FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the proposed development of the up to 100 MW Padloper Solar PV Facility 6 (i.e., Padloper PV 6), the proposed development of 132 kV Electrical Grid Infrastructure between the proposed Padloper PV 4 and the proposed Padloper PV 6 (i.e., Padloper EGI 6), and their associated infrastructure, near Murraysburg in the Western Cape Province

APPENDIX D.2:
Visual



VISUAL IMPACT ASSESSMENT
SPECIALIST BASIC ASSESSMENT REPORT INPUTS:

BASIC ASSESSMENTS FOR THE PROPOSED DEVELOPMENT OF THE PADLOPER SOLAR PROJECTS 5 - 7, NEAR MURRAYSBURG IN THE WESTERN CAPE PROVINCE

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30 June 2023

Executive Summary

Padloper PV (Pty) Ltd (hereafter referred to as "the Applicant") is proposing to develop seven Solar Photovoltaic (PV) Facilities (also referred to as Solar Energy Facilities (SEFs) or Padloper Solar Facilities 1-7) with a capacity between 100 and 250 MW , and seven dedicated 132 kV overhead power lines (or Electrical Grid Infrastructure (EGI) - Padloper EGIs 1–7) and their associated infrastructure, near Murraysburg in the Western Cape Province. The facilities and the EGIs, and their associated infrastructure, are known as the Padloper Solar Projects 1-7 or the Padloper Solar Cluster.

The Padloper Solar Cluster, which includes the Padloper Solar Projects 1 – 7, is located in the Beaufort West Renewable Energy Development Zone (REDZ 11) and accordingly each of the proposed solar facilities is subject to a Basic Assessment (BA) process in terms of the National Environmental Management Act (Act No. 107 of 1998) (NEMA) and Appendix 1 of the Environmental Impact Assessment (EIA) Regulations, 2014 promulgated in Government Gazette 40772 and GN R326, R327, R325 and R324 on 7 April 2017.

Grid connection infrastructure for four of the PV facilities (Padloper Solar Facilities 1–4) will be subject to separate Basic Assessment (BA) processes as contemplated in terms of Regulations 19 and 20 of the EIA Regulations, 2014, which will be undertaken in parallel to the BA processes for the PV facilities. Grid connection facilities for the remaining three PV facilities (Padloper Solar Facilities 5–7) will be retained by ACED and therefore do not require a separate Environmental Authorisation (EA). As such the assessment of these powerlines will be included in the respective solar facility assessments.

This combined visual impact assessment (VIA) is being undertaken as part of the BA processes for Padloper Solar Facilities 5 – 7 and EGIs 5- to 7. This VIA Report relates specifically to the three Padloper Solar Facilities 5-7 and their dedicated three powerlines (Padloper EGIs 5-7), and associated infrastructure.

Overall, the VIA has determined that sparse human habitation and the predominance of natural vegetation that covers much of the study area would give the viewer the general impression of a largely natural setting with some pastoral elements. As such, the SEF and EGI developments would alter the visual character and contrast significantly with the typical land use and/or pattern and form of human elements present across the broader study area.

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 moderate 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 and relatively few sensitive or potentially sensitive receptor locations were identified in the study area, thus confirming the moderate level of visual sensitivity.

The assessment identified nine potentially sensitive visual receptor locations within the combined study area. Although the findings of the desktop assessment were largely confirmed during the field investigation, it was not possible to confirm the presence of receptors at all the identified locations due to access restrictions. Notwithstanding this limitation, 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.

One of the receptor locations identified, namely Salem Self-Catering was found to be linked to leisure-based (specifically nature-based) tourism and is therefore considered to be a sensitive receptor location. It should be noted that this receptor location is situated on Portion 2 of Farm Angora No. 26 and as this is the project area for Padloper Solar Facility 4, it is understood that the landowners are involved in the Padloper

Solar and EGI Cluster development and thus would not view the proposed SEF and EGI projects in a negative light.

The remaining eight receptor locations are believed to be farmsteads which are regarded as *potentially* sensitive visual receptors as the proposed development will likely alter natural or semi-natural vistas experienced from these locations. At this stage however, the residents' sentiments towards the proposed development are unknown.

Only one of the identified receptor locations is expected to experience high levels of visual impact as a result of the proposed developments. This receptor location is however inside the assessment area for the Padloper Solar Facilities 6 and 7 and it is understood that the landowner is involved in the Padloper Solar PV Cluster project and thus would not view the proposed development is a negative light.

Although the R63 receptor road traverses the study area, the PV arrays and powerlines are some considerable distance from the road and not visible from much of the road.

A preliminary assessment of overall impacts revealed that impacts associated with the proposed Padloper Solar Facilities 5-7 are of low significance during both construction and decommissioning phases. During operation however, visual impacts from the SEFs would be of moderate significance with relatively few mitigation measures available to reduce the visual impact. Impacts (post mitigation) associated with all the proposed Padloper EGIs 5-7 are of low significance during construction, operation and decommissioning phases with a number of mitigation measures available.

Two (2) additional renewable energy projects were identified within a 30 km radius of the Padloper Solar and EGI Cluster, namely the proposed Victoria West Renewable Energy Facility (REF) and Umsinde Emoyeni WEF. Only one of these, Umsinde Emoyeni WEF is expected to result in significant cumulative impacts in the combined visual assessment zone for these projects due to its location near the Padloper Solar Facilities and EGIs. This project, in conjunction with all seven Padloper SEF and EGI projects comprising the Padloper Solar and EGI Cluster will inevitably introduce an increasingly industrial character into a largely natural, pastoral landscape, thus giving rise to significant cumulative impacts. It is however anticipated that these impacts could be mitigated to acceptable levels with the implementation of the recommendations and mitigation measures stipulated for each of these developments by the visual specialists. Considering this and the relatively low level of human habitation in the study area however, cumulative impacts have been rated as medium.

From a visual perspective therefore, the proposed Padloper Solar Facilities 5-7 and EGIs 5-7 are deemed acceptable, and the Environmental Authorization (EA) should be granted. SLR Consulting is of the opinion that the visual impacts associated with the construction, operation and decommissioning phases of these developments can be mitigated to acceptable levels provided the recommended mitigation measures are implemented.

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List of Abbreviations

BA	Basic Assessment
BESS	Battery Energy Storage System
DBAR	Draft Environmental Impact Assessment Report
DEIAR	Draft Environmental Impact Assessment Report
DFFE	Department of Forestry, Fisheries and Environment
DM	District Municipality
DSR	Draft Scoping Report
DEM	Digital Elevation Model
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EGI	Electrical Grid Infrastructure
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
FEIAR	Final Environmental Impact Assessment Report
FSR	Final Scoping Report
GIS	Geographic Information System
I&AP	Interested and/or Affected Party
IPP	Independent Power Producer
LM	Local Municipality
kV	Kilovolt
MW	Megawatt
NGI	National Geo-Spatial Information
NPAES	National Protected Areas Expansion Strategy
OHL	Overhead Powerline
PV	Photovoltaic
REF	Renewable Energy Facility
REIPPP	Renewable Energy Independent Power Producer Programme
SANBI	South African National Biodiversity Institute
SAPAD	South African National Protected Areas Database
SEF	Solar Energy Facility
SVR	Sensitive Visual Receptor
TOR	Terms of Reference
VIA	Visual Impact Assessment
VR	Visual Receptor
WEF	Wind Energy Facility

Glossary

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).
Combined study area / visual assessment zone	The combined study area or visual assessment zone is assumed to encompass a zone of 5 km from the combined outer boundary of the application sites for Padloper Solar Facilities 5 – 7 and the assessment corridors for .EGIs 5 – 7.
Padloper Solar Cluster	Includes the seven Solar PV Facilities (Padloper Solar Facilities 1 -7) and seven associated overhead powerlines and associated infrastructure.
Project assessment area /project area	Farm portion -assessed for each Solar PV project
Padloper Solar Project	Includes the solar facility and the associated grid infrastructure.
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.
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.
Slope aspect	Direction in which a hill or mountain slope faces.
Study area / Visual assessment zone	The study area or visual assessment zone is assumed to encompass a zone of 5 km from the outer boundary of the proposed Solar PV Facility 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 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 the development would be in conformity 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 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.

This report serves as the Visual Specialist Report input prepared as part of the Basic Assessment (BA) processes for the proposed development of between 100 and 250 MW each Padloper Solar Energy Facilities (Padloper Solar Facilities 1-7) and associated infrastructure, near Murraysburg in the Western and Northern Cape Provinces.

1. Introduction

1.1 Scope, Purpose and Objectives of this Specialist Report

Padloper PV (Pty) Ltd (hereafter referred to as "the Applicant") is proposing to develop seven Solar Photovoltaic (PV) Facilities (also referred to as Solar Energy Facilities (SEFs) or Padloper Solar Facilities 1-7) with a capacity between 100 and 250 MW, and seven dedicated 132 kV overhead power lines (or Electrical Grid Infrastructure (EGI) -Padloper EGIs 1–7), near Murraysburg in the Western Cape and Northern Cape provinces.

The Padloper Solar Cluster (i.e., Padloper Solar Facilities 1-7 and Padloper EGIs 1-7) is located in the Beaufort West Renewable Energy Development Zone (REDZ 11) and accordingly each of the proposed PV facilities are subject to a Basic Assessment (BA) process in terms of the National Environmental Management Act (Act No. 107 of 1998) (NEMA) and Appendix 1 of the Environmental Impact Assessment (EIA) Regulations, 2014 promulgated in Government Gazette 40772 and GN R326, R327, R325 and R324 on 7 April 2017.

Grid connection infrastructure for four of the PV facilities (Padloper Solar Facilities 1–4) will be subject to separate Basic Assessment (BA) processes as contemplated in terms of Regulations 19 and 20 of the EIA Regulations, 2014, which will be undertaken in parallel to the BA processes for the PV facilities. Grid connection facilities for the remaining three PV facilities (Padloper Solar Facilities 5–7) will be retained by ACED and therefore do not require a separate Environmental Authorisation (EA). As such the assessment of these powerlines will be included in the respective solar facility assessments.

This combined visual impact assessment (VIA) is being undertaken as part of the BA processes for Padloper Solar Facilities 5 - 7 and EGIs 5-7. This VIA Report relates specifically to the three Padloper Solar Facilities 5-7 and their dedicated three powerlines (Padloper EGIs 5-7), and their associated infrastructure.

Prior to commencing with the Visual Specialist Assessment in accordance with the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on the Visual Theme (Government Notice 320, dated 20 March 2020), a site sensitivity verification was undertaken to confirm the current land use and environmental sensitivity of the proposed project areas as identified by the National Environmental Screening Tool[1].

The aim of this VIA Report is to present the preliminary findings of the visual specialist assessment and to provide specialist inputs to the Basic Assessment Reports (BARs) for each of the Padloper SEF and EGI Projects 5- . The assessment identifies potential visual issues associated with the development of the proposed SEFs (i.e. Padloper Facilities 5-7), and their associated infrastructure, and determines the potential extent of visual impacts. This involves characterising the visual environment of the area and identifying areas of potential visual sensitivity that may be subject to visual impacts. This visual assessment focuses on the potential sensitive visual receptor locations and provides an assessment of the magnitude and significance of the visual impacts associated with the proposed developments.

[1] https://screening.environment.gov.za/screeningtool/

1.2 Details of Specialist

This specialist assessment was undertaken by Kerry Schwartz of SLR Consulting, a Geographic Information System (GIS) specialist with more than 20 years' experience in the application of GIS technology in various environmental, regional planning and infrastructural projects. Kerry's GIS 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.

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

1.3 Terms of Reference

The detailed Terms of Reference document is contained in **Appendix C**, however specific requirements for the VIA are outlined below.

- Comply with the Assessment Protocols that were published on 20 March 2020, in Government Gazette 43110, GN 320. This specifically includes Part A, which provides the Site Sensitivity Verification Requirements where a Specialist Assessment is required but no Specific Assessment Protocol has been prescribed.
- Provide a Site Sensitivity Verification Report based on the requirements documented in the Assessment Protocols published on 20 March 2020, in Government Gazette 43110, GN 320.
- Compile a Visual Impact Assessment (VIA) in compliance with Appendix 6 of the 2014 NEMA EIA Regulations. The Specialist Assessment must also be in adherence to any additional relevant legislation and guidelines that may be deemed necessary. It must also comply with the report templates provided by the CSIR.
- Provide inputs to the Draft BA Report to include a description of the affected environment and environmental sensitivities, key legislation, key issues and detailed assessment of impacts. A template for such inputs will be provided by the CSIR.
- Identify the level of sensitivity assigned to the project area on the Screening Tool, and to verify and confirm this sensitivity and land-use during a site visit, as well as to comply with the requirements of Part A of the Assessment Protocols published on 20 March 2020, in Government Gazette 43110, GN 320.
- Determine, describe and map the baseline environmental condition and sensitivity of the study area. Specify set-backs or buffers, and provide clear reasons for these recommendations.
- Provide sensitivities in KMZ or similar GIS format.
- Provide review input on the preferred infrastructure layout following the sensitivity analysis and layout identification.
- Describe the visual character of the local area in the VIA Report. Any significant visual features or visual disturbances should be identified and mapped, as well as any sensitive visual receptors within the proposed project area or within viewsheds of the projects.
- Describe the visual character and visual absorption capacity in the VIA Report.
- Calculate, define and present the viewsheds for various elements of the proposed development, and highlight the varying sensitivities of these viewsheds in the VIA Report.
- Consider visual receptors outside the site, and sensitivity to development on the site for potentially affected visual receptors of "very high" sensitivity in the mapping.
- Assessment to be based on a site visit, visual modelling, and a photographic survey of the surrounding region from which the landscape and visual baselines can be prepared. The assessment must also consider the maps generated by the National Screening Tool.
- Identify and assess the potential direct, indirect and cumulative impacts of the proposed development on the receiving environment from a visual perspective. Impact significance must be rated both without and with mitigation, and must cover the construction, operational and

decommissioning phases of the project. The Impact Assessment Methodology must follow that contained in Section B of this Terms of Reference (ToR), as provided by the CSIR.

- Present schematic portrayals of the visual impact of the proposed project infrastructure on the different viewsheds identified. All impacts should be considered under varying conditions as appropriate to the study i.e., day, night, clear weather, cloudy weather etc.
- Generate and include maps depicting viewsheds/line of sight across the site in the VIA Report. These maps should indicate current viewsheds/visual landscape/obstructions as well as expected visual impacts during the construction, operational and decommissioning phases of the proposed development.
- Identify any protocols, legal and permit requirements that are relevant to this project and the implications thereof.
- Provide recommendations with regards to potential monitoring programmes.
- Determine mitigation and/or management measures which could be implemented to as far as possible reduce the effect of negative impacts and enhance the effect of positive impacts. Also identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This must be included in the Environmental Management Programme (EMPr).
- Incorporate and address all review comments made by the Project Team (CSIR and the Applicant) during the various revisions of the specialist report.
- Incorporate and address all issues and concerns raised by Stakeholders, Competent Authority, Interested and Affected Parties (I&APs) and the public during the Public Participation Process (PPP) (where relevant and applicable).
- Review the Generic EMPr for 1) Power Lines and 2) Substations (GN 435) and confirm if there are any specific environmental sensitivities or attributes present on the site and any resultant site specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, provide a list of these specific impact management outcomes and actions based on the format of the report template provided by the CSIR.
-

2. Approach and Methodology

In line with the requirements of the Environmental Assessment Practitioner (EAP), SLR Consulting has undertaken a combined VIA, encompassing three Solar Facilities (Padloper Solar Facilities 5-7) and their three dedicated EGIs (Padloper EGIs 5–7), and their associated infrastructure.

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

- 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 National Geospatial Information (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 a site visit.

- Identification of sensitive and potentially sensitive receptor locations

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

- Fieldwork and photographic review

A two (2) day site visit was undertaken between the 23 and 24 August 2022 (late-winter). The aim of the site visit was to:

- verify the landscape characteristics identified via desktop means;
- conduct a photographic survey of the proposed study area;
- verify 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
- assist with the assessment and rating of receptor impacts.

- Impact Assessment

A rating matrix (**Appendix C**) was used to objectively evaluate the significance of the potential visual impacts associated with each of the Padloper solar facilities and EGIs, both before and after implementing mitigation measures. Mitigation measures were identified (where possible) to minimise the potential visual impact of the proposed development. The rating matrix is based on several different factors including geographical extent, probability, reversibility, irreplaceable loss of resources, duration, extent and consequence in order to assign a level of significance to the potential visual impact of the project.

A separate rating matrix was used to assess the visual impact of each of the proposed Solar Facilities and EGIs on the identified visual receptor locations (both sensitive and potentially sensitive). 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.

2.1 Information Sources

The main sources of information which were utilised for the VIA are listed in Table 1 below:

Table 1: Sources of Information

Data / Information	Source	Date	Type	Description
Elevation data	NGI	2011	Spatial	5m contour national coverage - prone to inaccuracies.
1: 50 000 Topographical Maps	NGI	Various	Spatial	Topographical map series used as background.
Land Cover Data	DFFE (GEOTERRAIMAGE)	2020	Spatial	2020 South African National Land-Cover Dataset.
Vegetation Classification	SANBI	2018	Spatial	SANBI VegMap based on vegetation Rutherford & Mucina classification 2012.

Data / Information	Source	Date	Type	Description
Satellite Imagery	Google Earth	2022 / 2023	Spatial	Google Earth Imagery.
South African National Protected Areas Database (SAPAD)	DFFE	2022, Q3	Spatial	Spatial delineation of protected areas in South Africa. Updated quarterly.
National Protected Areas Expansion Strategy (NPAES)	SANBI	2008	Spatial	Spatial delineation of protected areas in South Africa.
The National web-based Environmental Screening Tool.	DFFE	2022	Report & spatial	High level identification of areas of environmental sensitivities.
SA REEA	DFFE	2023, Q1	Spatial	SA Renewable Energy EIA Application Database (REEA)

2.2 Assumptions, Knowledge Gaps and Limitations

Assumptions, knowledge gaps and limitations relevant to this study are outlined below:

- This visual study has been undertaken based on the project description provided by the Developer and the EAP at the inception of the project.
- Given the nature of the receiving environment and the planned height of the proposed PV panels and powerline towers, the study area or visual assessment zone is assumed to encompass an area of 5 km from the boundary of the combined project areas (farm portions) for the three Padloper SEFs (Padloper Solar Facilities 5–7) and the combined powerline assessment corridors (EGIs 5 - 7), and their associated infrastructure. This limit on the visual assessment zone relates to the fact that visual impacts decrease exponentially over distance. Thus, although the proposed development may still be visible beyond 5 km, the degree of visual impact would diminish considerably. As such, the need to assess the impact on potential receptors beyond this distance would not be warranted.
- Due to flooding of the Buffels River during the site visit, certain roads were not accessible and as such it was not possible to provide a full photographic record for the combined study area.
- 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 during a site visit which was undertaken between the 23 and 24 August 2022 (late-winter). Due to access constraints and the extent of the study area however, 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.
- As the exact status of all the receptors could not be verified during the field investigation, 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 the project description provided by the Developer, all analysis for this VIA is based on a worst-case scenario where PV panel heights are assumed to be 4.5 m and powerline tower heights are assumed to be 21 m. Substation, Battery Energy Storage System (BESS) facilities and office building heights are assumed to be less than 21 m.
- Due to the varying scales and sources of information; maps may have minor inaccuracies. Terrain data for this area, derived from the NGI’s 5 m Contour Database, 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 required viewsheds and visibility analysis conducted in respect of the proposed development.
- In addition, the viewshed analysis does not take into account 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 respective Draft Basic Assessment Reports (DBARs) will however be incorporated into further drafts of this report, if relevant.
- At the time of undertaking the visual study no information was available regarding the type and intensity of lighting that will be required for the proposed development and therefore the potential impact of lighting at night has not been assessed at a detailed level. However, lighting requirements are relatively similar for all SEF and EGI facilities and as such, general measures to mitigate the impact of additional light sources on the ambiance of the nightscape have been provided.
- 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.
- At the time of writing this report, the proposed PV layouts were still in the preliminary design phase and as such, no visualisation modelling (photomontages) was undertaken for the proposed development.
- No visualisation modelling was undertaken for the proposed powerlines as this is not normally required for linear infrastructure.
- It should be noted that the site visit was undertaken in 23 and 24 August 2022 (late-winter). However, the study area is typically characterised by low levels of rainfall all year round and therefore the season is not expected to affect the significance of the potential visual impact of the proposed SEF and EGI projects.
- The overall weather conditions in the study area have certain visual implications and are expected to affect the visual impact of the proposed development to some degree. In clear conditions, the PV panels and powerlines would present a greater contrast with the surrounding environment than

they would on an overcast day. Both clear and overcast weather conditions were experienced during the field investigation and this factor was taken into consideration when undertaking this VIA.

2.3 Consultation Processes Undertaken

At this stage, no specific consultation has been undertaken in respect of this VIA. However, continuous consultation with I&APs during the public participation process for the respective BAs will be used (where available) to help establish how the proposed development will be perceived by the various identified receptors and the degree to which the impact will be regarded as negative. Although I&APs have not yet provided any formal feedback in this regard, the report will be updated to include relevant information as and when it becomes available.

3. Description of Project Aspects relevant to the Visual Impact Assessment

In this section, typical visual issues related to the establishment of SEFs, 132 kV powerlines and associated infrastructure as proposed are discussed. It is important to note that the renewable energy industry is still relatively new in South Africa and as such this report draws on international literature and web material (of which there is significant material available) in conjunction with local experience to describe the generic impacts associated with SEFs.

3.1 Project Components

A full project description for the proposed Padloper Solar Facilities 5–7 and EGIs 5-7 - has been provided in the DBAR. However, a list of the key components that have visual implications is provided below.

3.1.1 Solar Energy Facilities

At this stage, it is anticipated that each of the proposed SEFs will include PV fields (arrays) comprising multiple PV modules. The PV modules are arranged in rows and columns, some of which may require levelling of the terrain and associated slope stabilisation measures. Solar PV panels will have a height of up to 4.5 m (**Figure 1**).

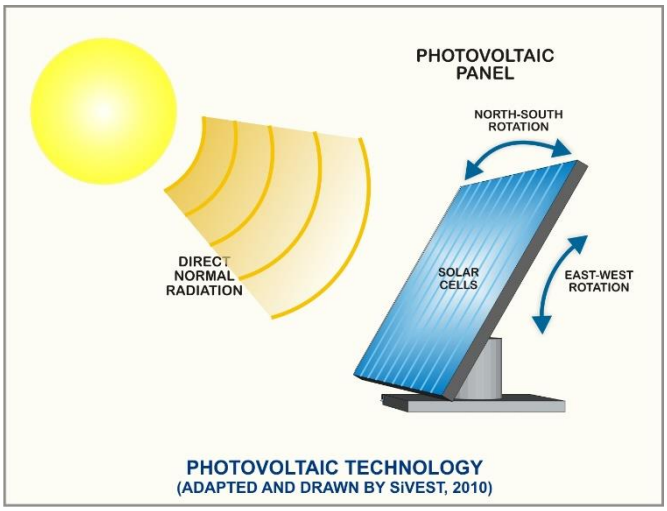


Figure 1: Typical components of a solar PV panel.

3.1.2 Associated Infrastructure

Each of the three SEFs will include the following on-site infrastructure:

- A 132 kV on-site substation (SS) to feed electricity generated by the proposed Padloper Solar Facilities into the national grid;
- Inverter-Transformer stations;
- Internal medium voltage cabling (22 / 33 kV) between project components to be buried underground;
- BESS to be located at the Substation site and / or the Laydown area
- Site offices, including
    - warehouse/workshops;
    - operational and maintenance (O&M) control center
- Guard house;
- Ablution facilities;
- Temporary construction laydown area;
- Internal roads, up to 5 m wide, will provide access to the PV arrays. Existing site roads will be used wherever possible, although new site roads will be constructed where necessary.

3.1.3 Electrical Grid Infrastructure

Powerline assessment corridors with a width of 400 m are being assessed (200 m on either side of the centre line) to allow flexibility when determining the final route alignment. The proposed powerline however only requires a 31 m wide servitude which would be positioned within the corridor as required by Eskom Holdings Limited (Eskom).

The type of powerline towers being considered at this stage include both steel lattice and monopole towers and it is assumed that these towers will be located approximately 200 m to 250 m apart. The towers will be up to 21 m in height, depending on the terrain, but will ensure minimum overhead line clearances from buildings and surrounding infrastructure. The exact location of the towers will be determined during the final stages of the powerline design process.

The proposed EGIs are intended to feed the electricity generated by the proposed Padloper Solar Facilities 5-7 into the national grid via the proposed Padloper Solar Facility 4 Substation. A broad description of the powerline routes for each EGI project is provided below;

- Padloper EGI 5: 132 kV overhead powerlines will run between the proposed Padloper Solar Facility 5 and the proposed Padloper Solar Facility 4 Substation (length approximately 2.5 km);
- Padloper EGI 6: 132 kV overhead powerlines will run between the proposed Padloper Solar Facility 6 and the proposed Padloper Solar Facility 4 Substation (length approximately 5.7 km); and
- Padloper EGI 7: 132 kV overhead powerlines will run between the proposed Padloper Solar Facility 7 project and the proposed Padloper Solar Facility 4 Substation (length 6.2 km).

3.1.4 Construction Period

The construction period in respect of each project is expected to span ±12 - 18 months .

3.2 Visual Implications

3.2.1 Solar Energy Facilities and On-Site Infrastructure

Each of the proposed SEFs consists of PV panels, which grouped together form a “solar field” or “solar array”. Each PV panel is a large structure that is typically between 1 m and 4.5 m high. The height of these objects will make them visible, especially in the context of a relatively flat landscape.

More importantly, the concentration of these panels will make them highly visible, depending on the number of panels in each solar field. Solar fields with a large spatial extent (footprint) will become distinctly visible features that contrast with the landscape, especially where the landscape is natural in character or undeveloped. In this context the solar field could be considered a visual intrusion, potentially altering the visual environment towards a more industrial character.

The establishment of PV facilities generally requires some levelling of the terrain and the clearance of taller shrubs, trees and ground cover vegetation. This will intensify the visual prominence of the SEFs, particularly in natural locations where little transformation has taken place.

The proposed on-site infrastructural elements are not expected to be associated with significant visual impacts when compared to visual impact associated with the PV arrays. Substations however are generally large, highly visible structures (up to 21 m high) which are relatively industrial in character. In addition, BESS facilities, at a maximum height of 10 m, could potentially be highly visible from receptors in the surrounding area. Substation and BESS facilities are not features of the natural environment, but are representative of human (anthropogenic) alteration, and as such could potentially be perceived to be incongruous when placed in largely natural landscapes. In this instance, the substation and BESS are intended to serve the proposed solar facilities and as such, these structures are likely to be perceived as part of the greater PV facility. Thus, the visual impact of the substation and BESS will be relatively minor when compared to the visual impact associated with the development as a whole. The infrastructure would, however, increase the visual "clutter" of the proposed development and magnify the visual prominence of the development if located on ridge tops or flat sites in natural settings where there is limited tall, wooded vegetation to conceal the impact.

Surface clearance for cable trenches, access roads and laydown areas may result in the increased visual prominence of these features, thus increasing the level of contrast with the surrounding landscape. Buildings, BESS containers and associated infrastructure placed in prominent positions such as on ridge tops may break the natural skyline, drawing the attention of the viewer. In addition, security lighting on the site may impact on the nightscape (**Section 4.1.8**).

3.2.2 Electrical Grid Infrastructure

Powerline towers are by their nature very large objects and thus highly visible. It is understood that the maximum tower height envisaged for the proposed power line is expected to be 21 m (approximately equivalent in height to a seven-storey building). Although a tower 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 power line comprises a series of towers typically spaced approximately 200 m to 400 m apart in a linear alignment.

As power lines are not features of the natural environment, they 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 towers may impinge on views within the landscape. In addition, the practice of clearing taller vegetation from areas within the powerline servitude can increase the visibility and incongruity of the powerline. In a largely natural, bushy setting, vegetation clearance will cause fragmentation of the natural vegetation cover, thus making the powerline more visible and drawing the viewer's attention to the servitude.

In this instance there is little built form or landscape transformation in the study area that would lessen the degree of visual contrast caused by new EGI development. However, the proposed EGI projects are intended to serve the proposed Padloper Solar Facilities 5-7 and as such will only be built if the solar facilities are developed. The proposed EGI is therefore likely to be perceived to be part of the greater Padloper Solar and EGI Cluster development and the visual impact will be relatively minor when compared to the visual impact associated with the Cluster as a whole.

4. Baseline Environmental Description

4.1 General Description

4.1.1 Site Locality

The proposed Padloper Solar Facilities and EGIs 5 to 7 are located between approximately 6 km and 14 km northeast of the town of Murraysburg. All six projects are located in the Beaufort West Local Municipality in the Western Cape Province. (**Map 1 in Appendix E**).

As shown in **Map 2 in Appendix E**, the proposed solar facilities and EGIs will be constructed on the following farm portions:

- Padloper Solar Facility 5 and EGI 5: Portions 2 and 3 of Farm Angora No. 26;
- Padloper Solar Facility and EGI 6: Portions 2 and 7 of Farm Angora No. 26; and
- Padloper Solar Facility and EGI 7: Portions 2 and 7 of Farm Angora No. 26.

Although the entire extent of each farm has been assessed for the purposes of this VIA, smaller buildable areas and grid corridors have been identified as a result of the exclusion of sensitive areas as determined through various specialist studies being conducted as part of the BA processes. The buildable areas for each solar facility are as follows:

- Padloper Solar Facility 5: 250 ha (Total developable area: ± 202 ha)
- Padloper Solar Facility 6: 182 ha (Total developable area: ± 119 ha)
- Padloper Solar Facility 7: 433 ha (Total developable area: ± 241 ha)

The resultant solar facility site layouts and grid corridor alignments are shown in **Maps 3A, 3B and 3C in Appendix E.**

4.1.2 Topography

The broader area surrounding the proposed Padloper SEF and EGI projects is largely characterised by a mix of flat to undulating and hilly terrain with distinctive koppies and hills in evidence (**Figure 2**). The terrain drops relatively steeply towards the valleys associated with the Snyderkraal and Buffels Rivers in the west and south respectively. Steep slopes also mark the divide between the central sector of the site and the higher lying, more mountainous areas that dominate the north- east (**Figure** 3).



Figure 2:View to the north across the combined study area for Padloper Solar Projects 5 – 7 from the R63 Main Road showing the relatively flat to undulating terrain.



Figure 3: Hilly terrain to the south of the combined study area for Padloper Solar Projects 5 - 7.

The topography and slope of the study area are illustrated in **Map 4 and Map 5 in Appendix E** respectively.

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.

Considering that PV panels are relatively large structures, these could potentially be visible from some distance. However, in this instance, visibility would be reduced as a result of topographic shielding provided by the terrain across the study area. GIS technology was used to undertake a preliminary visibility analysis for each of the proposed PV arrays based on the project information provided by the Applicant. A worst-case scenario was assumed when undertaking the analysis, in which the proposed PV panels were assigned a maximum height of 4.5 m. Broadly speaking, the resulting viewsheds indicate that the undulating terrain has resulted in significant portions of the study area being outside the viewsheds for the proposed SEFs. Specific viewsheds for each solar facility will be examined in **Section 4.2** below.

Bearing in mind that powerline towers and elements of the substation are large structures (potentially up to 21 m in height), these structures could potentially be visible from an extensive area around the EGI. GIS technology was used to undertake a preliminary visibility analysis for the proposed powerline route alignments, based on points at 250 m intervals along the centre line of each EGI corridor and assuming a tower height of 21 m. Broadly speaking, the resulting viewsheds indicate that the undulating terrain has resulted in significant portions of the study area being outside the viewsheds for the proposed EGI infrastructure. Specific viewsheds for each EGI project will be examined in **Section 4.2 below**.

Detailed topographic data was not available for the broader study area and as such the visibility analysis does not take into account any localised topographic variations which may constrain views. Additionally, 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. This analysis should therefore be seen as a conceptual representation or a worst-case scenario.

4.1.3 Vegetation

According to Mucina & Rutherford (2006), the most extensive vegetation type occurring in the study area is Eastern Upper Karoo, interspersed with scattered patches of Upper Karoo Hardeveld (**Map 6 in Appendix E).** Both vegetation classes fall within the Nama-Karoo Biome and are largely characterised by dwarf shrubland (**Figure 4**).

River valleys in the south-western sector of the study area are associated with the Southern Karoo Riviere vegetation type, characterised by tall thicket and shrubland (**Figure 5**).



Figure 4: Shrubland visible in the southern section of the combined study area for Padloper Solar Projects 1 -7.



Figure 5: Taller thicket and shrubland associated with river valleys.

Additional tree species are also present in the study area, particularly where exotic tree species and other typical garden vegetation has been established around farmsteads (**Figure 6**).

Much of the study area however is still characterised by natural low shrubland with transformation limited to a few isolated areas where pastoral activities such as livestock rearing and/or cultivation are taking place.



Figure 6: Typical example of tall trees planted around a farmhouse to the south of the combined study area for Padloper Solar Projects 1 - 7.

Visual Implications

Vegetation cover across the study area is predominantly short and sparse and thus will not provide any significant visual screening. In some instances, however, tall exotic trees planted around farmhouses will restrict views from receptor locations.

4.1.4 Land Cover

According to the South African National Land Cover dataset (Geoterraimage 2020), much of the study area is classified as shrubland interspersed with small patches of grassland and forested (natural wooded) land. Larger tracts of grassland and forested land however occur along the main watercourses in the area and on the areas of higher elevation in the north-east of the study area. (**Map 7 in Appendix E**).

Agricultural activity in the area is restricted by the arid nature of the local climate and areas of cultivation are largely concentrated along the main watercourses in the study area, (**Figure 7**). As such, the natural vegetation has been retained across much of the study area. Livestock (sheep) farming is also fairly common (**Figure 8**) although farm properties are quite large and livestock densities are relatively low. In addition, the area has a very low density of rural settlement, with relatively few isolated farmsteads in evidence. Built form in much of the study area is limited to isolated farmsteads (**Figure 9**), including farm worker's dwellings and ancillary farm buildings, gravel access roads, low voltage powerlines, telephone lines, fences, windmills and irrigation infrastructure.



Figure 7: Cultivated land adjacent to the Buffels River, south of Padloper Solar Projects 5 – 7.



Figure 8: Typical view of sheep grazing in the study area.



Figure 9: Typical farm infrastructure in the combined study area for Padloper Solar Projects 5 - 7, including windmill and irrigation infrastructure.

Built form in much of the study area comprises farmsteads, ancillary farm buildings and workers' dwellings, gravel access roads, powerlines, telephone lines and fences.

The closest built-up area is the town of Murraysburg which is situated more than 6 km south-west of the Padloper Solar Facilities and EGIs 5 - 7. The town is outside the study area for this project and is thus not expected to have any impact on the visual character of the study area.

Visual Implications

Sparse human habitation and the predominance of natural vegetation cover across much of the study area would give the viewer the general impression of a largely natural setting with some pastoral elements. In addition, there are no towns or settlements in the study area and thus, there are very low levels of human transformation and visual degradation across much of the study area.

The short, scrubby shrubland vegetation that occurs over much of the study area offers no visual screening in itself, and thus terrain / topography is the most important factor in limiting vistas. Exceptions to this situation occur at some local farmsteads where trees and shrubs have been established around the farmstead, providing some screening from the surrounding areas.

Thus, the proposed Padloper Solar Facilities and EGIs would alter the visual character and contrast with the typical land use and/or pattern and form of human elements present across much of the study area. The influence of the level of human transformation on the visual character of the area is described in more detail below.

4.1.5 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 (sheep farming and some limited cultivation) has not transformed the natural landscape across much of the study area to any significant degree and there are no towns or built-up areas in the study area influencing the overall visual character. Thus, there are low levels of human transformation and visual degradation across a significant portion of the study area and the natural character has been retained.

The presence of existing infrastructure is an important factor in this context, as the introduction of the proposed SEF and EGI projects would result in slightly less visual contrast where other anthropogenic elements are already present. In this instance however, anthropogenic elements in the study area are limited to low voltage power lines, telephone poles, windmills, gravel farm access roads and farm boundary fences. All of these are typical features of the Karoo landscape and not likely to reduce the level of contrast resulting from the proposed SEF and EGI projects to any significant degree.

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, the largely natural, scenic landscapes which occur in the wider study area would increase the scenic appeal and visual interest in the 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).

The area can be considered to be typical of a Karoo or "platteland" landscape that would characteristically be encountered across the high-lying dry western and central interior of South Africa. Much of South Africa's dry Karoo interior consists of wide open, uninhabited spaces sparsely punctuated by scattered farmsteads and small towns.

The typical Karoo landscape can be considered a valuable 'cultural landscape' in the South African context, consisting of wide open plains, and isolated relief, interspersed with isolated farmsteads, windmills and stock holding pens, it is an important part of the cultural matrix of the South African environment. The Karoo farmstead is also a representation of how the harsh arid nature of the environment in this part of the country has shaped the predominant land use and economic activity practiced in the area, as well as the patterns of human habitation and interaction. The presence of small towns, such as Murraysburg engulfed by an otherwise rural, almost barren environment, form an integral part of the wider Karoo landscape. As such, the Karoo landscape as it exists today has value as a cultural landscape in the South African context.

Considering this, it is important to assess whether the introduction of Solar and EGI facilities into the study area would be a degrading factor in the context of the Karoo character of the cultural landscape.
However, since a number of Renewable Energy Facilities (REFs) have been developed or are likely to be developed across the Karoo, it is possible that REFs, including wind turbines and PV panels, may in the future become an integral part of the typical Karoo cultural landscape. In addition, it could be argued that EGI development is not considered to be a significant degrading factor in the context of the natural Karoo character of the study area, since electrical infrastructure is frequently part of the typical form present within the Karoo landscape.

In this instance visual impacts on the cultural landscape would be reduced by the fact that the area is relatively remote and there are relatively few tourism or nature-based leisure facilities in the study area.

A more detailed assessment of the potential impacts of the proposed SEF and EGI projects on the cultural landscape has been included in the Heritage Impact Assessment (HIA) undertaken in respect of the proposed project.

4.1.6 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 hilly nature of the topography in the study area would increase the visual absorption capacity, this would be offset by the lack of screening provided by the dominant shrubland vegetation. Visual absorption capacity in the study area is therefore rated as low.

4.1.7 Sensitive Visual Receptor Locations

A sensitive visual receptor location is defined as a location from where receptors would potentially be impacted by a proposed development. Adverse impacts often arise where a new development is seen as

an intrusion that 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, depending 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 / 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 Environmental Assessment study.

As the visibility of the development would diminish exponentially over distance, receptors that are closer to the SEF or EGI projects would experience greater adverse visual impacts than those located further away.

The degree of visual impact experienced will vary from one receptor location 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); and
- Degree to which the viewer will accept a change in the typical character of the surrounding area.

Preliminary desktop assessment did not identify any formal protected areas in the combined study area for the SEF and EGI projects. The assessment did however identify nine potentially sensitive visual receptor locations, within 5 km of the respective Solar Facility assessment areas (farm portions) and grid assessment corridors. Although the findings of the desktop assessment were largely confirmed during the field investigation, it was not possible to confirm the presence of receptors at all the identified locations due to access restrictions. Notwithstanding this limitation, 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.

One of the receptor locations identified, namely Salem Self-Catering (identified as "SR3" on **Maps 10A – 10F in Appendix E**) was found to be linked to leisure-based (specifically nature-based) tourism and is therefore considered to be a sensitive receptor location. It should be noted that this receptor location is situated on Portion 2 of Farm Angora No. 26 and as this is the project area for Padloper Solar Facility 4, it is understood that the landowners are involved in the Padloper PV Complex development and would not view the proposed SEF and EGI projects in a negative light.

The remaining eight receptor locations are believed to be farmsteads which are regarded as *potentially* sensitive visual receptors as the proposed development will likely alter natural or semi-natural vistas experienced from these locations. At this stage however, the residents' sentiments towards the proposed development are unknown.

In many cases, roads along which people travel, are regarded as sensitive receptors. The primary thoroughfare in the study area is the R63 Main Road, which traverses the southern sector of the combined study area. This route provides a major link between Graaf-Reinet in the East and the N1 National Route in the west. The section of this road traversing the study area is not considered part of a designated scenic route, although the route is an important link and is likely to be utilised, to some extent, by tourists en-route to other parts of the Western and Northern Cape. As a result, it is a potentially sensitive receptor road – i.e., a road being used by motorists who may object to the potential visual intrusion of the proposed SEF and EGI projects.

The secondary road traversing the study area in a north-south direction, along with the other minor thoroughfares in the area, are primarily used as a local access roads and are not specifically valued or utilised for their scenic or tourism potential. As such they are not regarded as visually sensitive.

Visual receptor locations in relation to each Solar Facility and EGI project are examined in more detail in Section 4.2.

4.1.8 Night-Time Visual Baseline

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 SEF and EGI projects at night.

Much of the study area is characterised by natural areas with pastoral elements and low densities of human settlement. As a result, relatively few light sources are present in the broader area surrounding the proposed SEF and EGI projects. The closest built-up area is the town of Murraysburg which is situated more than 6km south of the combined study area for the three Padloper Solar Facilities and EGI projects and is thus too far away to have significant impacts on the night scene. At night, the general study area is therefore characterised by a picturesque dark starry sky and the visual character of the night environment across the broader area is largely 'unpolluted' and pristine. Sources of light in the area are limited to isolated lighting from surrounding farmsteads and transient light from the cars travelling along the R63 and the local access roads.

Given the scale of the proposed SEFs, the operational and security lighting required for the proposed project is likely to intrude on the nightscape and create some glare, which will contrast with the extremely dark backdrop of the surrounding area.

Powerlines and associated towers however are not generally lit up at night and, thus light spill associated with the proposed EGI projects is only likely to emanate from the proposed on-site substations. Lighting from these facilities is therefore expected to intrude on the nightscape to some degree. As the EGI projects will only be constructed if the associated Padloper Solar Facilities are developed, the lighting impacts from the proposed substation would be subsumed by the glare and contrast of the lights associated with the SEFs. As such, the respective EGI projects alone are not expected to result in significant lighting impacts.

4.1.9 Existing and Proposed Renewable Energy Developments

Although it is important to assess the visual impacts of the proposed Padloper SEF and EGI projects 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 renewable energy facilities and associated infrastructure development.

