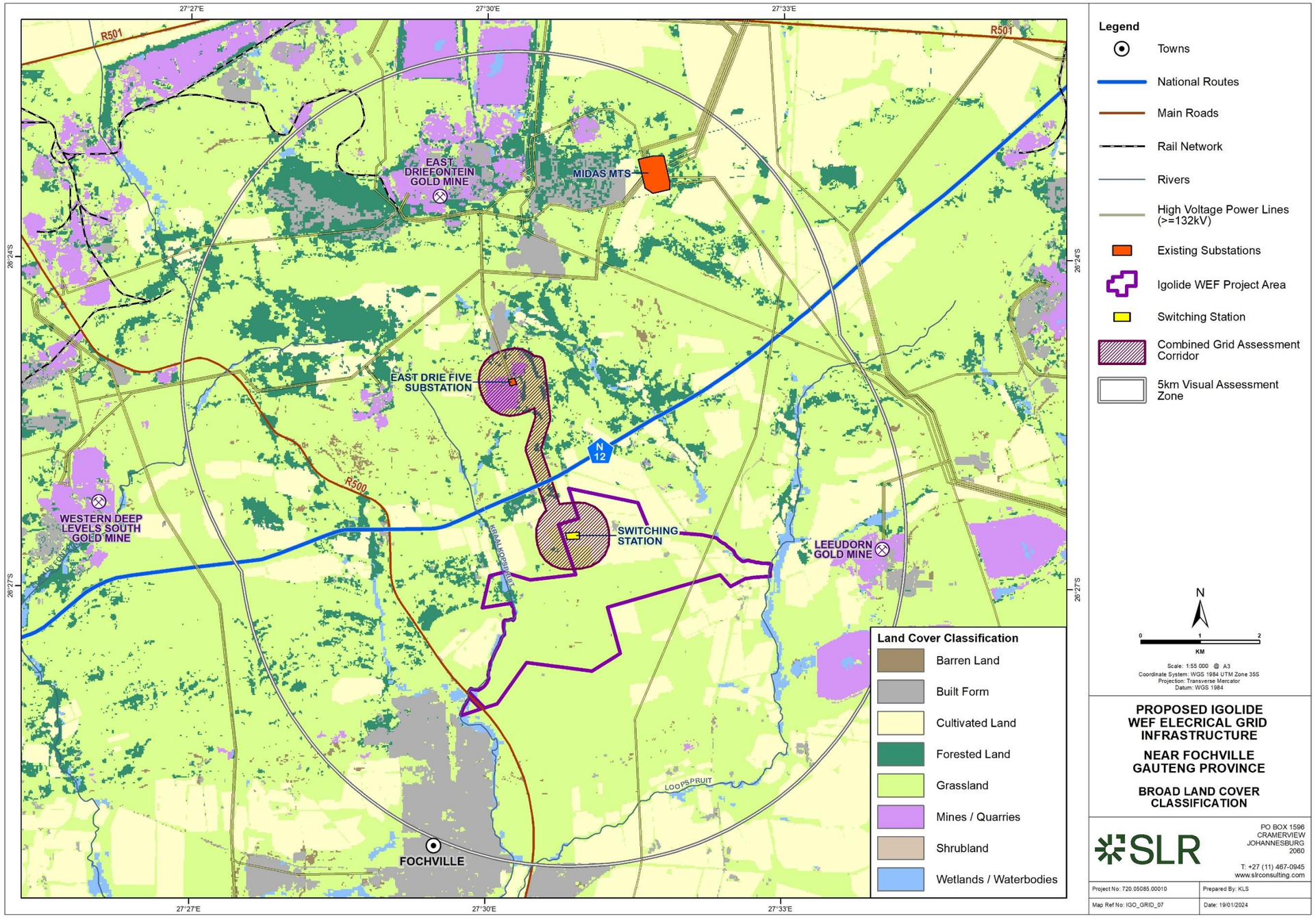
Map 7: Land Cover Classification



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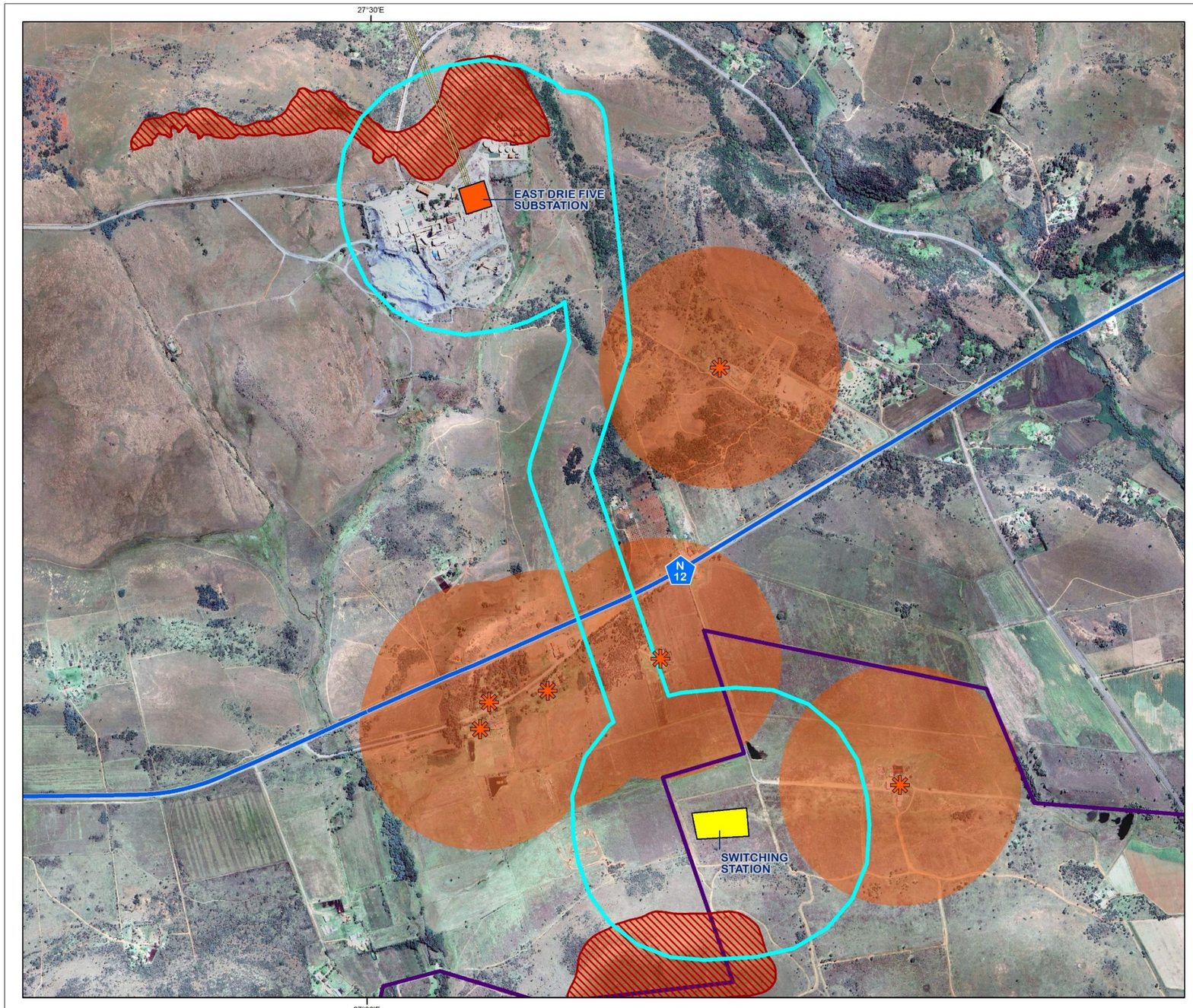
Map 8: Preliminary Sensitivity Assessment



Legend

- National Routes
- High Voltage Power Lines (>=132kV)
- Existing Substations
- Igolide WEF Project Area
- Switching Station
- Combined Grid Assessment Corridor
- Zones of Potential Visual Sensitivity
- Prominent Ridges
- Farmhouses / Residences

N

0 250 500

Meters

Scale: 1:15 000 @ A3
Coordinate System: WGS 1984 UTM Zone 35S
Projection: Transverse Mercator
Datum: WGS 1984

