PROPOSED AMSA VANDERBIJLPARK SOLAR PHOTOVOLTAIC (PV) ENERGY FACILITY, NEAR VANDERBIJLPARK WITHIN THE GAUTENG PROVINCE

VISUAL ASSESSMENT – INPUT FOR SCOPING REPORT

Produced for:

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DECLARATION

I, **Lourens du Plessis**, as an independent consultant compiled this Scoping Visual Impact Assessment and declare that it correctly reflects the findings made at the time of the report's compilation. I further declare that I, act as an independent consultant in terms of the following:

- Do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed in terms of the National Environmental Management Act, 1998 (Act107 of 1998);
- Undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the National Environmental Management Act,1998 (Act 107 of 1998);
- Based on information provided to me by the project proponent, and in addition to information obtained during the course of this study, will present the results and conclusion within the associated document to the best of my professional judgement.

____

Lourens du Plessis
Professional GISc Practitioner

1. STUDY APPROACH

1.1. Qualification and experience of the practitioner

Lourens du Plessis (t/a LOGIS) is a Professional Geographical Information Sciences (GISc) Practitioner registered with The South African Geomatics Council (SAGC), and specialises in Environmental GIS and Visual Impact Assessments (VIA).

Lourens has been involved in the application of Geographical Information Systems (GIS) in Environmental Planning and Management since 1990. He has extensive practical knowledge in spatial analysis, environmental modelling, and digital mapping, and applies this knowledge in various scientific fields and disciplines. His GIS expertise are often utilised in Environmental Impact Assessments, Environmental Management Frameworks, State of the Environment Reports, Environmental Management Plans, tourism development and environmental awareness projects.

He holds a BA degree in Geography and Anthropology from the University of Pretoria and worked at the GisLAB (Department of Landscape Architecture) from 1990 to 1997. He later became a member of the GisLAB and in 1997, when Q-Data Consulting acquired the GisLAB, worked for GIS Business Solutions for two years as project manager and senior consultant. In 1999 he joined MetroGIS (Pty) Ltd as director and equal partner until December 2015. From January 2016 he worked for SMEC South Africa (Pty) Ltd as a technical specialist until he went independent and began trading as LOGIS in April 2017.

Lourens has received various awards for his work over the past two decades, including EPPIC Awards for ENPAT, a Q-Data Consulting Performance Award and two ESRI (Environmental Systems Research Institute) awards for Most Analytical and Best Cartographic Maps, at Annual International ESRI User Conferences. He is a co-author of the ENPAT atlas and has had several of his maps published in various tourism, educational and environmental publications.

He is familiar with the "Guidelines for Involving Visual and Aesthetic Specialists in EIA Processes" (Provincial Government of the Western Cape: Department of Environmental Affairs and Development Planning) and utilises the principles and recommendations stated therein to successfully undertake visual impact assessments.

1.2. Assumptions and limitations

This Report has been prepared by LOGIS at the request of Savannah Environmental (Pty) Ltd (hereby referred to as Savannah) as the appointed Environmental Assessment Practitioner (EAP) on behalf of the Project Developer, to provide them with an independent specialist assessment. Unless otherwise agreed by LOGIS in writing, LOGIS does not accept responsibility or legal liability to any person other than the EAP and Project Developer for the contents of, or any omissions from, this Report.

To prepare this Report, LOGIS utilised only the documents and information provided by Savannah or any third parties directed to provide information and documents by Savannah. LOGIS has not consulted any other documents or information in relation to this Report, except where otherwise indicated.

The findings, recommendations and conclusions given in this report are based on the author's best scientific and professional knowledge, as well as, the available information. This report is based on survey and assessment techniques which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken. LOGIS reserve the right to modify aspects of the report including the recommendations if and when new information may become available from on-going research or further work in this field, or pertaining to this investigation.

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This report may not be altered or added to without the prior written consent of the author. This also refers to electronic copies of this report which are supplied for the purposes of inclusion as part of other reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must make reference to this report. If this report is used as part of a main report, the report in its entirety must be included as an appendix or separate section to the main report.

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

This Visual Impact Assessment and all associated mapping has been undertaken according to the worst-case scenario.

1.3. Legal framework

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

- **The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA):** This report is in line with Appendix 6 of NEMA: Environmental Impact Assessment (EIA) Regulations (2014, as amended) which details the minimum requirements a specialist report must contain for an Environmental Impact Assessment.
- **Guideline for Involving Visual and Aesthetic Specialists in EIA Processes (DEADP, Provincial Government of the Western Cape, 2005):** This guideline was developed for use in the Western Cape, however in the absence of the development of any other guideline, this provides input for the preparation of visual specialist input into EIA processes. The guideline documents the requirements for visual impact assessment, typical issues that trigger the need for specialist visual input, the scope and extent of a visual assessment, information required, as well as the assessment ad reporting of visual impacts and management actions.
- **Screening Tool as per Regulation 16 (1)(v) of the Environmental Impact Assessment Regulations, 2014 as amended:** a Screening report was generated for this proposed project, whereby a visual impact assessment was identified as one of the specialist studies that would be required.