Renewable energy facilities have the potential to cause large scale visual impacts and the location of several such developments near each other could significantly alter the sense of place and visual character in the broader region.

Two (2) additional renewable energy projects were identified within a 30 km radius of the Padloper Solar and EGI Cluster (**Map 8 in Appendix E**), using the DFFE's Renewable Energy EIA Application Database for SA (REEA_OR_2023_Q1). The proposed Victoria West REF and associated grid connection infrastructure appears to affect several farm portions to the north-west of the Padloper Solar Facilities and EGI Projects 5-7, with the nearest portion being some 33 kms away. Considering this, it is not anticipated that this development will result in any significant cumulative impacts affecting the landscape or the visual receptors within the combined visual assessment zone for Padloper Solar Facilities and EGIs 5-7.

The second proposed REF is Umsinde Emoyeni Wind Energy Facility (WEF) (Phases 1 and 2) and the associated grid connection infrastructure. All three proposed solar facilities and EGIs are located within the WEF application site and / or the assessment area for the associated grid connection corridor. A cumulative assessment must include the remaining four SEFs and associated grid connection projects comprising the Padloper Solar PV complex, all of which are located inside the boundary of the the application site for the WEF, and also within the assessment area for the Umsinde Emoyeni grid corridor. The proposed WEF and SEFs, in conjunction with the associated grid connection infrastructure, will inevitably introduce an increasingly industrial character into a largely natural, pastoral landscape, thus giving rise to significant cumulative impacts.

From a visual perspective, the concentration of renewable energy facilities as proposed will further change the visual character of the area, altering the inherent sense of place 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. In addition, it is possible that these developments in close proximity to each other could be seen as one large REF rather than several separate developments. Although this will not necessarily reduce impacts on the visual character of the area, it could potentially reduce the cumulative impacts on the landscape.

It should be noted however that the study area is located within the Beaufort West REDZ (REDZ 11) and thus the concentration of renewable energy developments is supported in this area.

4.2 Project Specific Description

As the focus of the VIA is largely on the potential impacts of the proposed development on the landscape and the receptors ***in the surrounding area***, much of the baseline information for each of the three Padloper Solar Facilities and EGIs (5-7) is the same. The topography within the respective project areas will however influence the level of visibility of each project and the prevalent land cover will determine the level of contrast that will be associated with each project. In addition, impacts on the identified receptors will also vary depending on the location of the receptor in relation to each specific project. Accordingly, project specific baseline information has only been provided in respect of topography / visibility, land cover and receptor impacts.

4.2.1 Topography

4.2.1.1 ***Padloper Solar Facility 5 and EGI 5***

Much of the site being assessed for Padloper Solar Facility 5 is characterised by a mix of undulating and hilly terrain with distinctive koppies and hills in evidence. Steeper slopes (>= 1:5) are evident in the northern and southern sectors of the site. The PV arrays will be located on relatively flat terrain in the south-western sector of the assessment area and as such, it is anticipated that there will only be limited impact on the skyline. In addition, topographic variations in the surrounding area are sufficient to limit views of the PV arrays from significant parts of the study area.

The powerline route alignment for Padloper EGI 5 traverses relatively flat to undulating terrain avoiding any koppies or prominent ridges. Although, sections of the powerline route are expected to have a significant impact on the skyline, topographic variations in the surrounding area are sufficient to limit views of the EGI from significant parts of the study area.

Visual Implications

A preliminary visibility analysis was conducted for the proposed solar facilities based on the PV Panel Array area for Padloper Solar Facility 5 (**Map 9A in Appendix E**). The results of this analysis showed that the PV arrays would not be visible from most parts of the study area, including the R63 Main Road, and only partially visible from one sensitive receptor (SR3) and two potentially sensitive receptor locations in the study area (VR7 and VR8).

Visibility analysis for proposed EGI 5 based on the powerline route alignment provided by Padloper (**Map 9B in Appendix E**), showed that although the powerlines would not be visible from various sections of the study area, they would be highly visible from the central sector of the study area, including three receptor locations, namely SR3, VR7 and VR8.

4.2.1.2 ***Padloper Solar Facilities 6 and 7 and EGIs 6 and 7***

Padloper Solar Facilities 6 and 7 are located on the same assessment site (farm portion) and as such the topography description for these two projects has been combined. As with Padloper Solar Facility 5, much of the site is characterised by a mix of undulating and hilly terrain with distinctive koppies and hills in evidence. Steeper slopes (>= 1:5) are evident in the northern and southern sectors of the site. The PV arrays for both Solar Facilities 6 and 7 will be located on relatively flat terrain in the southern sector of the assessment area and as such, it is anticipated that there will only be limited impact on the skyline. In addition, topographic variations in the surrounding area are sufficient to limit views of the PV arrays from significant parts of the study area.

The powerline route alignments for Padloper EGIs 6 and 7 are almost exactly the same, traversing an area of relatively flat to undulating terrain, avoiding any koppies or prominent ridges. Although, sections of the powerline route are expected to have a significant impact on the skyline, topographic variations in the surrounding area are sufficient to limit views of the EGI from significant parts of the study area.

Visual Implications

A separate visibility analysis was conducted for each proposed solar facility based on the PV Panel Array area for Padloper Solar Facilities 6 and 7 (**Maps 9C and 9E in Appendix E**). In both instances, the analysis showed that the PV arrays would not be visible from most parts of the study area and most sections of the R63 Main Road. However the 6 arrays at Solar Facility 6 would only be partially visible from one potentially sensitive receptor location (VR11), while the arrays at Facility 7 would be highly visible from this location.

A separate visibility analysis was conducted for each proposed EGI project based on the route alignments provided by Padloper for EGIs 6 and 7 (**Maps 9D and 9F in Appendix E**). As the route alignments are

practically the same, the resultant viewsheds are very similar, showing that although the powerlines would not be visible from many sections of the study area, including the R63 Main Road, they would be at least partially visible from the much of central sector of the study area, including four receptor locations, namely SR3, VR7, VR8 and VR11.

4.2.2 Land Cover

All of the sites being assessed for Padloper Solar Facilities and EGIs 5 to 7 are largely characterised by shrubland interspersed with scattered areas of grassland. The PV Panel Array areas and the EGI assessment corridors are all located on land that is predominantly characterised by shrubland. As such, the proposed development would alter the visual character and contrast significantly with the typical land use present across each respective development site.

4.2.3 Specific Receptor Impact Rating

In order to assess the impact of the proposed SEF and EGI projects 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 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 several 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.

As described above, 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 500 m of the proposed PV Panel arrays or EGI assessment corridor. Beyond 5 km, the impact of a solar facility or powerline diminishes considerably, as the development would appear to merge with the elements on the horizon.

Although the entire farm portion was initially assessed for each SEF, the PV Panel Array areas only occupy a small portion of each land parcel. Accordingly, zones of visual impact were delineated based on distance bands measured from the PV Panel Array areas for each project. Zones of visual impact for the EGI projects were delineated based on distance bands measured from the assessment corridor for each project. Considering the height and scale of the solar facilities and EGIs, the distance intervals chosen for these zones of visual impact are as follows:

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

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 or a series of low hills

located between a receptor location and an object could completely shield the object from the receptor. As such, where views of the proposed development are completely screened, the receptor has been assigned an overriding negligible impact rating, as the development would not impose any impact on the receptor.

The visual contrast of a development refers to the degree to which the proposed SEFs or electrical infrastructure would be congruent with the surrounding environment. This is based on whether 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.

To determine the likely visual compatibility of the proposed development, the study area was classified according to following characteristics:

- **High –** undeveloped / natural / rural areas.
- **Moderate –**
  - areas within 500 m of existing power lines;
  - areas within 500 m of main roads;
  - areas within 500 m of cultivated land.
- **Low –** areas within 500 m of built-up areas.

The receptor impact rating matrix returns a score (Table 2) which in turn determines the visual impact rating assigned to each receptor location.

Table 2: 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 Table 3 below

Table 3: Visual assessment matrix used to rate the impact of the proposed development on potentially sensitive receptors.

VISUAL FACTOR	VISUAL IMPACT RATING			
	HIGH	**MODERATE**	**LOW**	**OVERRIDING FACTOR: NEGLIGIBLE**
Distance of receptor away from proposed development	<= 500 m **Score 3**	500 m - 2 km **Score 2**	2 km - 5 km **Score 1**	>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 land form), 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 land form), typical land use and/or human elements (infrastructural form) **Score 2**	**Corresponds** with the pattern and form of the natural landscape elements (vegetation and land form), typical land use and/or human elements (infrastructural form) **Score 1**	

Receptor impact rating matrices are presented below for each of the Padloper Solar Facilities and EGIs 5 to 7.

4.2.3.1 ***Padloper Solar Facility 5***

Seven visual receptor locations were identified within 5 kms of the project assessment area for Padloper Solar Facility 5, (**Map 10A in Appendix E**), one of which is sensitive (SR3). Only five of these receptors are however within 5kms of the PV Panel array area.

Table 4 below presents the receptor impact rating matrix for each of the potentially sensitive visual receptor locations identified within 5kms of the proposed PV Panel Array Area.

Table 4: Receptor impact rating for the proposed Padloper Solar Facility 5

Receptor Location	Distance from PV Panel Array Area (km)		Screening		Contrast		OVERALL IMPACT RATING / SCORE	
INSIDE VIEWSHED								
*SR3 - Salem Self-Catering**	*1.0*	*Mod*	*2*	*Low*	*1*	*Mod*	*2*	*MODERATE*	*5*
*VR7 - Farmstead**	*0.8*	*Mod*	*2*	*Mod*	*2*	*Mod*	*2*	*MODERATE*	*6*
*VR8 - Farmstead**	*0.5*	*High*	*3*	*Mod*	*2*	*Mod*	*2*	*MODERATE*	*7*
OUTSIDE VIEWSHED								
VR3 - Farmstead	***NIL***							
VR6 - Farmstead								
VR10 - Farmstead								
VR11 - Farmstead#								

** Inside Padloper Solar Facility 4 assessment area*

 # Inside Padloper Solar Facilities 6 & 7 assessment area

The table above shows that one sensitive receptor (SR3) and two potentially sensitive receptor locations are expected to experience moderate visual impacts as a result of the proposed development. All four of these receptor locations are however inside the assessment area for the adjacent Padloper Solar Facility 4 and it is undestood that the respective landowners are involved in the Padloper Solar Cluster project. As such visual impacts would be reduced. The four remaining receptors were found to be outside the viewshed for the proposed PV Panel Array and as such are not expected to experience any visual impacts as a result of the proposed development.

4.2.3.2 ***Padloper EGI 5***

Four visual receptor locations were identified within 5 kms of the grid assessment corridor for Padloper EGI 5, (**Map 10B in Appendix E**), one of which is sensitive (SR2).

Table 5 below presents the receptor impact rating matrix for each of the potentially sensitive visual receptor locations identified within 5 kms of the proposed PV Panel Array Area.

Table 5: Receptor impact rating for the proposed Padloper EGI 5

Receptor Location	Distance from Grid Assessment Corridor (km)		Screening		Contrast		OVERALL IMPACT RATING / SCORE	
INSIDE VIEWSHED								
*SR3 - Salem Self-Catering**	*1.2*	*Mod*	*2*	*Low*	*1*	*Mod*	*2*	*MODERATE*	*5*
*VR7 - Farmstead**	*1.0*	*Mod*	*2*	*Mod*	*2*	*Mod*	*2*	*MODERATE*	*6*
*VR8 - Farmstead**	*0.7*	*Mod*	*2*	*Mod*	*2*	*Mod*	*2*	*MODERATE*	*6*
OUTSIDE VIEWSHED								
VR11 - Farmstead#								

** Inside Padloper Solar Facility 4 assessment area*

 # Inside Padloper Solar Facilities 6 & 7 assessment area

The table above shows that one potentially sensitive receptor location and two potentially sensitive receptor locations are expected to experience moderate visual impacts as a result of the proposed development. All three of these receptor locations are however inside the assessment area for the Padloper Solar Facility 4 and it is undestood that the landowners are involved in the Padloper Solar PV Cluster project. As such visual impacts would be reduced.

The remaining receptors (VR11) was found to be outside the viewshed for the proposed EGI project and is not expected to experience any visual impacts as a result of the proposed development.

*4.2.3.3 **Padloper Solar Facility 6***

Eight visual receptor locations s were identified within 5 kms of the project assessment area for Padloper Solar Facility 6, (**Map 10C in Appendix E**), one of which is sensitive (SR3). Only four of these receptors are however within 5kms of the PV Panel array area.

Table 6 below presents the receptor impact rating matrix for each of the potentially sensitive visual receptor locations identified within 5kms of the proposed PV Panel Array Area.

Table 6: Receptor impact rating for the proposed Padloper Solar Facility 6

Receptor Location	Distance from PV Panel Array Area (km)		Screening		Contrast		OVERALL IMPACT RATING / SCORE	
INSIDE VIEWSHED								
VR11 - Farmstead#	*0.6*	*Mod*	*2*	*High*	*3*	*Mod*	*2*	*MODERATE*	*7*
OUTSIDE VIEWSHED								
*SR3 - Salem Self-Catering**	***NIL***							
VR2 - Farmstead								
VR3 - Farmstead								
VR6 - Farmstead								
*VR7 - Farmstead**								
*VR8 - Farmstead**								
VR9 - Farmstead								

** Inside Padloper Solar Facility 4 assessment area*

 # Inside Padloper Solar Facilities 6 & 7 assessment area

The table above shows that one potentially sensitive receptor location (VR11) is expected to experience moderate visual impacts as a result of the proposed development. This receptor location is however inside the assessment area for the Padloper Solar Facilities 6 and 7 and it is understood that the landowner is involved in the Padloper Solar PV Cluster project. As such visual impacts would be reduced. The seven remaining receptors, including one sensitive receptor (SR3) were found to be outside the viewshed for the proposed PV Panel Array and as such are not expected to experience any visual impacts as a result of the proposed development.

4.2.3.4 ***Padloper EGI 6***

Five visual receptor locations were identified within 5 kms of the grid assessment corridor for Padloper EGI 6, (**Map 10D in Appendix E**), one of which is considered to be sensitive (SR2).

Table 7 below presents the receptor impact rating matrix for each of the potentially sensitive visual receptor locations identified within 5kms of the proposed PV Panel Array Area.

Table 7: Receptor impact rating for the proposed Padloper EGI 6

Receptor Location	Distance from Grid Assessment Corridor (km)		Screening		Contrast		OVERALL IMPACT RATING / SCORE	
INSIDE VIEWSHED								
*SR3 - Salem Self-Catering**	*2.0*	*Mod*	*2*	*Low*	*1*	*Mod*	*2*	*MODERATE*	*5*
*VR7 - Farmstead**	*1.8*	*Mod*	*2*	*Mod*	*2*	*Mod*	*2*	*MODERATE*	*6*
*VR8 - Farmstead**	*1.7*	*Mod*	*2*	*Mod*	*2*	*Mod*	*2*	*MODERATE*	*6*
VR11 - Farmstead#	*1.0*	*Mod*	*2*	*High*	*3*	*Mod*	*2*	*MODERATE*	*7*
OUTSIDE VIEWSHED								
VR9 - Farmstead								

** Inside Padloper Solar Facility 4 assessment area*

 # Inside Padloper Solar Facilities 6 & 7 assessment area

The table above shows that one potentially sensitive receptor location and three potentially sensitive receptor locations are expected to experience moderate visual impacts as a result of the proposed development. All these receptor locations are however inside the assessment areas for either Padloper Solar Facility 4 or Padloper Solar Facilities 6 and 7. It is understood that the landowners are involved in the Padloper Solar PV Cluster project and as such visual impacts would be reduced.

The remaining receptor (VR9) was found to be outside the viewshed for the proposed EGI project and is not expected to experience any visual impacts as a result of the proposed development.

*4.2.3.5 **Padloper Solar Facility 7***

Eight visual receptor locations s were identified within 5 kms of the project assessment area for Padloper Solar Facility 7, (**Map 10E in Appendix E**), one of which is considered to be sensitive (SR3). Only four of these receptors are however within 5 kms of the PV Panel array area.

Table 8 below presents the receptor impact rating matrix for each of the potentially sensitive visual receptor locations identified within 5kms of the proposed PV Panel Array Area.

Table 8: Receptor impact rating for the proposed Padloper Solar Facility 7

Receptor Location	Distance from PV Panel Array Area (km)			Screening		Contrast		OVERALL IMPACT RATING / SCORE	
INSIDE VIEWSHED									
VR11 - Farmstead#	*0.3*	*High*	*3*	*High*	*3*	*Mod*	*2*	*HIGH*	*8*
OUTSIDE VIEWSHED									
*SR3 - Salem Self-Catering**	***NIL***								
VR2 – Farmstead									
VR3 – Farmstead									
VR6 – Farmstead									
VR7 - Farmstead#									
VR8 - Farmstead#									
VR9 – Farmstead									

** Inside Padloper Solar Facility 4 assessment area*

 # Inside Padloper Solar Facilities 6 & 7 assessment area

The table above shows that one potentially sensitive receptor location (VR11) is expected to experience high visual impacts as a result of the proposed development. This receptor location is however inside the assessment area for the Padloper Solar Facilities 6 and 7 and it is understood that the landowner is involved in the Padloper Solar PV Cluster project. As such visual impacts would be reduced. The seven remaining receptors, including one sensitive receptor (SR3) were found to be outside the viewshed for the proposed PV Panel Array and as such are not expected to experience any visual impacts as a result of the proposed development.

*4.2.3.6 **Padloper EGI 7***

Five visual receptor locations were identified within 5 kms of the grid assessment corridor for Padloper EGI Project, (**Map 10F in Appendix E**), one of which is sensitive (SR2).

Table 9 below presents the receptor impact rating matrix for each of the potentially sensitive visual receptor locations identified within 5 kms of the proposed PV Panel Array Area.

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Table 9: Receptor impact rating for the proposed Padloper EGI 7

Receptor Location	Distance from Grid Assessment Corridor (km)		Screening		Contrast		OVERALL IMPACT RATING / SCORE	
INSIDE VIEWSHED								
*SR3 - Salem Self-Catering**	*2.0*	*Mod*	*2*	*Low*	*1*	*Mod*	*2*	*MODERATE*	*5*
*VR7 - Farmstead**	*1.8*	*Mod*	*2*	*Mod*	*2*	*Mod*	*2*	*MODERATE*	*6*
*VR8 - Farmstead**	*1.7*	*Mod*	*2*	*Mod*	*2*	*Mod*	*2*	*MODERATE*	*6*
VR11 - Farmstead#	*1.0*	*Mod*	*2*	*High*	*3*	*Mod*	*2*	*MODERATE*	*7*
OUTSIDE VIEWSHED								
VR9 - Farmstead								

* *Inside Padloper Solar Facility 4 assessment area*

\# *Inside Padloper Solar Facilities 6 & 7 assessment area*

The table above shows that one potentially sensitive receptor location and three potentially sensitive receptor locations are expected to experience moderate visual impacts as a result of the proposed development. All of these receptor locations are however inside the assessment areas for either Padloper Solar Facility 4 or Padloper Solar Facilities 6 and 7. It is understood that the landowners are involved in the Padloper Solar PV Cluster project and as such visual impacts would be reduced.

The remaining receptor (VR9) was found to be outside the viewshed for the proposed EGI project and is not expected to experience any visual impacts as a result of the proposed development.

4.3 Identification of Environmental Sensitivities

4.3.1 Sensitivities identified by the National Web-Based Environmental Screening Tool

In assessing the visual sensitivity of the proposed Padloper Solar Facilities and EGIs 5-7, consideration was given to the Landscape Theme of the National Environmental Screening Tool. Landscape sensitivity identified by the screening tool for each of the three solar facility project areas is described below. It should be noted that this sensitivity rating relates to solar PV development only. The tool does not identify any landscape sensitivities in respect of powerlines and substations.

*4.3.1.1 **Padloper Solar Facility 5***

The Landscape Theme of the National Environmental Screening Tool identifies areas of very high sensitivity in respect of solar PV development within the project area for Padloper Solar Facility 5 (**Figure 10**). According to the Screening Tool, aside from some areas identified as mountain tops, high ridges and steep slopes, much of the site is within 20 km of a South African Large Telescope and this factor has resulted in areas of "Very High" landscape sensitivity across almost all of the site, including the area identified for the PV Panel arrays.

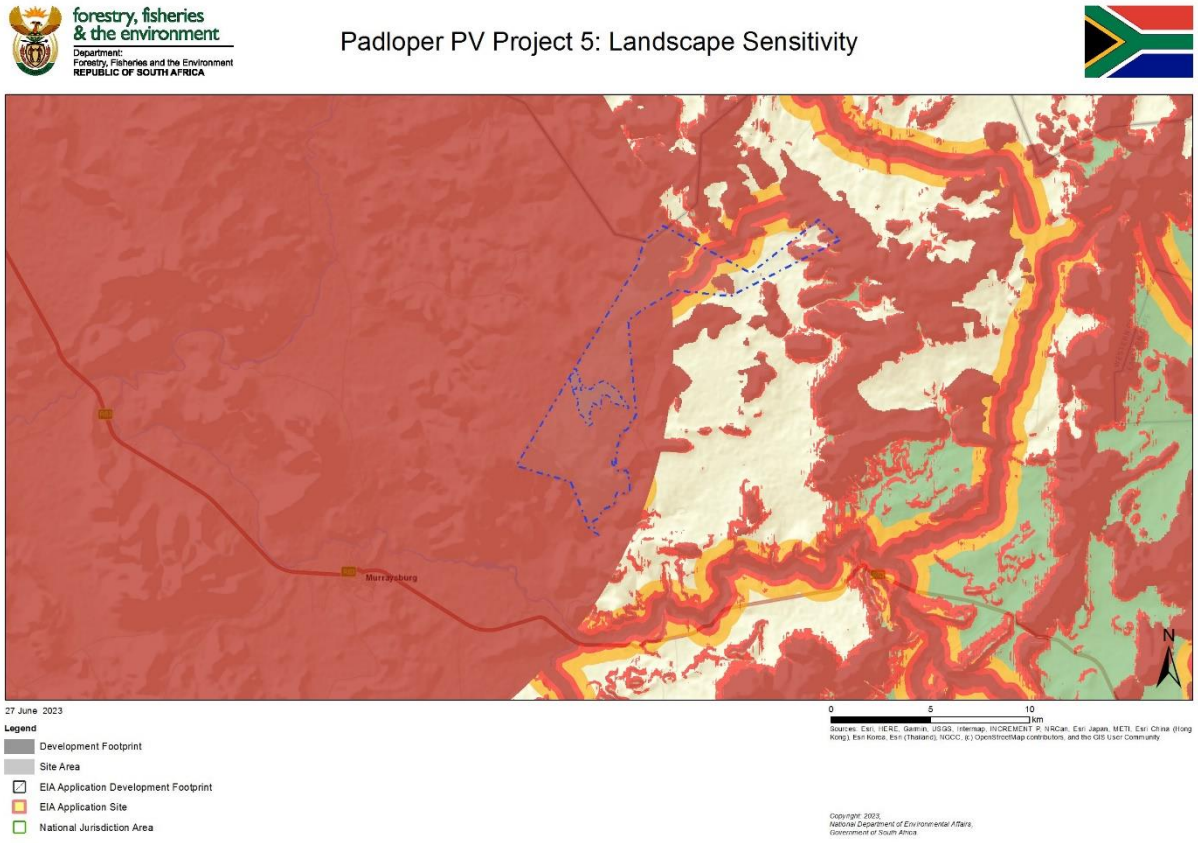


Figure 10: Relative Landscape Sensitivity within the project area for the Padloper Solar Facility 5 (June 2023)

4.3.1.2 ***Padloper Solar Facility 6***

The Landscape Theme of the National Environmental Screening Tool identifies areas of very high sensitivity in respect of solar PV development on the Padloper Solar Facility 6 (**Figure 11**). According to the Screening Tool, aside from some areas identified as mountain tops, high ridges and steep slopes, the south-western sector of the site is within 20 km of a South African Large Telescope and this factor has resulted in some areas of "Very High" landscape sensitivity on the site. The proposed PV Panel Array area for Padloper Solar Facility 6 is entirely outside the area of high sensitivity.

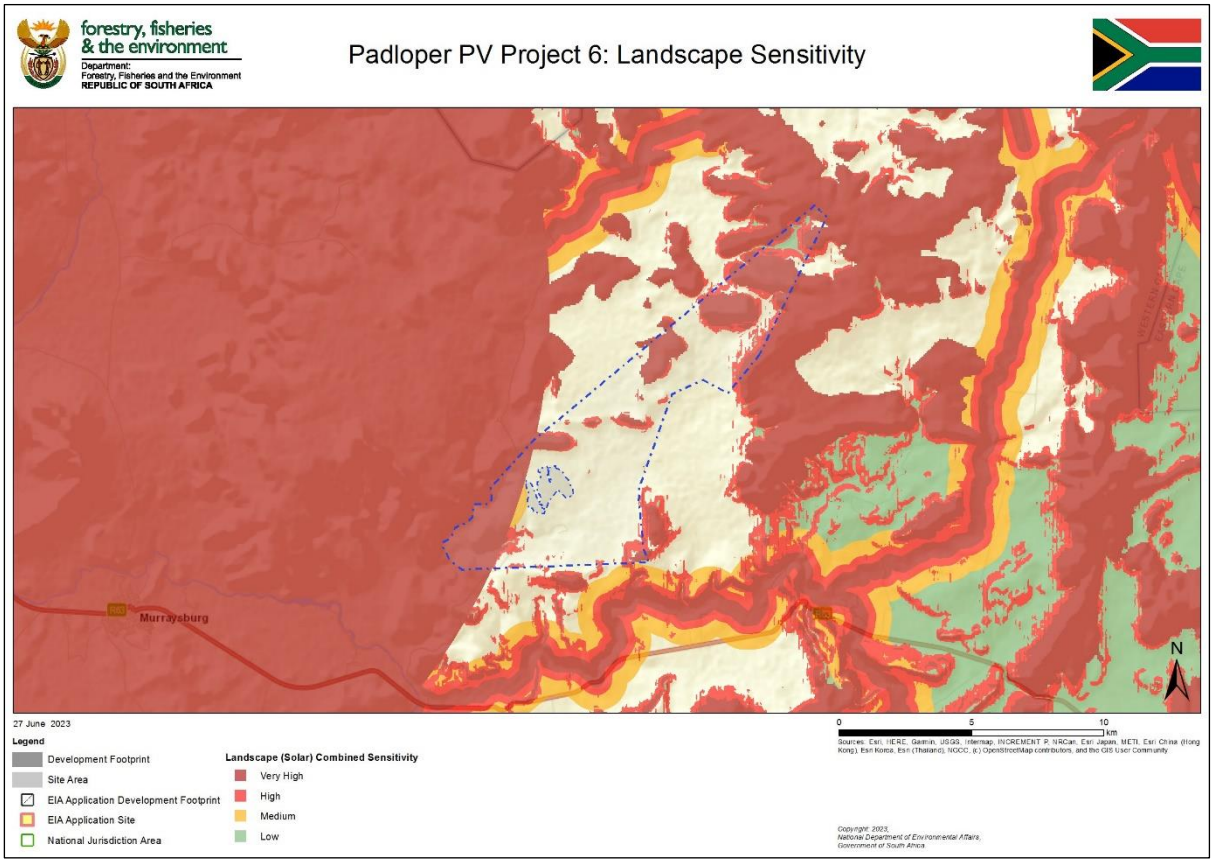


Figure 11: Relative Landscape Sensitivity within the project area for the Padloper Solar Facility 6 (June 2023).

4.3.1.3 ***Padloper Solar Facility 7***

As with Padloper Solar Facility 6, the Landscape Theme of the National Environmental Screening Tool identifies areas of very high sensitivity in respect of solar PV development on the Padloper Solar Facility 7 (**Figure 12**). According to the Screening Tool, aside from some areas identified as mountain tops, high ridges and steep slopes, the south-western sector of the site is within 20 km of a South African Large Telescope and this factor has resulted in some areas of "Very High" landscape sensitivity on the site. The proposed PV Panel Array area for Padloper Solar Facility 7 is entirely outside the area of high sensitivity.

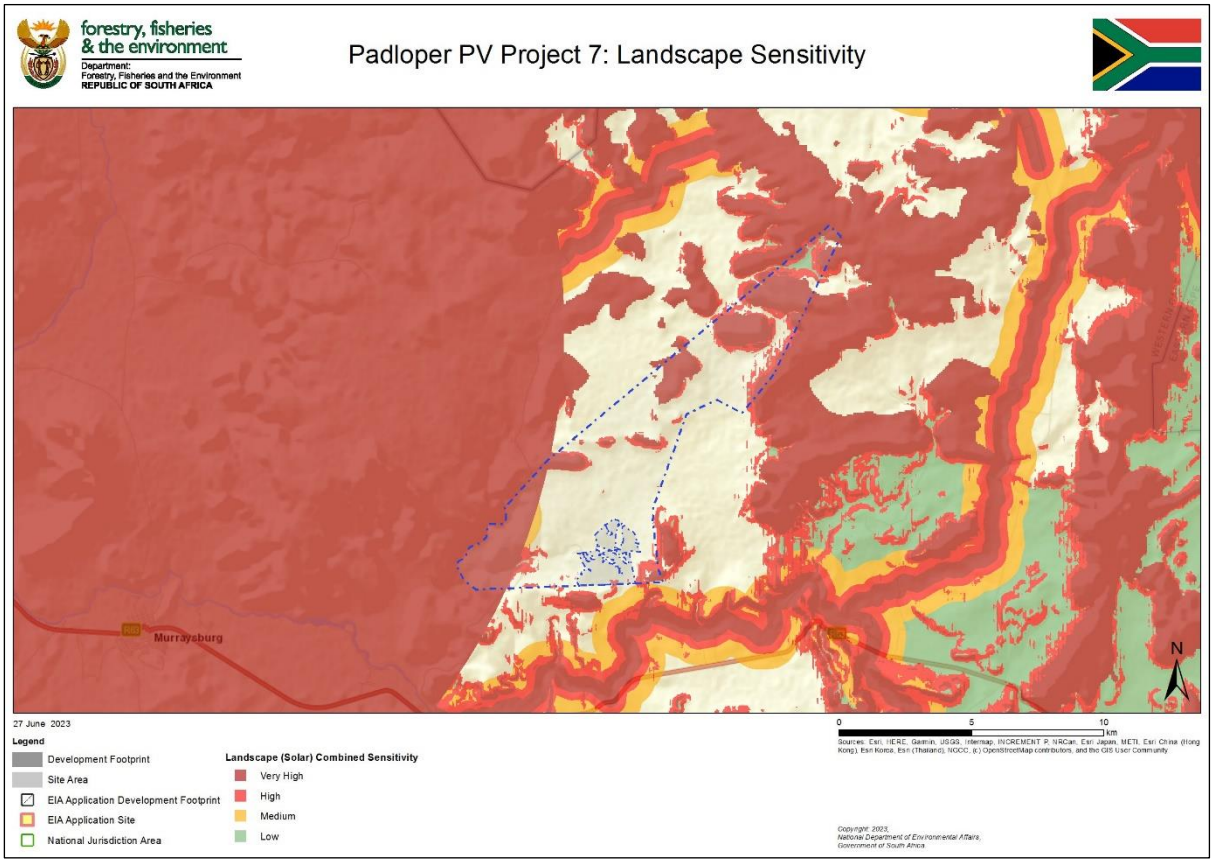


Figure 12: Relative Landscape Sensitivity within the project area for the Padloper Solar Facility 7 (June 2023).

The Screening Tool is however a very high level, desktop study and as such the results of the study must be viewed against the findings of the field investigation as well as factors affecting visual impacts such as:

- the presence of visual receptors;
- the distance of those receptors from the proposed development;
- the likely visibility of the development from the receptor locations; and
- the degree of landscape transformation and / or degradation already present.

Accordingly, visual sensitivity is examined in more detail below.

4.3.2 Outcome of the Specialist 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.

To assess the visual sensitivity of the receiving environment, 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 10**), the visual sensitivity of the area is broken up into several categories, as described below:

i. **High** - The introduction of a new development such as SEF and / or EGI projects 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 10: 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 natural with areas of scenic value and some pastoral elements.										
Presence of sensitive visual receptors	Relatively few sensitive or potentially sensitive receptor locations have been identified in the study area.										
Aesthetic sense of place / visual character	Visual character is typical of a Karoo Cultural landscape.										
Irreplaceability / uniqueness / scarcity value	There are areas of scenic value within the combined study area.										
Cultural or symbolic meaning	Much of the area is a typical of a Karoo Cultural landscape.										
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 were found in the area.										
International / regional / local status of the environment	Study area is typical of Karoo landscapes.										
**Scenic quality under threat / at risk of change	Introduction of SEFs will alter the visual character and sense of place. In addition, the development of other renewable energy facilities in the broader area as planned will introduce an increasingly industrial character, 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				Moderate					High
10	20	30	40	50	60	70	80	90	100

Based on the above factors, the total score for the study area is 48, which according to the scale above, would result in the area being rated as having a moderate 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 and this has been factored into the sensitivity rating above. The presence of visual receptors is examined in detail in **Section 4.1.7** of this report. However, no formal protected areas, leisure-based tourism activities or sensitive receptor locations were identified in the study area.

As part of the visual sensitivity assessment, a screening exercise was undertaken with the aim of identifying any areas that should be precluded from the proposed development footprint. From a visual perspective, these are areas where the establishment of PV arrays and grid connection infrastructure would result in the greatest probability of visual impacts on sensitive or potentially sensitive visual receptors.

Solar Energy Facilities

Using GIS-based visibility analysis, it was possible to determine which sectors of each facility project assessment area would be visible to the highest numbers of receptors in the study area. Overall, the 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 PV panel would be exacerbated if located on any ridges or a relatively higher-lying plateaus on the site. It was therefore initially recommended that PV panels should preferably not be located on the highest ridges within the Padloper SEF project areas. However, while these ridges could be seen as areas of potentially high visual sensitivity, the study area as a whole is rated as having a moderate visual sensitivity, and as such, the sensitivity rating would be reduced to "**Medium**". **Hence the ridges are not considered to be "no go areas", but rather should be viewed as zones where PV Array placement would be least preferred.**

In determining visual sensitivity, consideration was also given to the potential direct visual impact of the PV arrays on any farmsteads or receptors located in, or within 500 m of the project area and also on passing motorists. The exclusion of PV arrays from these areas will reduce visual impacts and prevent significantly adverse impacts of glint and glare on the local residents and on passing motorists, although the full extent of these impacts can only be determined by way of a Glint and Glare Impact Assessment.

Accordingly, zones of visual sensitivity have been delineated on each site as necessary. It should be stressed that these zones apply to PV array development only. The visual impacts resulting from the associated on-site infrastructure are considered to have far less significance when viewed in the context of the SEF as a whole and as such the associated on-site infrastructure has been excluded from the sensitivity analysis.

Sensitivities applicable to each of the three Padloper Solar Facilities are explained below.

*4.3.2.1 **Padloper Solar Facility 5***

Zones of potential visual sensitivity are shown in **Map 11A in Appendix E**. In addition to some scattered areas of higher elevation, the zones of potential visual sensitivity include a 500m buffer around the three residences / farmhouses within 500 m of the farm portion boundary.

The PV Array Area for Padloper Solar Facility 5 has avoided these areas.

4.3.2.2 ***Padloper Solar Facility 6***

Zones of potential visual sensitivity are shown in **Map 11B in Appendix E**. In addition to some scattered areas of higher elevation, the zones of potential visual sensitivity include a 500 m buffer around the residence / farmhouse on the farm portion as well a 300 m buffer along the Secondary Road that traverses the farm portion.

For the most part, the PV Array Area for Padloper Solar Facility 6 has avoided these areas. The array area has however extended into the buffer zone along a section of the Secondary Road, although this is not seen as a fatal flaw. Aside from the fact that these zones are ***not*** viewed as "no-go" areas, the Secondary Road is not specifically valued or utilised for its scenic or tourism potential and is not regarded as visually sensitive.

4.3.2.3 ***Padloper Solar Facility 7***

Zones of potential visual sensitivity are shown in **Map 11B in Appendix E**. In addition to some scattered areas of higher elevation, the zones of potential visual sensitivity include a 500m buffer around the residence / farmhouse on the farm portion as well a 300 m buffer along the Secondary Road that traverses the farm portion.

For the most part, the PV Array Area for Padloper Solar Facility 7 has avoided these areas. The array area has however extended into the buffer zone around the residence on the farm portion, although this is not seen as a fatal flaw. Aside from the fact that these zones are ***not*** viewed as "no-go" areas, it is assumed that the landowner is involved in the Padloper Solar PV Cluster project and would not consider the development to be intrusive.

Electrical Grid Infrastructure

Using GIS-based visibility analysis, it was possible to determine which sectors of the grid assessment corridors would be visible to the highest numbers of receptors in the study area. This analysis considered all the sensitive and potentially sensitive receptor locations identified. However, due to the nature of the terrain and the fact that there are relatively few affected receptors, widely scattered across the area, the more visible sections of grid assessment corridors were not considered to be significantly sensitive. In addition, investigation determined that the only residence within 500 m of any of the grid assessment corridors is VR11 which is located within the project assessment area (farm portion). It is therefore assumed that the landowner is involved in the Padloper Solar PV Cluster project and would not consider the development to be intrusive.

As such, no specific areas of visual sensitivity were identified along any of the proposed route alignments for the Padloper EGIs 5-7.

4.3.3 Sensitivity Analysis Summary Statement

Although the Screening Tool identifies significant areas of very high landscape sensitivity for the Padloper Solar Facilities 5 - 7, the site sensitivity verification exercise conducted in respect of this VIA (**Appendix D**) did not indicate the presence of mountaintops, **high** ridges or any significantly steep slopes. This assessment, confirmed by the field investigation, showed the presence of undulating and hilly terrain with some koppies and hills in evidence The sensitivity analysis above has recognised these ridges and identified the higher ridges as zones where development would be least preferred. In addition, efforts to obtain confirmation of the presence of a large telescope within 20 km of the site have not been successful and as such this factor has not been included in the sensitivity analysis.

5. Alternative Development Footprints

From a visual perspective, there are no fatal flaws associated with the preliminary PV development footprint or the proposed powerline route alignments.

6. Issues, Risks and Impacts

From a visual perspective, the potential issues, risks and impacts are the same for all three of the proposed Padloper Solar Facilities and EGIs 5-7.

6.1 Identification of Potential Impacts/Risks

Potential visual issues / impacts identified during the VIA resulting from the proposed Padloper Solar Facilities and EGIs 5 - 7 are outlined below.

6.1.1 Construction Phase: Potential Impact 1

- 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.

6.1.2 Operational Phase: Potential Impact 2:

- Potential alteration of the visual character and sense of place;
- Potential visual impacts affecting receptors in the study area, including:
  - visual intrusion resulting from the presence of PV arrays and / or powerlines and substations, particularly in more natural undisturbed settings;
  - visual clutter caused by substation and other associated infrastructure on-site;
  - impacts of increased dust emissions from maintenance vehicles accessing the site via gravel roads; and
  - visual scarring of the landscape as a result of site clearance and earthworks .
- Potential glint and glare impacts on passing motorists and nearby receptors; and
- Potential visual impact on the night time visual environment.

6.1.3 Decommissioning Phase: Impact 3

- 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.

6.1.4 Cumulative Impacts: Impact 4

- Combined visual impacts from several REFs in the broader area could potentially alter the sense of place and visual character of the area; and
- Combined visual impacts from several renewable energy facilities in the broader area could potentially exacerbate visual impacts on visual receptors.

7. Impact Assessment

7.1 Potential Impacts during the Construction Phase

Potential visual impacts identified during the Construction Phase of the projects are listed below.

- Large construction vehicles and equipment 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.
- 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 (scarring) which could visually contrast with the surrounding environment.
- 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.
- Litter on the construction site may result in visual pollution.

Table 11 and Table 12 and below present the detailed impact ratings associated with the construction of the Padloper Solar Facilities (and associated on-site infrastructure) and EGIs 5-7 respectively, together with the recommended mitigation measures.

An explanation of the impact rating methodology is provided in the Terms of Reference in **Appendix C**.

Table 11: Direct visual Impacts During Construction – Padloper Solar Facilities 5–– 7.

Impact	***Impact Criteria***		***Significance and Ranking (Pre-Mitigation)***	***Potential mitigation measures***	***Significance and Ranking (Post-Mitigation)***	***Confidence Level***
CONSTRUCTION PHASE (Direct Impacts)						
Impact 1 ▪ Large construction vehicles and equipment 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. ▪ 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 (scarring) which could visually contrast with the surrounding environment. ▪ Temporary stockpiling of soil during construction may alter	*Status* *Spatial Extent* *Duration* *Consequence* *Probability* *Reversibility* *Irreplaceability*	*Negative* *Local* *Short Term* *Substantial* *Very Likely* *High* *Low*	*Moderate (3)*	▪ Carefully plan to minimise the construction period and avoid construction delays. ▪ Restrict construction activities to daylight hours in order to negate or reduce the visual impacts associated with lighting. ▪ Position laydown areas and related storage/stockpile areas in unobtrusive positions in the landscape, where possible. ▪ Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. ▪ Vegetation clearing should take place in a phased manner. ▪ Inform any receptors within 500 m of the site of the construction programme and schedules. ▪ Make use of existing gravel access roads where possible. ▪ Limit the number of vehicles and trucks travelling to and from the proposed sites, where possible. ▪ Ensure that suitable dust suppression techniques are implemented: o on all access roads; o in all areas where vegetation clearing has taken place; o on all soil stockpiles. ▪ Maintain a neat construction site by removing litter, rubble and waste materials regularly.	*Low (4)*	*Medium*

Impact	*Impact Criteria*		*Significance and Ranking (Pre-Mitigation)*	*Potential mitigation measures*	*Significance and Ranking (Post-Mitigation)*	*Confidence Level*
the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact. ▪ Litter on the construction site may result in visual pollution.						