PROPOSED IGOLIDE WEF ELECRICAL GRID INFRASTRUCTURE

NEAR FOCHVILLE GAUTENG PROVINCE

VISUAL ASSESSMENT: VISUAL SENSITIVITY

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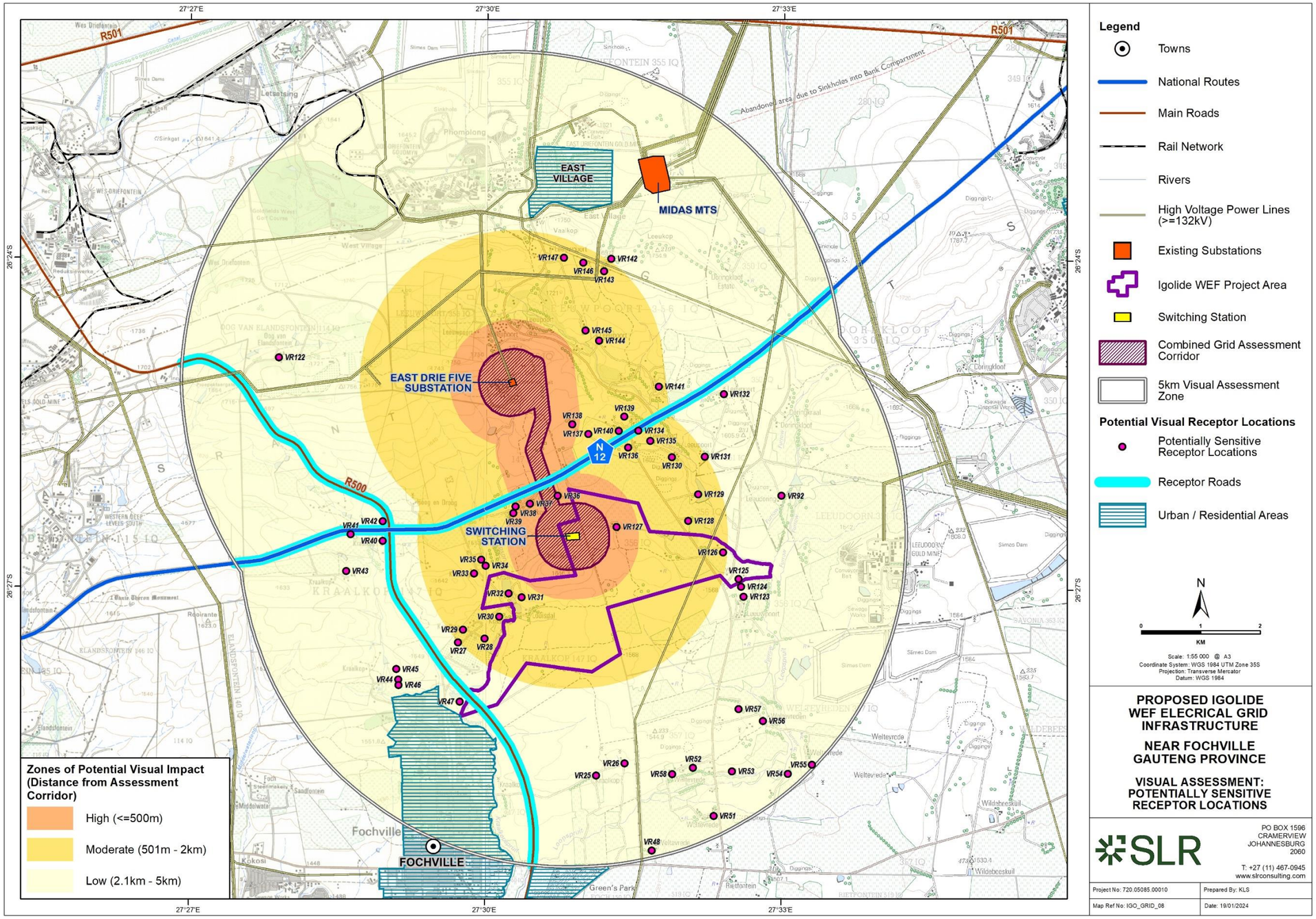
Map 9: Potentially Sensitive Receptor Locations