1.4. Information base

This assessment was based on information from the following sources:

- Topographical maps and GIS generated data were sourced from the Surveyor General, Surveys and Mapping in Mowbray, Cape Town;
- Chief Directorate National (CDN) Geo-Spatial Information, varying dates. *1:50 000 Topographical Maps and Data.*
- DFFE, 2018/2020. *National Land-cover Database 2018/2020 (NLC2018/2020).*
- DFFE, 2022. *South African Protected Areas Database (SAPAD_OR_2022_Q2).*
- JAXA, 2021. Earth Observation Research Centre. *ALOS Global Digital Surface Model (AW3D30).*
- Google Earth Pro. *Up to date and recent satellite images.*
- Professional judgement based on experience gained from similar projects;
- Literature research on similar projects;
- 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 NEMA

Quality of the above information bases are rated as Good.

1.5. Level of confidence

Level of confidence[1] is determined as a function of:

- The information available, and understanding of the study area by the practitioner:
  - **3**: A high level of information is available of the study area and a thorough knowledge base could be established during site visits, surveys etc. The study area was readily accessible.
  - **2**: A moderate level of information is available of the study area and a moderate knowledge base could be established during site visits, surveys etc. Accessibility to the study area was acceptable for the level of assessment.
  - **1**: Limited information is available of the study area and a poor knowledge base could be established during site visits and/or surveys, or no site visit and/or surveys were carried out.

- The information available, understanding of the project and experience of this type of project by the practitioner:
  - **3**: A high level of information and knowledge is available of the project and the visual impact assessor is well experienced in this type of project and level of assessment.
  - **2**: A moderate level of information and knowledge is available of the project and the visual impact assessor is moderately experienced in this type of project and level of assessment.
  - **1**: Limited information and knowledge is available of the project and the visual impact assessor has a low experience level in this type of project and level of assessment.

These values are applied as follows:

Table 1: Level of confidence.

	Information on the project & experience of the practitioner			
Information on the study area		**3**	**2**	**1**
	3	9	6	3
	2	6	4	2
	1	3	2	1

The level of confidence for this assessment is determined to be **9** and indicates that the author's confidence in the accuracy of the findings is Moderate to High:

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

1.6. Methodology

The scoping report was undertaken using Geographical Information Systems (GIS) software as a tool to generate viewshed analyses and to apply relevant spatial criteria to the proposed facility. A detailed Digital Terrain Model (DTM) for the study area was created from topographical data provided by the Japan Aerospace Exploration Agency (JAXA), Earth Observation Research Centre, in the form of the ALOS Global Digital Surface Model "ALOS World 3D - 30m" (AW3D30) elevation model.

[1] Adapted from Oberholzer (2005).

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

- The creation of a detailed digital terrain model (DTM) of the potentially affected environment;
- The sourcing of relevant spatial data. This includes cadastral features, vegetation types, land use activities, topographical features, site placement, etc.;
- The identification of sensitive environments upon which the proposed facility could have a potential impact.
- The creation of viewshed analyses from the proposed project site in order to determine the visual exposure and the topography's potential to absorb the potential visual impact. The viewshed analyses take into account the dimensions of the proposed structures and activities.

This report (scoping report) sets out to identify the possible visual impacts related to the proposed AMSA Vanderbijlpark Solar PV Facility from a desktop level.

2. PROJECT DESCRIPTION

ArcelorMittal South Africa (Pty) Ltd (the Applicant) proposes the construction and operation of the AMSA Vanderbijlpark Solar Photovoltaic (PV) Energy Facility and associated infrastructure on Portion 1 of the Farm Vanderbijlpark 550 IQ, located approximately ~5km to the north of Vanderbijlpark, in the Emfuleni Local municipality and the Sedibeng District Municipality within the Gauteng Province. The AMSA Vanderbijlpark Solar PV Energy Facility will have a contracted capacity of up to 270MW. The grid connection infrastructure for this proposed facility is likely to be at 132kV and the use would be made of Eskom’s grid to facilitate connection of the facilities to the grid. Details of the exact grid connection solution are to be finalised. The Project Site, with an extent of approximately 255ha, was identified by ArcelorMittal South Africa (Pty) Ltd and is considered to be technically suitable for the development of the Project.

The Project will include specific infrastructure, namely:

- Solar PV array, with branch strings, comprising PV panels and mounting structures.
- Inverters and transformers.
- Cabling between project components.
- A battery energy storage system (BESS) with the footprint of 4.6ha.
- AMSA Vanderbijlpark Solar PV will connect to on-site Transformers in the existing substation bay to facilitate the connection between the Solar PV Energy Facility with a footprint of 648 ha for AMSA Vanderbijlpark.
- Storage area of 4.6ha.
- 132kV power line from the PV Site for the distribution of the generated power, which will be connected to the existing substation.
- Temporary laydown areas and a construction yard.
- Access road (gravel), internal gravel roads, firebreaks (4m width) and fencing around the PV Site.
- An O & M building, which will include a site security office, control areas, standard single storey height or warehouse not exceeding 8.6m.