Table 12: Direct visual Impacts During Construction – Padloper EGIs 5 - 7

Impact	*Impact Criteria*		*Significance and Ranking (Pre-Mitigation)*	*Potential mitigation measures*	*Significance and Ranking (Post-Mitigation)*	*Confidence Level*
CONSTRUCTION PHASE (Direct Impacts)						
Impact 1 ▪ Large construction vehicles and equipment 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. ▪ 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 (scarring) which could visually contrast with the surrounding environment. ▪ Temporary stockpiling of soil during construction may alter the flat landscape.	*Status* *Spatial Extent* *Duration* *Consequence* *Probability* *Reversibility* *Irreplaceability*	*Negative* *Local* *Short Term* *Substantial* *Very Likely* *High* *Low*	*Moderate (3)*	▪ Carefully plan to minimise the construction period and avoid construction delays. ▪ Restrict construction activities to daylight hours to negate or reduce the visual impacts associated with lighting. ▪ Position storage/stockpile areas in unobtrusive positions in the landscape, where possible. ▪ Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. ▪ Vegetation clearing should take place in a phased manner. ▪ 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 suitable dust suppression techniques are implemented: o on all access roads; o in all areas where vegetation clearing has taken place; o on all soil stockpiles. ▪ Maintain a neat construction site by removing litter, rubble and waste materials regularly.	*Low (4)*	*Medium*

Impact	*Impact Criteria*		*Significance and Ranking (Pre-Mitigation)*	*Potential mitigation measures*	*Significance and Ranking (Post-Mitigation)*	*Confidence Level*
Wind blowing over these disturbed areas could result in dust which would have a visual impact. ▪ Litter on the construction site may result in visual pollution.						

7.2 Potential Impacts during the Operational Phase

7.2.1 Impact 2

Potential visual impacts identified during the Operational Phase of the projects are listed below.

- The PV arrays and / or powerlines may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings.
- The proposed SEF and / or EGI projects will alter the visual character of the surrounding area and expose potentially sensitive visual receptor locations to visual impacts.
- Glint and glare (from PV Panel arrays) may impact nearby receptors.
- 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 will be altered as a result of operational and security lighting at the proposed PV facility and substation.

Table 13 and Table 14 below present the detailed impact ratings associated with the operational phase of the Padloper Solar Facilities (and associated on-site infrastructure) and EGIs respectively, together with the recommended mitigation measures.

Table 13: Direct Visual Impacts during Operation - Padloper Solar Facilities 5 - 7

Impact	*Impact Criteria*		*Significance and Ranking (Pre-Mitigation)*	*Potential mitigation measures*	*Significance and Ranking (Post-Mitigation)*	*Confidence Level*
OPERATIONAL PHASE (Direct Impacts)						
Impact 2 ▪ The PV arrays may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. ▪ The proposed solar PV facility will alter the visual character of the surrounding area and expose potentially sensitive visual receptor locations to visual impacts. ▪ Glint and glare may impact nearby receptors. ▪ 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 will be altered as a result of operational and security lighting at the proposed PV facility.	*Status* *Spatial Extent* *Duration* *Consequence* *Probability* *Reversibility* *Irreplaceability*	*Negative* *Local* *Long-term* *Substantial* *Very likely* *Moderate* *Low*	*Moderate (3)*	▪ Restrict vegetation clearance on the site to that which is required for the correct operation of the facility. ▪ As far as possible, limit the number of maintenance vehicles which are allowed to access the site. ▪ Ensure that suitable dust suppression techniques are implemented on all gravel access roads. ▪ As far as possible, limit the amount of security and operational lighting present on site. ▪ Light fittings for security at night should reflect the light toward the ground and prevent 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 economically and technically feasible, make use of motion detectors on security lighting. ▪ Buildings on the site should be painted with natural tones that fit with the surrounding environment. ▪ Non-reflective surfaces should be utilised where possible.	*Moderate (3)*	*Medium*

Table 14: Direct visual Impacts During Construction – Padloper EGIs 5 – 7

Impact	***Impact Criteria***		***Significance and Ranking (Pre-Mitigation)***	***Potential mitigation measures***	***Significance and Ranking (Post-Mitigation)***	***Confidence Level***
OPERATIONAL PHASE (Direct Impacts)						
Impact 2 ▪ The power line may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. ▪ The proposed power line 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 will be altered as a result of operational and security lighting associated with the development.	*Status*	*Negative*	*Low (4)*	1. Where possible, limit the amount of security and operational lighting associated with the power line development. 2. Where possible, avoid placing lights on tower/pylon structures. 3. As far as possible, limit the number of maintenance vehicles using access roads. 4. Ensure that suitable dust suppression techniques are implemented on all gravel access roads. 5. Non-reflective surfaces should be utilised where possible.	*Low (4)*	*Medium*
	Spatial Extent	*Local*				
	Duration	*Long-term*				
	Consequence	*Moderate*				
	Probability	*Very likely*				
	Reversibility	*High*				
	Irreplaceability	*Low*				

7.3 Potential Impacts during the Decommissioning Phase

7.3.1 Impact 3

Potential visual impacts identified during the Decommissioning Phase of the projects are listed below.

- 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 decommissioning would expose bare soil (scarring) which could visually 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.

Table 15 and Table 16 below present the detailed impact ratings associated with the operational phase of the Padloper Solar Facilities (and associated on-site infrastructure) and EGIs respectively, together with the recommended mitigation measures.

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Table 15: Direct Visual Impacts during Decommissioning - Padloper Solar Facilities 5 – 7

Impact	***Impact Criteria***		***Significance and Ranking (Pre-Mitigation)***	***Potential mitigation measures***	***Significance and Ranking (Post-Mitigation)***	***Confidence Level***
DECOMMISSIONING PHASE (Direct Impacts)						
Impact 1 ▪ 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 decommissioning would expose bare soil (scarring) which could visually contrast with the surrounding environment. ▪ Temporary stockpiling of soil during	*Status* *Spatial Extent* *Duration* *Consequence* *Probability* *Reversibility* *Irreplaceability*	*Negative* *Local* *Short Term* *Substantial* *Very likely* *High* *Low*	*Moderate (3)*	▪ 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. ▪ Ensure that dust suppression procedures are maintained on all gravel access roads throughout the decommissioning phase. ▪ All cleared areas should be rehabilitated as soon as possible.	*Low (4)*	*Medium*

Impact	*Impact Criteria*		*Significance and Ranking (Pre-Mitigation)*	*Potential mitigation measures*	*Significance and Ranking (Post-Mitigation)*	*Confidence Level*
DECOMMISSIONING PHASE (Direct Impacts)						
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.						

Table 16: Direct Visual Impacts during Decommissioning - Padloper EGIs 5 – 7

Impact	*Impact Criteria*		*Significance and Ranking (Pre-Mitigation)*	*Potential mitigation measures*	*Significance and Ranking (Post-Mitigation)*	*Confidence Level*
DECOMMISSIONING PHASE (Direct Impacts)						
Impact 1 ▪ 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 decommissioning would expose bare soil (scarring) which could visually contrast with the surrounding environment. ▪ Temporary stockpiling of soil during decommissioning may alter the flat	*Status* *Spatial Extent* *Duration* *Consequence* *Probability* *Reversibility* *Irreplaceability*	*Negative* *Local* *Short Term* *Substantial* *Very likely* *High* *Low*	*Moderate (3)*	▪ All infrastructure that is not required for post-decommissioning use should be removed. ▪ Carefully plan to minimize the decommissioning period and avoid delays. ▪ Position storage/stockpile areas in unobtrusive positions in the landscape, where possible ▪ Maintain a neat decommissioning site by removing rubble and waste materials regularly. ▪ Ensure that dust suppression procedures are maintained on all gravel access roads throughout the decommissioning phase. ▪ All cleared areas should be rehabilitated as soon as possible.	*Low (4)*	*Medium*

Impact	*Impact Criteria*		*Significance and Ranking (Pre-Mitigation)*	*Potential mitigation measures*	*Significance and Ranking (Post-Mitigation)*	*Confidence Level*
DECOMMISSIONING PHASE (Direct Impacts)						
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.						

7.4 Cumulative Impacts

7.4.1 Impact 4

Potential cumulative visual impacts relevant to the Padloper Solar Facilities and EGIs 5 - 7 for the construction, operational and decommissioning phases are listed below.

- Additional renewable energy and associated grid connection 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.

Table 17 below presents the detailed impact ratings associated with potential cumulative impacts resulting from the construction, operation and decommissioning of the Padloper Solar Facilities and EGIs 5 - 7 and associated infrastructure, together with the recommended mitigation measures.

Table 17: Cumulative Impacts

Impact	***Impact Criteria***		***Significance and Ranking (Pre-Mitigation)***	***Potential mitigation measures***	***Significance and Ranking (Post-Mitigation)***	***Confidence Level***
CONSTRUCTION PHASE						
Impact 4	*Status*	*Negative*	*Moderate (3)*	▪ Carefully plan to minimise the construction period and avoid construction delays. ▪ Where possible, restrict construction activities to daylight hours in order to negate or reduce the visual impacts associated with lighting. ▪ Position laydown areas and related storage/stockpile areas in unobtrusive positions in the landscape, where possible. ▪ Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. ▪ Vegetation clearing should take place in a phased manner. ▪ Inform receptors within 500 m of the site of the construction programme and schedules. ▪ Make use of existing gravel access roads where possible. ▪ Limit the number of vehicles and trucks travelling to and from the proposed sites, where possible. ▪ Ensure that suitable dust suppression techniques are implemented: o on all access roads; o in all areas where vegetation clearing has taken place; and o on all soil stockpiles. ▪ Maintain a neat construction site by removing litter, rubble and waste materials regularly.	*Moderate (3)*	*Medium*
	Spatial Extent	*Local*				
	Duration	*Short Term*				
	Consequence	*Substantial*				
	Probability	*Very likely*				
	Reversibility	*High*				
	Irreplaceability	*Low*				
OPERATIONAL PHASE						
Impact 4	*Status*	*Negative*	*Moderate (3)*	▪ Restrict vegetation clearance on the site to that which is required for the correct operation of the facility. ▪ As far as possible, limit the number of maintenance vehicles which are allowed to access the site.	*Moderate (3)*	*Medium*
	Spatial Extent	*Local*				
	Duration	*Long Term*				

Impact	*Impact Criteria*		*Significance and Ranking (Pre-Mitigation)*	*Potential mitigation measures*	*Significance and Ranking (Post-Mitigation)*	*Confidence Level*
	Consequence	*Substantial*		▪ Ensure that suitable dust suppression techniques are implemented on all gravel access roads. ▪ As far as possible, limit the amount of security and operational lighting present on site. ▪ Where possible, avoid placing lights on tower/pylon structures. ▪ Light fittings for security at night should reflect the light toward the ground and prevent 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 economically and technically feasible, make use of motion detectors on security lighting. ▪ Buildings on the site should be painted with natural tones that fit with the surrounding environment. ▪ Non-reflective surfaces should be utilised where possible.		
	Probability	*Very likely*				
	Reversibility	*Moderate*				
	Irreplaceability	*Low*				
DECOMMISSIONING PHASE						
Impact 4	*Status*	*Negative*	*Low (4)*	▪ 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. ▪ Ensure that dust suppression procedures are maintained on all gravel access roads throughout the decommissioning phase. ▪ All cleared areas should be rehabilitated as soon as possible.	*Low (4)*	*Medium*
	Spatial Extent	*Local*				
	Duration	*Short Term*				
	Consequence	*Moderate*				
	Probability	*Very likely*				
	Reversibility	*High*				
	Irreplaceability	*Low*				

7.5 No-Go Impacts

Nature of the impact

The 'No Go' alternative is essentially the option of not developing the Padloper Solar Facilities and EGIs. The area would thus retain its visual character and sense of place and no visual impacts would be experienced by any locally occurring receptors.

Significance of impact without mitigation measures

Not applicable.

Significance of impact with mitigation measures

Not applicable.

8. Impact Assessment Summary

Impact assessment summaries for the Solar Facilities and EGIs are provided in **Table 18** below.

Table 18: Overall Impact Significance (Post Mitigation)

PADLOPER SOLAR FACILITIES 5-7	
Phase	**Overall Impact Significance**
Construction	Low (4)
Operational	Moderate (3)
Decommissioning	Low (4)
Nature of Impact	**Overall Impact Significance**
Cumulative - Construction	Moderate (3)
Cumulative - Operational	Moderate (3)
Cumulative - Decommissioning	Low (4)
PADLOPER EGIs 5-7	
Phase	Overall Impact Significance
Construction	Low (4)
Operational	Low (4)
Decommissioning	Low (4)
Nature of Impact	Overall Impact Significance
Cumulative - Construction	Moderate (3)
Cumulative - Operational	Moderate (3)
Cumulative - Decommissioning	Low (4)

9. Legislative and Permit Requirements

In terms of the NEMA and the EIA Regulations 2014, the proposed Solar Facilities and EGIs include listed activities which require a Basic Assessment (BA). As part of the BA processes, the need for VIAs to be undertaken has been identified to assess the visual impact of the proposed Padloper Solar Facilities and EGIs 5-7.

There is currently no legislation within South Africa that explicitly pertains to the assessment of visual impacts, however in addition to NEMA the following legislation has relevance to the protection of scenic resources:

- National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)
- 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.

Accordingly, this specialist visual assessment has been undertaken in compliance with Appendix 6 of 2014 NEMA EIA Regulations.

10. Conclusion

A visual study was conducted to assess the magnitude and significance of the potential visual impacts associated with the development of the proposed Padloper Solar Facilities and EGIs 5-7 near Murraysburg in the Western Cape. Overall, sparse human habitation and the predominance of natural vegetation cover across much of the study area would give the viewer the general impression of a largely natural setting with some pastoral elements. As such, SEF and EGI development would alter the visual character and contrast significantly with the typical land use and/or pattern and form of human elements present across the broader study area.

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 moderate 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 and relatively few sensitive or potentially sensitive receptor locations were identified in the study area, thus confirming the moderate level of visual sensitivity.

The assessment identified nine potentially sensitive visual receptor locations within the combined study area. Although the findings of the desktop assessment were largely confirmed during the field investigation, it was not possible to confirm the presence of receptors at all the identified locations due to access restrictions. Notwithstanding this limitation, 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.

One of the receptor locations identified, namely Salem Self-Catering (SR3) was found to be linked to leisure-based (specifically nature-based) tourism and is therefore considered to be a sensitive receptor location. It should be noted that this receptor location is situated on Portion 2 of Farm Angora No. 26 and as this is the project area for Padloper Solar Facility 4, it is understood that the landowners are involved in the Padloper PV Complex development and thus would not view the proposed SEF and EGI projects in a negative light.

The remaining eight receptor locations are believed to be farmsteads which are regarded as *potentially* sensitive visual receptors as the proposed development will likely alter natural or semi-natural vistas experienced from these locations. At this stage however, the residents' sentiments towards the proposed development are unknown.

Only one of the identified receptor locations is expected to experience high levels of visual impact as a result of the proposed development. This receptor location is however inside the assessment area for the Padloper Solar Facilities 6 and 7 and it is understood that the landowner is involved in the Padloper Solar PV Cluster project and thus would not view the proposed development is a negative light.

Although the R63 receptor road traverses the study area, the PV arrays and powerlines are some considerable distance from the road and not visible from much of the road.

A preliminary assessment of overall impacts revealed that impacts associated with the proposed Padloper Solar Facilities 5 - 7 are of a Low significance during both construction and decommissioning phases. During operation however, visual impacts from the SEFs would be of Moderate significance with relatively few mitigation measures available to reduce the visual impact. Impacts (post mitigation) associated with all the proposed Padloper EGIs 5-7 are of low significance during construction, operation and decommissioning phases with a number of mitigation measures available.

Two (2) additional renewable energy projects were identified within a 30 km radius of the Padloper PV Complex, namely the proposed Victoria West REF and Umsinde Emoyeni WEF. Only one of these, Umsinde Emoyeni WEF is expected to result in significant cumulative impacts in the combined visual assessment zone for these projects due to its location near the Padloper Solar Facilities and EGIs. This project, in conjunction with all seven SEF and EGI projects comprising the Padloper PV Complex will inevitably introduce an increasingly industrial character into a largely natural, pastoral landscape, thus giving rise to significant cumulative impacts. It is however anticipated that these impacts could be mitigated to acceptable levels with the implementation of the recommendations and mitigation measures stipulated for each of these developments by the visual specialists. In light of this and the relatively low level of human habitation in the study area however, cumulative impacts have been rated as medium.

10.1 Visual Impact Statement

It is SLR Consulting's opinion that the potential visual impacts associated with the proposed Padloper Solar Facilities and EGIs 5-7 are negative and of moderate significance. Given the low level of human habitation and the relatively low number of sensitive and potentially sensitive receptor locations however, 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.

11. Compliance with the Appendix 6 of the 2014 EIA Regulations

Requirements of Appendix 6 (Specialist Reports) of Government Notice R326 (Environmental Impact Assessment (EIA) Regulations of 2014, as amended)	***Section where this has been addressed in the Specialist Report***
1. (1) A specialist report prepared in terms of these Regulations must contain - *a) details of -* *i. the specialist who prepared the report; and* *ii. the expertise of that specialist to compile a specialist report including a curriculum vitae;*	*Section 1.2* *Appendix A*
b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	*Appendix B*
c) an indication of the scope of, and the purpose for which, the report was prepared;	*Section 1.3* *Appendix C*
(cA) an indication of the quality and age of base data used for the specialist report;	*Section 2.1* *Section 2.2*
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	*Section 6* *Section 7* *Section 8*
d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	*Section 2*
e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	*Section 2*
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 4.3.2*
g) an identification of any areas to be avoided, including buffers;	*Section 4.3.2*
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;	*Appendix E*
i) a description of any assumptions made and any uncertainties or gaps in knowledge;	*Section 2.2*
j) a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	*Section 6*
k) any mitigation measures for inclusion in the EMPr;	*Section 7*
l) any conditions for inclusion in the environmental authorisation;	*Section 7*
m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	*Section 7*
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, and where applicable, the closure plan;*	*Section 10.1*
o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	*Section 2.3*

Requirements of Appendix 6 (Specialist Reports) of Government Notice R326 (Environmental Impact Assessment (EIA) Regulations of 2014, as amended)	*Section where this has been addressed in the Specialist Report*
p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	*n/a*
q) any other information requested by the competent authority.	*n/a*
(2) Where a government notice 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.	*Part A of the Assessment Protocols published in GN 320 on 20 March 2020 is applicable (i.e. Site sensitivity verification requirements where a specialist assessment is required but no specific assessment protocol has been prescribed). See Appendix D.*

12. References

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Appendix A

SPECIALIST EXPERTISE

CURRICULUM VITAE

KERRY LIANNE SCHWARTZ

SENIOR GIS CONSULTANT

EMPA, South Africa

QUALIFICATIONS

BA	1982	Geography, Leeds Trinity University, UK

EXPERTISE

- GIS, spatial modelling and 3D analysis
- Visual Impact Assessment
- Fatal Flaw Assessments
- Glint and Glare Assessments

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;
- Glint and glare 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.

PROJECTS

A selection of Kerry's key project's are presented below.

	Built Infrastructure
EIA and EMP for a 9km railway line and water pipeline for manganese mine – Kalagadi Manganese	Kerry was responsible for GIS analysis and mapping in support of the EIA project in the Northern Cape, South Africa.
EIA and EMP for 5x 440kV Transmission Lines between Thyspunt (proposed nuclear power station site) and several substations	Kerry was responsible for GIS analysis and mapping in support of the EIA project in the Port Elizabeth area in the Eastern Cape, South Africa.

EIA for multi petroleum products pipeline from Kendall Waltloo, and from Jameson Park to Langlaagte Tanks farms Pipelines	Kerry was responsible for GIS analysis and mapping in support of the EIA project.
Environmental Management Plan for copper and cobalt mine	Kerry was responsible for GIS analysis and mapping in support of the EMP project in the Democratic Republic of Congo.
EIA and Agricultural Feasibility study for Miwani Sugar Mill	Kerry was responsible for GIS analysis and mapping in support of the EIA project in Kenya.
EIAs for several Solar Photovoltaic Energy Facilities and associated infrastructure	Kerry was responsible for GIS analysis and mapping in support of several EIAs for Solar PV facilities, the most recent projects being: • Oya Energy Facility (Western Cape Province); • Mooi Plaats, Wonderheuvel and Paarde Valley Solar PV Facilities (Northern Cape Province); and • Sendawo 1, 2 and 3 Solar Energy Facilities (North West Province).
EIAs / BAs for several WEFs and associated infrastructure	Kerry was responsible for GIS analysis and mapping in support of several EIAs for Wind Energy Farms, the most recent projects being: • Tooverberg WEF (Western Cape Province); • Rondekop WEF (Western Cape Province); and • Graskoppies, Hartebeest Leegte, Ithuba and !Xha Boom (Leeuwberg Cluster) WEFs (Northern Cape Province).
Basic Assessments for various 400kV and 132kV Distribution Lines for the Transnet Coal Link Upgrade Project	Kerry was responsible for GIS analysis and mapping in support of the powerline BA project in KwaZulu-Natal and Mpumalanga, South Africa.
Environmental Assessment for the proposed Moloto Development Corridor	Kerry was responsible for GIS analysis and mapping in support of the EIA project in the Limpopo Province.
Environmental Advisory Services for the Gauteng Rapid Rail Extensions Feasibility Project	Kerry was responsible for GIS analysis and mapping in support of a feasibility study for a rail extension in Gauteng, South Africa.
Environmental Screening for the Strategic Logistics and Industrial Corridor Plan for Strategic Infrastructure Project 2	Kerry was responsible for GIS analysis and mapping in support of the environmental screening for strategic infrastructure in KwaZulu-Natal, the Free State and Gauteng.

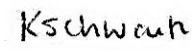
Fatal Flaw Assessments for various proposed Renewable Energy Facilities	Kerry was responsible for GIS analysis and mapping in support of fatal flaw assessment for renewable energy projects in the Northern Cape and Western Cape Provinces.
	Strategic Planning
Lesotho Highlands Development Association – Lesotho	GIS database development for socio-economic and health indicators arising from Social Impact Assessments
Development Plans for the adjacent towns of Kasane and Kazungula and for the rural village of Hukuntsi	Kerry was responsible for GIS database management, spatial data analysis and mapping for the development plans for towns in Botswana.
Integrated Development Plans for various District and Local Municipalities	Kerry was responsible for GIS database management, spatial data analysis and mapping for various IDPs for District Municipalities in KwaZulu-Natal.
Rural Development Initiative and Rural Roads Identification for uMhlathuze Local Municipality	Kerry was responsible for GIS database management, spatial data analysis and mapping for rural road identification in the uMhlathuze Local Municipality in KwaZulu-Natal.
Tourism Initiatives and Master Plans for areas such as the Mapungubwe Cultural Landscape	Kerry was responsible for GIS database management, spatial data analysis and mapping for various Master Plans in the Limpopo and Northern Cape Provinces.
Spatial Development Frameworks for various Local and District Municipalities	Kerry was responsible for GIS database management, spatial data analysis and mapping for Spatial Development Frameworks for various Municipalities in KwaZulu-Natal, Mpumalanga and the Free State.
Land Use Management Plans/Systems (LUMS) for various Local Municipalities	Kerry was responsible for GIS database management, spatial data analysis and mapping for the development of Land Use Management Systems for various Local Municipalities in KwaZulu-Natal.
Land use study for the Johannesburg Inner City Summit and Charter	Kerry was responsible for GIS database management, spatial data analysis and mapping for the Johannesburg Inner City land use study.
Due Diligence Investigation for the Port of Richards Bay	Kerry was responsible for GIS database management, spatial data analysis and mapping for the Port of Richards Bay Due Diligence Investigation.
	State of the Environment Reporting
2008 State of the Environment Report for City of Johannesburg	Kerry was responsible for GIS database management, spatial data analysis and mapping for the 2008 Johannesburg State of the Environment Report.

	Strategic Environmental Assessments and Environmental Management Frameworks
SEA for Greater Clarens	Kerry was responsible for GIS database management, spatial data analysis and mapping for the Greater Clarens SEA in the Free State Province.
SEA for the Marula Region of the Kruger National Park	Kerry was responsible for GIS database management, spatial data analysis and mapping for the Marula Region SEA on behalf of SANParks.
SEA for Thanda Private Game Reserve	Kerry was responsible for GIS database management, spatial data analysis and mapping for the Thanda Private Game Reserve SEA in KwaZulu-Natal.
SEA for KwaDukuza Local Municipality	Kerry was responsible for GIS database management, spatial data analysis and mapping for the KwaDukuza Local Municipality SEA in KwaZulu-Natal.
SEA for Molemole Local Municipality, Capricorn District Municipality	Kerry was responsible for GIS database management, spatial data analysis and mapping for the Molemole Local Municipality SEA in Limpopo Province.
SEA for Blouberg Local Municipality, Capricorn District Municipality	Kerry was responsible for GIS database management, spatial data analysis and mapping for the Blouberg Local Municipality in Limpopo Province.
SEA for the Bishopstowe study area in the Msunduzi Local Municipality	Kerry was responsible for GIS database management, spatial data analysis and mapping for the Bishopstowee SEA in KwaZulu-Natal.
EMF for proposed Renishaw Estate	Kerry was responsible for GIS database management, spatial data analysis and mapping for the Reinshaw Estate EMF in KwaZulu-Natal.
EMF for Mogale City Local Municipality, Mogale City Local Municipality	Kerry was responsible for GIS database management, spatial data analysis and mapping for the Mogale City Local Municipality EMF in Gauteng.
	Visual Impact Assessments
VIAs for various Solar Power Plants and associated grid connection infrastructure	Kerry was responsible for the GIS mapping and visual impact assessments for various Solar Power Plants and associated grid connection infrastructure (Northern Cape, Free State, Limpopo and North West Province) the most recent projects being: • Camden 1 Solar Energy Facility (Mpumalanga Province); • Vhuvhili Solar Energy Facility (Mpumalanga Province); • Rinkhals Solar Energy Facility (Northern Cape Province); • Aardvark Solar Energy Facility (Northern Cape Province); • Oya Energy Facility (Western Cape Province); and • Mooi Plaats, Wonderheuvel and Paarde Valley Solar PV facilities (Northern Cape Province).

VIAs for various WEFs and associated grid connection infrastructure	Kerry was responsible for the GIS mapping and visual impact assessments for various Wind Energy Farms and associated grid connection infrastructure (Northern Cape and Western Cape), the most recent projects including: • Gromis and Komas WEFs (Northerrn Cape Province). • Paulputs WEF (Northern Cape Province); • Kudusberg WEF (Western Cape Province); • Tooverberg WEF (Western Cape Province); • Rondekop WEF (Northern Cape Province); and • San Kraal and Phezukomya WEFs (Northern Cape Province).
VIAs for various 400kV and 132kV Distribution Lines for the Transnet Coal Link Upgrade Project	Kerry was responsible for the GIS mapping and visual impact assessments for various powerlines in KwaZulu-Natal and Mpumalanga Provinces.
VIAs for the proposed Assagay Valley and Kassier Road North Mixed Use Development	Kerry was responsible for the GIS mapping and a visual impact assessment for the Assagay Valley and Kassier Road North Mixed Use Development in KwaZulu-Natal.
VIA for the proposed Tinley Manor South Banks Development	Kerry was responsible for the GIS mapping and a visual impact assessment for the Tinley Manor Southbanks Coastal Development in KwaZulu-Natal.
VIA for the proposed Tinley Manor South Banks Beach Enhancement Solution	Kerry was responsible for the GIS mapping and a visual impact assessment for the Tinley Beach Enhancement EIA in KwaZulu-Natal.
VIA for the proposed Mlonzi Hotel and Golf Estate Development	Kerry was responsible for the GIS mapping and a visual impact assessment for the Mlonzi Hotel and Golf Estate in the Eastern Cape.
Landscape Assessment for the Mogale City Local Municipality	Kerry was responsible for the GIS mapping and a visual impact assessment for the Mogale City Local Municipality landscape assessment.

MEMBERSHIPS

GISSA	Member of Geo-Information Society of South Africa
SAGC	Registered as GISc Technician with the South African Geomatics Council, Membership No. GTc GISc 1187



20 February 2023

Appendix B

SPECIALIST DECLARATION

forestry, fisheries & the environment
Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Private Bag X447, Pretoria, 0001, Environment House, 473 Steve Biko Road, Pretoria, 0002 Tel: +27 12 399 9000, Fax: +27 86 625 1042

SPECIALIST DECLARATION FORM – AUGUST 2023

Specialist Declaration form for assessments undertaken for application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

REPORT TITLE

Basic Assessment for the proposed development of the Padloper Solar PV Facility 6 (i.e., Padloper PV 6), the proposed development of 132 kV Electrical Grid Infrastructure between the proposed Padloper PV 4 and the proposed Padloper PV 6 (i.e., Padloper EGI 6), and their associated infrastructure, near Murraysburg in the Western Cape Province

Kindly note the following:

1. This form must always be used for assessment that are in support of applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting, where this Department is the Competent Authority.
2. This form is current as of August 2023. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at https://www.dffe.gov.za/documents/forms.
3. An electronic copy of the signed declaration form must be appended to all Draft and Final Reports submitted to the department for consideration.
4. The specialist must be aware of and comply with '*the Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the act, when applying for environmental authorisation - GN 320/2020)'*, where applicable.

1. SPECIALIST INFORMATION

Title of Specialist Assessment	Visual Assessment
Specialist Company Name	SLR Consulting (South Africa) (Pty) Ltd
Specialist Name	Kerry Schwartz
Specialist Identity Number	[redacted]
Specialist Qualifications:	BA
Professional affiliation/registration:	SAGC (GISc Technician)
Physical address:	[redacted]
Postal address:	
Postal address	
Telephone	
Cell phone	
E-mail	

2. DECLARATION BY THE SPECIALIST

I, Kerry Schwartz declare that –

- I act as the independent specialist in this application;
- I am aware of the procedures and requirements for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act (NEMA), 1998, as amended, when applying for environmental authorisation which were promulgated in Government Notice No. 320 of 20 March 2020 (i.e. "the Protocols") and in Government Notice No. 1150 of 30 October 2020.
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing –
    - any decision to be taken with respect to the application by the competent authority; and;
    - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 48 and is punishable in terms of section 24F of the NEMA Act.

K Schwartz

Signature of the Specialist

SLR Consulting (South Africa) (Pty) Ltd

Name of Company:

08 Aug 2023

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, _ Kerry Schwartz_____, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

K Schwartz

Signature of the Specialist

SLR Consulting (South Africa) (Pty) Ltd

Name of Company

08 Aug 2023

Date

Click or tap here to enter text.

Signature of the Commissioner of Oaths

08 August 2023

Date

KERRY AUGUST
Commissioner of Oaths
Master HR Professional (MHRP)
Member Number: 53544596
25 Bordeaux Close
Stellenbosch
7600

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Appendix C

TERMS OF REFERENCE

UPDATED TERMS OF REFERENCE FOR SPECIALIST STUDIES FOR THE BASIC ASSESSMENTS FOR THE PROPOSED DEVELOPMENT OF THE SEVEN 100 TO 350 MW PADLOPER SOLAR PHOTOVOLTAIC (PV) FACILITIES AND 132 kV OVERHEAD POWERLINES AND ASSOCIATED ELECTRICAL GRID INFRASTRUCTURE (EGI), NEAR MURRAYSBURG IN THE WESTERN AND NORTHERN CAPE PROVINCE.

Date:

Internal Version 3 (Sent to Specialists): May 2023

Prepared by:

Minnelise Levendal, Rohaida Abed, Dhiveshni Moodley and Helen Antonopoulos (CSIR)

Prepared for:

Jaana-Maria Ball and African Clean Energy Developments (Pty) Ltd (ACED)

Name of the Overall Project:

Basic Assessment Processes for the Proposed Development of the 7 x Solar Photovoltaic (PV) Facilities of between 100 and 350 MW generation capacity each (known as the Padloper Solar PV Cluster) and the associated 7 x 132 kV overhead power lines and associated Electrical Grid Infrastructure (EGI) near Murraysburg in the Western and Northern Cape Provinces.

Names of the Individual Projects: Solar Photovoltaic Facilities	**Project 1**	Basic Assessment for the proposed construction and operation of the up to 200 MW Padloper Solar Photovoltaic Facility 1 and associated infrastructure (i.e., Padloper Solar 1) near Murraysburg in the Northern Cape Province
	Project 2	Basic Assessment for the proposed construction and operation of the up to 100 MW Padloper Solar Photovoltaic Facility 2 and associated infrastructure (i.e., Padloper Solar 2), near Murraysburg in the Western Cape Province
	Project 3	Basic Assessment for the proposed construction and operation of the up to 100 MW Padloper Solar Photovoltaic Facility 3 and associated infrastructure (i.e., Padloper Solar 3), near Murraysburg in the Western Cape Province
	Project 4	Basic Assessment for the proposed construction and operation of the up to 350 MW Padloper Solar Photovoltaic Facility 4 and associated infrastructure (i.e., Padloper Solar 5), near Murraysburg in the Western Cape Province
	Project 5	Basic Assessment for the proposed construction and operation of the up to 125 MW Padloper Solar Photovoltaic Facility 5 and associated infrastructure (i.e., Padloper Solar 5), as well as the proposed development of a 132 kV Electrical Grid Infrastructure between the Padloper Solar 4 and the proposed Padloper Solar 5, near Murraysburg in the Western Cape Province
	Project 6	Basic Assessment for the proposed construction and operation of the up to 100 MW Padloper Solar Photovoltaic Facility 6 and associated infrastructure (i.e., Padloper Solar 6), as well as the proposed development of a 132 kV Electrical Grid Infrastructure between the Padloper Solar 4 and the proposed Padloper Solar 6, near Murraysburg in the Western Cape Province
	Project 7	Basic Assessment for the proposed construction and operation of the up to 125 MW Padloper Solar Photovoltaic Facility 7 and associated infrastructure (Padloper Solar 7), as well as the proposed development of a 132 kV Electrical Grid Infrastructure between the Padloper Solar 6 and the proposed Padloper Solar 7, near Murraysburg in the Western Cape Province
Associated Power line and Electrical Grid Infrastructure	**Project 8**	Basic Assessment for the proposed development of a 132 kV Overhead Power line and associated Electrical Grid Infrastructure (EGI) between the proposed Padloper Solar 1 and the proposed authorised Ishwati Emoyeni Substation (i.e., Padloper EGI 1), near Murraysburg in the Northern Cape and Western Cape Provinces
	Project 9	Basic Assessment for the proposed development of a 132 kV Overhead Power line and associated Electrical Grid Infrastructure (EGI) between the proposed Padloper Solar 2 and the proposed authorised Ishwati Emoyeni Substation (i.e., Padloper EGI 2) from the Padloper Solar Photovoltaic Facility 2 to the Eskom Gamma Main Transmission Substation, near Murraysburg in the Western Cape Province
	Project 10	Basic Assessment for the proposed development of a 132 kV Overhead Power line and associated Electrical Grid Infrastructure (EGI) between the proposed Padloper Solar Facility 2 and the proposed Padloper Solar Facility 3 (i.e., Padloper EGI 3), near Murraysburg in the Western Cape Province
	Project 11	Basic Assessment for the proposed development of a 132 kV Overhead Power line and associated Electrical Grid Infrastructure (EGI) between the proposed Padloper Solar 4 and the proposed authorised Ishwati Emoyeni Substation (i.e., Padloper EGI 4), near Murraysburg in the Northern Cape and Western Cape Provinces

1. Introduction

The purpose of this Terms of Reference (ToR) for the Specialists is to provide a consistent and up-to-date approach to the specialist studies that are required as part of the Basic Assessments (BAs) being conducted for the projects mentioned above. This will enable efficient review and collation of the specialist studies into the BA Reports, in accordance with the latest requirements of the 2014 National Environmental Management Act, 1998 (Act No. 107 of 1998, as amended) (NEMA) Environmental Impact Assessment (EIA) Regulations (as amended).

The Specialist ToR consists of the following sections:

- Section A: Project Description
- Section B: Impact Assessment Methodology
- Section C: Cumulative Impact Assessment
- Section D: Specific Issues to be addressed in each Specialist Study

Please consider the following two important aspects when undertaking your specialist studies:

1. The Project Developer, African Clean Energy Developments (Pty) Ltd (ACED), is currently undertaking a BA process for the Electrical Grid Infrastructure (EGI) for the Umsinde and Khangela Wind Farms and have completed the specialist assessments for the Wind Farm overhead line (OHL) corridor. Please note that the proposed Padloper PV EGI has been planned to run parallel with the Wind Farm OHL as much as possible.

   Given that the Wind Farm OHL corridor has already been assessed, please highlight if there is any way to capitalize on this for the current BAs. It may therefore not be necessary to re-assess a corridor that has recently been assessed by a full suite of specialists. We will make the specialist mapping and reports available to you.

2. ACED holds an existing Environmental Authorisation (EA) for the grid connection required between the Ishwati substation (refer to the “NC OHL Route for Walkthrough….”) and the Gamma MTS. Three 132 kV OHLs are authorised between Ishwati and Gamma. Therefore, in the context of the current Padloper Solar Facility BA processes, only the proposed powerlines connecting the Padloper Solar Facilities must be assessed. However, the above context should be considered in your assessments.

Section A: Project Description

1. Generic Project Description

The Project Applicant, Padloper Solar (Pty) Ltd (hereinafter referred to as "Padloper Solar" or "the Applicant")[1], is proposing to develop 7 x Solar Photovoltaic (PV) Facilities with a capacity of between 100 and 350 MW each and the associated infrastructure, and the associated 7 x 132 kV overhead power lines and associated Electrical Grid Infrastructure (EGI) near Murraysburg in the Western and Northern Cape Provinces. Each solar PV facility will have a range of associated infrastructure, including, but not limited to, an on-site substation and Battery Energy Storage System (BESS) complex and will connect to the existing Gamma Main Transmission Substation (MTS) via dedicated 132 kV overhead power lines.

The proposed solar PV facilities and overhead power lines will be constructed on the following farm portions:

Affected Farm portion	SG Code	Padloper (Pd) Solar Facilities 1 - 7							Overhead Powerline Route
		Pd 1	Pd 2	Pd 3	Pd 4	Pd 5	Pd 6	Pd 7	
Portion 7 of Farm Klipplaat No. 109	C06300000000010900007	✓							✓
Remainder of Farm Riet Poort No.9	C05200000000000900000		✓						✓
Portion 1 of Farm Klipplaat No. 109	C06300000000010900001			✓					✓
Portion 4 of Farm Klipplaat No. 109	C06300000000010900004								✓
Portion 6 of Farm Klipplaat No. 109	C06300000000010900006								✓
Portion 3 of Farm Angora No. 26	C05200000000002600003					✓			✓
Portion 2 of Farm Angora No. 26	C05200000000002600002								✓
Portion 4 of Farm Angora No. 26	C05200000000002600004								✓
Portion 7 of Farm Angora No. 26	C05200000000002600007						✓	✓	✓
Remainder of Farm No.8	C05200000000000800000								✓
Remainder of Farm No.6	C05200000000000600000								✓
Portion 2 of Farm No.6	C05200000000000600002								✓
Portion 4 of Farm No.7	C05200000000000700004								✓
Remainder of Farm No.7	C05200000000000700000								✓
Portion 2 of Farm No.7	C05200000000000700002								✓
Portion 5 of Farm Klein Los Kop No. 5	C05200000000000500005								✓
Remainder of Farm Schietkuil No. 3	C05200000000000300000								✓

Note that the specialists have assessed the full extent of the farm portions listed above for the proposed PV and 132 kV Overhead powerlines and associated EGI infrastructure. This has informed the buildable areas and sensitivity mapping. Refer to Figure 1 locality map of the proposed sites.

[1]It is important to note that Padloper Solar (Pty) Ltd is the Project Applicant, whereas African Clean Energy Developments (Pty) Ltd (ACED) is the Project Developer.

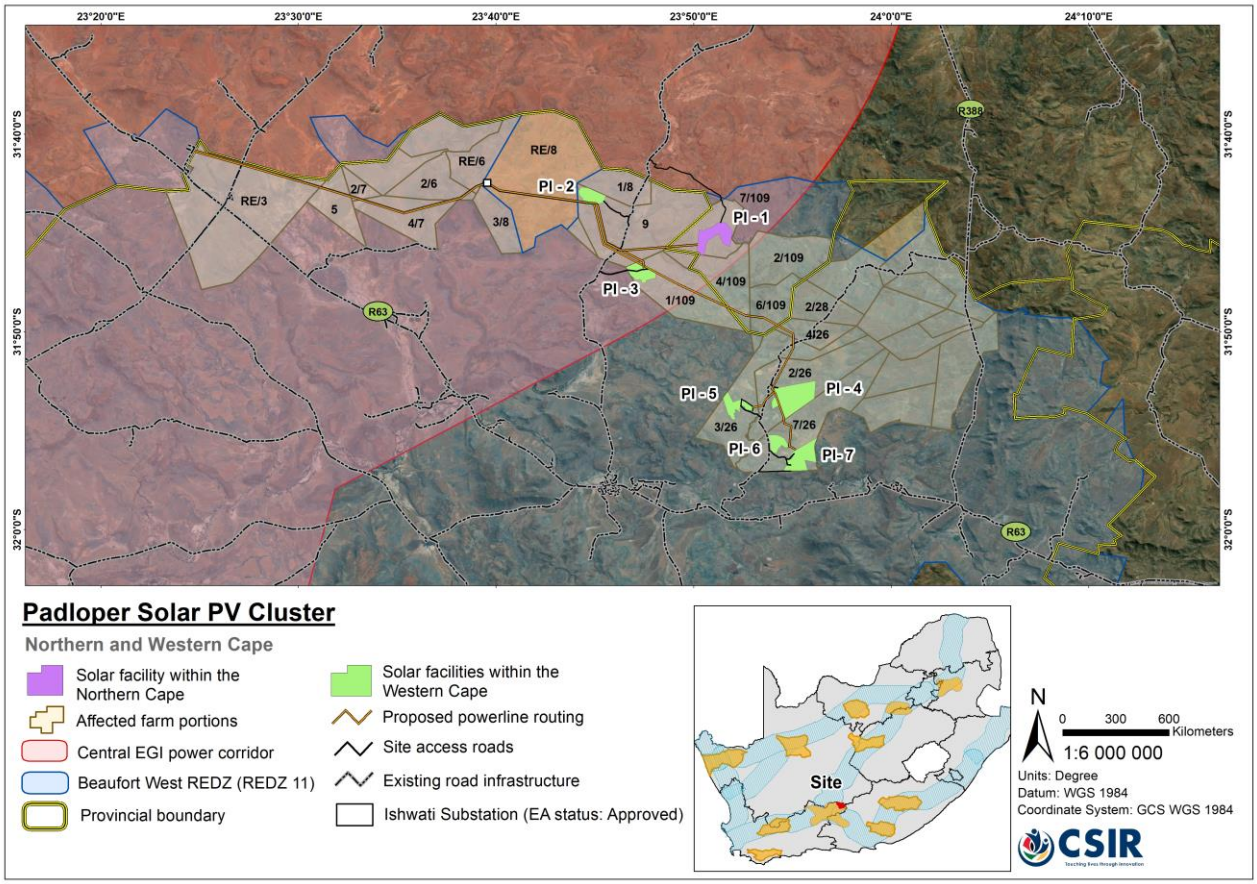


Figure 1: Location of the affected farm portions on which the proposed seven Padloper Solar PV Facilities will be constructed. These entire farm portions (outlined in brown) are the study area for the PV Facilities, including access roads.