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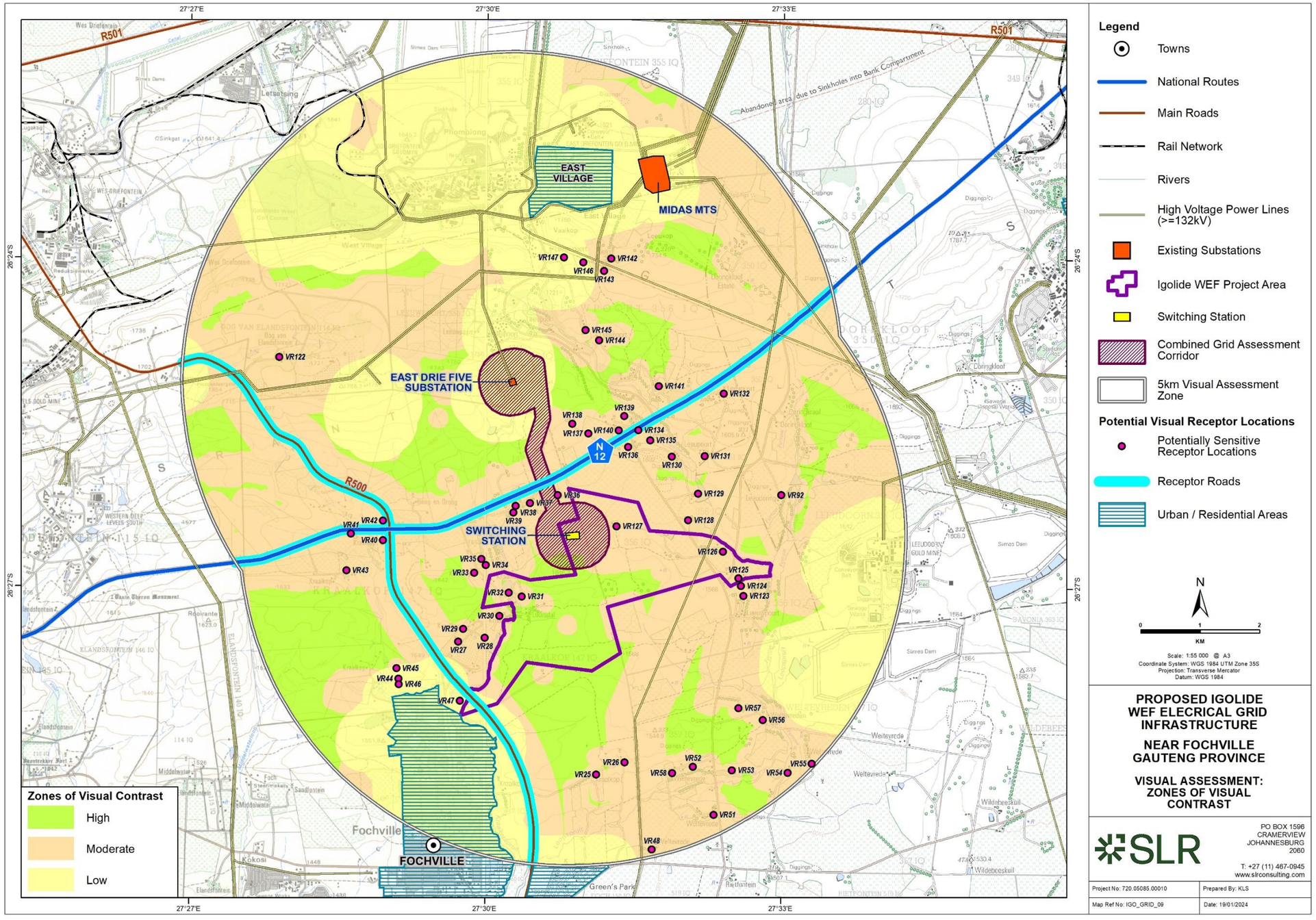
Map 10: Zones of Visual Contrast