The proposed properties identified for the PV facility and associated infrastructure are indicated on the maps within this report. Sample images of similar PV technology and Battery Energy Storage System (BESS) facilities are provided below.

Figure 1: Photovoltaic (PV) solar panels. (Photo:SunPower Solar Power Plant- Prieska)

Figure 2: Aerial view of PV arrays (Photo: Scatec Solar South Africa)

Figure 3: Aerial view of a BESS facility (Photo: Power Engineering International)

3. SCOPE OF WORK

The scope of the work includes a scoping level visual assessment of the issues related to the visual impact. The scoping phase is the process of determining the spatial and temporal boundaries (i.e. extent) and key issues to be addressed in an impact assessment.

The main purpose is to focus the impact assessment on a manageable number of important questions on which decision-making is expected to focus and to ensure that only key issues are examined. Additionally, it is to inform the facility layout in order to avoid potential sensitive visual areas, if possible. The study area for the visual assessment includes a minimum 6 km buffer zone (area of potential visual influence) from the PV footprint.

4. THE AFFECTED ENVIRONMENT

The AMSA Vanderbijlpark PV Solar Facility is located south east of the N1 national road approximately 5km north and north west of Vanderbijlpark, in the Emfuleni Local municipality and the Sedibeng District Municipality within the Gauteng Province. The region has a strong mining and industrial character, interspersed with agricultural activities (dryland crop production) and human settlements (both formal and informal). The central portion of the study area is home to the ArcelorMittal Vanderbijlpark Plant, one of the world's largest inland steel mills and the largest supplier of flat steel products in sub-Saharan Africa, giving the area a very industrial / mining feel. These activities are rapidly changing the once rural and agricultural character to that of a predominantly industrial nature.

The topography or terrain morphology of the region is broadly described as gently to moderately undulating landscape. The slope of the entire study area is generally even with very gradual drops towards the water courses and wetlands traversing the study area (hence the term undulating). The highest point above sea level within the region is located in the hills located just north of the Houtkop Agricultural Holdings (1,620m), with the lowest points located along the Rietspruit and Leeuspruit in the western portion of the study area, as well as the Vaal River located in the south western portion of the study area (1,420m). Refer to **Map 1** for the shaded relief/topography map of the study area.

Figure 4: ArcelorMittal Vanderbijlpark Plant located adjacent to the proposed AMSA Vanderbijlpark PV Solar Facility.

Prominent rivers or streams include the Vaal River, to the south east, and the Rietspruit and Leeuspruit traversing western portion of the study area. The Leeukuil Dam is also located south east of the site. These water courses and associated wetlands, as well as, grassland account for the few remaining scenic natural resources in an area largely dominated by industrial activities and human settlements.

Figure 5: View over the grasslands towards the site from the N1 national road (note ArcelorMittal Vanderbijlpark Plant in the background).

The R553 traverses the site, while the R57 is located to the west of the site and the R54 to the north. Access to the various sites will be via these various arterial roads. The N1 national road traverses the north western portion of the study area. Additional linear infrastructure includes the railway line and railway sidings traversing the north and eastern portions of the study area and of the ArcelorMittal Vanderbijlpark Plant, transporting iron ore to the Plant.

Figure 6: View of the western site from the R57 looking east towards the ArcelorMittal Vanderbijlpark Plant.

Figure 7: Railway line traversing the north and eastern portions of the study area used to transport iron ore to the ArcelorMittal Vanderbijlpark Plant

A host of power lines criss-cross the study area, many of them congregating at the Olympus Substation located within the ArcelorMittal Vanderbijlpark Plant property. Electricity for the Vanderbijlpark Plant are supplied by some of these power lines.

Figure 8: Example of the existing power lines crossing the site

The north western part of the study area, north of the N1 national road, the land use activities are largely of an agricultural and rural character where predominantly dryland agriculture and limited irrigated agriculture are practised. The south western portion and north eastern portions of the study area comprise predominately of the agricultural holding areas known as Mullerstuine, Rosashof, Lamont Park, Louisrus, Steel Valley, Houtkop, Lenteland and Waterdal.

Figure 9: Example of dryland agricultural activities undertaken within the study area