The proposed solar PV and EGI projects will consist of the components listed below. **It is important to note at the outset that the exact specifications of the proposed project components will only be determined during the detailed engineering phase prior to construction (subsequent to the issuing of an EA), should such an authorisation be granted for the proposed projects, but that the information provided below is seen as the worst-case scenario for the projects. The detail provided is to give specialists as much information as possible to inform the identification and assessment of potential impacts. It is however important to note that these specifications are subject to change as the BA process progresses. Any changes will be communicated to the specialists to update their specialist assessments and reports accordingly.**

The Solar PV Facilities will have the following project components:

PV Facilities	
Component	**Description / dimensions**
Height of PV panels	Maximum of ± 4.5m.
MW of each PV Facility	Padloper Solar 1: Up to 200 MW Padloper Solar 2: Up to 100 MW Padloper Solar 3: Up to 100 MW Padloper Solar 4: Up to 350 MW Padloper Solar 5: Up to 125 MW Padloper Solar 6: Up to 100 MW Padloper Solar 7: Up to 125 MW
Area of PV Array	Proposed area occupied by PV panel arrays: Padloper Solar 1: 429 ha (Total developable area: ± 420 ha) Padloper Solar 2: 249 ha (Total developable area: ± 222 ha) Padloper Solar 3: 293 ha (Total developable area: ± 233 ha) Padloper Solar 4: 747 ha (Total developable area: ±y 329 ha) Padloper Solar 5: 250 ha (Total developable area: ± 202 ha) Padloper Solar 6: 182 ha (Total developable area: ± 119 ha) Padloper Solar 7: 433 ha (Total developable area: ± 241 ha) Note that the total developable area referred to above includes all associated infrastructure within the fenced off area of the PV facility.
Number of inverters required	Preliminary number of 3.5 MW inverters across all the projects: 330
Area occupied by inverter-transformer stations and on-site substation and height	Inverter-Transformer stations: 0.022 ha each x 165 stations = 3.63 ha. The inverter stations will have a height of ± 3 m each (Excluding lightning rods. The lightning rods are expected to extend 10 m high. Each inverter station will have 1 – 2 lightning rods). A facility substation complex at **all seven PV facilities.** The on-site substation will be approximately 2 ha and will have a height of up to 18 m, thereby covering a total area of 14 ha. Note that the construction of Eskom substations only applies to **PV 1, 2, 3, and 4**. The Eskom substations will range between approximately 1.55 ha and 2.2 ha, thereby covering a total area of 7.98 ha.
Capacity of on-site substation	132 kV
Area occupied by both permanent and construction laydown areas	Temporary Laydown: up to 22 ha in total. There is one temporary laydown area proposed at each PV Facility (ranging from approximately 1 ha to 4 ha). Please note that the temporary laydown areas will be rehabilitated after construction and will not be retained for the operational phase.
Length of internal roads	Preliminary internal roads: ± 78 km long x 5 m wide = 39 ha (Note: This is rough estimate and will be confirmed during the final design phase of the

PV Facilities		
Component	**Description / dimensions**	
	projects prior to commencing construction).	
Width of internal roads	Width: ± 4 – 5 m	
Upgrading of existing access road/s	Yes. Existing roads will be used as far as practically achievable.	
	Current width (m): ± 5 m	
	Upgraded width (m): ± 8 m (6m wide road surface with 1m drain either side)	
Site access points	Proposed to be on the Western side of Development areas, from existing farm road running further North (refer to attached KMZ file). Specialists are required to assess a 100 m wide corridor, i.e., 50 m on either side of the centreline, within which the 8 m wide road will be located. This will allow a bit of flexibility for future micro-siting.	
Internal transmission and/or distribution lines	All on-site medium voltage cabling (22 or 33kV) will be buried to a maximum depth of 1.5 m. Please refer to the separate section below for the 132 kV overhead lines within the PV areas.	
Site offices There will be 1 site office at each PV Facility which will include a warehouse/workshop and an operational and maintenance (O&M) control center. The details provided in this section is for one site office.	Number of buildings:	± 1
	Maximum height (m):	Up to 10 m
	Footprint (m²):	300 m²
Guard houses There will be 2 guardhouses facilities at each PV Facility. The details provided in this section is for one guard house.	Maximum height (m):	Up to 3 m
	Footprint (m²):	Guard house and security: ± 6 m x 6 m ± 36 m²
Ablution facilities There will be 2 ablution facilities at each PV Facility included in site offices and guardhouse footprints. The details provided in this section is for one ablution facility	Maximum height (m):	Up to 10m
	Footprint (m²):	Staff lockers: ± 22 m x 11 m ± 242 m²
Battery storage	Battery technology type:	Lithium-ion technology
	Approx. footprint (ha):	± 5ha

PV Facilities		
Component	**Description / dimensions**	
Each PV Facility will include 1 BESS facility. It is proposed that the BESS will be located at the project substation site and laydown area	Maximum height (m):	Up to 10 m
	Capacity:	Padloper PV 1: 200 MW (1 200 MWh) Padloper PV 2: 100 MW (600 MWh) Padloper PV 3: 100 MW (600 MWh) Padloper PV 4: 350 MW (2 100 MWh) Padloper PV 5: 125 MW (750 MWh) Padloper PV 6: 100 MW (600 MWh) Padloper PV 7: 125 MW (750 MWh)
Underground low voltage cables or cable trays	Maximum depth (m):	Up to 1.5 m
Water use requirements (per project)	Estimated quantity of water (litres) required for the construction phase:	Construction: ± 10,000 m^3 per project over a ± 18-month construction period. The largest site Padloper Solar PV 4 comprising 350 MW) will use up to ~50 000 m^3 per year during construction.
	Estimated quantity of water (litres) required for the operational phase:	Operation: ± 5,000 m^3 per annum per project for a minimum of 20-year operational lifespan of the solar energy facility. ~15 000m^3 per year during operations for the Padloper Solar PV 4 project (comprising 350 MW).
	Estimated quantity of water (litres) required for the decommissioning phase:	Unknown
	Where will the water be sourced from e.g., borehole, dam, river, municipal, etc.:	In order of priority: i) A borehole drilled on site, which will be subject to complete geohydrological testing and the necessary water use authorisation obtained (as applicable). The need for a Water Use Licence (WUL) will be avoided and General Authorisaton abstraction volumes will be adhered to as far as possible. ii) The Local Municipality (LM) - Specific arrangements will be agreed with the LM in a Service Level Agreement (SLA). Most likely the water will be either trucked in, or otherwise made available for collection at their Water Treatment Plant via a metered standpipe. iii) Investigation into a third-party water supplier which may include a nearby mine or other private services company.
Construction Period (months):	± 12 - 18 months per project (projects may be constructed in parallel).	

The following applies to all 7 x over-head power lines:

EGI Projects	
Component	**Description**
Foundation	The type of terrain will determine the choice of foundation. The size of the footprint area will range from 0.6 m x 0.6 m to 1.5 m x 1.5 m. The minimum working area required around a structure position is 20 m x 20 m.
Pylon	132 kV steel monopole or lattice towers
Tower type	Self-supporting and Angle Strain towers
Height	17.4 - 21 m
Span length	200, 250 or 375 m
Servitude width	A 400 m wide corridor (i.e., 200 m on either side of centreline) for all the overhead power lines listed above to be assessed by specialists, in order to identify sensitivities and features that need to be avoided.
Additional Information	• EGI 1 to 4: To be handed over to Eskom post EA (should EA be granted) therefore separate applications will be submitted for these power lines. • The overhead power lines connecting Padloper Solar 5 -7 to Padloper 4 will be retained by ACED and therefore do not require a separate EA. The assessment of these powerlines will be included in the respective Solar facility assessments.

The assessment area for the specialists includes the above-mentioned affected farm portions to identify sensitivities and features that need to be avoided and to identify potential buildable areas. The specialists are required to assess the total study area and the entire 400 m wide corridors for the power lines and infrastructure upgrades to generate sensitivity maps that will be used to identify the best locations for the PV areas and power lines. The location of the proposed facilities and the citing of the project infrastructure within the assessed larger study areas will be informed by the recommendations of the specialists and field work.

Depending on which projects win preferred bidder status in the Renewable Energy Independent Power Producer Procurement Program (REIPPPP) (i.e., the issuing of a Power Purchase Agreement (PPA) from the Department of Mineral Resources and Energy (DMRE)) or a private procurement process, the number of power lines may be changed/reduced **(however all corridors and lines must be assessed based on the worst-case scenario).**

2. Specialist Reporting Requirements

In terms of the NEMA and the 2014 NEMA EIA Regulations, as amended, in Government Gazette 40772 and Government Notice (GN) R326, R327, R325 and R324 on 7 April 2017, the proposed projects will be subject to BA Processes. The requirements for Specialist Studies are specified in **Appendix 6 of the 2014 NEMA EIA Regulations, as amended**, as well as the **Assessment Protocols that were published on 20 March 2020, in Government Gazette 43110, GN 320, and on 30 October 2020, in Government Gazette 43855, GN 1150**. These protocols stipulate the Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(A) and (H) and 44 of the NEMA, when applying for EA.

The Assessment Protocols in GN 320 include the following sections:

- **Part A**: This includes the Site Sensitivity Verification Requirements where a Specialist Assessment is required but no Specific Assessment Protocol has been prescribed. The current use of the land and the environmental sensitivity of the site under consideration identified by the Department of Forestry, Fisheries and the Environment (DFFE) Screening Tool, where determined, must be verified and confirmed by undertaking a Site Sensitivity Verification (SSV). A Site Sensitivity Verification must be compiled and included as an appendix to the Specialist Assessment. Where there are no sensitivity layers on the Screening Tool for a particular Specialist Assessment, then this must be stated in the actual Specialist Assessment. For example, as at July 2022, there are no sensitivity layers on the Screening Tool for Socio-Economic and Traffic features. The Specialist Assessment must comply with Appendix 6 of the 2014 NEMA EIA Regulations, as amended.
- **Part B**: This includes the Site Sensitivity Verification Requirements and Reporting Requirements where a Specialist Assessment is required and a specific Assessment Protocol has been prescribed. The following protocols are prescribed:
    - **Agriculture**: Site Sensitivity Verification Report required and specific Assessment Protocol to be followed. This applies to all onshore wind and/or solar PV energy activities requiring EA;
    - **Terrestrial Biodiversity**: Site Sensitivity Verification Report required and specific Assessment Protocol to be followed. This applies to all relevant activities requiring EA;
    - **Aquatic Biodiversity**: Site Sensitivity Verification Report required and specific Assessment Protocol to be followed. This applies to all relevant activities requiring EA;
    - **Noise**: Site Sensitivity Verification Report required and specific Assessment Protocol to be followed. This applies to all relevant activities requiring EA;
    - **Defense**: Site Sensitivity Verification Report required and specific Assessment Protocol to be followed. This applies to all relevant activities requiring EA (the CSIR will address this); and
    - **Civil Aviation**: Site Sensitivity Verification Report required and specific Assessment Protocol to be followed. This applies to all relevant activities requiring EA (the CSIR will address this).

GN 1150 prescribes protocols in respect of specific environmental themes for the assessment of, as well as the minimum report content requirements on, the environmental impacts for activities requiring EA. GN 1150 includes a protocol for the specialist assessment and minimum report content requirements for environmental impacts on a) terrestrial animal species and b) terrestrial plant species. The requirements of these protocols apply from the date of publication (i.e., from 30 October 2020). Therefore, these protocols are applicable to the projects.

Since the proposed Solar PV facilities and EGI are located within the same geographical area and constitute the same type of activity, an integrated Public Participation Process (PPP) is proposed to be undertaken for the proposed projects.

Combination request

A combination request for PV-EGI pairs 1 to 4 will be submitted to the DFFE in terms of Regulation 11 of the 2014 NEMA EIA Regulations, as amended. Should the above approach be deemed acceptable by the DFFE, a combined process will be followed with one combined BA report being compiled for each PV-EGI pair comprising of separate sections pertaining to the PV and EGI components as well as separate impact assessment table. This combined process will yield two separate EAs (should they be granted). (A schematic diagram of the above approach is provided below - Figure 2).

Combined reports for PV-EGI pairs 5 to 7 will also be compiled, however the overhead power lines connecting Padloper Solar 5 -7 to Padloper 4 will be retained by ACED and therefore do not require separate EAs. These reports will therefore follow GN145.

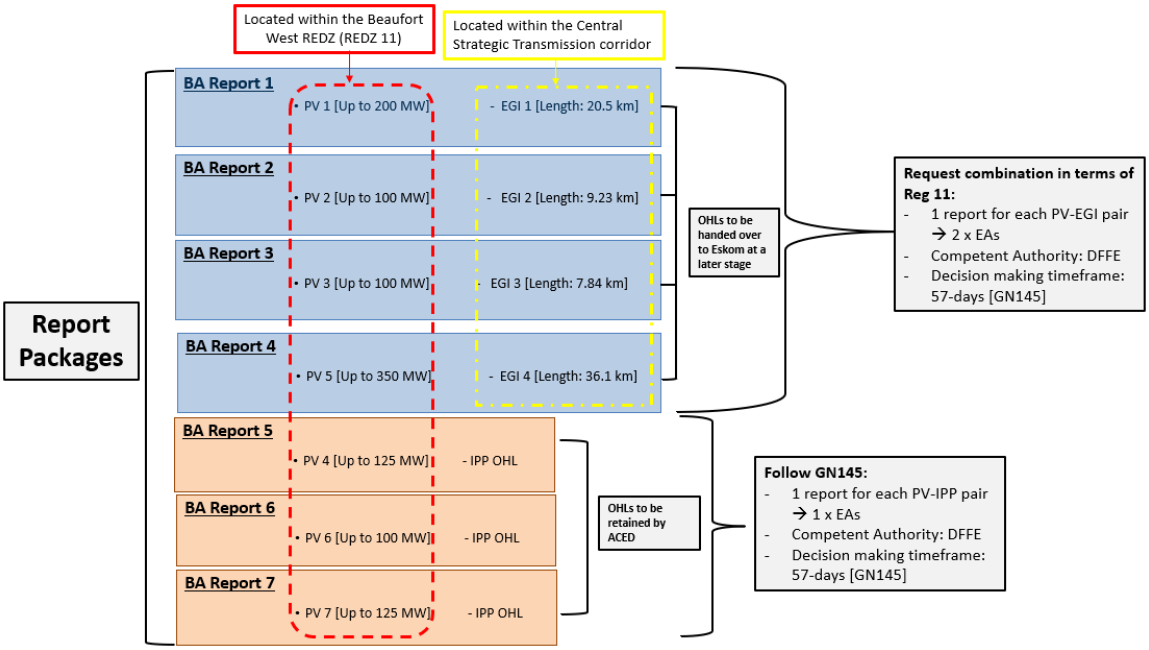


Figure 2. Schematic overview of the reporting structing, should DFFE grant the combination request for PV-EGI pairs 1 to 4.

In the event that the combination request for PV-EGI pairs 1 to 4 is granted by the DFFE, the specialists will be required to produce the following reports (subject to change depending on the outcome of the combination request and discussions with DFFE), unless otherwise agreed on with the EAP:

- **Report 1:** 1 x combined specialist report for Projects 1 to 4 (i.e., addresses Padloper Solar PV facilities 1 to 4 and associated infrastructure),
- **Report 2:** 1 x combined specialist report for Projects 8 to 11 (i.e., addresses all four 132 kV overhead power lines associated with PV 1 to 4 to be handed over to Eskom at a later stage) [2],
- **Report 3**: 1 x combined specialist report for Projects 5 to 7 (i.e., addresses Padloper Solar PV facilities 5, 6, and 7 and associated infrastructure), and
- **Report 4:** 1 x combined specialist report for the overhead power lines connecting Padloper Solar 5 -7 to Padloper 4

As noted above, the specialist assessments will comply with Appendix 6 of the 2014 NEMA EIA Regulations (as amended), or the Assessment Protocols published in GN R320 on March 2020; or the Assessment Protocols published in GN R1150 on October 2020. The BESS Risk Assessment and Geotechnical Assessment will serve as technical reports, and the aforementioned legislation will thus not be applicable.

[2] The Socio-Economic, Traffic, Geohydrology and Risk Assessments for BESSs are not required to assess projects 8-11.

Specialist Assessment/Theme	Appendix 6 and Part A of GN 320	Part B of GN 320	GN 1150	Technical	PV Reports Required		EGI Reports Required	
					1-4	5-7		
Agriculture and Soils		X			X	X	X	X
Terrestrial Biodiversity, Terrestrial Plant and Terrestrial Species		X	X		X	X	X	X
Aquatic Biodiversity and Species		X			X	X	X	X
Avifauna Assessment			X		X	X	X	X
Visual Impact Assessment	X				X	X	X	X
Heritage Impact Assessment	X				X	X	X	X
Palaeontology Assessment	X				X	X	X	X
Socio-Economic Assessment (PV only)	X				X	X		
Traffic Impact Assessment (PV only)	X				X	X		
BESS Risk Assessment (PV only)				X	X	X		
Geotechnical Assessment (PV only) (to be confirmed by DFFE)				X	X	X		
Geohydrology (PV only)	X				X	X		

The specialists will be required to commence with their studies as soon as possible. The specialists will be required to undertake their studies in two phases:

- **Phase 1**: Initially, the specialists will be requested to conduct a complete survey (i.e., field work) of the larger study area (i.e., entire farm portions for the PV areas and 400 m wide corridors for the overhead lines) to identify sensitive environmental areas or features that need to be flagged and avoided, which will be used to inform the project layout. Where applicable, the specialists must ensure that all requirements of the Assessment Protocols published in GN 320 and GN1150, where applicable, are addressed. However, as per the pre-construction monitoring requirements, the Avifauna Specialist will be required to undertake more than one survey over a 6-month period if necessary. After the site visit, the specialists must provide sensitivity maps that will be used to determine the project layout.
  ***This Phase has been completed by the specialist team**.
- **Phase 2**: Once the project layout is identified, and buildable area is confirmed, the specialists will commence with the report compilation (**structure and number of reports has been confirmed above**).
  ***This Phase is currently underway**

The Specialist invoicing schedule is based on the above phasing. Appointment letters have been provided to each Specialist and includes the recommended invoicing scheduling. ACED will be responsible for contracting the Specialists and settling the invoices, while the CSIR will liaise with and manage the Specialist team.

A first order draft of the high-level specialist impact assessment reports and detailed specialist impact assessment reports (v1) will be compiled by the Specialists, which will be reviewed by CSIR and ACED, and the Specialists will be required to address comments raised in that review. Thereafter, the Specialists will be required to compile a second order draft of the high-level specialist impact assessment reports and detailed specialist impact assessment reports (v2) that

will be incorporated into the Draft BA Reports, which will be released for a 30-day public comment period.

Following this public comment period, the Specialists will be required to address comments raised during this commenting period where applicable, and thereafter compile a third order draft of the detailed specialist impact assessment reports (v3) that will be incorporated into the Final BA Report, which will be released for a 30-day public comment period.

The CSIR will provide the specialists with the report templates to be used, where necessary. *Note the earlier comment about the Socio-Economic and Traffic specialists to only provide a statement as to why a SSV cannot be undertaken and included as an appendix to their impact assessment report.*

The reports must also assess cumulative impacts from all the Padloper Solar PV projects proposed by the Project Applicant (Padloper Solar (Pty) Ltd), and additional solar PV and wind energy projects that may still be identified as having received a positive EA or which have lodged an application with the Competent Authority (CA) at the start of these BA processes, i.e., by May 2023. Refer to Section C of this ToR, which provides additional information on this assessment requirement.

3. Environmental Screening and Sensitivity Mapping

The CSIR will provide KMZ files of the project areas to be assessed (attached to this ToR) as well as the KMZs that were developed as part of the fatal flaw assessment for the projects.

In Government Gazette 42561, GN 960 dated 5 July 2019, the DFFE published the compulsory requirement to submit a report generated from the national web based environmental screening tool (Screening Tool), as contemplated in Regulation 16(1)(b)(v) of the 2014 NEMA EIA Regulations (as amended), when submitting an Application for EA in terms of Regulations 19 and 21 of the 2014 NEMA EIA Regulations (as amended). The requirement became compulsory on 4 October 2019 (i.e., within 90 days of the publication of the GN 960). The Screening Tool can be accessed at: https://screening.environment.gov.za/screeningtool/

Based on the outcome of the screening tool report, the information must be verified using previous studies, resources and site visits (where needed). Thereafter, the specialists must provide an updated sensitivity map for each of the projects. These sensitivity maps must include four tiers of sensitivity (i.e., very high, high, moderate and low sensitivity). A rationale must be provided as to how these sensitivity classes were allocated for the site. In addition, “no go” areas must be identified and mapped clearly, with a supporting explanation provided.
These maps will be used to guide the identification of the power line routes and infrastructure layouts, and potential micro-siting that may occur during the detailed engineering design phase of the project, if the project receives a positive EA and progresses to detailed design. The specialists are to apply the assumption that if the project siting is adjusted but remains within an area of the same sensitivity and the same project envelope, then the impact significance rating and

associated management actions remain the same. However, if the micro-siting results in the project footprint intruding onto areas with higher sensitivity rating, then the specialists will be requested to re-assess the significance ratings, which will entail an EA amendment process (should this occur post-EA).

4. Specialist Studies Commissioned

Specialists should contact each other if there are 'knock-on'/ 'cross-over' impacts from one specialist study to another or any queries on links between studies. For example, sometimes there is a need for cross-referencing between the Visual Impact Assessment and the consideration of impacts on cultural landscapes in the Heritage Impact Assessment.

The list of specialist studies commissioned for each BA Project, authors and contact details are provided below:

Specialist Study	Specialist Company	Specialist Name	Contact Details
Agriculture and Soils	Private	Johann Lanz	johann@johannlanz.co.za +27 (0)82 927 9018
Visual Impact Assessment	SLR Consulting	Kerry Schwartz	klschwartz@slrconsulting.com +27 (0)82 469 5850
Heritage Impact Assessment	ASHA Consulting	Dr Jayson Orton	jayson@asha-consulting.co.za +27 (0)83 272 3225
Palaeontology Assessment	Banzai Environmental Pty Ltd	Elize Butler	elizebutler002@gmail.com +27 (0)84 447 8759
Terrestrial Biodiversity and Species	Enviro-Sci	Brian Colloty	bcolloty@gmail.com +27 (0)83 498 3299
Aquatic Biodiversity and Species			
Avifauna Assessment	Holland & Associates Environmental Consultants	Anja Albertyn	anja@hollandandassociates.net +27 (0)76 265 8933
Socio-Economic Assessment	Independent Economic Researchers	Dr Hugo van Zyl	hugo@independentecon.co.za +27 (0)82 578 4148
Geohydrology Assessment	GEOSS South Africa	Hardy Luttig	hluttig@geoss.co.za
Geotechnical Assessment	GEOSS South Africa	Hardy Luttig	hluttig@geoss.co.za
Traffic Impact Assessment	SiVEST	Ntuthuko Hlanguza	NtuthukoH@sivest.com
BESS Risk Assessment	ISHECON	Debbie Mitchell	mitchelld@ishecon.co.za +27 (0)82 428 8844

5. Timelines for Specialist Studies

The following updated schedule applies:

Task / Milestone	Due Date
Appointment of specialists by ACED	Completed
Specialists to submit revised Draft Specialist Impact Assessment Reports (including SSV Reports, detailed impact assessments) for review and comment by EAP and Project Applicant.	26 June 2023 (or earlier where possible)
Specialists to address comments from EAP and Project Applicant, if and where needed, and submit the second order revised Draft Specialist Impact Assessment Reports for inclusion in the Draft BA Reports, as well as the Draft Scoping Report and Draft EIA Reports to be released for public comment.	7 July 2023 (or earlier where possible)
Specialists to address comments on **Report 3 and 4** from I&APs, if and where needed, and submit **Final Specialist Impact Assessment Reports 3 and 4** for inclusion in the Final BA Reports to be submitted to national DFFE for decision-making	Between 13 July and 14 August 2023
Specialists to address comments on **Report 1 and 2** from I&APs, if and where needed, and submit **Final Specialist Impact Assessment Reports 1 and 2** for inclusion in the Final BA Reports to be submitted to national DFFE for decision-making	Between 24 July and 23 August 2023

Section B: Impact Assessment Methodology and EMPr Requirements

The identification of potential impacts includes impacts that may occur during the construction, operational and decommissioning phases of the proposed development. The assessment of impacts includes direct, indirect as well as cumulative impacts. In order to identify potential impacts (both positive and negative) it is important that the nature of the proposed activity is well understood so that the impacts associated with the activity can be understood. The process of identification and assessment of impacts must include:

- Determining the current environmental conditions in sufficient detail so that there is a baseline against which impacts can be identified and measured;
- Determining future changes to the environment that will occur if the activity does not proceed;
- Gaining an understanding of the activity in sufficient detail to understand its consequences; and the
- Identification of significant impacts which are likely to occur if the activity is undertaken.

The impact assessment methodology has been aligned with the requirements for BA Reports.

The BA Report requirements stipulated in Appendix 1 (3) (j) of the 2014 NEMA EIA Regulations, as amended, states the following:

- *"A BA Report must contain the information that is necessary for the Competent Authority to consider and come to a decision on the application, and must include an assessment of each identified potentially significant impact and risk, including –*
    - *(i) cumulative impacts;*
    - *(ii) the nature, significance and consequences of the impact and risk;*
    - *(iii) the extent and duration of the impact and risk;*
    - *(iv) the probability of the impact and risk occurring;*
    - *(v) the degree to which the impact and risk can be reversed;*
    - *(vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and*
    - *(vii) the degree to which the impact and risk can be mitigated".*

Terminology used in impact assessment can overlap. To avoid ambiguity, please note the following clarifications (that are based on NEMA and the EIA Regulations):

- *The term environment is understood to have a broad interpretation that includes both the natural (biophysical) environment and the socio-economic environment. The term socio-ecological system is also used to describe the natural and socio-economic environment and the interactions amongst these components.*
- *Significance = Consequence x Probability, which means that significance is equivalent to risk.*
- *The impact can have a positive or negative status. The significance of a negative impact may be called a risk, and the significance of a positive impact may be called an opportunity.*

The following principles are to underpin the application of this methodology:

- *Transparent and repeatable process - specialists are to describe the thresholds and limits they apply in their assessment, wherever possible.*
- *Adapt parameters to context (where justified) – the methodology proposes some thresholds (e.g. for spatial extent, in Step 3 below), however, if the nature of the impact requires a different definition of the categories of spatial extent, then this can be provided and described.*
- *Combination of a quantitative and qualitative assessment – where possible, specialists are to provide quantitative assessments (e.g. areas of habitat affected, decibels of noise, number of jobs), however, it is recognised that not all impacts can be quantified, and then qualitative assessments are to be provided.*

As per DEA Guideline 5: Assessment of Alternatives and Impacts the following methodology is to be applied to the prediction and assessment of impacts. Potential impacts should be rated in terms of the direct, indirect and cumulative:

- **Direct impacts** are impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable.

- **Indirect impacts** of an activity are indirect or induced changes that may occur as a result of the activity. These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity.
- **Cumulative impacts** are impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities. Cumulative impacts can occur from the collective impacts of individual minor actions over a period of time and can include both direct and indirect impacts. Refer to Section C of this ToR for the approach to assessing the cumulative impacts of surrounding projects.

The impact assessment methodology must include the following aspects:

- ***Step 1**:* **Nature of impact** - this reviews the type of effect that a proposed activity will have on the environment and should include "what will be affected and how?"

- ***Step 2**: **Status** - Whether the impact/risk on the overall environment will be:*
  - *Positive - environment overall will benefit from the impact/risk;*
  - *Negative - environment overall will be adversely affected by the impact/risk; or*
  - *Neutral - environment overall not be affected.*

- ***Step 3**: **Qualitatively** determine the **consequence** of the impact/risk by identifying the **a) SPATIAL EXTENT; b) DURATION; c) REVERSIBILITY; AND d) IRREPLACEABILITY**.*

  - ***A) Spatial extent** – The size of the area that will be affected by the impact/risk:*
    - *Site specific;*
    - *Local (<10 km from site);*
    - *Regional (<100 km of site);*
    - *National; or*
    - *International (e.g. Greenhouse Gas emissions or migrant birds).*

  - ***B) Duration** – The timeframe during which the impact/risk will be experienced:*
    - *Very short term (instantaneous);*
    - *Short term (less than 1 year);*
    - *Medium term (1 to 10 years);*
    - *Long term (the impact will cease after the operational life of the activity (i.e., the impact or risk will occur for the project duration)); or*
    - *Permanent (mitigation will not occur in such a way or in such a time span that the impact can be considered transient (i.e., the impact will occur beyond the project decommissioning)).*

  - ***C) Reversibility** of the Impacts - the extent to which the impacts/risks are reversible assuming that the project has reached the end of its life cycle (decommissioning phase):*

        - *High reversibility of impacts (impact is highly reversible at end of project life i.e., this is the most favourable assessment for the environment);*
        - *Moderate reversibility of impacts;*
        - *Low reversibility of impacts; or*
        - *Impacts are non-reversible (impact is permanent, i.e., this is the least favourable assessment for the environment).*

    - ***D) Irreplaceability** of Receiving Environment/Resource Loss caused by impacts/risks – the degree to which the impact causes irreplaceable loss of resources assuming that the project has reached the end of its life cycle (decommissioning phase):*
        - *High irreplaceability of resources (project will destroy unique resources that cannot be replaced, i.e., this is the least favourable assessment for the environment);*
        - *Moderate irreplaceability of resources;*
        - *Low irreplaceability of resources; or*
        - *Resources are replaceable (the affected resource is easy to replace/rehabilitate, i.e., this is the most favourable assessment for the environment).*

Some of the criteria are quantitative (e.g. spatial extent and duration) and some may be described in a quantitative or qualitative manner (e.g. reversibility and irreplaceability). The specialist then combines these criteria in a qualitative manner to determine the **consequence**.

The consequence terms ranging from slight to extreme must be calibrated per Specialist Study so that there is transparency and consistency in the way a risk/impact is measured. For example, from a biodiversity and ecology perspective, the consequence ratings could be defined according to a reduction in population or occupied area in relation to Species of Conservation Concern (SCC) status, ranging from slight consequence for defined areas of Least Concern, to extreme consequence for defined areas that are Critically Endangered. For example, from a social perspective, a slight consequence could refer to small and manageable impacts, or impacts on small sections of the community; a moderate consequence could refer to impacts which affect the bulk of the local population negatively or may produce a net negative impact on the community; and an extreme consequence could refer to impacts which could result in social or political violence or institutional collapse.

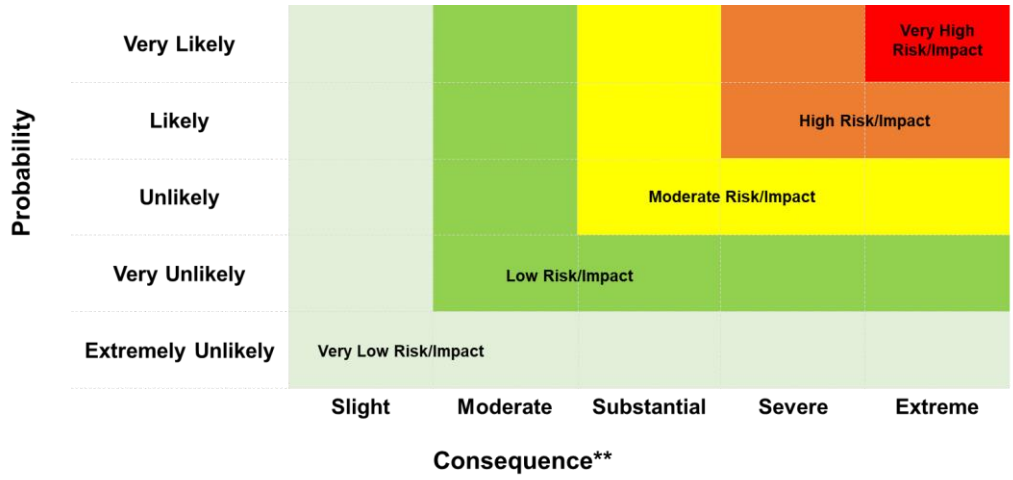
- **Consequence** – The anticipated consequence of the risk/impact is generally defined as follows:
    - Extreme (extreme alteration of natural or socio-economic systems, patterns or processes, i.e., where environmental or socio-economic functions and processes are altered such that they permanently cease);
    - Severe (severe alteration of natural or socio-economic systems, patterns or processes, i.e., where environmental or socio-economic functions and processes are altered such that they temporarily or permanently cease);
    - Substantial (substantial alteration of natural or socio-economic systems, patterns or processes, i.e., where environmental or socio-economic functions and processes are altered such that they temporarily or permanently cease;

- Moderate (notable alteration of natural or socio-economic systems, patterns or processes, i.e., where the natural or socio-economic environment continues to function but in a modified manner; or
- Slight (negligible and transient alteration of natural or socio-economic systems, patterns or processes, i.e., where natural systems/environmental or socio-economic functions, patterns, or processes are not affected in a measurable manner, or if affected, that effect is transient and the system recovers).

- **Step 4**: Rate the **probability** of the impact/risk using the criteria below:

  - **Probability** – The probability of the impact/risk occurring:
    - Extremely unlikely (little to no chance of occurring);
    - Very unlikely (<30% chance of occurring);
    - Unlikely (30-50% chance of occurring)
    - Likely (51 – 90% chance of occurring); or
    - Very Likely (>90% chance of occurring regardless of prevention measures).

- **Step 5**: Use both the **consequence** and **probability** to determine the **significance** of the identified impact/risk (qualitatively as shown in Figure 1). Significance definitions and rankings are provided below:



[Qualitatively determined based on Spatial Extent, Duration, Reversibility and Irreplaceability]

Figure 3. Guide to assessing risk/impact significance as a result of consequence and probability.

- ***Significance*** *– Will the impact cause a notable alteration of the environment?*
  - *Very low (the risk/impact may result in very minor alterations of the environment and can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making);*
  - *Low (the risk/impact may result in minor alterations of the environment and can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making);*

- *Moderate (the risk/impact will result in moderate alteration of the environment and can be reduced or avoided by implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated);*
- *High (the risk/impact will result in major alteration to the environment even with the implementation on the appropriate mitigation measures and will have an influence on decision-making); and*
- *Very high (the risk/impact will result in very major alteration to the environment even with the implementation on the appropriate mitigation measures and will have an influence on decision-making (i.e., the project cannot be authorised unless major changes to the engineering design are carried out to reduce the significance rating)).*

With the implementation of mitigation measures, the residual impacts/risks are ranked as follows in terms of significance:

- *Very low = 5;*
- *Low = 4;*
- *Moderate = 3;*
- *High = 2; and*
- *Very high = 1.*

The specialists must provide a written supporting motivation of the assessment ratings provided.

- ***Step 6**: Determine the **Confidence Level** – The degree of confidence in predictions based on available information and specialist knowledge:*
  - *Low;*
  - *Medium; or*
  - *High.*

The above assessment must be described in the text (with clear explanation provided on the rationale for the allocation of significance ratings) and summarised in an impact assessment table in a similar manner as shown in the example below (Table 1). Table 1 is to be used by the specialists for the rating of impacts.

Table 1: Table for rating of impacts

Impact	***Impact Criteria***		***Significance and Ranking (Pre-Mitigation)***	***Potential mitigation measures***	***Significance and Ranking (Post-Mitigation)***	***Confidence Level***
CONSTRUCTION PHASE						
Habitat and species loss as a result of clearance of vegetation for the PV Facility	***Status***	*Negative*	*Moderate (3)*	*Plant search and rescue (EMPr)*	*Low (4)*	*Medium*
	Spatial Extent	*Site Specific*				
	Duration	*Long-term*				
	Consequence	*Substantial*				
	Probability	*Very likely*				
	Reversibility	*Moderate*				
	Irreplaceability	*Moderate*				
OPERATIONAL PHASE						

	Status					
	Spatial Extent					
	Duration					
	Consequence					
	Probability					
	Reversibility					
	Irreplaceability					
DECOMMISSIONING PHASE						
	Status					
	Spatial Extent					
	Duration					
	Consequence					
	Probability					
	Reversibility					
	Irreplaceability					

Other aspects to be taken into consideration in the assessment of impact significance are:

- Impacts will be evaluated for the construction, operational and decommissioning phases of the development. The assessment of impacts for the decommissioning phase will be brief, as there is limited understanding at this stage of what this might entail. The relevant rehabilitation guidelines and legal requirements applicable at the time will need to be applied;
- The impact evaluation will, where possible, take into consideration the cumulative effects associated with this and other facilities/projects which are either developed or in the process of being developed in the local area (refer to Section C);
- The impact assessment will attempt to quantify the magnitude of potential impacts (direct and cumulative effects) and outline the rationale used. Where appropriate, national standards are to be used as a measure of the level of impact;
- Impacts should be assessed for all layouts and project components;
- **IMPORTANT NOTE**: Impacts should be described both before and after the proposed mitigation and management measures have been implemented. The assessment of the potential impact “before mitigation” should take into consideration all management actions that are already part of the project design (which are a given). The assessment of the potential impact “after mitigation” should take into consideration any additional management actions proposed by the specialist, to minimise negative or enhance positive impacts.

Impacts will then be collated into an Environmental Management Programme (EMPr) and these will include the following:

- Management actions and monitoring of the impacts;
- Negative impacts and mitigation measures to avoid or reduce negative impacts; and
- Positive impacts and enhancement measures where possible.

A generic EMPr was compiled for the development and expansion of (a) overhead electricity transmission and distribution infrastructure; and (b) substation infrastructure for the transmission and distribution of electricity. On 2 March 2018, these two Generic EMPrs were gazetted in

Government Gazette 41473, GN 162 and GN 163, for public comment for a period of 45 days. On 22 March 2019, these two Generic EMPrs were gazetted for implementation in Government Gazette 42323, GN 435. Since the project components also include power lines and substations, the gazetted EMPrs for power lines and substations need to be complied with.

A template for the EMPr input will be provided to the specialists by the CSIR, and it will comply with the 2014 NEMA EIA Regulations (as amended) and the Generic EMPrs for power lines and substations (where applicable).

The EMPr will consist of the following:

- EMPr for the PV Facility and all other infrastructure, excluding the power line and substation.
- EMPr for the power line (This will include confirmation that the pre-approved template in Part B of the Generic EMPr will be complied with and the completion of a site-specific EMPr if required).
- EMPr for the substation (This will include confirmation that the pre-approved template in Part B of the Generic EMPr will be complied with and the completion of a site-specific EMPr if required).
- Annexures that include the pre-approved power line and substation EMPr.

Section C: Cumulative Impact Assessment

Given that there are several renewable energy projects proposed and in existence in the local vicinity of the proposed Padloper Solar PV projects, it is important to define a consistent approach to the assessment of cumulative effects by the specialists.

The CSIR will provide a list of projects that need to be considered in the cumulative impact assessment.

The approach for this project is that the specialists must include **all renewable energy projects** within a **30 km radius that have received an EA or have submitted an application at the time of starting this project (i.e. by May 2023)**. It is assumed that each renewable energy project consists of an EGI component.

The specialists are requested to please inform the CSIR of any wind or solar projects within 30 km of the project sites that have received an EA or had their Application for EA rejected by the DFFE or have applications which are in process.

Please also consider the proposed Padloper Solar PV and EGI projects (subject of this ToR) in the cumulative impact assessment.

Section D: Specific Issues to be Addressed in each Specialist Study

This section provides the **specific issues** to be addressed by each specialist in their study for each project. The specialists should also add any key issues from their experience.

As noted in Section A of this ToR, the first phase of the specialist input is to undertake complete site work and provide a sensitivity map of the sensitive features on site that need to be considered in the placement of the infrastructure (i.e., layout determination). Once the project layout is confirmed, then the second phase of the specialist input must be provided i.e., the specialist must provide their report based on the reporting requirements noted below and the templates provided by the CSIR. All site work must be undertaken once off during Phase 1, where applicable.

1. Agriculture and Soils

- Comply with the Assessment Protocols that were published on 20 March 2020, in Government Gazette 43110, GN 320. This specifically includes the Agriculture Protocol that applies to all onshore wind and/or solar PV energy activities requiring EA. This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations (as amended).
- Provide a Site Sensitivity Verification Report based on the requirements documented in the Assessment Protocols published on 20 March 2020, in Government Gazette 43110, GN 320. It is understood that verification undertaken by other specialists or the EAP can be used by the Agricultural Specialist in this regard. No site visit has been allowed for this study. In the site sensitivity verification, the Agricultural Specialist will refer to the site visit by the EAP or other specialists and include a current photograph(s) of the site, showing its vegetation / cultivation status. The specialist will also use aerial photography to identify the level of sensitivity assigned to the project area on the Screening Tool, and to verify and confirm this sensitivity and land-use and either compile an Agro-Ecosystem Specialist Report or Compliance Statement.
- Provide inputs to the Draft BA Report to include a description of the affected environment and environmental sensitivities, key legislation, key issues and detailed assessment of impacts. A template for such inputs will be provided by the CSIR.
- Provide an Agro-Ecosystem Specialist Report or Compliance Statement based on the requirements documented in the Assessment Protocols published on 20 March 2020, in Government Gazette 43110, GN 320.
- The Specialist Assessment and/or Compliance Statement must also be in adherence to any additional relevant legislation and guidelines that may be deemed necessary. A suitable report template will be compiled with input from the specialist and the CSIR. In addition, it must comply with the 2014 NEMA EIA Regulations, as amended), where applicable.
- Provide sensitivities in KMZ or similar GIS format.
- Provide review input on the preferred infrastructure layout following the sensitivity analysis and layout identification.