PROPOSED IGOLIDE WEF ELECRICAL GRID INFRASTRUCTURE

NEAR FOCHVILLE GAUTENG PROVINCE

VISUAL ASSESSMENT: ZONES OF VISUAL CONTRAST

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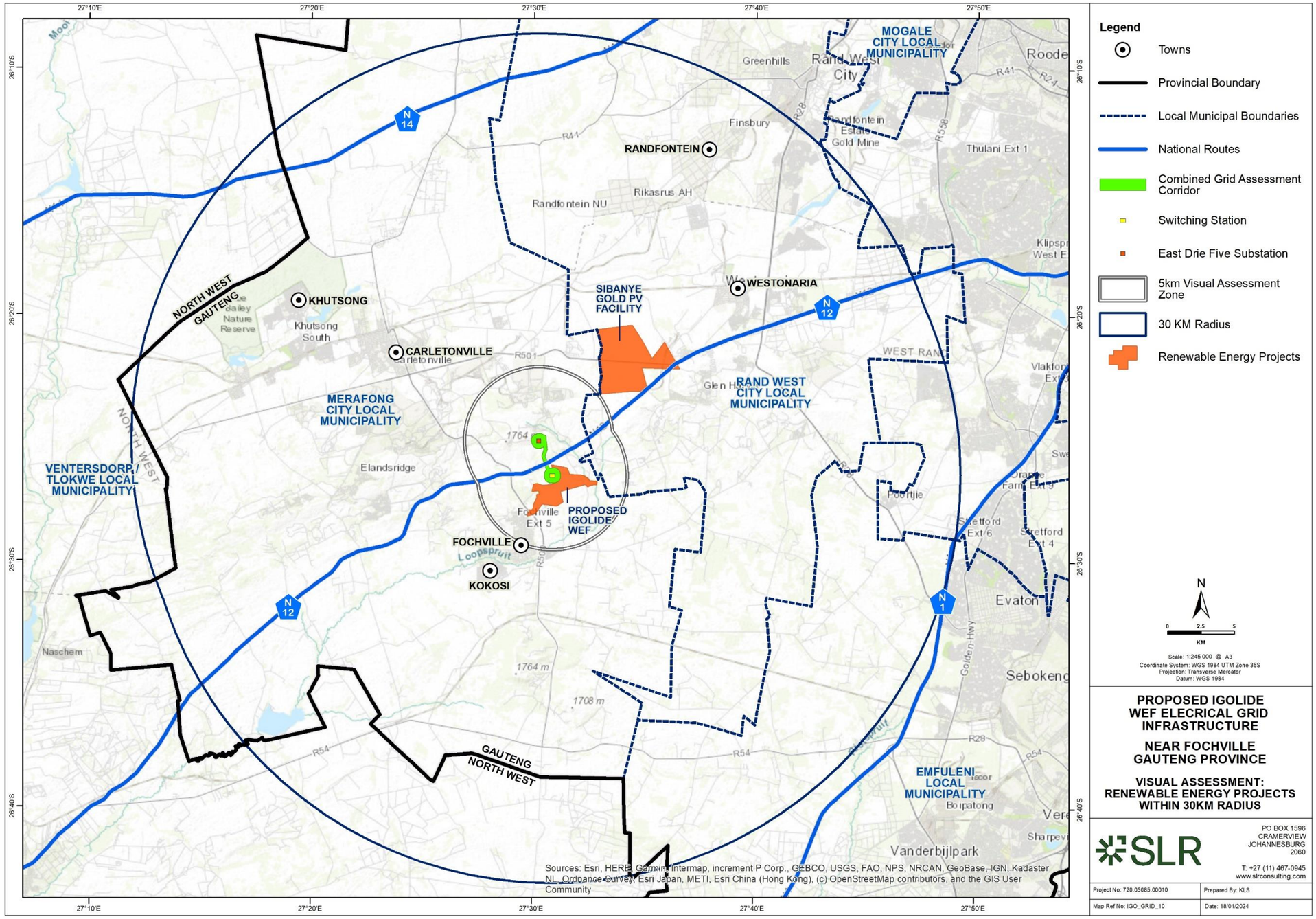
Map 11: Proposed Renewable Energy Projects within 30km of the EGI



PROPOSED IGOLIDE WEF ELECRICAL GRID INFRASTRUCTURE

NEAR FOCHVILLE GAUTENG PROVINCE

VISUAL ASSESSMENT: RENEWABLE ENERGY PROJECTS WITHIN 30KM RADIUS

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