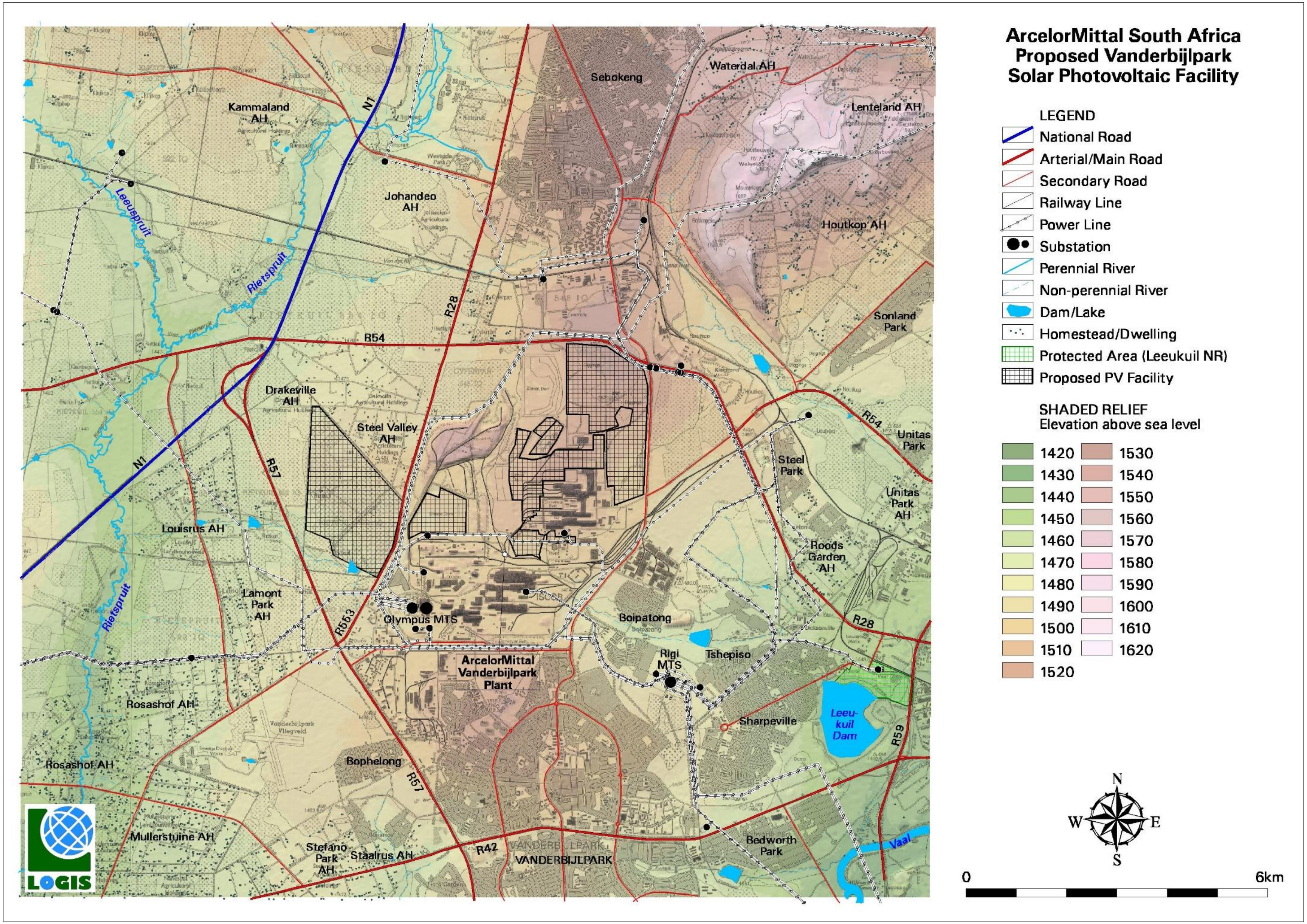
Other dominate land use activities within the study area include formalised high-density settlements with some informal township developments along the outskirts. These include Bophelong, Vanderbijlpark, Bedworth, Sharpeville, Tshepiso, Biopatong, Steel Park, Sonland Park and Sebokeng.

The population density of the region is indicated at approximately 750 people per km^2, predominantly concentrated within the towns and settlements surrounding the site, especially in Vanderbijlpark.