- Describe and map soil types (soil forms), soil characteristics (soil depth, soil colour, limiting factors, and clay content of the top and sub soil layers), and degradation and erodibility of soils etc. to the extent necessary to inform this assessment.
- The assessment is to be based on existing information and professional experience and previous field work conducted by the specialist, as considered necessary and in accordance with relevant legislated requirements. The assessment must also consider the maps generated by the National Screening Tool.
- Identify any protocols, legal and permit requirements relating to soil and agricultural potential impacts that are relevant to this project and the implications thereof.
- Provide recommendations with regards to potential monitoring programmes.
- Determine mitigation and/or management measures which could be implemented to as far as possible reduce the effect of negative impacts and enhance the effect of positive impacts. Also identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This must be included in the EMPr.
- Incorporate and address all review comments made by the Project Team (CSIR and Project Applicant) during the various revisions of the specialist report.
- Incorporate and address all issues and concerns raised by Stakeholders, Competent Authority, I&APs and the public during the Public Participation Process (where relevant and applicable).
- Review the Generic EMPr for 1) Power Lines and 2) Substations (GN 435) and confirm if there are any specific environmental sensitivities or attributes present on the site and any resultant site specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, provide a list of these specific impact management outcomes and actions based on the format of the report template provided by the CSIR.

2. Visual

- Comply with the Assessment Protocols that were published on 20 March 2020, in Government Gazette 43110, GN 320. This specifically includes Part A, which provides the Site Sensitivity Verification Requirements where a Specialist Assessment is required but no Specific Assessment Protocol has been prescribed.
- Provide a Site Sensitivity Verification Report based on the requirements documented in the Assessment Protocols published on 20 March 2020, in Government Gazette 43110, GN 320.
- Compile a Visual Impact Assessment (VIA) in compliance with Appendix 6 of the 2014 NEMA EIA Regulations (as amended). The Specialist Assessment must also be in adherence to any additional relevant legislation and guidelines that may be deemed necessary. It must also comply with the report templates provided by the CSIR.
- Provide inputs to the Draft BA Report to include a description of the affected environment and environmental sensitivities, key legislation, key issues and detailed assessment of impacts. A template for such inputs will be provided by the CSIR.
- The specialist must undertake a site visit in order to identify the level of sensitivity assigned to the project area on the Screening Tool, and to verify and confirm this sensitivity and land-use,

as well as to comply with the requirements of Part A of the Assessment Protocols published on 20 March 2020, in Government Gazette 43110, GN 320.

- Determine, describe and map the baseline environmental condition and sensitivity of the study area. Specify set-backs or buffers, and provide clear reasons for these recommendations.
- Provide sensitivities in KMZ or similar GIS format.
- Provide review input on the preferred infrastructure layout following the sensitivity analysis and layout identification.
- The report must describe the visual character of the local area. Any significant visual features or visual disturbances should be identified and mapped, as well as any sensitive visual receptors within the proposed project area or within viewsheds of the projects.
- Visual character and visual absorption capacity should be described.
- Viewsheds for various elements of the proposed development should be calculated, defined and presented, and the varying sensitivities of these viewsheds must be highlighted.
- Mapping of visual sensitivity of the site will require consideration of visual receptors outside the site, and sensitivity to development on the site for potentially affected visual receptors of “very high” sensitivity.
- Assessment to be based on a site visit, visual modelling, and a photographic survey of the surrounding region from which the landscape and visual baselines can be prepared. The assessment must also consider the maps generated by the National Screening Tool.
- Identify and assess the potential direct, indirect and cumulative impacts of the proposed development on the receiving environment from a visual perspective. Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology must follow that contained in Section B of this ToR, as provided by the CSIR.
- Schematic portrayals of the visual impact of the proposed project infrastructure on the different viewsheds identified must be presented. All impacts should be considered under varying conditions as appropriate to the study i.e., day, night, clear weather, cloudy weather etc.
- Maps depicting viewsheds/line of sight across the site should be generated and included in the reports. These maps should indicate current viewsheds/visual landscape/obstructions as well as expected visual impacts during the construction, operational and decommissioning phases of the proposed development.
- Identify any protocols, legal and permit requirements that are relevant to this project and the implications thereof.
- Provide recommendations with regards to potential monitoring programmes.
- Determine mitigation and/or management measures which could be implemented to as far as possible reduce the effect of negative impacts and enhance the effect of positive impacts. Also identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This must be included in the EMPr.
- Incorporate and address all review comments made by the Project Team (CSIR and Project Applicant) during the various revisions of the specialist report.

- Incorporate and address all issues and concerns raised by Stakeholders, Competent Authority, I&APs and the public during the Public Participation Process (where relevant and applicable).
- Review the Generic EMPr for 1) Power Lines and 2) Substations (GN 435) and confirm if there are any specific environmental sensitivities or attributes present on the site and any resultant site specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, provide a list of these specific impact management outcomes and actions based on the format of the report template provided by the CSIR.

3. Heritage: Archaeology and Cultural Landscape

- Comply with the Assessment Protocols that were published on 20 March 2020, in Government Gazette 43110, GN 320. This specifically includes Part A, which provides the Site Sensitivity Verification Requirements where a Specialist Assessment is required but no Specific Assessment Protocol has been prescribed.
- Provide a Site Sensitivity Verification Report based on the requirements documented in the Assessment Protocols published on 20 March 2020, in Government Gazette 43110, GN 320.
- Compile a Heritage Impact Assessment in compliance with Appendix 6 of the 2014 NEMA EIA Regulations, as amended. The Specialist Assessment must also be in adherence to any additional relevant legislation and guidelines that may be deemed necessary. It must also comply with the report templates provided by the CSIR.
- Provide inputs to the Draft BA Report to include a description of the affected environment and environmental sensitivities, key legislation, key issues and detailed assessment of impacts. A template for such inputs will be provided by the CSIR.
- The specialist must undertake a site visit in order to identify the level of sensitivity assigned to the project area on the Screening Tool, and to verify and confirm this sensitivity and land-use.
- Determine, describe and map the baseline environmental condition and sensitivity of the study area. Specify set-backs or buffers, and provide clear reasons for these recommendations.
- Provide sensitivities in KMZ or similar GIS format.
- Provide review input on the preferred infrastructure layout following the sensitivity analysis and layout identification.
- Describe and map the heritage and features of the site and surrounding area. This is to be based on desktop reviews, fieldwork, available databases and findings from other heritage studies in the area, where relevant. Include reference to the grade of heritage feature and any heritage status the feature may have been awarded. The assessment must also consider the maps generated by the National Screening Tool.
- Map heritage sensitivity for the site. Clearly show any “no-go” areas in terms of heritage (i.e., “very high” sensitivity), and provide recommended buffers or set-back distances. Indicate which very high sensitivity areas are regarded as complete no-go areas.
- Identify and assess the potential direct, indirect and cumulative impacts of the proposed development on the full scope of heritage features, including archaeology, palaeontology and the cultural-historical landscape, as required by heritage legislation. Impact significance must

be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology must follow that contained in Section B of this ToR, as provided by the CSIR.

- Liaise with the relevant authorities (i.e., South African Heritage Resources Agency, Heritage Western Cape etc.) in order to obtain a letter of approval, comments or a Permit in terms of National Heritage Resources Act, 1999 (Act No. 25 of 1999), including Regulations issued thereunder, as necessary.
- Provide recommendations with regards to potential monitoring programmes.
- Determine mitigation and/or management measures which could be implemented to as far as possible reduce the effect of negative impacts and enhance the effect of positive impacts. Also identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This must be included in the EMPr.
- Incorporate and address all review comments made by the Project Team (CSIR and Project Applicant) during the various revisions of the specialist report.
- Incorporate and address all issues and concerns raised by Stakeholders, Competent Authority, I&APs and the public during the Public Participation Process (where relevant and applicable).
- Review the Generic EMPr for 1) Power Lines and 2) Substations (GN 435) and confirm if there are any specific environmental sensitivities or attributes present on the site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, provide a list of these specific impact management outcomes and actions based on the format of the report template provided by the CSIR.

4. Palaeontology

- Comply with the Assessment Protocols that were published on 20 March 2020, in Government Gazette 43110, GN 320. This specifically includes Part A, which provides the Site Sensitivity Verification Requirements where a Specialist Assessment is required but no Specific Assessment Protocol has been prescribed.
- Provide a Site Sensitivity Verification Report based on the requirements documented in the Assessment Protocols published on 20 March 2020, in Government Gazette 43110, GN 320.
- Compile a Palaeontological Impact Assessment in compliance with Appendix 6 of the 2014 NEMA EIA Regulations (as amended). The Specialist Assessment must also be in adherence to any additional relevant legislation and guidelines that may be deemed necessary. It must also comply with the report templates provided by the CSIR.
- Provide inputs to the Draft BA Report to include a description of the affected environment and environmental sensitivities, key legislation, key issues and detailed assessment of impacts. A template for such inputs will be provided by the CSIR.
- The specialist must undertake a site visit in order to identify the level of sensitivity assigned to the project area on the Screening Tool, and to verify and confirm this sensitivity and land-use.
- Determine, describe and map of the baseline environmental condition and sensitivity of the study area. Specify set-backs or buffers, and provide clear reasons for these recommendations.

- Provide sensitivities in KMZ or similar GIS format.
- Provide review input on the preferred infrastructure layout following the sensitivity analysis and layout identification.
- Prepare and undertake a study on the palaeontology and fossil heritage within the proposed project area, based on:
    - Site visit;
    - Review of all relevant palaeontological and geological literature, including geological maps and previous reports,
    - Location and examination of fossil collections from the study area (e.g. museums), and
    - Data on the proposed development (e.g. location of footprint, depth and volume of bedrock excavation envisaged).
- Describe the type and location of known palaeontology and fossil heritage sites in the study area, and characterize all items that may be affected by the proposed project.
- Note fossils and associated sedimentological features of palaeontological relevance (photos, maps, aerial or satellite images, and stratigraphic columns).
- Evaluate the potential for occurrence of palaeontology and fossil heritage features within the study area.
- Identify and rate potential direct, indirect and cumulative impacts of the proposed project on the palaeontology and fossil heritage during the construction, operational and decommissioning phases of the project. Study the cumulative impacts of the project by considering the impacts of existing renewable energy plants within the area (as well as those proposed), together with the impact of the proposed project. Impact significance must be rated both without and with mitigation. The Impact Assessment Methodology must follow that contained in Section B of this ToR, as provided by the CSIR.
- Identify any protocols, legal and permit requirements that relevant to this project and the implications thereof.
- Provide recommendations and suggestions regarding fossil heritage management on site, including conservation measures, as well as promotion of local fossil heritage (e.g. for public education, schools) to ensure that the impacts are limited.
- Provide recommendations with regards to potential monitoring programmes.
- Determine mitigation and/or management measures which could be implemented to as far as possible reduce the effect of negative impacts and enhance the effect of positive impacts. Also identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This must be included in the EMPr.
- Incorporate and address all review comments made by the Project Team (CSIR and Project Applicant) during the various revisions of the specialist report.
- Incorporate and address all issues and concerns raised by Stakeholders (i.e., SAHRA), Competent Authority, I&APs and the public during the Public Participation Process (where relevant and applicable).
- Review the Generic EMPr for 1) Power Lines and 2) Substations (GN 435) and confirm if there are any specific environmental sensitivities or attributes present on the site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, provide a list of these specific impact

management outcomes and actions based on the format of the report template provided by the CSIR.

5. Terrestrial Biodiversity and Species

- Comply with the Assessment Protocols that were published on 20 March 2020, in Government Gazette 43110, GN 320. This specifically includes the Terrestrial Biodiversity Protocol that applies to all activities requiring EA. This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations (as amended).
- Comply with the Assessment Protocols that were published on 30 October 2020, in Government Gazette 43855, GN 1150. This specifically includes the protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial animal species and terrestrial plant species. This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations (as amended).
- Provide a Site Sensitivity Verification Report based on the requirements documented in the Assessment Protocols published on 20 March 2020, in Government Gazette 43110, GN 320, and 30 October 2020, in Government Gazette 43855, GN 1150.
- Provide a Terrestrial Biodiversity and Species Specialist Report or Compliance Statement based on the requirements documented in the Assessment Protocols published on 20 March 2020, in Government Gazette 43110, GN 320, and 30 October 2020, in Government Gazette 43855, GN 1150. All necessary taxa specialists must be appointed, as required by the Species Protocol (excluding Avifauna).
- The Specialist Assessment and/or Compliance Statement must also be in adherence to any additional relevant legislation and guidelines that may be deemed necessary. It must also comply with the report templates provided by the CSIR. In addition, it must comply with the 2014 NEMA EIA Regulations (as amended), where applicable. Provide information as captured in the quote dated February 2021.
- Provide inputs to the Draft BA Report to include a description of the affected environment and environmental sensitivities, key legislation, key issues and detailed assessment of impacts. A template for such inputs will be provided by the CSIR.
- The specialist must undertake a site visit in order to identify the level of sensitivity assigned to the project area on the Screening Tool, and to verify and confirm this sensitivity and land-use and either compile a Terrestrial Biodiversity and Species Specialist Report or Compliance Statement, as documented in the Assessment Protocols published on 20 March 2020, in Government Gazette 43110, GN 320, and 30 October 2020, in Government Gazette 43855, GN 1150.
- Determine, describe and map of the baseline environmental condition and sensitivity of the study area. Specify set-backs or buffers, and provide clear reasons for these recommendations. Also map the extent of disturbance and transformation of the site.
- Provide sensitivities in KMZ or similar GIS format.
- Provide review input on the preferred infrastructure layout following the sensitivity analysis and layout identification.
- The report must also describe the terrestrial ecology features of the project area, with focus on features that are potentially impacted by the proposed project. The description should

include the major habitat forms within the study site, giving due consideration to terrestrial ecology (flora) and terrestrial ecology (fauna).
- Consider seasonal changes and long-term trends, such as due to climate change.
- Identify any species of special concern or protected species on site (e.g. protected tree species).
- The assessment is to be based on existing information, national and provincial databases, and professional experience and field work conducted by the specialist, as considered necessary and in accordance with relevant legislated requirements. The assessment must also consider the maps generated by the National Screening Tool.
- Identify and assess the potential direct, indirect and cumulative impacts of the proposed development on terrestrial biodiversity and species. Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology must follow that contained in Section B of this ToR, as provided by the CSIR.
- Identify any protocols, legal and permit requirements that are relevant to this project and the implications thereof.
- Provide recommendations with regards to potential monitoring programmes.
- Determine mitigation and/or management measures which could be implemented to as far as possible reduce the effect of negative impacts and enhance the effect of positive impacts. Also identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This must be included in the EMPr.
- Incorporate and address all review comments made by the Project Team (CSIR and Project Applicant) during the various revisions of the specialist report.
- Incorporate and address all issues and concerns raised by Stakeholders (e.g. DFFE Biodiversity and Conservation, WESSA, EWT etc.), CA, I&APs and the public during the Public Participation Process (where relevant and applicable).
- Review the Generic EMPr for 1) Power Lines and 2) Substations (GN 435) and confirm if there are any specific environmental sensitivities or attributes present on the site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, provide a list of these specific impact management outcomes and actions based on the format of the report template provided by the CSIR.

6. Aquatic Biodiversity

- Comply with the Assessment Protocols that were published on 20 March 2020, in Government Gazette 43110, GN 320. This specifically includes the Aquatic Biodiversity Protocol that applies to all activities requiring EA. This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations, as amended.
- Provide a Site Sensitivity Verification Report based on the requirements documented in the Assessment Protocols published on 20 March 2020, in Government Gazette 43110, GN 320.
- Provide an Aquatic Biodiversity and Species Specialist Report or Compliance Statement based on the requirements documented in the Assessment Protocols published on 20 March 2020, in Government Gazette 43110, GN 320.

- The Specialist Assessment and/or Compliance Statement must also be in adherence to any additional relevant legislation and guidelines that may be deemed necessary. It must also comply with the report templates provided by the CSIR. In addition, it must comply with the 2014 NEMA EIA Regulations (as amended), where applicable.
- Provide inputs to the Draft BA Report to include a description of the affected environment and environmental sensitivities, key legislation, key issues and detailed assessment of impacts. A template for such inputs will be provided by the CSIR.
- The specialist must undertake a site visit in order to identify the level of sensitivity assigned to the project area on the Screening Tool, and to verify and confirm this sensitivity and land-use and either compile an Aquatic Biodiversity and Species Specialist Report or Compliance Statement, as documented in the Assessment Protocols published on 20 March 2020, in Government Gazette 43110, GN 320.
- Determine, describe and map the baseline environmental condition and sensitivity of the study area. Specify set-backs or buffers, and provide clear reasons for these recommendations. Also map the extent of disturbance and transformation of the site.
- Provide sensitivities in KMZ or similar GIS format.
- Provide review input on the preferred infrastructure layout following the sensitivity analysis and layout identification.
- The report must also describe the aquatic ecology features of the project area, with focus on features that are potentially impacted by the proposed project. The description should include the major habitat forms within the study site, giving due consideration to aquatic ecology (flora), aquatic ecology (fauna), and freshwater ecosystems/wetlands.
- Consider seasonal changes and long-term trends, such as due to climate change.
- Identify any species of special concern or protected species on site.
- The assessment is to be based on existing information, national and provincial databases and professional experience and field work conducted by the specialist, as considered necessary and in accordance with relevant legislated requirements. The assessment must also consider the maps generated by the National Screening Tool.
- Identify and assess the potential direct, indirect and cumulative impacts of the proposed development on aquatic biodiversity and species. Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology must follow that contained in Section B of this ToR, as provided by the CSIR.
- Identify and delineate wetlands that may occur on the site, using the relevant protocols established.
- Compile a Risk Matrix (Appendix A to GN R509 of 2016) and determine if a Water Use License (WUL) is required and if so, determine the requirements thereof.
- Identify any additional protocols, legal and permit requirements that are relevant to this project and the implications thereof.
- Provide recommendations with regards to potential monitoring programmes.
- Determine mitigation and/or management measures which could be implemented to as far as possible reduce the effect of negative impacts and enhance the effect of positive impacts. Also identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This must be included in the EMPr.

- Incorporate and address all review comments made by the Project Team (CSIR and Project Applicant) during the various revisions of the specialist report.
- Incorporate and address all issues and concerns raised by Stakeholders, Competent Authority, I&APs and the public during the Public Participation Process (where relevant and applicable).
- Review the Generic EMPr for 1) Power Lines and 2) Substations (GN 435) and confirm if there are any specific environmental sensitivities or attributes present on the site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, provide a list of these specific impact management outcomes and actions based on the format of the report template provided by the CSIR.

7. Avifauna

- Comply with the Assessment Protocols that were published on 30 October 2020, in Government Gazette 43855, GN 1150. This specifically includes the protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial animal species. This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations (as amended).
- Provide a Site Sensitivity Verification Report based on the requirements documented in the Assessment Protocols published on 30 October 2020, in Government Gazette 43855, GN 1150.
- Compile an Avifaunal Impact Assessment in compliance with the Terrestrial Animal Species protocol published on 30 October 2020, in Government Gazette 43855, GN 1150. The Specialist Assessment must also be in adherence to any additional relevant legislation and guidelines that may be deemed necessary. This includes the latest Birdlife South Africa (BLSA) Guidelines for Solar PV. It must also comply with the report templates provided by the CSIR.
- Provide inputs to the Draft BA Report to include a description of the affected environment and environmental sensitivities, key legislation, key issues and detailed assessment of impacts. A template for such inputs will be provided by the CSIR.
- The specialist must undertake a site visit in order to identify the level of sensitivity assigned to the project area on the Screening Tool, and to verify and confirm this sensitivity and land-use, as well as undertake four seasonal surveys over a period of 12 months in accordance with the latest BLSA guideline for Solar PV developments (i.e., Regime 2)
- Determine, describe and map the baseline environmental condition and sensitivity of the study area in terms of avifaunal features such as habitat use, roosting, feeding and nesting/breeding. Specify set-backs or buffers, and provide clear reasons for these recommendations.
- Provide sensitivities in KMZ or similar GIS format.
- Provide review input on the preferred infrastructure layout following the sensitivity analysis and layout identification.

- Describe the affected environment from an avifaunal perspective, including consideration of the surrounding habitats and avifaunal features (e.g. Ramsar sites, Critical Bird Areas, wetlands, migration routes, feeding, roosting & nesting areas, etc.).
- Describe and map bird habitats on the site, based on on-site monitoring, desk-top review, collation of available information, studies in the local area and previous experience. The assessment must also consider the maps generated by the National Screening Tool.
- Identify and assess the potential direct, indirect and cumulative impacts of the proposed development on avifauna, including impacts that may be seasonal or diurnal, or linked to specific species and their feeding, roosting or nesting habitats and habits. Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology must follow that contained in Section B of this ToR, as provided by the CSIR.
- Identify any protocols, legal and permit requirements that are relevant to this project and the implications thereof.
- Provide recommendations with regards to potential monitoring programmes.
- Determine mitigation and/or management measures which could be implemented to as far as possible reduce the effect of negative impacts and enhance the effect of positive impacts. Also identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This must be included in the EMPr.
- Incorporate and address all review comments made by the Project Team (CSIR and Project Applicant) during the various revisions of the specialist report.
- Incorporate and address all issues and concerns raised by Stakeholders, Competent Authority, I&APs and the public during the Public Participation Process (where relevant and applicable).
- Review the Generic EMPr for 1) Power Lines and 2) Substations (GN 435) and confirm if there are any specific environmental sensitivities or attributes present on the site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, provide a list of these specific impact management outcomes and actions based on the format of the report template provided by the CSIR.

8. Socio-Economic Assessment[3]

- Comply with the Assessment Protocols that were published on 20 March 2020, in Government Gazette 43110, GN 320. This specifically includes Part A, which provides the Site Sensitivity Verification Requirements where a Specialist Assessment is required but no Specific Assessment Protocol has been prescribed. As at May 2021, there are no sensitivity layers on the Screening Tool for Socio-Economic features, and as such the site verification process must document this and provide any additional feedback as necessary.
- Compile a Socio-Economic Assessment in compliance with Appendix 6 of the 2014 NEMA EIA Regulations, as amended. The Specialist Assessment must also be in adherence to any

[3] Not applicable to the EGI projects.

additional relevant legislation and guidelines that may be deemed necessary. It must also comply with the report templates provided by the CSIR.

- Provide inputs to the Draft BA Report to include a description of the affected environment and environmental sensitivities, key legislation, key issues and detailed assessment of impacts. A template for such inputs will be provided by the CSIR.
- Undertake a site inspection to identify the site-specific sensitivities from a socio-economic perspective, and include interviews with key informants to inform the studies.
- Undertake the collection of both primary and secondary data. The former involves a site visit and interviews with the local government authorities and affected landowners and similar sensitive receptors. The latter encompasses the collection and review of relevant policies, local and provincial strategic documents, and statistics presented by Stats SA and Quantec.
- Provide review input on the preferred infrastructure layout following the sensitivity analysis and layout identification.
- Describe the socio-economic context of the study area, focusing on aspects that are potentially affected by a solar PV project, and taking into consideration the current situation as well as the trends, the local planning (Integrated Development Plans (IDPs) and Spatial Development Frameworks (SDFs)), other developments in the area. The study should look more broadly than the individual land parcels on which the proposed projects will developed, as most, if not all, of the anticipated social impacts may be experienced in the urban areas nearest to the proposed project.
- Apply a variety of appropriate options for sourcing information, such as review of analogous studies, available databases and social indicators, and use of interviews with key affected parties such as local communities, local landowners and government officials (local and regional) etc.
- The socio-economic study does not lend itself to providing a spatially based sensitivity map. Therefore, instead, the study could provide a simplified schematic mapping of the links between the project actions (i.e., interventions) and the receiving social environment (i.e., the socio-ecological system), which may occur at a local, provincial or national scale, and showing how these links can be optimized to enhance benefits and minimize negative impacts.
- Consider social issues such as potential in-migration of job seekers, opportunities offered by training and skills development, phasing of employment over the duration of the REIPPPP program, cumulative effects with other REIPPPP projects in the local area, implications for local planning and resource use.
- Evaluate the implications of the social investment programme associated with REIPPPP projects on the local socio-economic context.
- Identify and assess the potential direct, indirect and cumulative impacts of the proposed development on the receiving environment from a socio-economic perspective. For example, identify and assess potential social benefits and costs as a result of the proposed development, and including the estimated direct employment opportunities. Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology must follow that contained in Section B of this ToR, as provided by the CSIR.

- Identify any protocols, legal and permit requirements that are relevant to this project and the implications thereof.
- Provide recommendations with regards to potential monitoring programmes.
- Determine mitigation and/or management measures which could be implemented to as far as possible reduce the effect of negative impacts and enhance the effect of positive impacts. Also identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This must be included in the EMPr.
- Incorporate and address all review comments made by the Project Team (CSIR and Project Applicant) during the various revisions of the specialist report.
- Incorporate and address all issues and concerns raised by Stakeholders, Competent Authority, I&APs and the public during the Public Participation Process (where relevant and applicable).
- Review the Generic EMPr for 2) Substations (GN 435) and confirm if there are any specific environmental sensitivities or attributes present on the site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, provide a list of these specific impact management outcomes and actions based on the format of the report template provided by the CSIR.

9. Traffic Assessment[4]

- Comply with the Assessment Protocols that were published on 20 March 2020, in Government Gazette 43110, GN 320. This specifically includes Part A, which provides the Site Sensitivity Verification Requirements where a Specialist Assessment is required but no Specific Assessment Protocol has been prescribed. As at May 2021, there are no sensitivity layers on the Screening Tool for traffic features, and as such the site verification process must document this and provide any additional feedback as necessary.
- Compile a Traffic Assessment in compliance with Appendix 6 of the 2014 NEMA EIA Regulations (as amended). The Specialist Assessment must also be in adherence to any additional relevant legislation and guidelines that may be deemed necessary. It must also comply with the report templates provided by the CSIR.
- Provide inputs to the Draft BA Report to include a description of the affected environment and environmental sensitivities, key legislation, key issues and detailed assessment of impacts. A template for such inputs will be provided by the CSIR.
- Undertake a site visit to gather relevant information in terms of access, road conditions etc.
- Provide review input on the preferred infrastructure layout following the sensitivity analysis and layout identification.
- Describe the traffic and transportation context of the study area, focusing on aspects that are potentially affected by a solar PV project. The study should look more broadly than the individual land parcels on which the proposed projects will developed, as most, if not all, of the anticipated traffic impacts may be experienced on the road network nearest to the proposed project.

[4] Not applicable to the EGI projects.

- Determine and describe the baseline transport and traffic condition of the study areas. Specify setbacks where required and provide clear reasons for these recommendations.
- Consider traffic issues such as impact on the road network, congestion etc. during construction and operational phases.
- Identify and assess the potential direct, indirect and cumulative impacts of the proposed development on the receiving environment from a traffic perspective. The Impact Assessment Methodology must follow that contained in Section B of this ToR, as provided by the CSIR.
- Identify any protocols, legal and permit requirements that are relevant to this project and the implications thereof.
- Determine mitigation and/or management measures which could be implemented to as far as possible reduce the effect of negative impacts and enhance the effect of positive impacts. Also identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This must be included in the EMPr.
- Incorporate and address all review comments made by the Project Team (CSIR and Project Applicant) during the various revisions of the specialist report.
- Incorporate and address all issues and concerns raised by Stakeholders, Competent Authority, I&APs and the public during the Public Participation Process (where relevant and applicable).
- Review the Generic EMPr for Substations (GN 435) and confirm if there are any specific environmental sensitivities or attributes present on the site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, provide a list of these specific impact management outcomes and actions based on the format of the report template provided by the CSIR.

10. BESS Risk Assessment[5]

- Provide inputs to the Draft BA Report to include a description of the affected environment and environmental sensitivities, key legislation, key issues and detailed assessment of impacts. A template for such inputs will be provided by the CSIR.
- Obtain technical information, information for the solar facilities and the proposed BESS, as well as photos of the proposed locations, GPS coordinates etc. Gather all relevant Safety Health and Environmental (SHE) information e.g. locations, surroundings, topography, types of activities surrounding the sites, vulnerable receptors (based on Google Earth and information provided from other specialist reports), material listings (details of the types of batteries), inventories (battery sizes and numbers), design drawings (possible layouts), process conditions, maps, weather data, key operating instructions, emergency procedures (if available).
- Conduct telephonic/e-mail/virtual meeting discussions with operations and design staff to identify hazards and agree risk assessment terms of reference, e.g. the risk matrix to be used.
- Identify potential SHE hazardous events associated with the installation, during construction, operation and eventual decommissioning.

[5] Not applicable to the EGI projects.

- Using a suitable risk assessment matrix dimension each of the hazardous events in terms of potential consequences and likelihood. From this determine the raw risk and determine which items may need further attention. Suggest risk reduction measures that should typically be applied, e.g. National Standards, best practices, monitoring requirements. Preventative measures will be to reduce the likelihood and mitigative measures to reduce the consequences. Calculate, and document, the residual risks. Determine if any of the risks require additional risk reduction measures, e.g. separation distances from vulnerable receptors.
- Compile a high-level qualitative Risk Assessment in adherence to any additional relevant legislation and guidelines that may be deemed necessary. It must also comply with the report templates provided by the CSIR.
- The assessment must include identification, analysis and evaluation of risks associated with the preferred battery type (e.g. Lithium-Ion Battery). It must cover the construction, operation and decommissioning phases, and must be based on a qualitative analysis. The analysis must identify hazards and hazardous events and be structured and presented according to a recognised risk assessment methodology. The analysis must identify vulnerable receptors (e.g. who is exposed to the risks), and identify applicable national and international standards that should be applied (where relevant) in order to mitigate risks.
- Undertake cumulative impact modelling of 7 BESS (7 PV projects x 1 BESS per project) to inform best placement from a fire / spill / explosion perspective. If necessary, determine if certain consequence aspects can be quantified e.g. fires, explosions, toxic smoke (if applicable).
- Provide review input on the preferred infrastructure layout following the sensitivity analysis and layout identification.
- Describe the risk-related context of the study area, focusing on aspects that are potentially affected by battery storage as part of a Solar PV project.
- Identify and assess the potential direct, indirect and cumulative impacts of the proposed development on the receiving environment from a risk perspective associated with battery storage.
- Identify any protocols, legal and permit requirements that are relevant to this project and the implications thereof.
- Provide recommendations with regards to potential monitoring programmes.
- Determine mitigation and/or management measures which could be implemented to as far as possible reduce the effect of negative impacts and enhance the effect of positive impacts. Also identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This must be included in the EMPr.
- Incorporate and address all review comments made by the Project Team (CSIR and Project Applicant) during the various revisions of the specialist report.
- Incorporate and address all issues and concerns raised by Stakeholders, Competent Authority, I&APs and the public during the Public Participation Process (where relevant and applicable).

11. Geohydrology Assessment[6]

- Comply with the Assessment Protocols that were published on 20 March 2020, in Government Gazette 43110, GN 320. This specifically includes Part A, which provides the Site Sensitivity Verification Requirements where a Specialist Assessment is required but no Specific Assessment Protocol has been prescribed. As at March 2022, there are no sensitivity layers on the Screening Tool for geohydrological features, and as such the site verification process must document this and provide any additional feedback as necessary.
- Obtain data for all the project sites (i.e., obtain data from the National Groundwater Archive (and associated groundwater use databases) and internal information databases (which includes information relevant to the area)). Obtain data from the local Department of Water and Sanitation (DWS) monitoring boreholes. Obtain relevant geological maps and geohydrological maps, as well as relevant groundwater reports.
- The specialist must undertake a site visit in order to identify the level of sensitivity relating to geohydrology, and to complete a hydrocensus (i.e., visit boreholes in the area and measure yields and water quality (pH, EC, TDS and RP) for each of the 7 PV sites. The hydrocensus will extend for a radius of 1 km from each of the PV facilities study area.
- Analyse the hydrocensus data using geohydrological and spatial analysis methods to address the project objectives.
- Provide inputs that include a description of the affected environment and environmental sensitivities, key legislation and key issues/impacts/risks to be addressed. Document the results of the fieldwork and hydrocensus, including provision of a shapefile indicating areas of concern.
- Compile a Geohydrology Impact Assessment in compliance with Appendix 6 of the 2014 NEMA EIA Regulations (as amended) and Part A of the Assessment Protocols published in GN 320. The Specialist Assessment must also be in adherence to any additional relevant legislation and guidelines that may be deemed necessary, as applicable. It must also comply with the report template provided by the CSIR.
- Determination, description and mapping of the baseline environmental condition and sensitivity of the study area relating to geohydrology (including hydrogeological characterisation of aquifers (types, sensitivity, vulnerability), and groundwater (quality, quantity, use, potential for industrial or domestic use) in the area surrounding the proposed development. Specify set-backs or buffers, and provide clear reasons for these recommendations. This environmental screening will inform each project layout (the layouts can only be determined after this initial screening or mapping is undertaken). The initial screening process is required to further refine the focus areas and identify developable areas.
- Provide sensitivities in KMZ or similar GIS format.
- Provide review input on the preferred infrastructure layout following the sensitivity analysis and layout identification.
- Identify relevant permits that may be required.

[6] Not applicable to the EGI projects.

- Identify significant features or disturbances within the proposed project area and define any environmental risks in terms of geohydrology and the proposed project infrastructure.
- Confirm what type of authorisation or license is required to make use of the ground water.
- Identify and assess the potential direct, indirect and cumulative impacts of the proposed development geohydrology. Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology to be followed will be provided by the CSIR.
- Provide recommendations with regards to potential monitoring programmes.
- Determine mitigation and/or management measures which could be implemented to as far as possible reduce the effect of negative impacts and enhance the effect of positive impacts. Also identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts.
- Review the Generic EMPr for Substations (GN 435) and confirm if there are any specific environmental sensitivities or attributes present on the site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, provide a list of these specific impact management outcomes and actions based on the format of the report template provided by the CSIR. This will apply to substations at the proposed projects.
- Incorporate and address all review comments made by the Project Team (CSIR and Project Applicant) during the various revisions of the specialist reports.

12. Geotechnical Assessment[7]

- Comply with the Assessment Protocols that were published on 20 March 2020, in Government Gazette 43110, GN 320. As at July 2022, there are no sensitivity layers on the Screening Tool for geohydrological features, and as such the site verification process must document this and provide any additional feedback as necessary.
- Provide inputs to the Draft BA Report to include a description of the affected environment and environmental sensitivities, key legislation, key issues and detailed assessment of impacts. A template for such inputs will be provided by the CSIR.
- Obtain technical information, information for the solar facilities as well as photos of the proposed locations, GPS coordinates etc. Gather all relevant geotechnical information e.g. locations, surroundings, topography, types of activities surrounding the sites, vulnerable receptors (based on Google Earth and information provided from other specialist reports), design drawings (possible layouts) and maps.
- Obtain all data relevant to the project (i.e.,, previous geotechnical reports), and conduct a search of the internal GEOSS database (including relevant information pertinent to the site). Review/acquire geological, geotechnical, and hydrogeological maps for the area. Review any reports that have been compiled for the study area. Compile a project GIS.
- Determine whether problem soils and/or geohazards are present across the site.

[7] Not applicable to the EGI projects.

- Evaluate the geological and geotechnical conditions and their influence on the founding conditions.
- Assess potential uses for materials present on-site and possible incorporation of such materials in construction activities.
- Delineate geological features of interest, e.g. steep slopes, outcrops, faults, lineaments, and/or steep slopes, that may have an impact on the development.
- Assess the influence of the groundwater on construction and development.
- Document the results obtained in a preliminary geotechnical desktop report in adherence to any additional relevant legislation and guidelines that may be deemed necessary. The report must provide information guiding future geotechnical investigations required for the proposed solar cluster development.
- The assessment must include identification, analysis and evaluation of geotechnical risks associated with the proposed development activities. It must cover the construction, operation and decommissioning phases.
- Provide review input on the preferred infrastructure layout following the sensitivity analysis and layout identification.
- Describe the risk-related context of the study area.
- Identify and assess the potential direct, indirect and cumulative impacts of the proposed development on the receiving environment from a geotechnical perspective.
- Identify any protocols, legal and permit requirements that are relevant to this project and the implications thereof.
- Determine mitigation and/or management measures which could be implemented to as far as possible reduce the effect of negative impacts and enhance the effect of positive impacts. Also identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This must be included in the EMPr.
- Incorporate and address all review comments made by the Project Team (CSIR and Project Applicant) during the various revisions of the specialist report.
- Incorporate and address all issues and concerns raised by Stakeholders, Competent Authority, I&APs and the public during the Public Participation Process (where relevant and applicable).

Appendix D

Site Sensitivity Verification (in terms of Part A of the Assessment Protocols published in GN 320 on 20 March 2020)

▪ Appendix D - Site Sensitivity Verification

Prior to commencing with the specialist assessment in accordance with Appendix 6 of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) Environmental Impact Assessment (EIA) Regulations of 2014, a site sensitivity verification was undertaken in order to confirm the current land use and environmental sensitivity of the project area for the proposed Padloper Solar Energy Facility (SEF) and Electrical Grid Infrastructure (EGI) Projects 5 - 7 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),

The details of the site sensitivity verification are noted below:

Date of Site Visit	23 – 24 August 2022
Specialist Name	Assessment undertaken by Kerry Schwartz Field investigation undertaken by Tshisevhe Tshifhango
Professional Registration Number	South African Geomatics Council – GTc GISc 1187
Specialist Affiliation / Company	SLR Consulting

1. Site Sensitivity Verification

A site sensitivity verification has been conducted in support of the Visual Impact Assessment (VIA) for the Padloper PV and EGI Projects 5 - 7 near Murraysburg in the Western Cape Province. The verification exercise is based on a desktop-level assessment supported by field-based observation and involved an assessment of factors as outlined below.

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 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.

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 (2022) 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.

1.3 Fieldwork and photographic review

A two (2) day site visit was undertaken between the 23rd and the 24th of January 2022 (late winter). 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).

1.4 Sources of Information

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

- Elevation data (5m contours) 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 (2020);
- Vegetation classification data extracted from the South African National Biodiversity Institute's (SANBI's) VEGMAP 2018 dataset;
- Google Earth Satellite imagery 2022;
- The National Web-Based Environmental Screening Tool, Department of Forestry, Fisheries and Environment (DFFE);

2. Outcome of Site Sensitivity Verification

Overall, sparse human habitation and the predominance of natural vegetation cover across much of the study area would give the viewer the general impression of a largely natural setting with some pastoral elements. As such, SEF and EGI development would alter the visual character and contrast significantly with the typical land use and/or pattern and form of human elements present across the broader study area.

A broad-scale assessment of landscape sensitivity, based on the physical characteristics of the study area, economic activities and land use that predominates, determined that the area would have a MODERATE visual sensitivity.

A site sensitivity assessment was undertaken to inform the site layouts and route alignments for the SEF and EGI projects. The aim of this exercise was to indicate any areas which should be precluded from the development footprint. From a visual perspective, sensitive areas would be areas where the establishment of PV arrays and grid connection infrastructure would result in the greatest probability of visual impacts on sensitive or potentially sensitive visual receptors.

Solar Energy Facilities

Using GIS-based visibility analysis, it was possible to determine which sectors of each PV project assessment area would be visible to the highest numbers of receptors in the study area. Overall, the 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 PV panel would be exacerbated if located on any ridges or a relatively higher-lying plateaus on the site. It was therefore initially recommended that PV panels should preferably not be located on the highest ridges within the Padloper SEF project areas. However, while these ridges could be seen as areas of potentially high visual sensitivity, the study area as a whole is rated as having a moderate visual sensitivity, and as such, the sensitivity rating would be reduced to "**Medium**". **Hence the ridges are not considered to be "no go areas", but rather should be viewed as zones where PV Array placement would be least preferred.**

In determining visual sensitivity, consideration was also given to the potential direct visual impact of the PV arrays on any farmsteads or receptors located in, or within 500m of the project area and also on passing

motorists. The exclusion of PV arrays from these areas will reduce visual impacts and prevent significantly adverse impacts of glint and glare on the local residents and on passing motorists, although the full extent of these impacts can only be determined by way of a Glint and Glare Impact Assessment.

Accordingly, zones of visual sensitivity have been delineated on each site as necessary. It should be stressed that these zones apply to PV array development only. The visual impacts resulting from the associated on-site infrastructure are considered to have far less significance when viewed in the context of the SEF as a whole and as such the associated on-site infrastructure has been excluded from the sensitivity analysis.

Sensitivities applicable to each of the four Padloper PV projects are explained below.

2.1 Padloper PV Project 5

In addition to some scattered areas of higher elevation, the zones of potential visual sensitivity include a 500m buffer around the three residences / farmhouses within 500 m of the farm portion boundary. The PV Array Area for Padloper PV Project 5 has avoided these areas.

Zones of potential visual sensitivity are shown in Figure 1

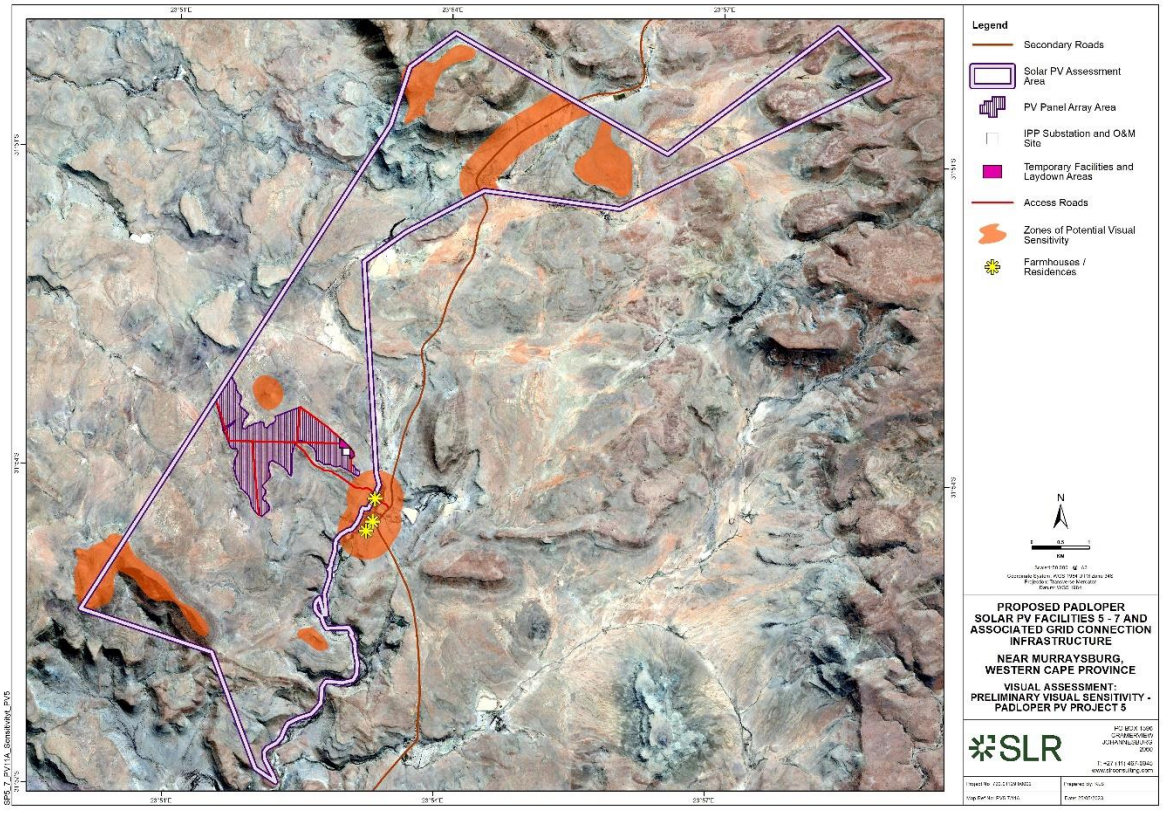


Figure 1: Areas of Potential Visual Sensitivity in the Padloper PV Project 5 Project Area

2.2 Padloper PV Project 6

In addition to some scattered areas of higher elevation, the zones of potential visual sensitivity include a 500m buffer around the residence / farmhouse on the farm portion as well a 300m buffer along the Secondary Road that traverses the farm portion.

For the most part, the PV Array Area for Padloper PV Project 6 has avoided these areas. The array area has however extended into the buffer zone along a section of the Secondary Road, although this is not seen as a fatal flaw. Aside from the fact that these zones are ***not*** viewed as "no-go" areas, the Secondary Road is not specifically valued or utilised for its scenic or tourism potential and is not regarded as visually sensitive.

Zones of potential visual sensitivity are shown in Figure 2

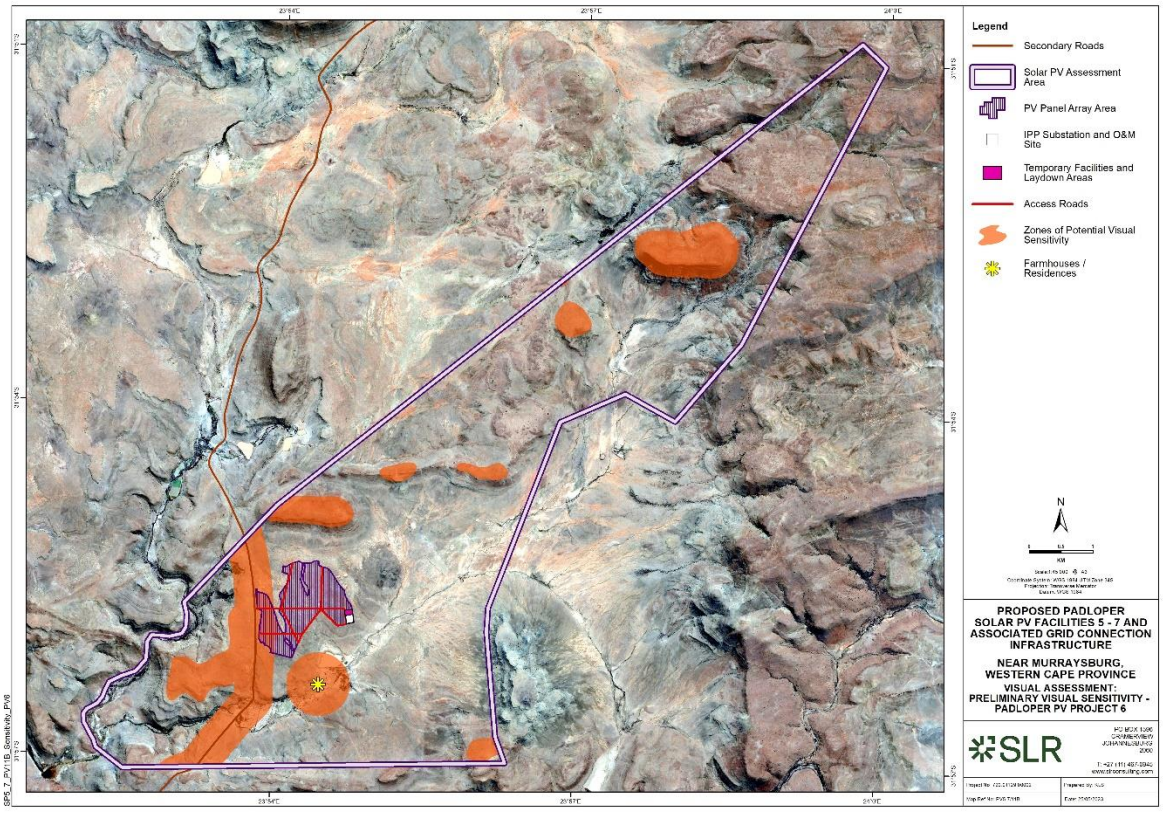


Figure 2: Areas of Potential Visual Sensitivity in the Padloper PV Project 6 Project Area

2.3 Padloper PV Project 7

In addition to some scattered areas of higher elevation, the zones of potential visual sensitivity include a 500m buffer around the residence / farmhouse on the farm portion as well a 300m buffer along the Secondary Road that traverses the farm portion.

For the most part, the PV Array Area for Padloper PV Project 7 has avoided these areas. The array area has however extended into the buffer zone around the residence on the farm portion, although this is not seen as a fatal flaw. Aside from the fact that these zones are not viewed as "no-go" areas, it is assumed that the landowner is involved in the Padloper Solar PV Cluster project and would not consider the development to be intrusive.

Zones of potential visual sensitivity are shown in Figure 3.

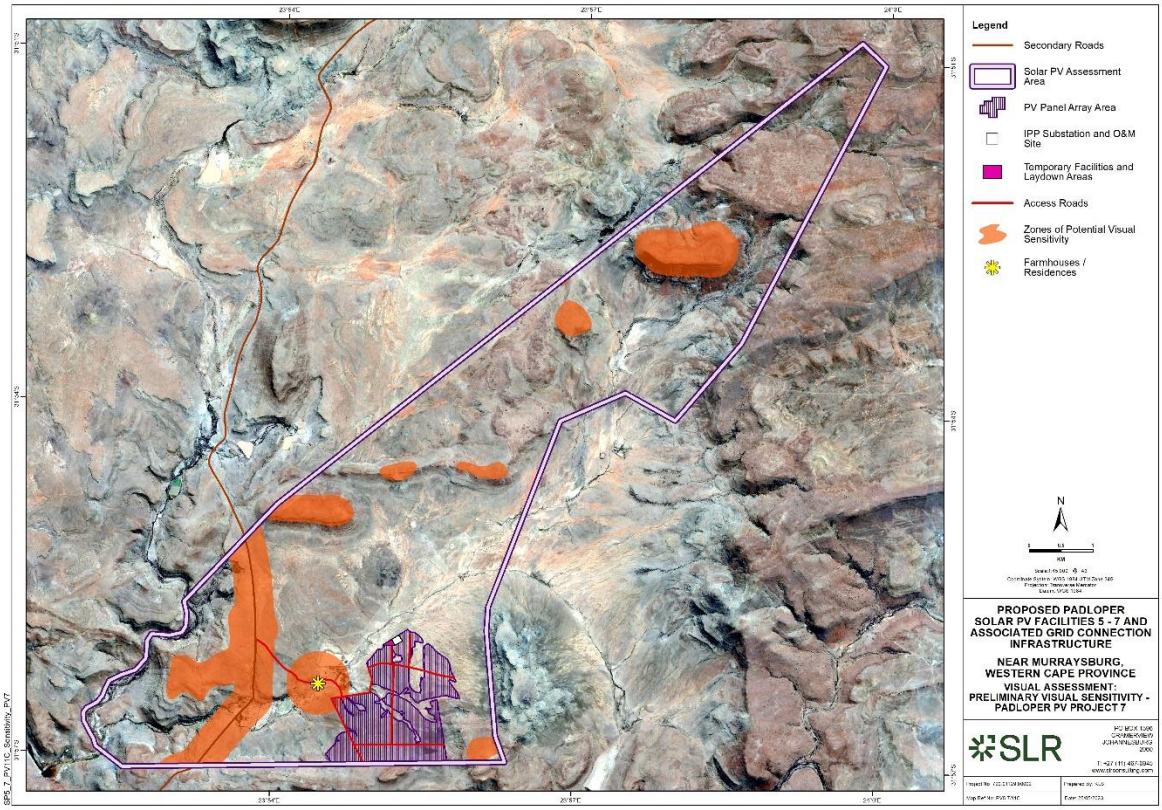


Figure 3: Areas of Potential Visual Sensitivity in the Padloper PV Project 7 Project Area

Electrical Grid Infrastructure

Using GIS-based visibility analysis, it was possible to determine which sectors of the grid assessment corridors would be visible to the highest numbers of receptors in the study area. This analysis considered all the sensitive and potentially sensitive receptor locations identified. However, due to the nature of the terrain and the fact that there are relatively few affected receptors, widely scattered across the area, the more visible sections of grid assessment corridors were not considered to be significantly sensitive. In addition, investigation determined that the only residence within 500m of any of the grid assessment corridors is VR11 which is located within the project assessment area (farm portion) for PV Projects 6 and 7. It is therefore assumed that the landowner is involved in the Padloper Solar PV Cluster project and would not consider the development to be intrusive.

As such, no specific areas of visual sensitivity were identified along any of the proposed route alignments for the Padloper EGI Projects 5 - 7.

3. National Environmental Screening Tool

In assessing the visual sensitivity of the proposed Padloper PV and EGI Projects 5 - 7, consideration was given to the Landscape Theme of the National Environmental Screening Tool. Landscape sensitivity identified by the screening tool for each of the three PV project areas is described below. It should be noted that this sensitivity rating relates to solar PV development only. The tool does not identify any landscape sensitivities in respect of powerlines and substations.

3.1 Padloper PV Project 5

The Landscape Theme of the National Environmental Screening Tool identifies areas of very high sensitivity in respect of solar PV development within the project area for Padloper PV Project 5 (**Error! Reference source not found.**4). According to the Screening Tool, aside from some areas identified as mountain tops, high ridges and steep slopes, much of the site is within 20 km of a South African Large Telescope and this factor has resulted in areas of "Very High" landscape sensitivity across almost all of the site, including the area identified for the PV Panel arrays.

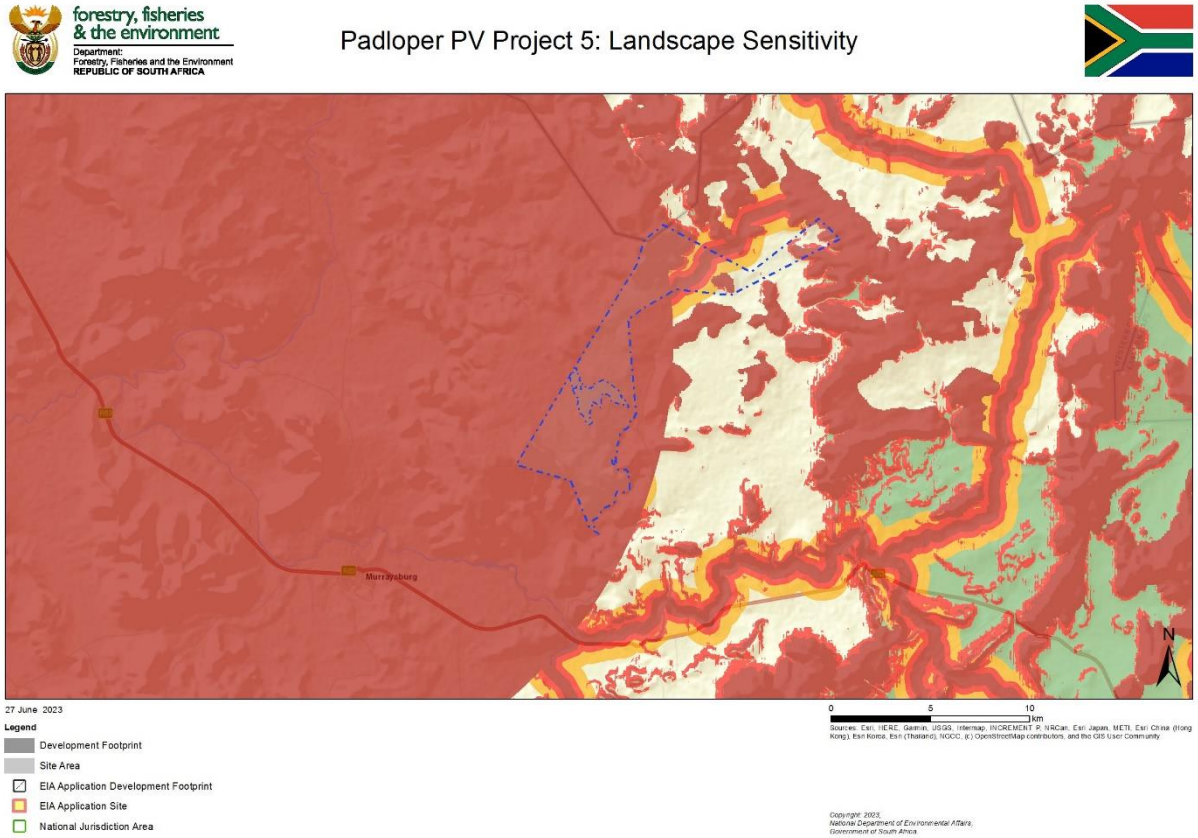


Figure 4: Relative Landscape Sensitivity within the project area for the Padloper PV Project 5 (June 2023)

3.2 Padloper PV Project 6

The Landscape Theme of the National Environmental Screening Tool identifies areas of very high sensitivity in respect of solar PV development on the Padloper PV Project 6 (**Error! Reference source not found.**). According to the Screening Tool, aside from some areas identified as mountain tops, high ridges and steep slopes, the south-western sector of the site is within 20 km of a South African Large Telescope

and this factor has resulted in some areas of “Very High” landscape sensitivity on the site. The proposed PV Panel Array area for Padloper PV Project 6 is entirely outside the area of high sensitivity.

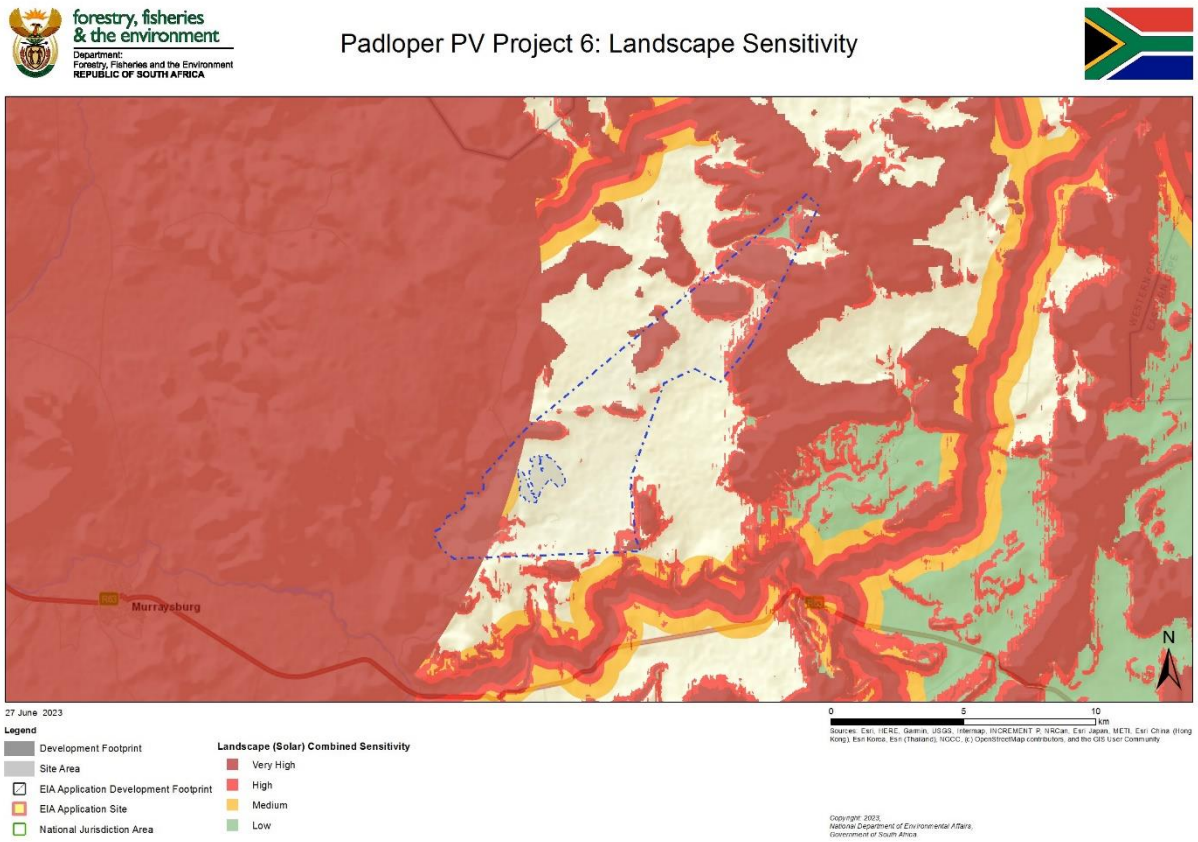


Figure 5: Relative Landscape Sensitivity within the project area for the Padloper PV Project 6 (June 2023)

3.3 Padloper PV Project 7

As with Padloper PV project 6, the Landscape Theme of the National Environmental Screening Tool identifies areas of very high sensitivity in respect of solar PV development on the Padloper PV Project 7 (Error! Reference source not found.). According to the Screening Tool, aside from some areas identified as mountain tops, high ridges and steep slopes, the south-western sector of the site is within 20 km of a South African Large Telescope and this factor has resulted in some areas of “Very High” landscape sensitivity on the site. The proposed PV Panel Array area for Padloper PV Project 7 is entirely outside the area of high sensitivity.

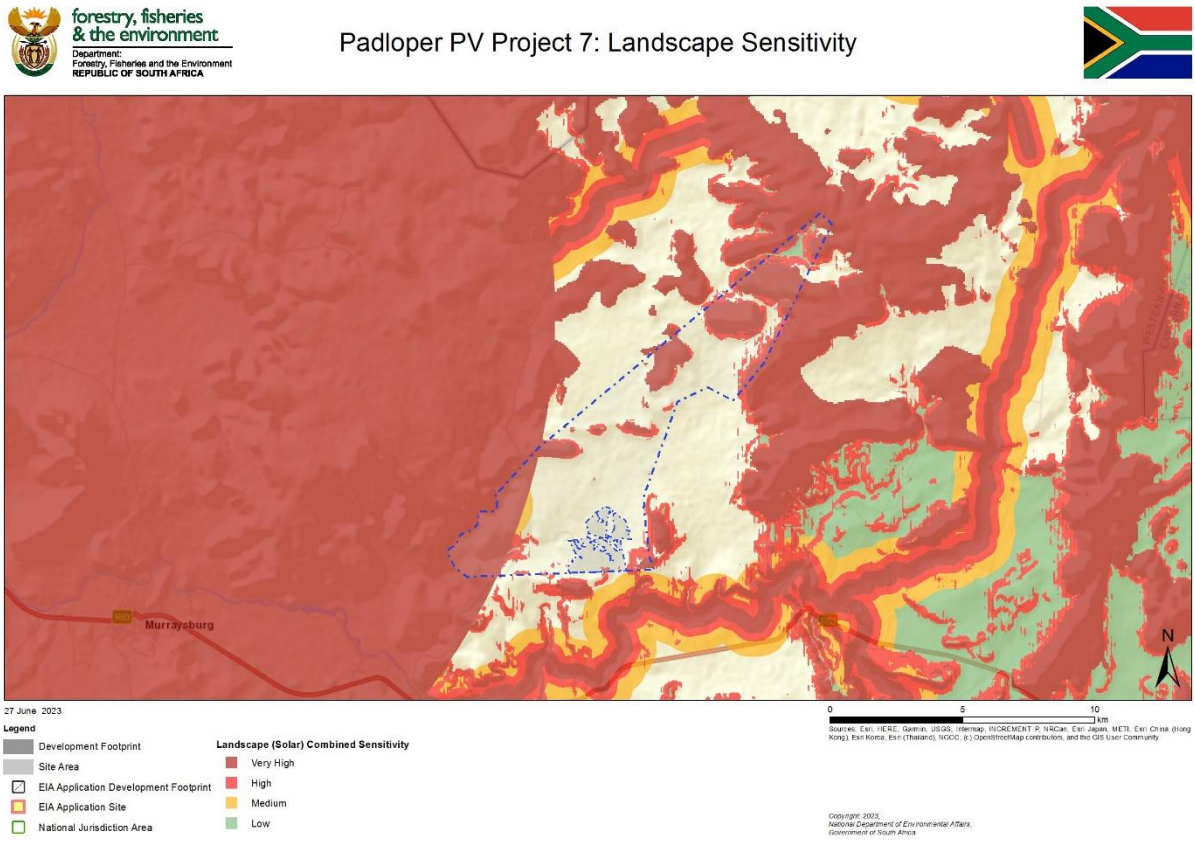


Figure 6: Relative Landscape Sensitivity within the project area for the Padloper PV Project 7 (June 2023)

The Screening Tool is however a very high level, desktop study and as such the results of the study must be viewed against the findings of the field investigation as well as factors affecting visual impacts such as:

- the presence of visual receptors;
- the distance of those receptors from the proposed development;
- the likely visibility of the development from the receptor locations; and
- the degree of landscape transformation and / or degradation already present.

4. Sensitivity Analysis Summary

Although the Screening Tool identifies significant areas of very high landscape sensitivity for padloper PV Projects 5 - 7, the site sensitivity verification exercise conducted in respect of this VIA did not indicate the presence of mountaintops, high ridges or any significantly steep slopes. This assessment, confirmed by the field investigation, showed the presence of undulating and hilly terrain with some koppies and hills in evidence The sensitivity analysis above has recognised these ridges and identified the higher ridges as zones where development would be least preferred. In addition, efforts to obtain confirmation of the presence of a large telescope within 20km of the site have not been successful and as such this factor has not been included in the sensitivity analysis.

5. Conclusion

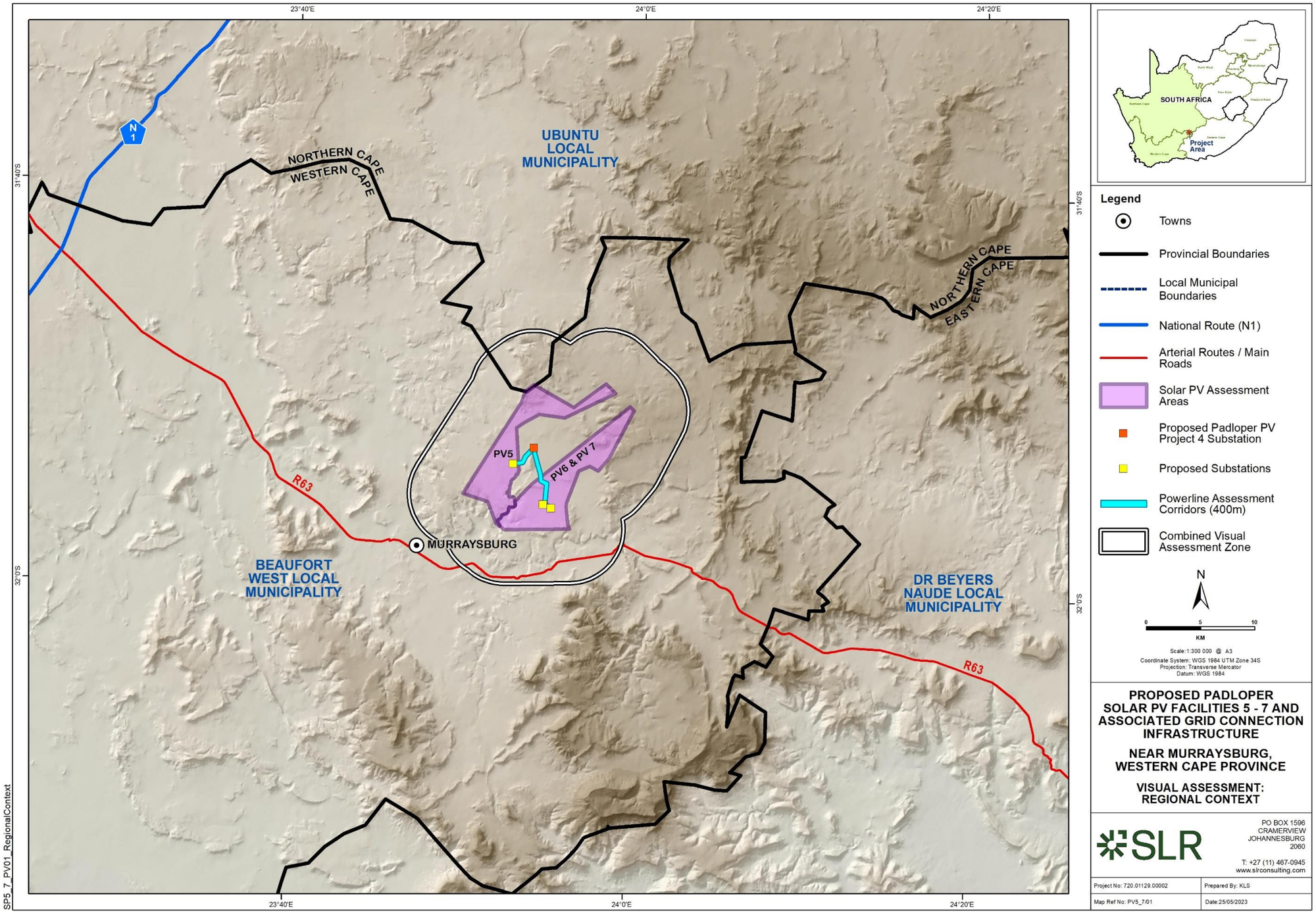
A site sensitivity verification has been conducted in respect of the VIA for the proposed Padloper PV and EGI Projects 5 – 7 near Murraysburg in the Western Cape Province. This verification has been based on a desktop-level assessment supported by field-based observation.

As outlined above, the sensitivities identified have been further assessed in relation to the sensitivities identified in terms of the Landscape Theme of the National Environmental Screening Tool and the areas identified as visually sensitive during the course of the specialist VIA and associated field work have been verified.

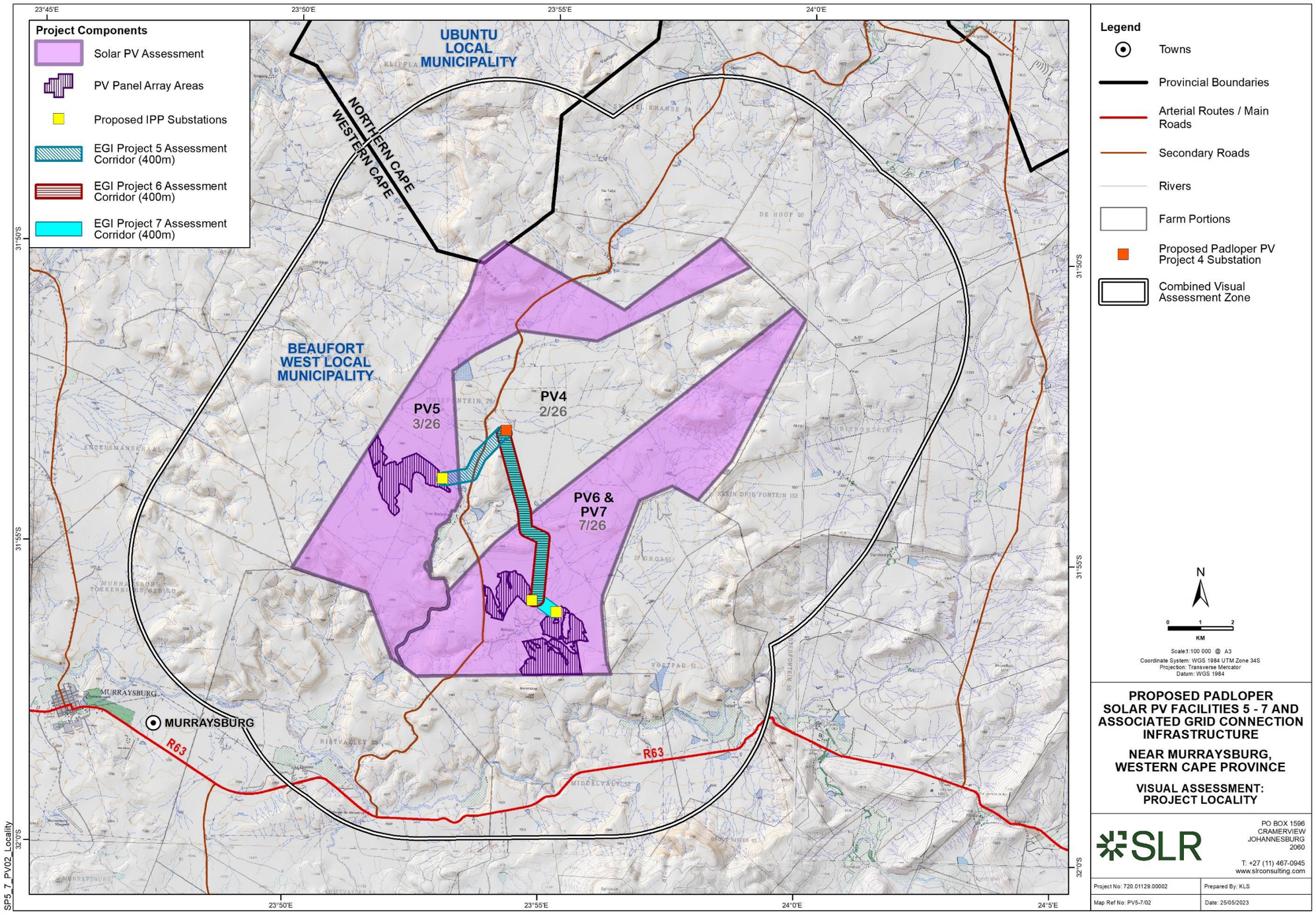
Appendix E

Maps

MAP 1: Regional Context



MAP 2: Project Locality



PROPOSED PADLOPER SOLAR PV FACILITIES 5 - 7 AND ASSOCIATED GRID CONNECTION INFRASTRUCTURE

NEAR MURRAYSBURG, WESTERN CAPE PROVINCE

VISUAL ASSESSMENT: PROJECT LOCALITY

SLR

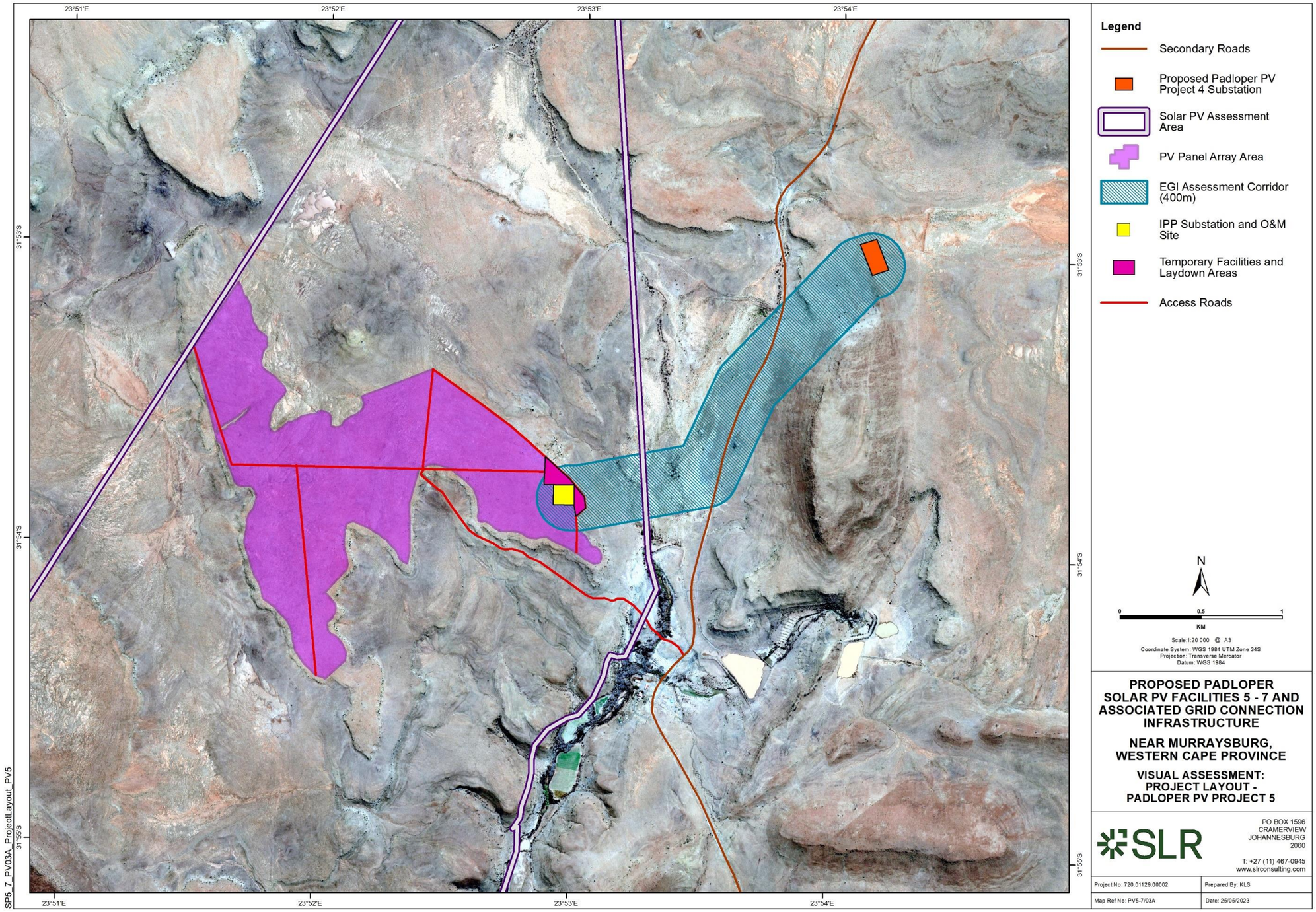
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Map Ref No: PV5-7/02	Date: 25/05/2023

SP5_7_PV02_Locality

MAP 3A: Project Layout – Padloper PV Project 5



PROPOSED PADLOPER SOLAR PV FACILITIES 5 - 7 AND ASSOCIATED GRID CONNECTION INFRASTRUCTURE

NEAR MURRAYSBURG, WESTERN CAPE PROVINCE

VISUAL ASSESSMENT: PROJECT LAYOUT - PADLOPER PV PROJECT 5

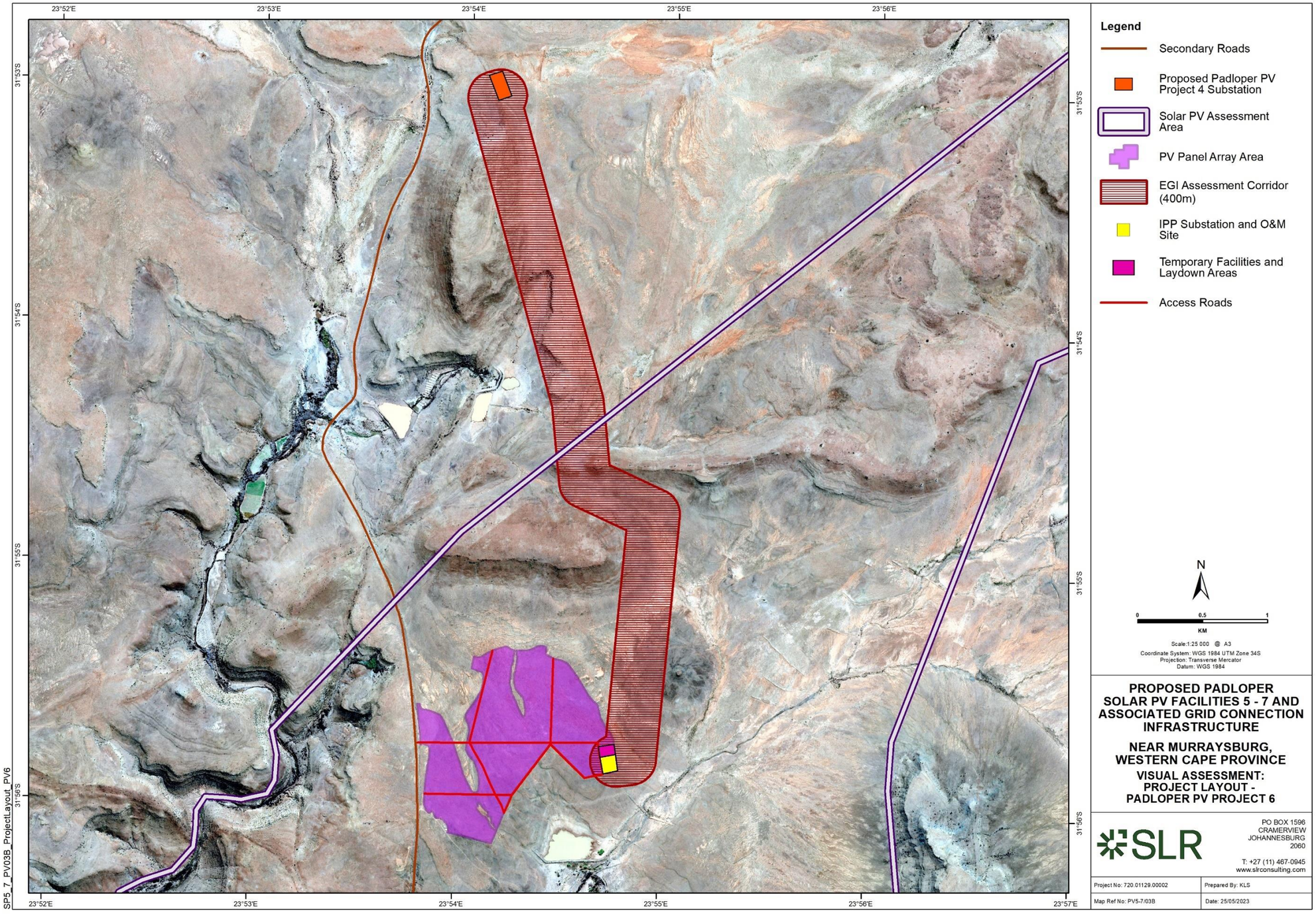
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Map Ref No: PV5-7/03A	Date: 25/05/2023

MAP 4B: Project Layout – Padloper PV Project 6



PROPOSED PADLOPER SOLAR PV FACILITIES 5 - 7 AND ASSOCIATED GRID CONNECTION INFRASTRUCTURE

NEAR MURRAYSBURG, WESTERN CAPE PROVINCE

VISUAL ASSESSMENT: PROJECT LAYOUT - PADLOPER PV PROJECT 6

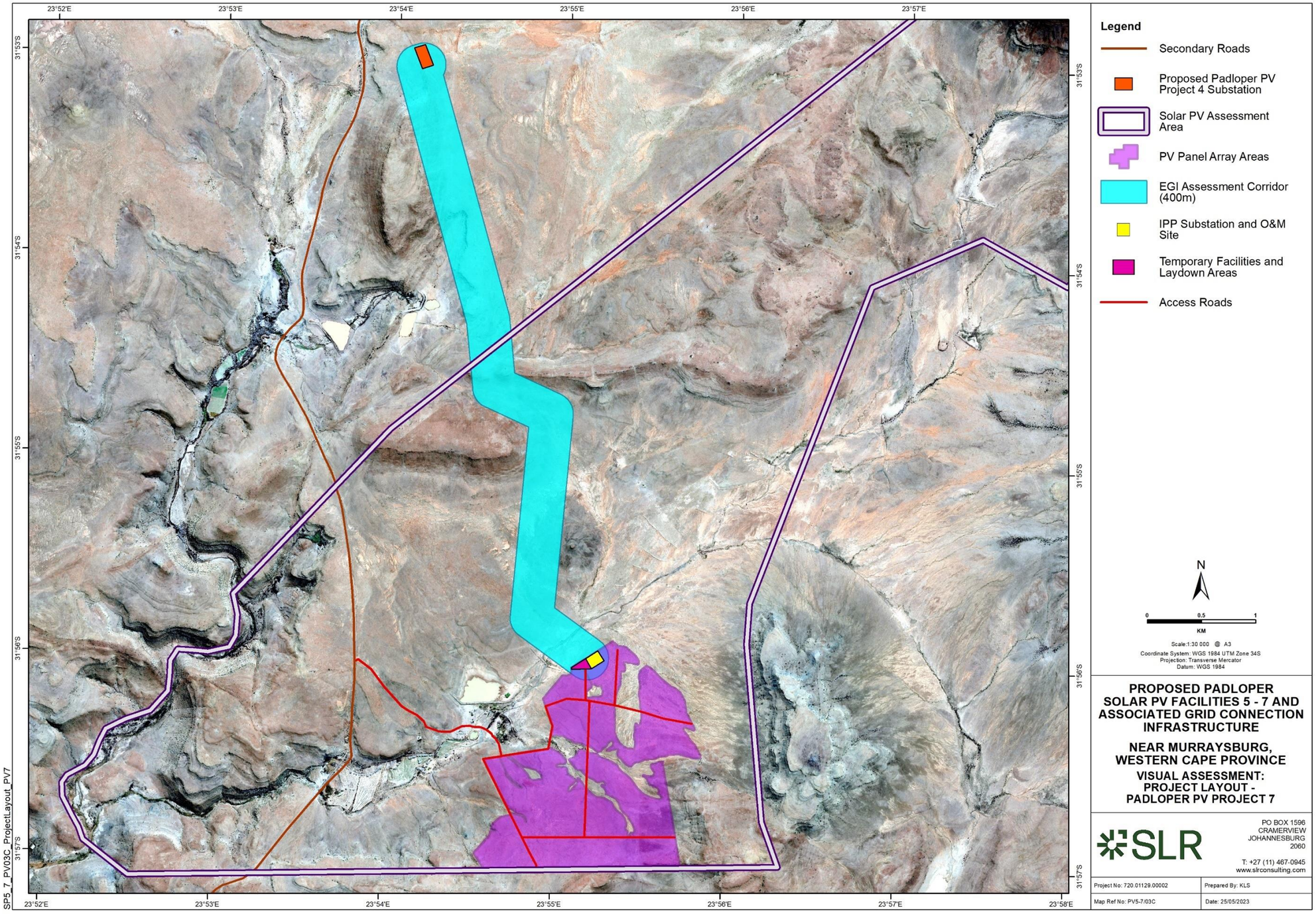
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Project No: 720.01129.00002	Prepared By: KLS
Map Ref No: PV5-7/03B	Date: 25/05/2023