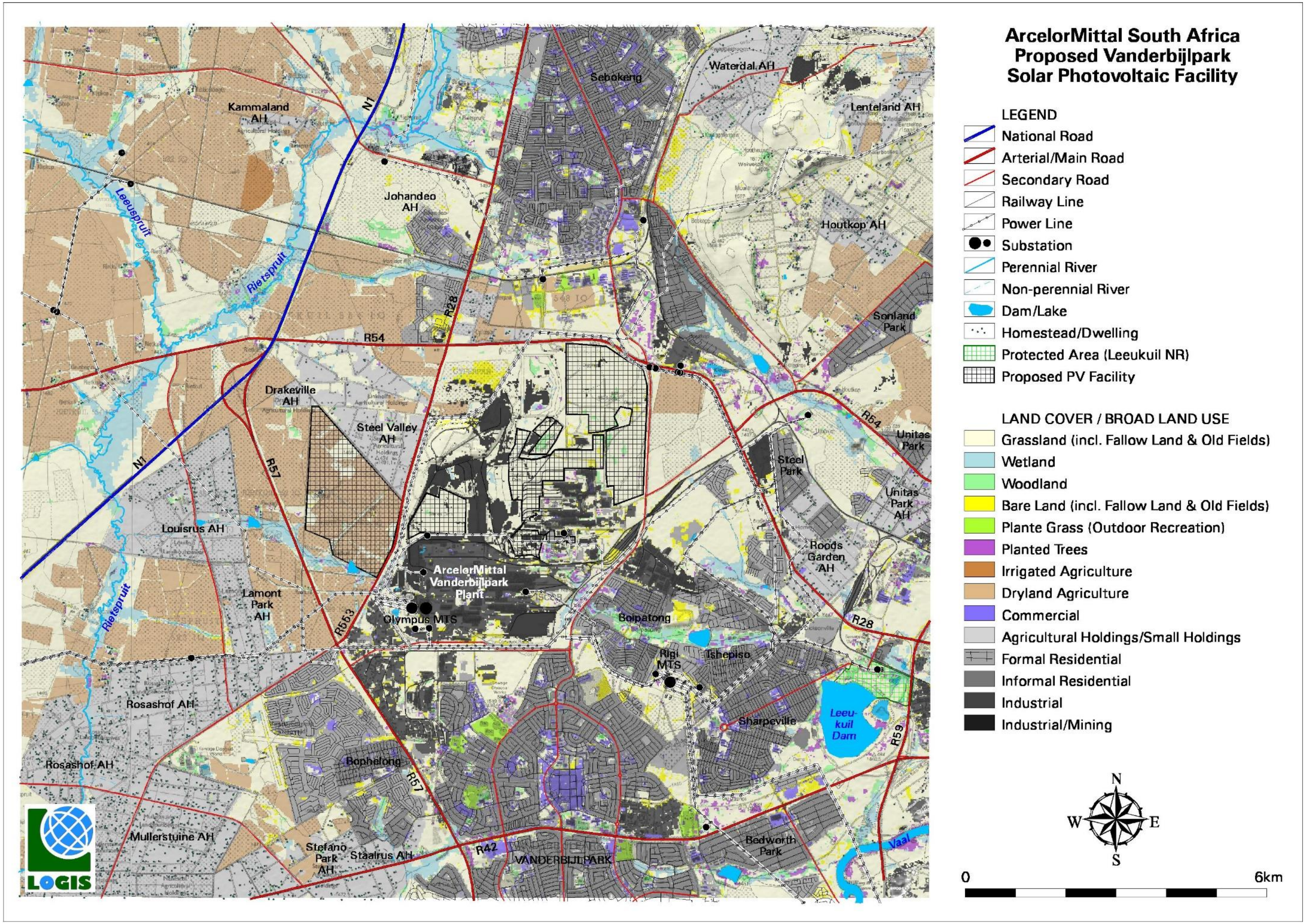
Figure 10: formalised high-density settlements surrounding the site

The natural vegetation or land cover types of the region (where intact) are described as Grassland and Wetlands. These vegetation cover types are under increased pressure from both industrial activities and township development and are often subject to varying levels degradation. They may also include old agricultural fields that are regenerating. The majority of the remaining natural vegetation within the study area is indicated as Soweto Highveld Grassland. Refer to **Map 2**.

One formally protected or conservation areas or major tourist attractions/resorts was identified within the study area, namely the Leeukuil Nature Reserve located adjacent to the Leeukuil Dam, a popular birding destination.



Map 1: Shaded relief map of the study area



Map 2: Land cover / broad land use map of the study area

5. VIEWSHED ANALYSIS- SCOPING LEVEL ASSESSMENT

5.1. Visual distance and observer proximity

Proximity offsets (the radial distance between the proposed development and the identified visual receptors) were determined based on the anticipated visual experience of the observer over varying distances. In general, the severity of the visual impact on visual receptors decreases with increased distance from the proposed facility. Therefore, in order to refine the visual exposure of the facility on surrounding areas/receptors, the principle of reduced impact over distance is applied in order to determine the core area of visual influence for the PV Facility. Proximity offsets for the proposed development footprint are thus established in order to indicate the scale and viewing distance of the facility and to determine the prominence of the structures in relation to their environment.

These proximity offsets are based on the anticipated visual experience of the observer over varying distances. The distances are adjusted upwards for larger facilities and downwards for smaller facilities (i.e. depending on the size and nature of the proposed infrastructure). This rationale was developed in the absence of any known and/or acceptable standards for South African solar energy facilities. Therefore, for the purpose of this study, proximity offsets have been calculated from the expected boundary of the site, as indicated on **Map 3** and as follows:

- 0 - 1km. Very short distance view where the facility would dominate the frame of vision and constitute a very high visual prominence.

- 1 – 3km. Short distance view where the structures would be easily and comfortably visible and constitute a high visual prominence.

- 3 - 6km. Medium to longer distance view where the facility would become part of the visual environment, but would still be visible and recognisable. This zone constitutes a moderate visual prominence.

- > 6km. Long distance view of the facility where the structures are not expected to be immediately visible and not easily recognisable. This zone constitutes a lower visual prominence for the facility.

5.2. Potential visual exposure

The result of the scoping viewshed analyses for the proposed AMSA Vanderbijlpark PV Solar Facility is shown on **Map 3** that follows.

The viewshed analysis was undertaken from a representative number of vantage points within the development footprint at an offset of 5m above ground level. This was done in order to determine the general visual exposure (visibility) of the area under investigation, simulating the maximum height of the proposed facility.

The viewshed analysis includes the effect of vegetation cover and existing structures on the exposure of the proposed infrastructure.