MAP 5C: Project Layout – Padloper PV Project 6



Legend

- Secondary Roads
- Proposed Padloper PV Project 4 Substation
- Solar PV Assessment Area
- PV Panel Array Areas
- EGI Assessment Corridor (400m)
- IPP Substation and O&M Site
- Temporary Facilities and Laydown Areas
- Access Roads

N

0 0.5 1
KM

Scale:1:30 000 @ A3
Coordinate System: WGS 1984 UTM Zone 34S
Projection: Transverse Mercator
Datum: WGS 1984

PROPOSED PADLOPER SOLAR PV FACILITIES 5 - 7 AND ASSOCIATED GRID CONNECTION INFRASTRUCTURE

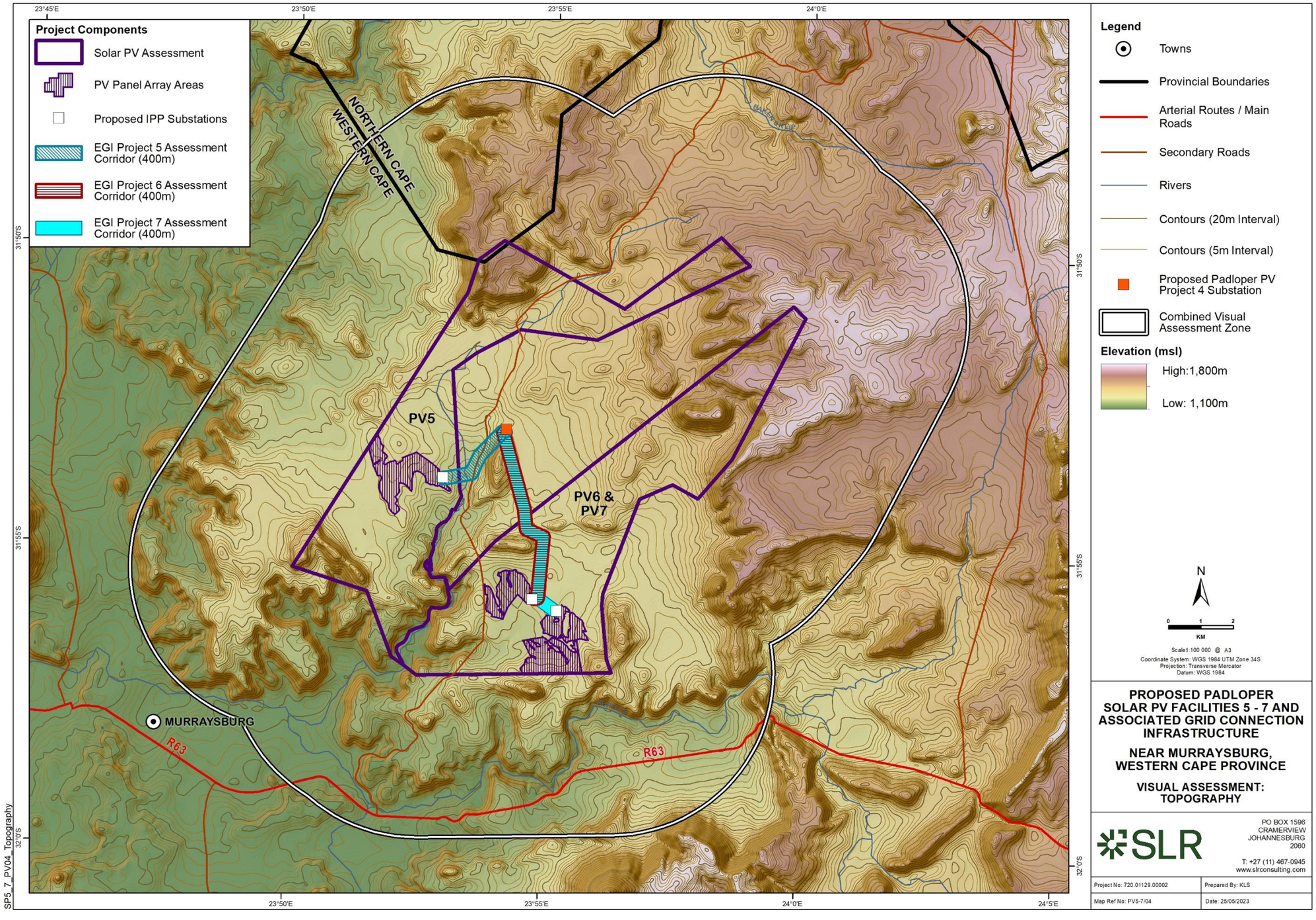
NEAR MURRAYSBURG, WESTERN CAPE PROVINCE

VISUAL ASSESSMENT: PROJECT LAYOUT - PADLOPER PV PROJECT 7

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Project No: 720.01129.00002	Prepared By: KLS
Map Ref No: PV5-7/03C	Date: 25/05/2023

MAP 6: Topography



PROPOSED PADLOPER SOLAR PV FACILITIES 5 - 7 AND ASSOCIATED GRID CONNECTION INFRASTRUCTURE

NEAR MURRAYSBURG, WESTERN CAPE PROVINCE

VISUAL ASSESSMENT: TOPOGRAPHY

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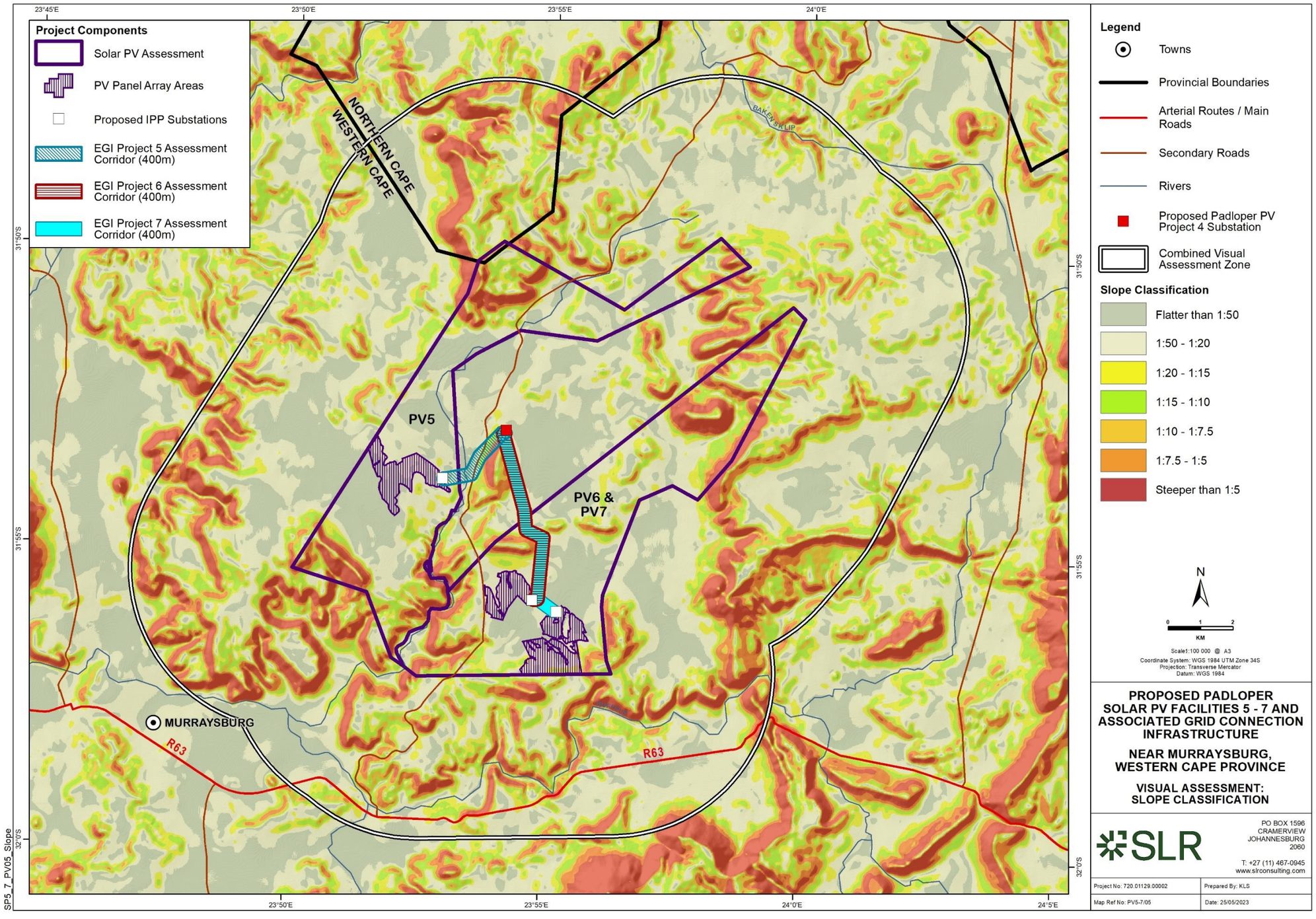
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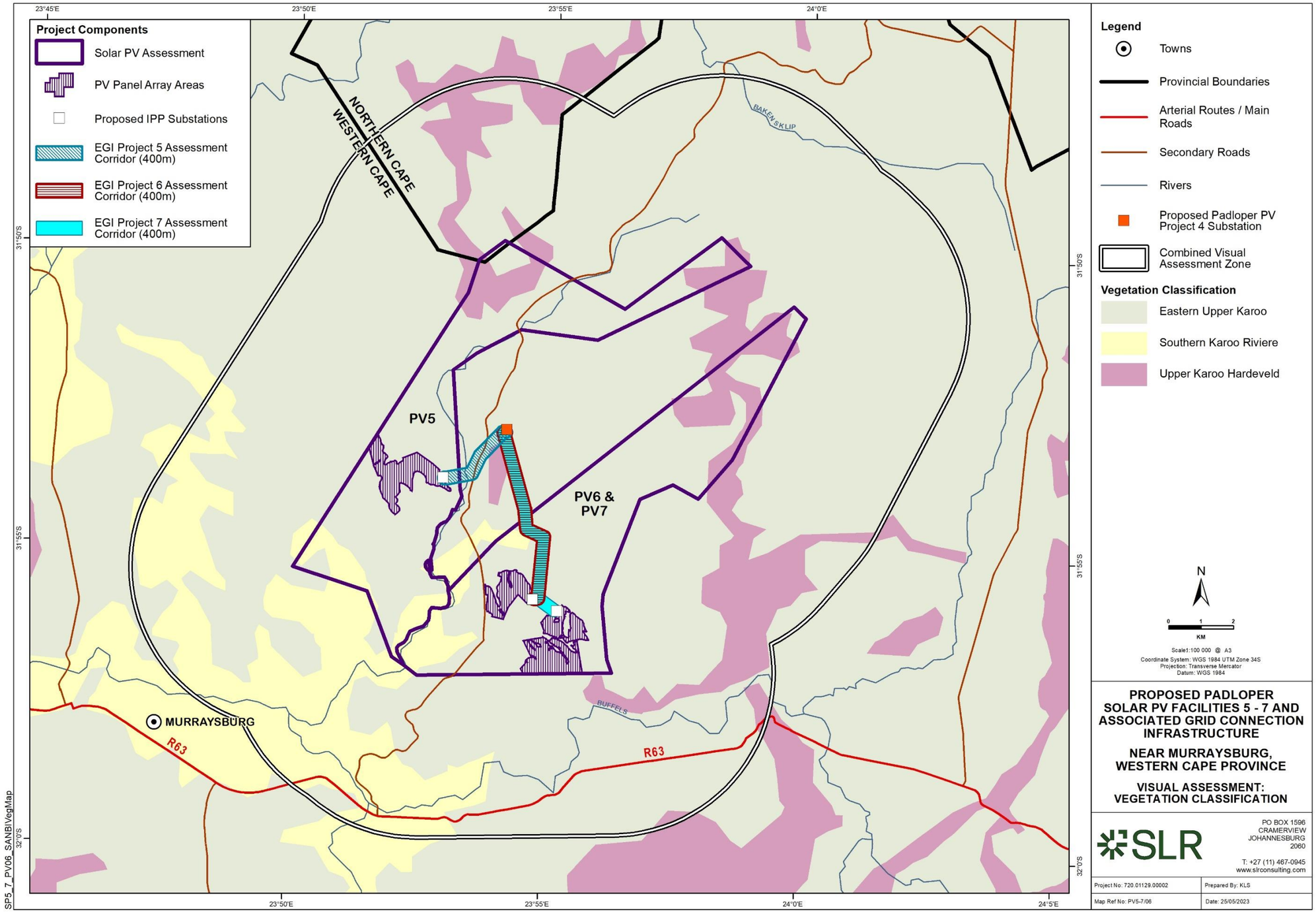
Project No: 720.01129.00002	Prepared By: KLS
Map Ref No: PV5-7/04	Date: 25/05/2023

SP5_7_PV04_Topography

MAP 5: Slope Classification



MAP 6: Vegetation Classification



PROPOSED PADLOPER SOLAR PV FACILITIES 5 - 7 AND ASSOCIATED GRID CONNECTION INFRASTRUCTURE

NEAR MURRAYSBURG, WESTERN CAPE PROVINCE

VISUAL ASSESSMENT: VEGETATION CLASSIFICATION

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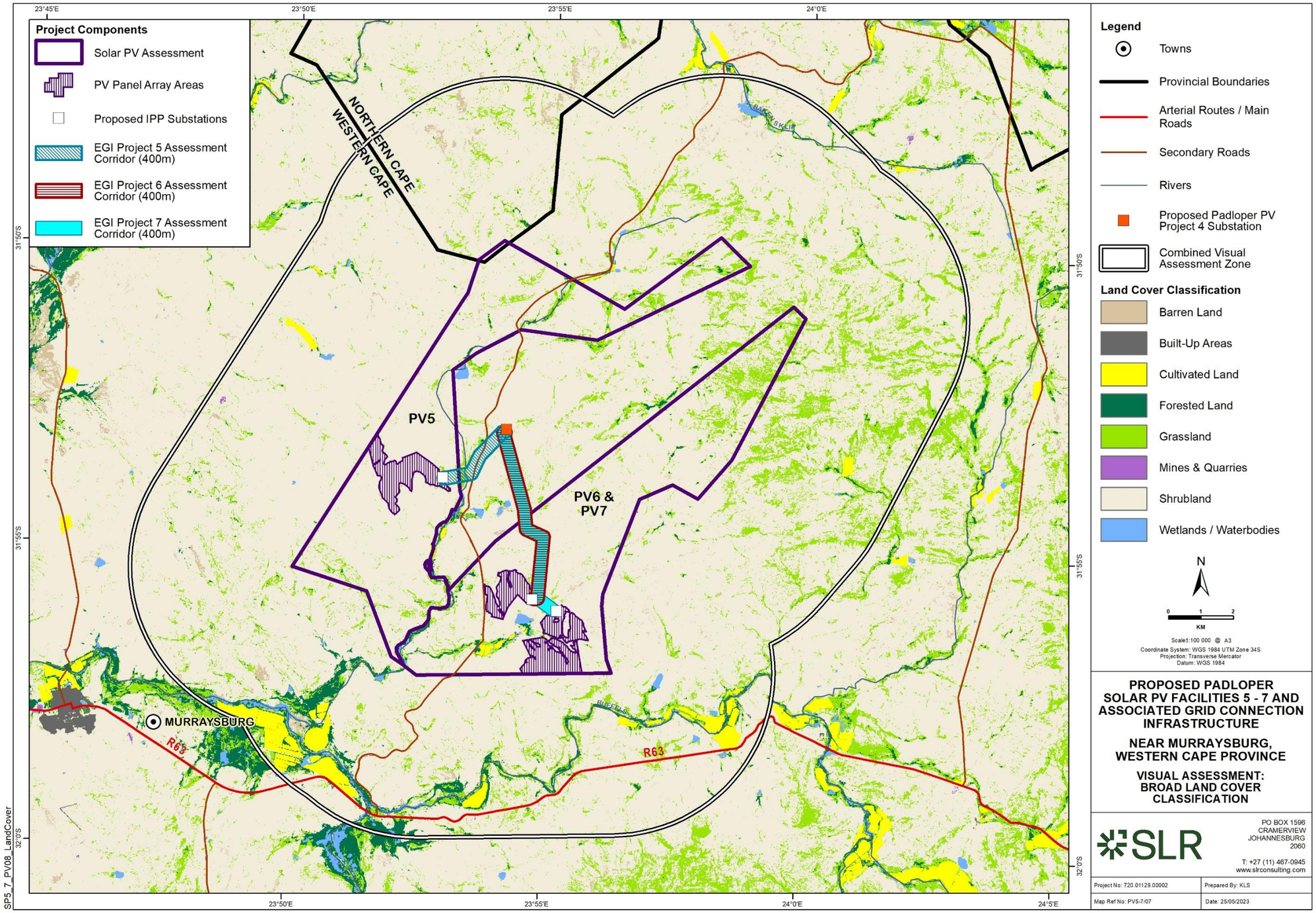
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SP5_7_PV06_SANBiVegMap

MAP 7: Land Cover Classification



PROPOSED PADLOPER SOLAR PV FACILITIES 5 - 7 AND ASSOCIATED GRID CONNECTION INFRASTRUCTURE

NEAR MURRAYSBURG, WESTERN CAPE PROVINCE

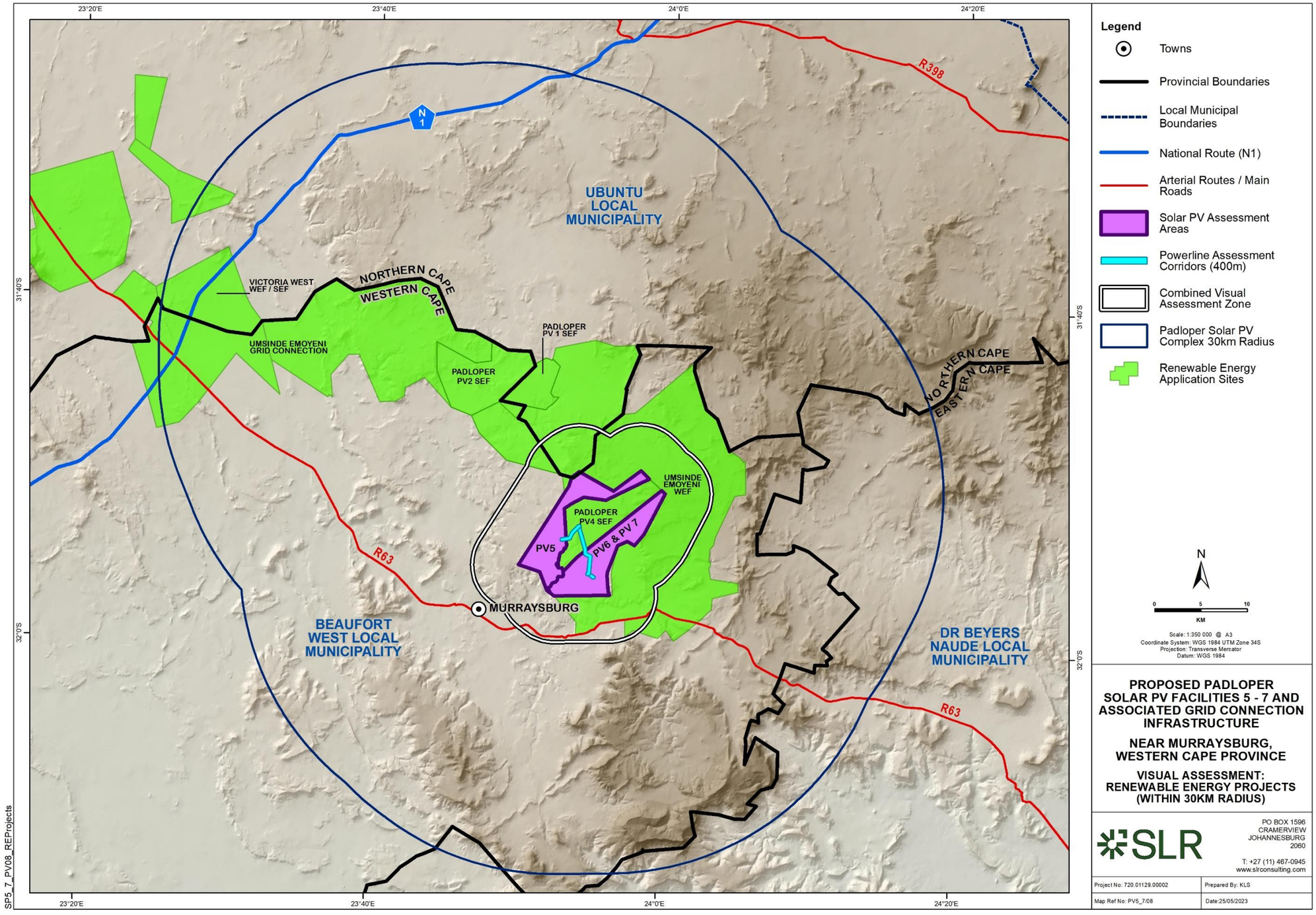
VISUAL ASSESSMENT: BROAD LAND COVER CLASSIFICATION

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SP5_7_PV08_LandCover

MAP 8: Renewable Energy Projects within 30km Radius



Legend

- Towns
- Provincial Boundaries
- Local Municipal Boundaries
- National Route (N1)
- Arterial Routes / Main Roads
- Solar PV Assessment Areas
- Powerline Assessment Corridors (400m)
- Combined Visual Assessment Zone
- Padloper Solar PV Complex 30km Radius
- Renewable Energy Application Sites

N

0 5 10
KM

Scale: 1:350 000 @ A3
Coordinate System: WGS 1984 UTM Zone 34S
Projection: Transverse Mercator
Datum: WGS 1984

PROPOSED PADLOPER SOLAR PV FACILITIES 5 - 7 AND ASSOCIATED GRID CONNECTION INFRASTRUCTURE

NEAR MURRAYSBURG, WESTERN CAPE PROVINCE

VISUAL ASSESSMENT: RENEWABLE ENERGY PROJECTS (WITHIN 30KM RADIUS)

SLR

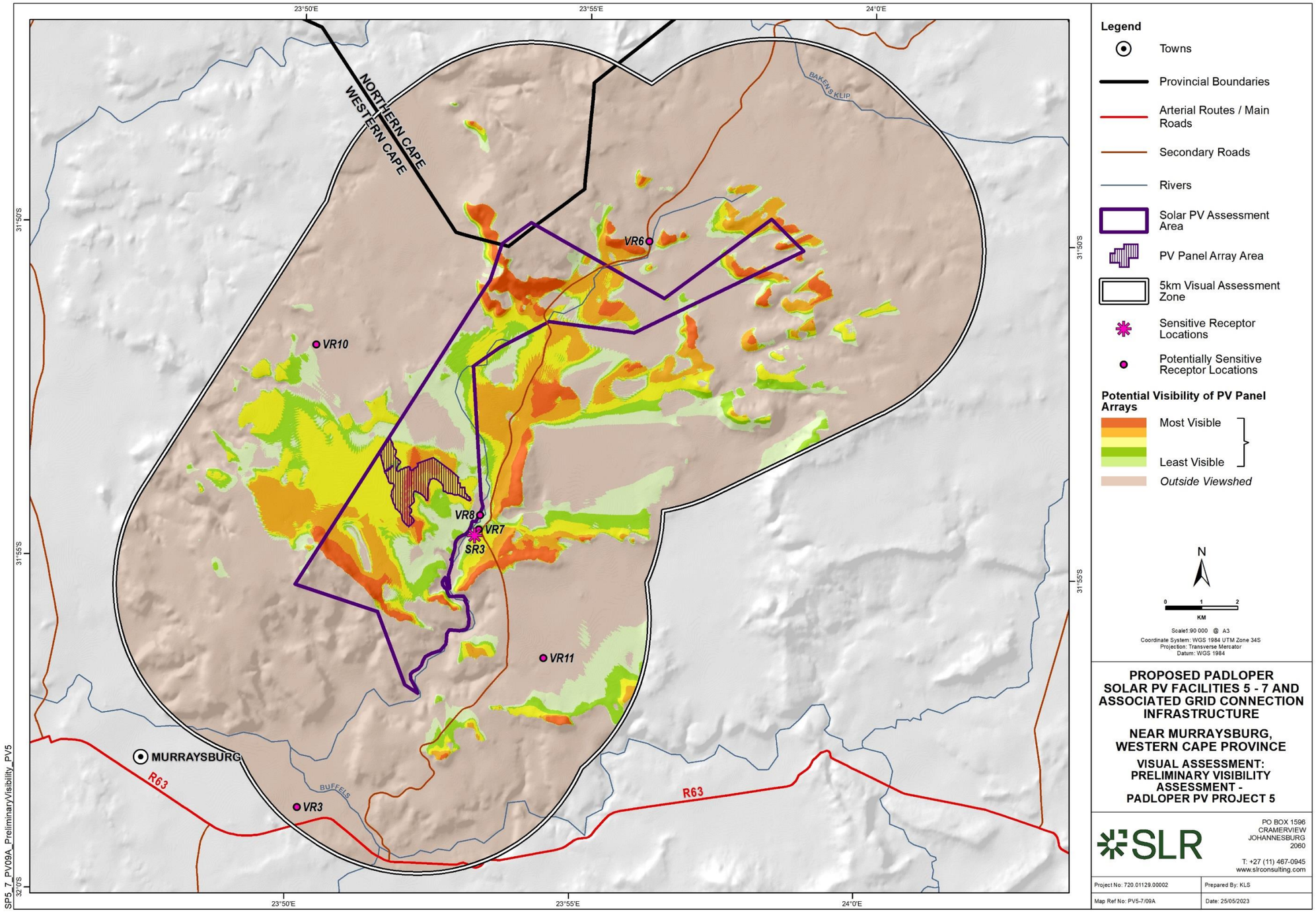
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SP5_7_PV08_REProjects

MAP 9A: Potential Visibility of PV Arrays – Padloper PV Project 1



PROPOSED PADLOPER SOLAR PV FACILITIES 5 - 7 AND ASSOCIATED GRID CONNECTION INFRASTRUCTURE

NEAR MURRAYSBURG, WESTERN CAPE PROVINCE

VISUAL ASSESSMENT: PRELIMINARY VISIBILITY ASSESSMENT - PADLOPER PV PROJECT 5

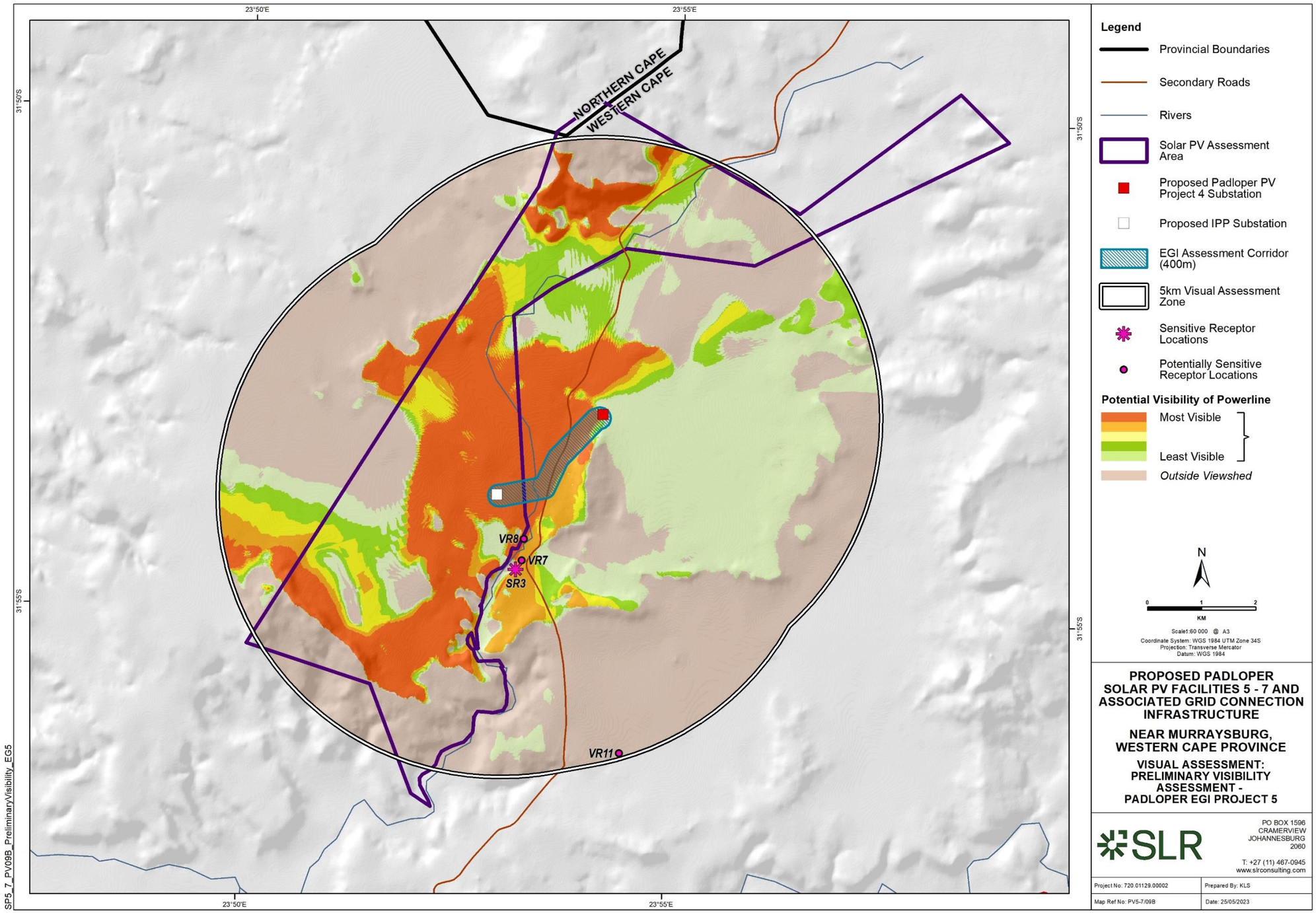
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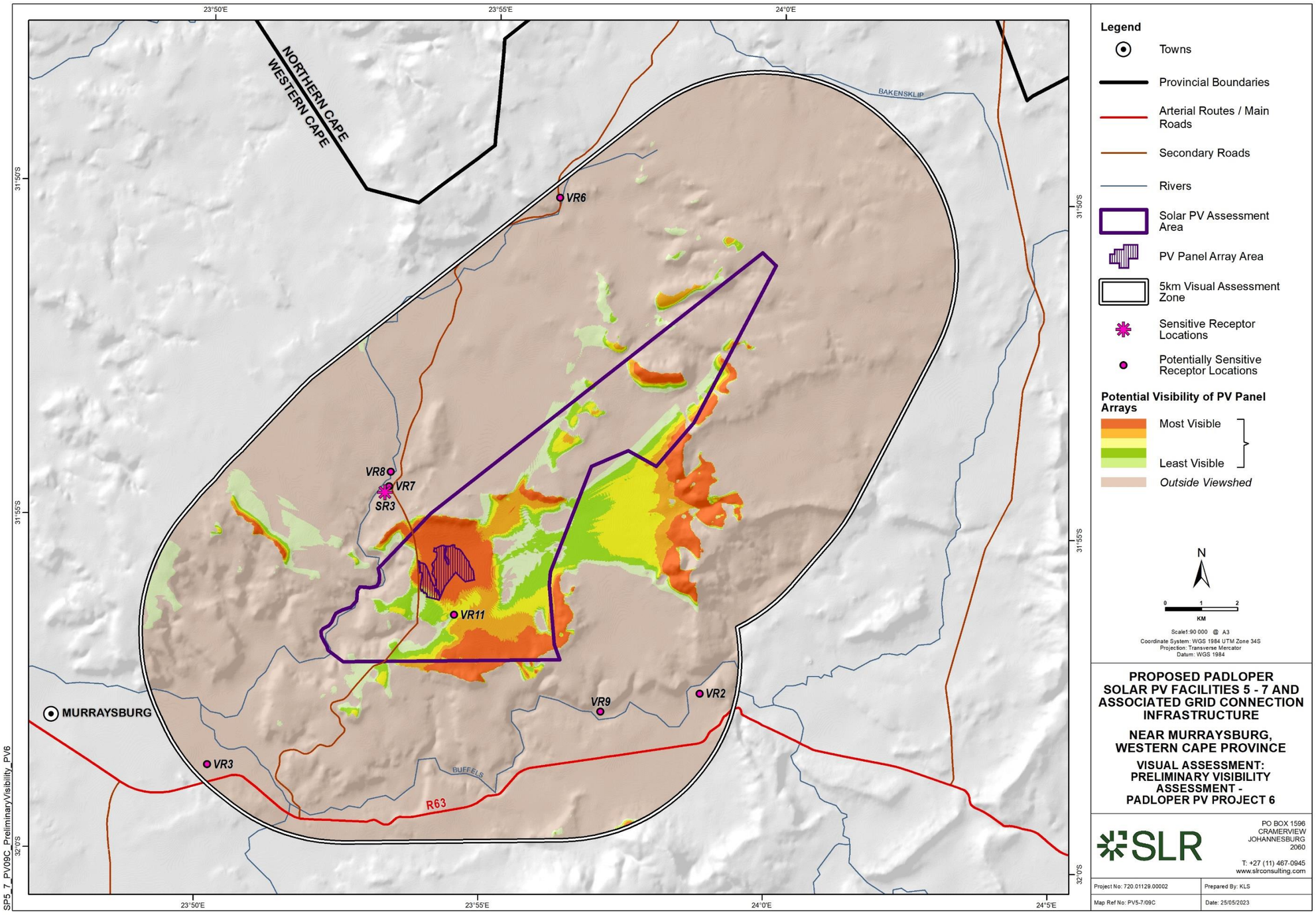
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Project No: 720.01129.00002	Prepared By: KLS
Map Ref No: PV5-7/09A	Date: 25/05/2023

MAP 9B: Potential Visibility of Powerlines – Padloper EGI Project 5



MAP 9C: Potential Visibility of PV Arrays – Padloper PV Project 6



PROPOSED PADLOPER SOLAR PV FACILITIES 5 - 7 AND ASSOCIATED GRID CONNECTION INFRASTRUCTURE

NEAR MURRAYSBURG, WESTERN CAPE PROVINCE

VISUAL ASSESSMENT: PRELIMINARY VISIBILITY ASSESSMENT - PADLOPER PV PROJECT 6

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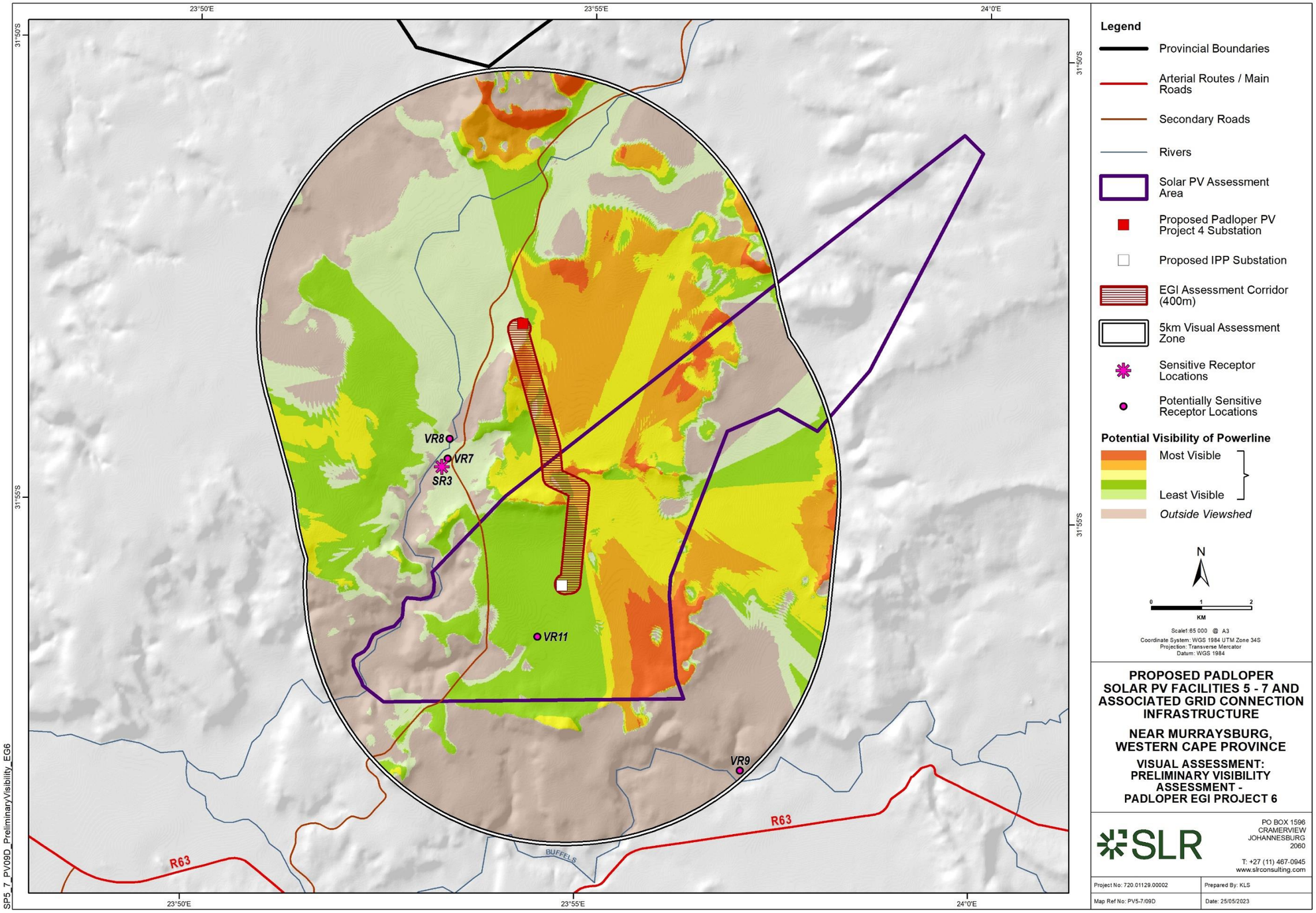
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Project No: 720.01129.00002	Prepared By: KLS
Map Ref No: PV5-7/09C	Date: 25/05/2023

SP5_7_PV09C_PreliminaryVisibility_PV6

MAP 9D: Potential Visibility of Powerlines – Padloper EGI Project 6



Legend

- Provincial Boundaries
- Arterial Routes / Main Roads
- Secondary Roads
- Rivers
- Solar PV Assessment Area
- Proposed Padloper PV Project 4 Substation
- Proposed IPP Substation
- EGI Assessment Corridor (400m)
- 5km Visual Assessment Zone
- Sensitive Receptor Locations
- Potentially Sensitive Receptor Locations

Potential Visibility of Powerline

- Most Visible
- Least Visible
- *Outside Viewshed*

N

0 1 2
KM

Scale1:65 000 @ A3
Coordinate System: WGS 1984 UTM Zone 34S
Projection: Transverse Mercator
Datum: WGS 1984