The AMSA Vanderbijlpark PV Solar Facility is expected to have a relatively extensive area of visual exposure owing to the relatively low growing nature of the predominately grassland vegetation. The shielding effect of the visual clutter (i.e. structures associated with industrial activities, existing powerlines, as well as, high-density housing) associated with the study area is expected to limit the extent of visual exposure on sensitive visual receptors located within the built-up area surrounding the proposed facility to a certain extent. Visual exposure is predominately located in higher lying areas to the north, west and north east of the site.

The following is an overview of the findings of the viewshed of the AMSA Vanderbijlpark PV Solar Facility only, based on the layout illustrated on the Map provided:

0 – 1km

It is expected that the facility would be highly visible within this zone with small pockets of visually screened areas lying to the north east and south. The core area of visual exposure is however expected to take place within the site itself, as well as within the ArcelorMittal Vanderbijlpark Plant property. Potential sensitive visual receptors within this zone include residents on the outskirts of the Steel Valley and Drakeville Agricultural Holdings, who are expected to be exposed to the development. Additionally, it is expected that observers travelling along the R28, R553 and R57 will be briefly visually exposed to the proposed facility.

1 – 3km

Visual exposure within this zone becomes slightly more scattered with visually screened areas largely correlating to lower lying areas along the Rietspruit to the north west and other drainage lines located to the north east and south east respectively. Residents located within the Louisrus, Lamont Park and Houtkop Agricultural Holdings, as well as residents on the outskirts of Vanderbijlpark, Steel Park, and Sebokeng are expected to be exposed to the development. This zone also contains various secondary roads, as well as, the N1 national road and various arterial roads (i.e. R54, R28, and R57). Observers travelling along these roads will similarly be exposed to the PV facility infrastructure.

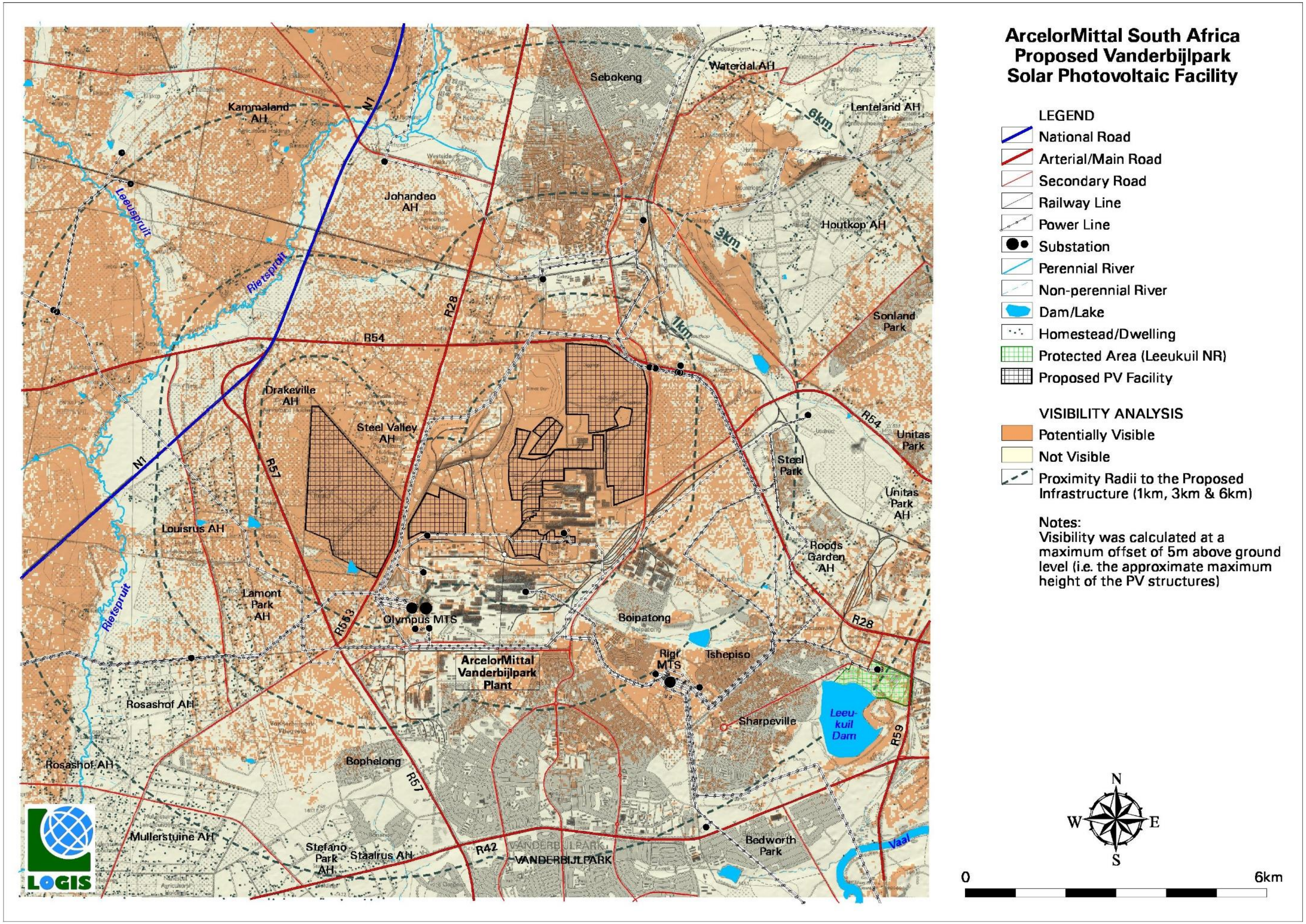
3 - 6km

Within a 3 – 6km radius, the visual exposure is somewhat reduced and interrupted in the north east, east and southern portions of the study area. Visual exposure is concentrated to the west, north west and north. Potential sensitive visual receptors include observers travelling along the various roads listed above, residents on the outskirts of Tshepiso, Sharpeville, Sonland Park and Bophelong, as well as residents of portions of the following Agricultural Holding areas; Roods Garden, Unitas Park, Johandeo, Kammalandand Rosashof.

> 6km

At distances exceeding 6km the intensity of visual exposure is expected to be very low and highly unlikely due to the extent of visual cluster and distance between the object (development) and the observer.

In general terms it is envisaged that the structures, where visible from shorter distances (e.g. less than 1km and potentially up to 3km), and where sensitive visual receptors may find themselves within this zone, may constitute a high visual prominence, potentially resulting in a visual impact. This may include observers travelling along the roads and residents of the towns and settlements mentioned above.



Map 3: Potential visual exposure (viewshed analysis) of the proposed AMSA Vanderbijlpark Solar PV

6. ANTICIPATED ISSUES RELATED TO VISUAL IMPACT

Anticipated issues related to the potential visual impact of the proposed **AMSA Vanderbijlpark Solar PV Facility** include the following:

- The visibility of the facility to, and potential visual impact on, observers travelling along the various national, arterial and secondary roads in closer proximity to the proposed infrastructure.
- The visibility of the facility to, and potential visual impact on residents of towns and settlements within the study area.
- The potential visual impact of the facility on the visual character or sense of place of the region.
- The potential visual impact of the construction of ancillary infrastructure (i.e. internal access roads, buildings, power line, etc.) on observers in close proximity to the facility.
- The visual absorption capacity of the natural vegetation (if applicable).
- Potential cumulative visual impacts (or consolidation of visual impacts), with specific reference to the placement of the PV facility within an area where various solar energy generation applications have been authorised, or are still being assessed.
- The potential visual impact of operational, safety and security lighting of the facility at night on observers residing in close proximity of the facility.
- Potential visual impact of solar glint and glare as a visual distraction and possible air/road travel hazard.
- Potential visual impact of solar glint and glare on static ground-based receptors (residents on the outskirts of towns and settlements) in close proximity to the PV facility.
- Potential visual impacts associated with the construction phase.
- The potential to mitigate visual impacts and inform the design process.

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

The following methodology will be used to assess the impacts identified above during the environmental impact assessment phase:

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

Extent – The distance the visual impact extends from the proposed development and to what extent it will have the highest impact. In the case of this type of development the extent of the visual impact is most likely to have a higher impact on receptors closer to the development and decrease as the distance increases[2].

- Long distance (very low = 1)
- Medium to longer distance (low = 2)
- Short distance (medium = 3)
- Very short distance (high = 4)

[2] Long distance = > 20km. Medium to longer distance = 10 – 20km. Short distance = 5 – 10km. Very short distance = < 5km (refer to Section **Error! Reference source not found.**).

Duration – The timeframe in both the construction and operational phase over which the effects of the impact will be felt.

- Very short (0-1 yrs. = 1)
- Short (2-5 yrs. = 2)
- Medium (5-15 yrs. = 3)
- Long (>15 yrs. = 4)
- Permanent (= 5)

Magnitude – The severity or size of the impact. This value is read off the Visual Impact Index maps. Where more than one value is applicable, the higher of these will be used as a worst-case scenario.

- None (= 0)
- minor (= 2)
- low (= 4)
- medium/moderate (= 6)
- high (= 8)
- very high (= 10)

Probability – The likelihood of the impact occurring.

- Very improbable (= 1)
- Improbable (= 2)
- Probable (= 3)
- Highly probable (= 4)
- Definite (= 5)

Status - The perception of Interested and Affected Parties towards the proposed development.

- Positive
- Negative
- Neutral

Reversibility – The possibility of visual recovery of the impact following the decommissioning of the proposed development.

- Reversible (= 1)
- Recoverable (= 3)
- Irreversible (= 5)

Significance - low, medium or high.

The **significance** of the potential visual impact is equal to the **consequence** multiplied by the **probability** of the impact occurring, where the consequence is determined by the sum of the individual scores for magnitude, duration and extent (i.e. **significance = consequence (magnitude + duration + extent) x probability**).