PROPOSED PADLOPER SOLAR PV FACILITIES 5 - 7 AND ASSOCIATED GRID CONNECTION INFRASTRUCTURE

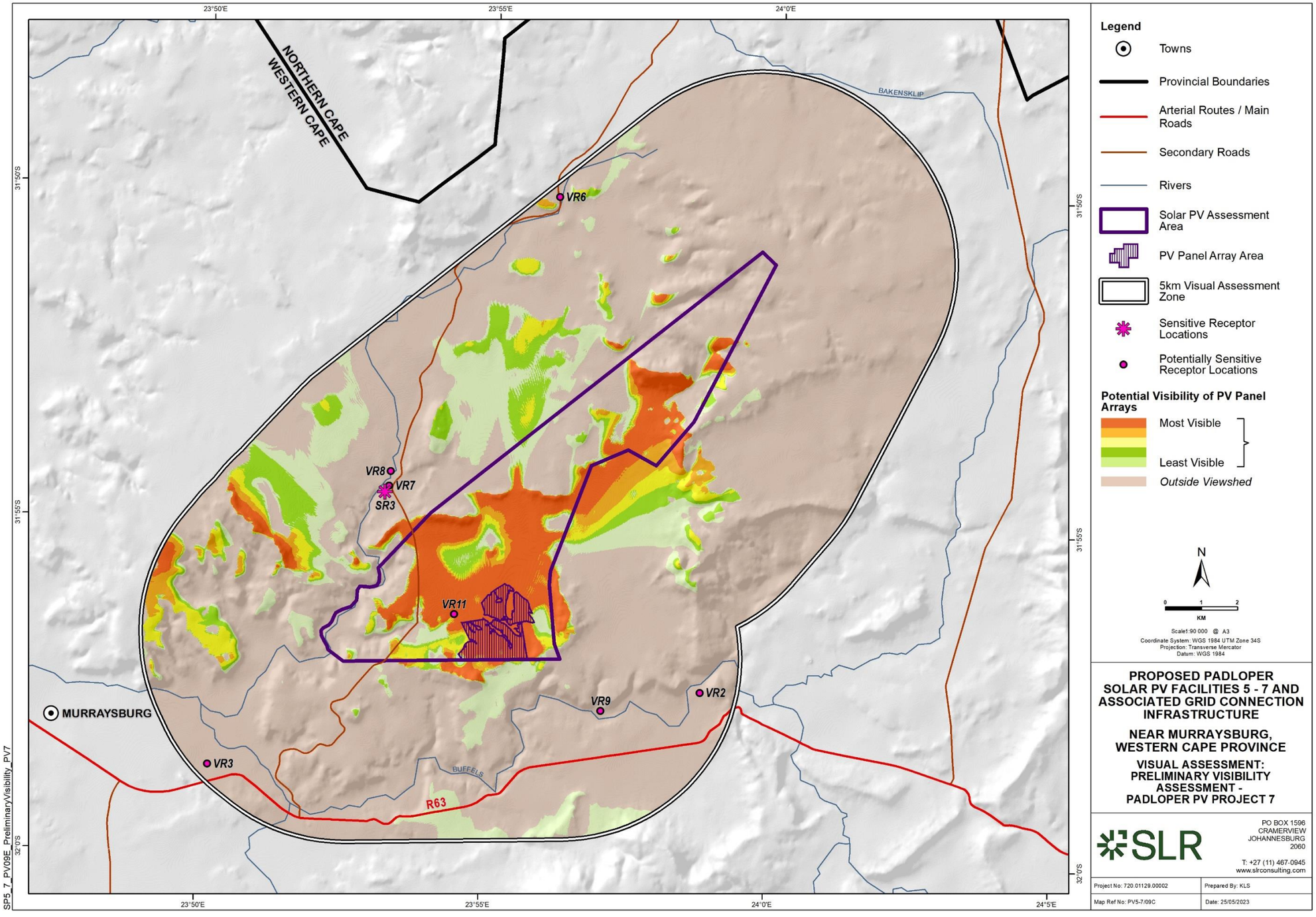
NEAR MURRAYSBURG, WESTERN CAPE PROVINCE

VISUAL ASSESSMENT: PRELIMINARY VISIBILITY ASSESSMENT - PADLOPER EGI PROJECT 6

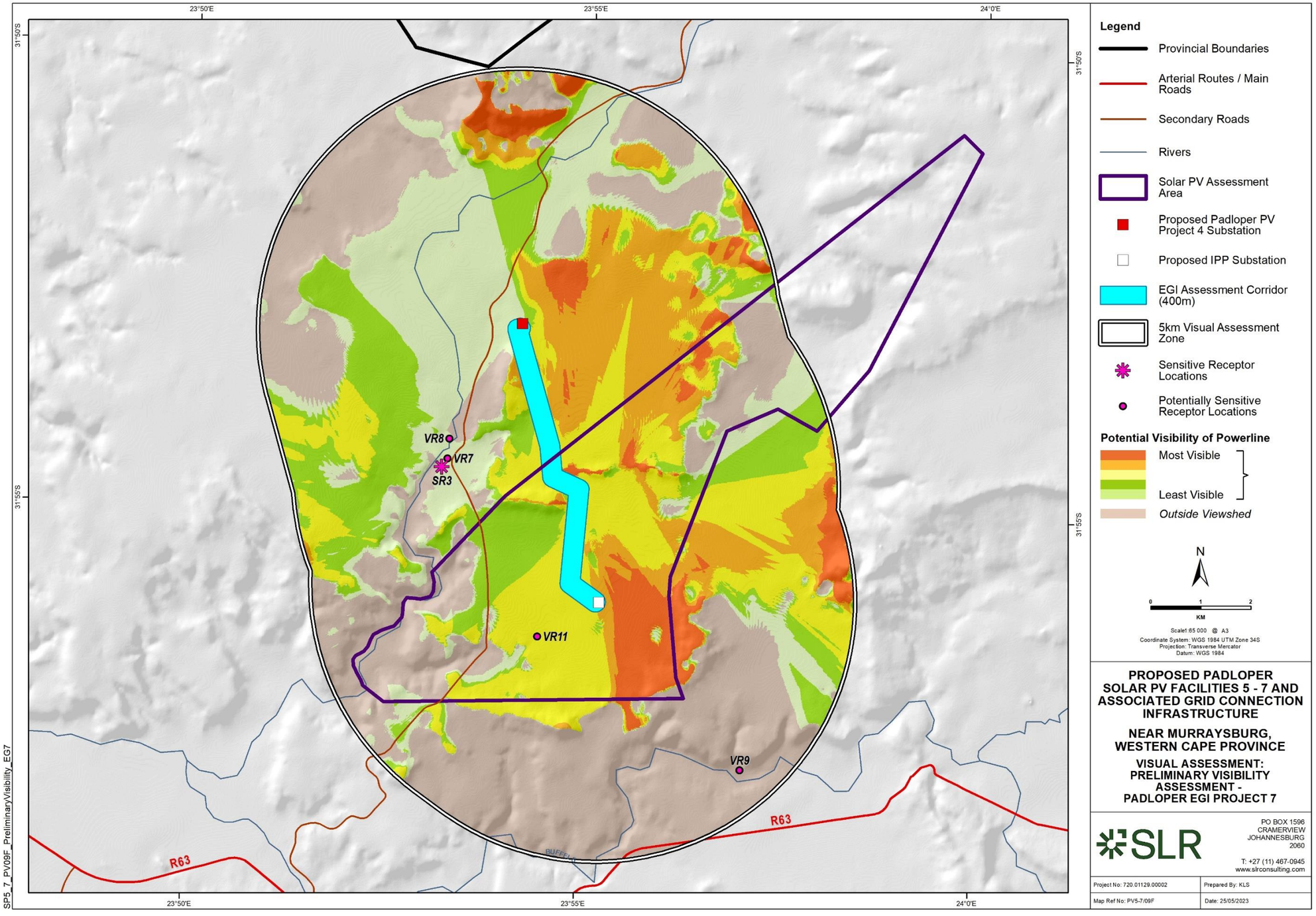
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Project No: 720.01129.00002	Prepared By: KLS
Map Ref No: PV5-7/09D	Date: 25/05/2023

MAP 9E: Potential Visibility of PV Arrays – Padloper PV Project 7



MAP 9F: Potential Visibility of Powerlines – Padloper EGI Project 7



Legend

- Provincial Boundaries
- Arterial Routes / Main Roads
- Secondary Roads
- Rivers
- Solar PV Assessment Area
- Proposed Padloper PV Project 4 Substation
- Proposed IPP Substation
- EGI Assessment Corridor (400m)
- 5km Visual Assessment Zone
- Sensitive Receptor Locations
- Potentially Sensitive Receptor Locations

Potential Visibility of Powerline

- Most Visible
- Least Visible
- *Outside Viewshed*

N

0 1 2
KM

Scale1:65 000 @ A3
Coordinate System: WGS 1984 UTM Zone 34S
Projection: Transverse Mercator
Datum: WGS 1984

PROPOSED PADLOPER SOLAR PV FACILITIES 5 - 7 AND ASSOCIATED GRID CONNECTION INFRASTRUCTURE

NEAR MURRAYSBURG, WESTERN CAPE PROVINCE

VISUAL ASSESSMENT: PRELIMINARY VISIBILITY ASSESSMENT - PADLOPER EGI PROJECT 7

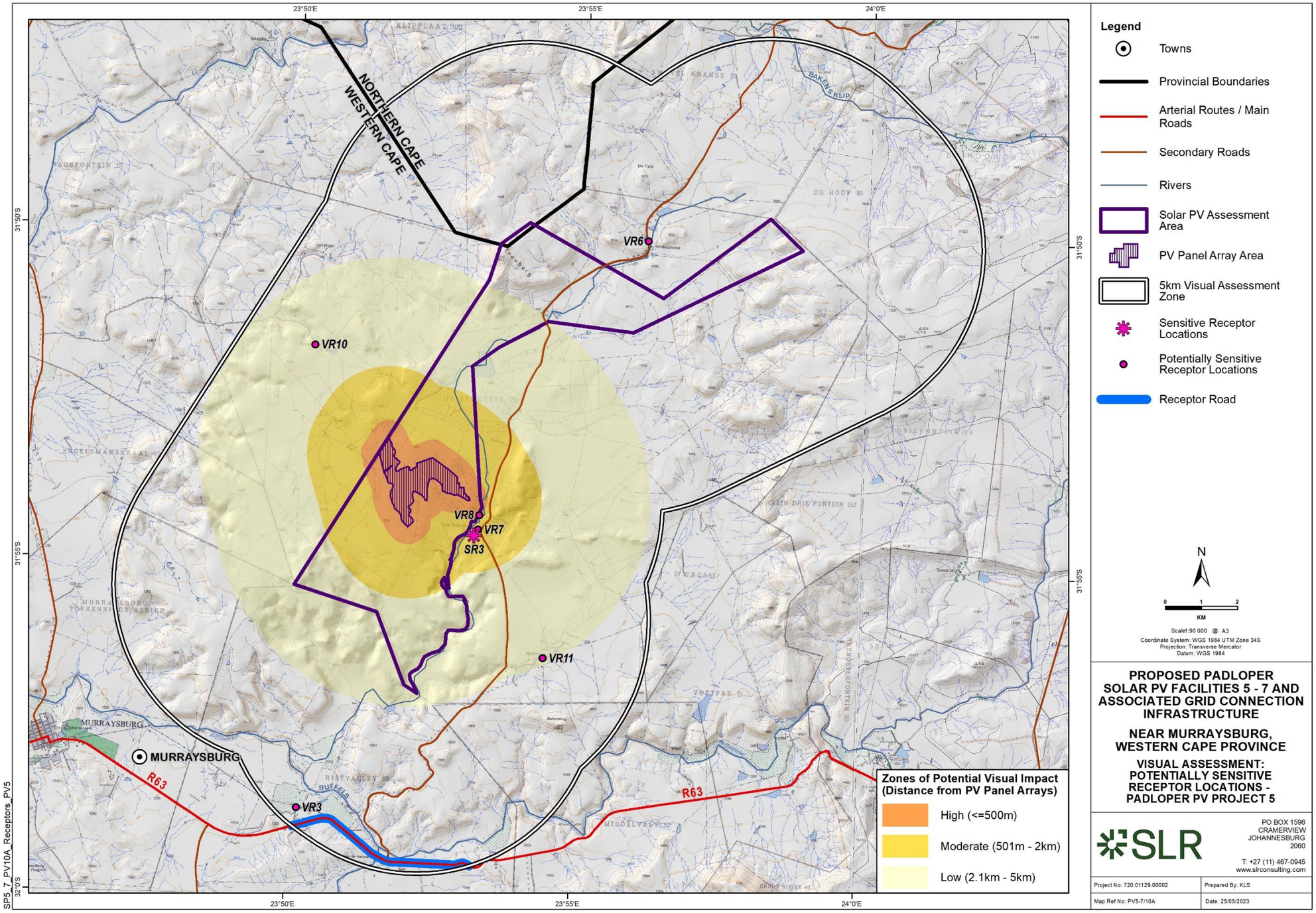
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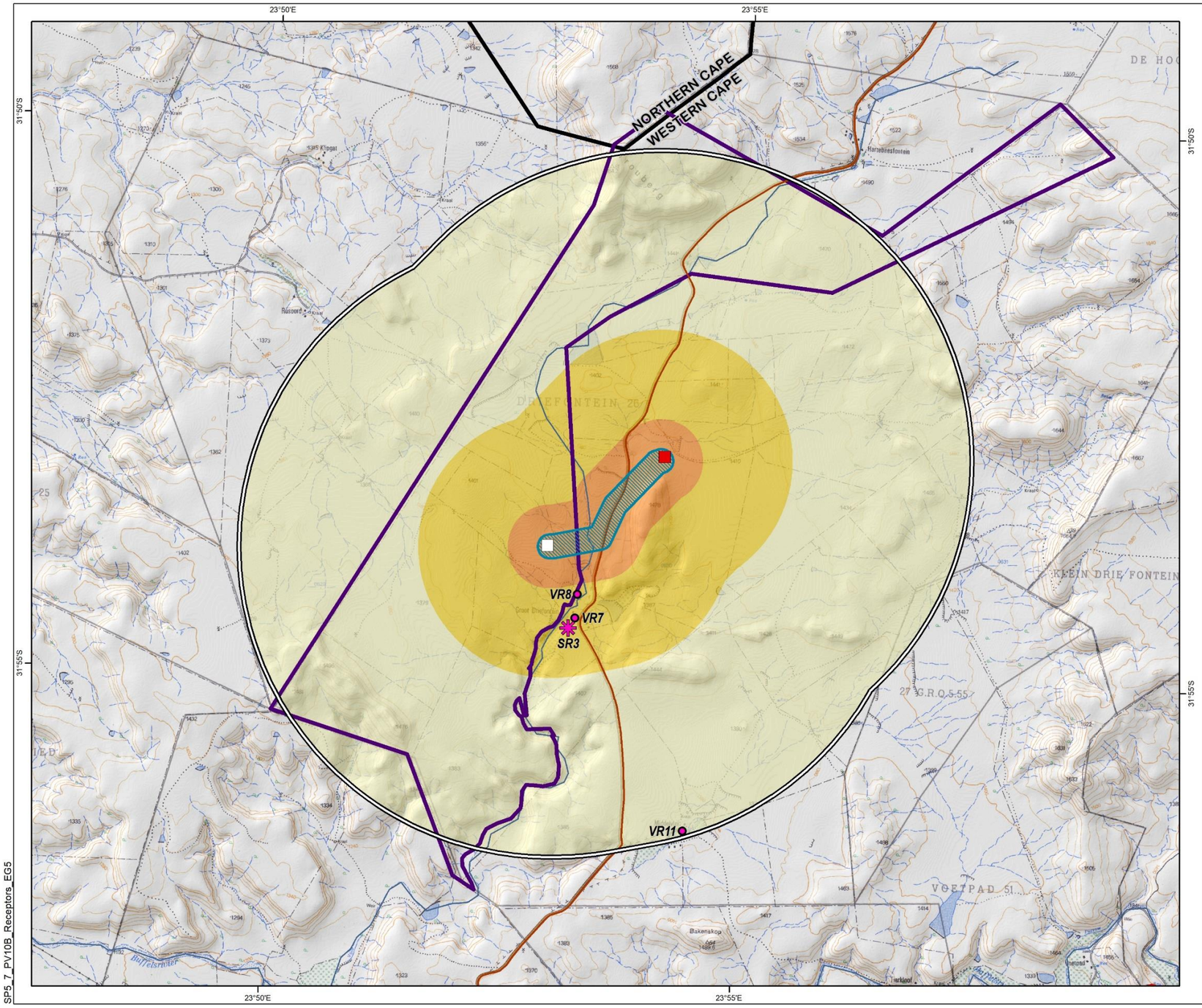
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Map Ref No: PV5-7/09F	Date: 25/05/2023

MAP 10A: Potentially Sensitive Receptor Locations within 5km of PV Array Area – Padloper PV Project 5



MAP 10B: Potentially Sensitive Receptor Locations within 5km of Grid Assessment Corridor – Padloper EGI Project 5



Legend

- Provincial Boundaries
- Secondary Roads
- Rivers
- Solar PV Assessment Area
- Proposed Padloper PV Project 4 Substation
- Proposed IPP Substation
- EGI Assessment Corridor (400m)
- 5km Visual Assessment Zone
- Sensitive Receptor Locations
- Potentially Sensitive Receptor Locations

Zones of Potential Visual Impact (Distance from Grid Assessment Corridor)

- High (<=500m)
- Moderate (501m - 2km)
- Low (2.1km - 5km)

N

0 1 2
KM

Scale1:60 000 @ A3
Coordinate System: WGS 1984 UTM Zone 34S
Projection: Transverse Mercator
Datum: WGS 1984

PROPOSED PADLOPER SOLAR PV FACILITIES 5 - 7 AND ASSOCIATED GRID CONNECTION INFRASTRUCTURE

NEAR MURRAYSBURG, WESTERN CAPE PROVINCE

VISUAL ASSESSMENT: POTENTIALLY SENSITIVE RECEPTOR LOCATIONS - PADLOPER EGI PROJECT 5

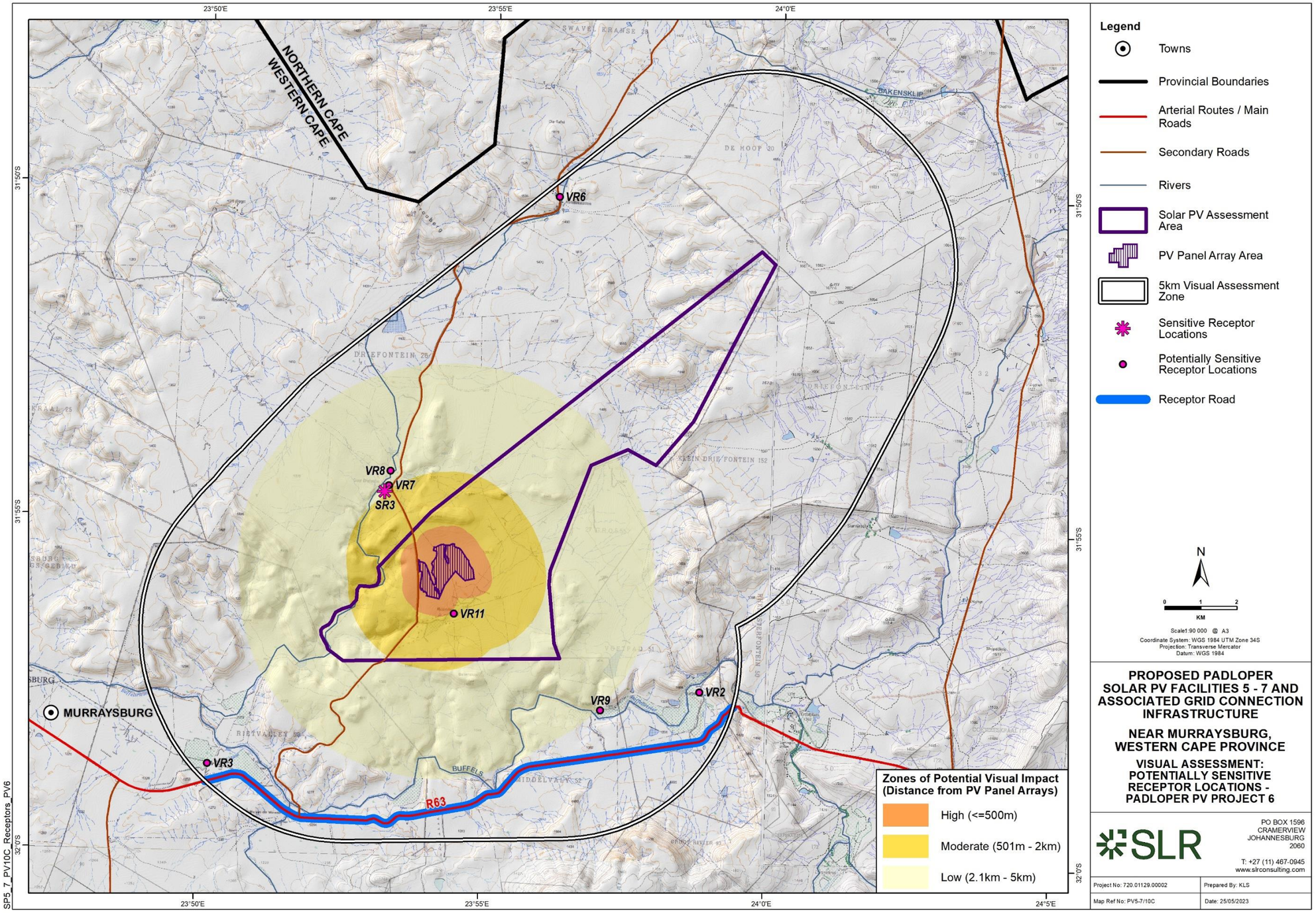
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Map Ref No: PV5-7/10B	Date: 25/05/2023

MAP 10C: Potentially Sensitive Receptor Locations within 5km of PV Array Area – Padloper PV Project 6



PROPOSED PADLOPER SOLAR PV FACILITIES 5 - 7 AND ASSOCIATED GRID CONNECTION INFRASTRUCTURE

NEAR MURRAYSBURG, WESTERN CAPE PROVINCE

VISUAL ASSESSMENT: POTENTIALLY SENSITIVE RECEPTOR LOCATIONS - PADLOPER PV PROJECT 6

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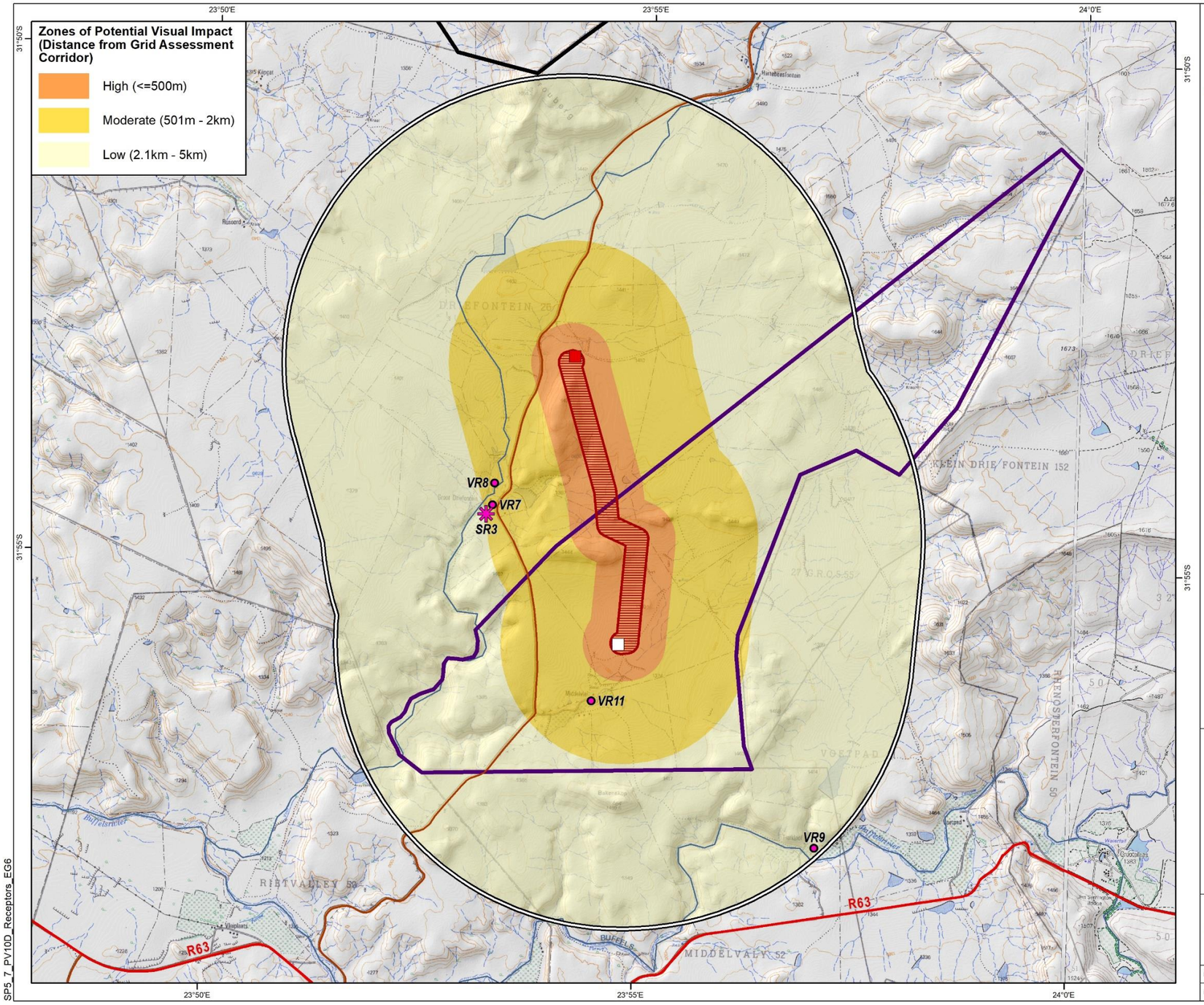
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Project No: 720.01129.00002	Prepared By: KLS
Map Ref No: PV5-7/10C	Date: 25/05/2023

SP5_7_PV10C_Receptors_PV6

Map 10D: Potentially Sensitive Receptor Locations within 5km of Grid Assessment Corridor – Padloper EGI Project 6



Legend

- Provincial Boundaries
- Arterial Routes / Main Roads
- Secondary Roads
- Rivers
- Solar PV Assessment Area
- Proposed Padloper PV Project 4 Substation
- Proposed IPP Substation
- EGI Assessment Corridor (400m)
- 5km Visual Assessment Zone
- Sensitive Receptor Locations
- Potentially Sensitive Receptor Locations

N

0 1 2
KM

Scale:65 000 @ A3
Coordinate System: WGS 1984 UTM Zone 34S
Projection: Transverse Mercator
Datum: WGS 1984

PROPOSED PADLOPER SOLAR PV FACILITIES 5 - 7 AND ASSOCIATED GRID CONNECTION INFRASTRUCTURE

NEAR MURRAYSBURG, WESTERN CAPE PROVINCE

VISUAL ASSESSMENT: POTENTIALLY SENSITIVE RECEPTOR LOCATIONS - PADLOPER EGI PROJECT 6

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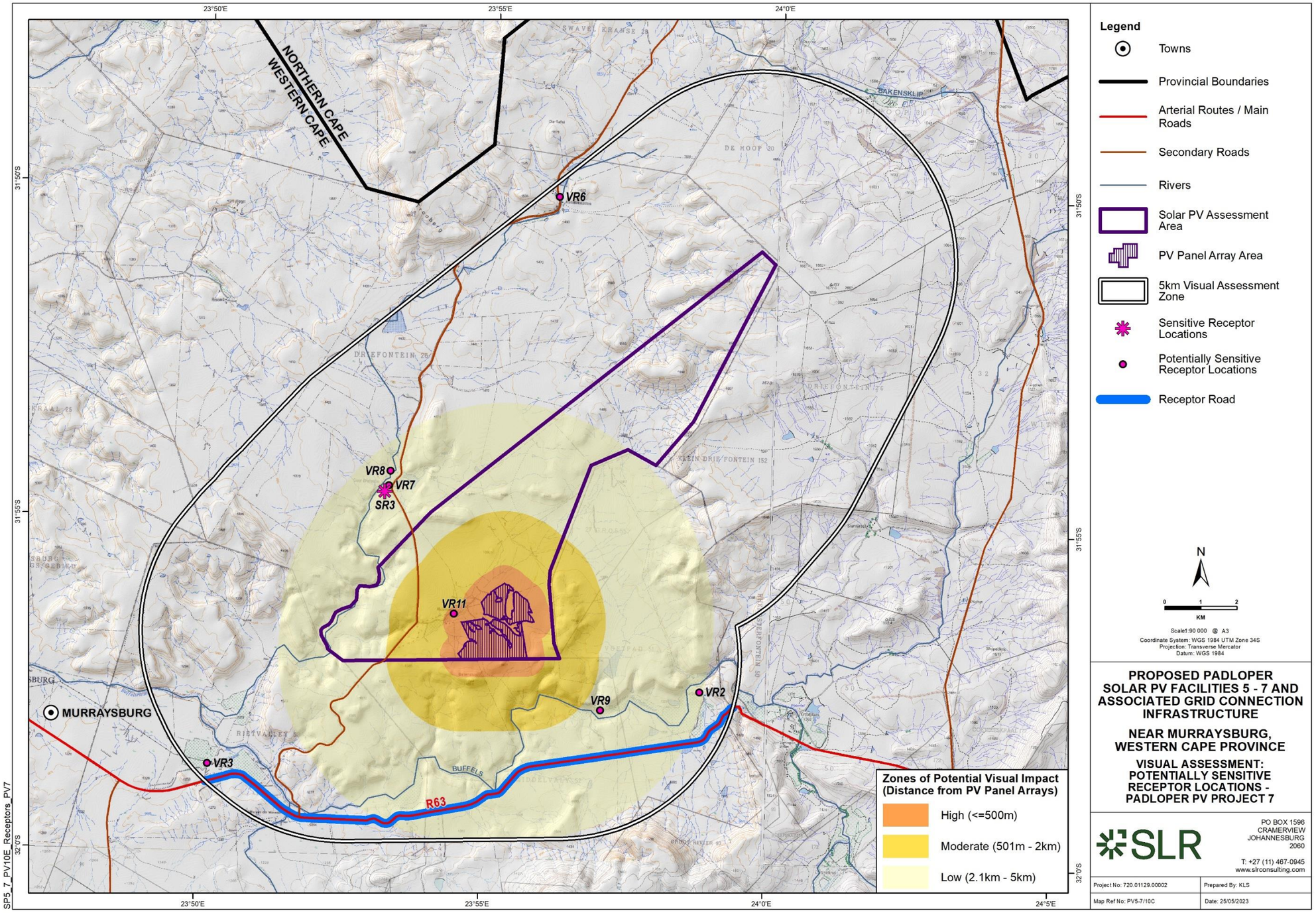
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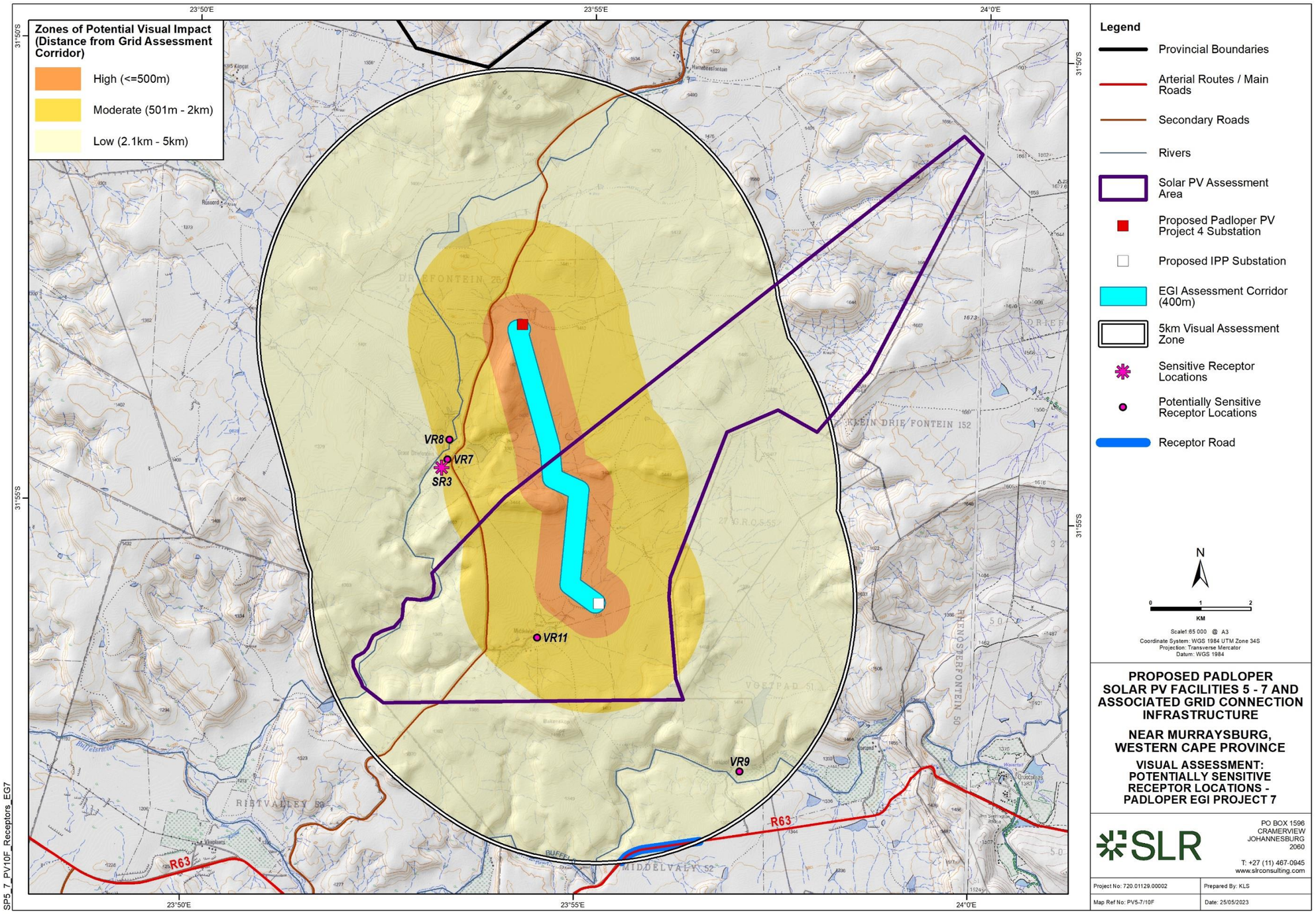
Project No: 720.01129.00002	Prepared By: KLS
Map Ref No: PV5-7/10D	Date: 25/05/2023

SP5_7_PV10D_Receptors_EG6

MAP 10E: Potentially Sensitive Receptor Locations within 5km of PV Array Area – Padloper PV Project 7



MAP 10F: Potentially Sensitive Receptor Locations within 5km of Grid Assessment Corridor – Padloper EGI Project 7



PROPOSED PADLOPER SOLAR PV FACILITIES 5 - 7 AND ASSOCIATED GRID CONNECTION INFRASTRUCTURE

NEAR MURRAYSBURG, WESTERN CAPE PROVINCE

VISUAL ASSESSMENT: POTENTIALLY SENSITIVE RECEPTOR LOCATIONS - PADLOPER EGI PROJECT 7

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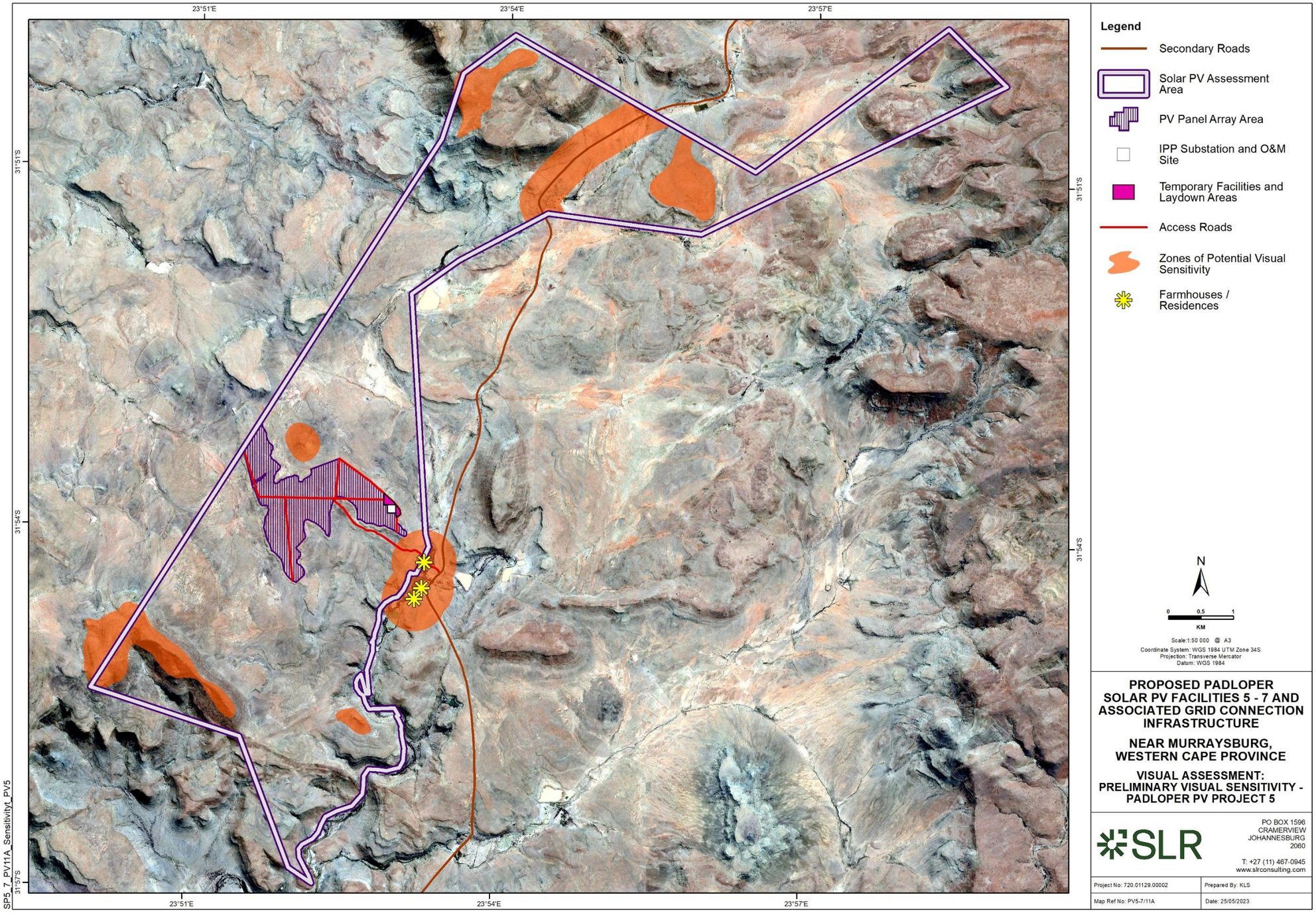
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Project No: 720.01129.00002	Prepared By: KLS
Map Ref No: PV5-7/10F	Date: 25/05/2023

SP5_7_PV10F_Receptors_EG7

MAP 11A: Preliminary Visual Sensitivity – Padloper PV Project 5



Legend

- Secondary Roads
- Solar PV Assessment Area
- PV Panel Array Area
- IPP Substation and O&M Site
- Temporary Facilities and Laydown Areas
- Access Roads
- Zones of Potential Visual Sensitivity
- Farmhouses / Residences

N

0 0.5 1
KM

Scale:1:50 000 @ A3
Coordinate System: WGS 1984 UTM Zone 34S
Projection: Transverse Mercator
Datum: WGS 1984

PROPOSED PADLOPER SOLAR PV FACILITIES 5 - 7 AND ASSOCIATED GRID CONNECTION INFRASTRUCTURE

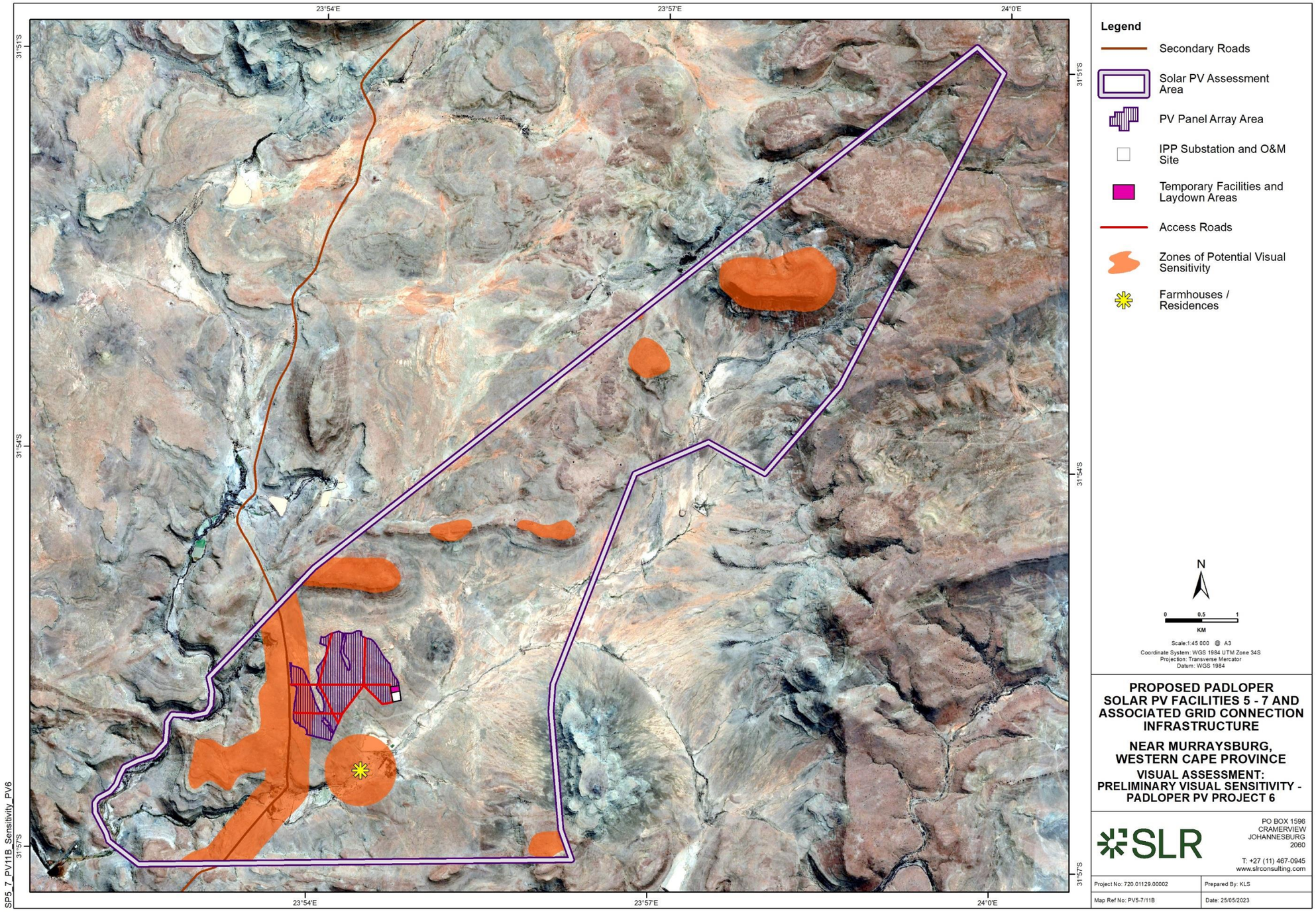
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VISUAL ASSESSMENT: PRELIMINARY VISUAL SENSITIVITY - PADLOPER PV PROJECT 5

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Project No: 720.01129.00002	Prepared By: KLS
Map Ref No: PV5-7/11A	Date: 25/05/2023

MAP 11B: Preliminary Visual Sensitivity – Padloper PV Project 6



Legend

- Secondary Roads
- Solar PV Assessment Area
- PV Panel Array Area
- IPP Substation and O&M Site
- Temporary Facilities and Laydown Areas
- Access Roads
- Zones of Potential Visual Sensitivity
- Farmhouses / Residences

N

0 0.5 1
KM

Scale:1:45 000 @ A3
Coordinate System: WGS 1984 UTM Zone 34S
Projection: Transverse Mercator
Datum: WGS 1984

PROPOSED PADLOPER SOLAR PV FACILITIES 5 - 7 AND ASSOCIATED GRID CONNECTION INFRASTRUCTURE

NEAR MURRAYSBURG, WESTERN CAPE PROVINCE

VISUAL ASSESSMENT: PRELIMINARY VISUAL SENSITIVITY - PADLOPER PV PROJECT 6

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Project No: 720.01129.00002	Prepared By: KLS
Map Ref No: PV5-7/11B	Date: 25/05/2023

MAP 11C: Preliminary Visual Sensitivity – Padloper PV Project 7