The significance weighting for each potential visual impact (as calculated above) is as follows:

- <30 points: Low (where the impact would not have a direct influence on the decision to develop in the area)
- 30-60 points: Medium/moderate (where the impact could influence the decision to develop in the area)
- >60: High (where the impact must have an influence on the decision to develop in the area)

Nature of Impact: Visual impact of construction activities on sensitive visual receptors in close proximity to the proposed PV Facility.		
	Without mitigation	***With mitigation***
Extent	Very Short distance **(4)**	Very Short distance **(4)**
Duration	Short term **(2)**	Short term **(2)**
Magnitude	Very High **(10)**	High **(8)**
Probability	Highly Probable **(4)**	Probable **(3)**
Significance	High **(64)**	Moderate **(42)**
Status (positive or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation: <u>Planning:</u> ➢ Retain and maintain natural vegetation in all areas outside of the development footprint, but within the project site. <u>Construction:</u> ➢ Ensure that vegetation is not unnecessarily removed during the construction period. ➢ Plan the placement of laydown areas and temporary construction equipment camps in order to minimise vegetation clearing (i.e. in already disturbed areas) where possible. ➢ Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads. ➢ Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed of regularly at licensed waste facilities. ➢ Reduce and control construction dust using approved dust suppression techniques as and when required (i.e. whenever dust becomes apparent). ➢ Restrict construction activities to daylight hours whenever possible in order to reduce lighting impacts. ➢ Rehabilitate all disturbed areas immediately after the completion of construction works.		
Residual impacts: None, provided that rehabilitation works are carried out as required.		

Table 2: Example of the impact table to be used during the assessment phase

7. TERMS OF REFERENCE FOR THE ENVIRONMENTAL IMPACT ASSESSMENT PHASE

Following the establishment of the baseline information pertinent to the development in the Scoping Phase VIA (as undertaken in this report), the primary goal of the Environmental Impact Assessment (EIA) Phase VIA report will be to ensure that visual impacts are adequately assessed and considered so that the relevant authorities can decide if the proposed PV Facility has unreasonable or undue visual impacts. The secondary aim is to identify effective and practical mitigation measures, if possible.

Since the purpose of a VIA is not to predict whether specific individuals or entities will find this type of development (Solar PV energy facility) pleasing or not but instead to identify the important visual features of the surrounding landscape, especially the features and characteristics that contribute to scenic quality, as the basis for determining how and to what degree a particular project will impact on those scenic values. The study will include the following:

1. Refinement of the baseline study, description of the visual character of the sites and zone of visual influence, if required.
2. Adjust the list of identified visual impacts resulting from the proposed development (with consideration of any public and/or relevant authorities' comments), if required.
3. Assessment of visual impacts based on the following VIA rating criteria, namely:
    a. Quality of the affected environment (landscape) – the aesthetic excellence and significance of the visual resources and scenery;
    b. Viewer incidence, perception and sensitivity – the level of acceptable visual impact is influenced by the type of visual receptors.
    c. Determine the Visual Absorption Capacity (VAC) – the capacity of the receiving environment to absorb the potential visual impact of the proposed development;
    d. Refine the potential visual exposure (visibility) - the geographic area from which the project may be visible based on any layout changes undertaken between the Scoping and EIA Phase;
    e. Determine the cumulative visual exposure - the combined or incremental effects resulting from changes caused by a proposed development in conjunction with other existing or proposed activities;
    f. Visual Impact Index - the combined results of visual exposure, viewer incidence / perception and visual distance of the proposed facility. Values are assigned for each potential visual impact per data category and merged in order to calculate the visual impact index;
4. Assessment of the significance of the visual impacts, rated according to methodology outlined in Section 6 above, which includes:
    a. Extent, duration, magnitude and probability to determine significance; and
    b. Significance considered with status (positive, negative or neutral) and reversibility (reversible, recoverable or irreversible) following decommissioning of the proposed facility.
5. Impacts will be rated before mitigation and after, assuming mitigation is possible.
6. Development of mitigation measures to reduce visual impacts and enhance any positive visual benefits, where possible.

8. CONCLUSION AND RECOMMENDATIONS

The construction and operation of the proposed AMSA Vanderbijlpark Solar PV Facility may have a visual impact on potentially sensitive visual receptors particularly within (but not restricted to) a 6 km radius of the proposed project development site. The fact that some components of the proposed AMSA Vanderbijlpark Solar PV Facility and associated infrastructure may be visible does not necessarily imply a high visual impact. Sensitive visual receptors within (but not restricted to) a 3km buffer zone from the facility need to be identified and the severity of the visual impact assessed within the EIA phase of the project.

Additionally, due to the location of the proposed PV site which lies adjacent to a national road (N1), various arterial roads (R54, R28, R553 and R57) and a railway line, the need for a glint and glare assessment should be investigated.

It is recommended that additional spatial analyses be undertaken in order to create a visual impact index that will further aid in determining potential areas of visual impact. This exercise should be undertaken for the core PV facility as well as for the ancillary infrastructure, as these structures (e.g. the BESS structures) are envisaged to have varying levels of visual impact at a more localised scale. The site-specific issues (as mentioned earlier in the report) and potential sensitive visual receptors should be measured against this visual impact index and be addressed individually in terms of nature, extent, duration, probability, severity and significance of visual impact. This recommended work must be undertaken during the Environmental Impact Assessment (EIA) Phase of reporting for this proposed project.

9. REFERENCES

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