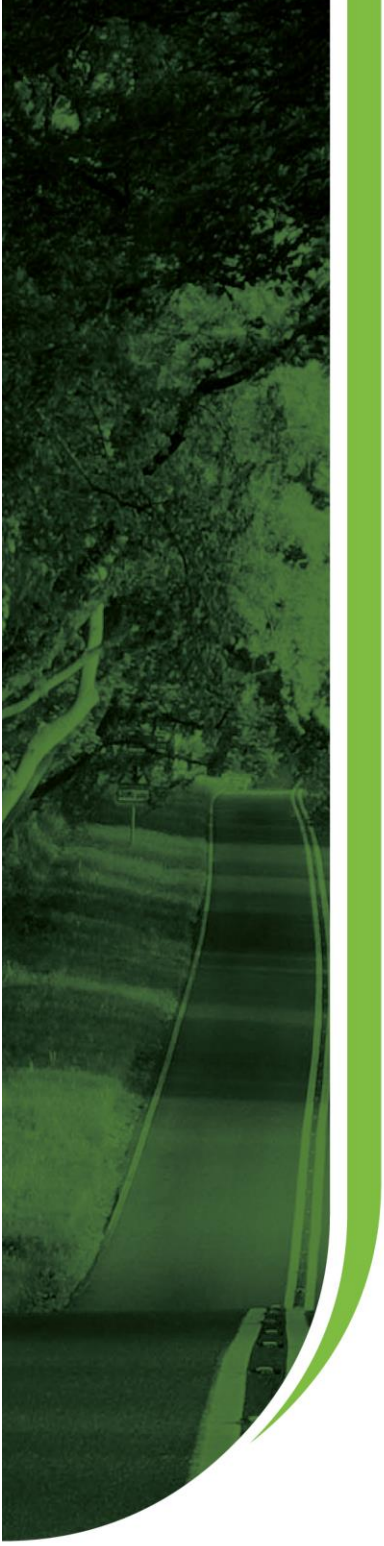

PROPOSED DEVELOPMENT OF A 50 MW PV FACILITY ON THE FARMS COMMANDANTS PAN NO. 382 & KOPJE ALLEEN NO. 81, RIEBEECKSTAD, FREE STATE PROVINCE

Visual Impact Assessment

September 2022

Prepared for:

WKN Windcurrent

Prepared by:

Mr Christoff du Plessis
christoff@enviroworks.co.za

QUALITY AND REVISION RECORD

1.1 QUALITY APPROVAL

	Capacity	Name	Signature	Date
Author	Visual Specialist	Christoff du Plessis		20/09/2022
Reviewer	Quality Check Officer	Gerhard Schoeman		26/09/2022

This report has been prepared in accordance with Enviroworks Quality Management System.

1.2 REVISION RECORD

Revision Number	Objective	Change	Date
Version 1	Determine the Visual Impact of the Proposed 50 MW Khauta PV Facility, Free State Province.	-	20/09/2022

1.3 DISCLAIMER

Even though every care is taken to ensure the accuracy of this report, Visual Impact Assessment studies are limited in scope, time and budget. Discussions are to some extent made on reasonable and informed assumptions built on bona fide information sources, as well as deductive reasoning. Since Visual impact studies deal with dynamic natural systems additional information may come to light at a later stage during the impact assessment phase. The Author does not accept responsibility for conclusions made in good faith based on own databases or on the information provided. Although the Author exercised due care and diligence in rendering services and preparing documents, he accepts no liability, and the Client, by receiving this document, indemnifies the Author against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, directly or indirectly by the Authors and by the use of this document. This report should therefore be viewed and acted upon with these limitations in mind."

2 EXECUTIVE SUMMARY

Kings Landing Trading 507 (PTY) Ltd t/a Enviroworks (hereafter referred to as Enviroworks) has been appointed by WKN Windcurrent to compile the Visual Impact Assessment (VIA) for the proposed 50 MW Khauta S

PV Facility in order to determine the Visual Impact of the proposed solar power generating facility. This VIA Report was compiled in accordance with the Guidelines for involving a Visual and Aesthetic Specialist in the EIA process (DEA&DP, 2005). This Guideline was developed by the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) to be implemented as best practise.

2.1 PROJECT DESCRIPTION

The Applicant, Khauta e Nyane Solar PV Facility (RF) (PTY) Ltd, propose to establish a commercial solar photovoltaic (SPV) facility (hereafter referred to as the 50 MW Khauta SPV Facility) with an output capacity of 50 MW. The proposed development will take place on Portion 3 of the Farm Kopje Alleen No. 81 and Portion 9 of the Farm Commandants Pan No. 382 situated roughly four kilometres (4 km) towards the northeast of the town of Riebeeckstad, Free State Province. The 50 MW generating capacity will be achieved through a series of array PV Panels and associated infrastructure (Figure 1) which include:

- PV modules and mounting structures (monofacial or bifacial) with fixed, single or double axis tracking mounting structures;
- Associated stormwater management infrastructure;
- Battery Energy Storage System (BESS);
- Site- and internal- access roads (up to six metres wide);
- Auxiliary buildings (offices, parking, etc.);
- Ablution facilities and associated infrastructure;
- Temporary laydown area during the construction phase (which will be a permanent laydown area for the BESS during the operational phase);
- On-site 33/44 kilovolt (kV) substation (facility substation) and associated 33/44 kV collector transmission line;
- Grid connection infrastructure including medium-voltage cabling between the proposed development and the facility substation (underground cabling will be used where practical);
- Perimeter fencing; and,
- Rainwater and/or groundwater storage tanks and associated water transfer infrastructure (Schoeman, 2022).

The 50 MW Khauta SPV Facility will have a development footprint of approximately 87 ha and will be located within the broader area of approximately 1015 ha (extent of the two farm portions) (Schoeman, 2022).

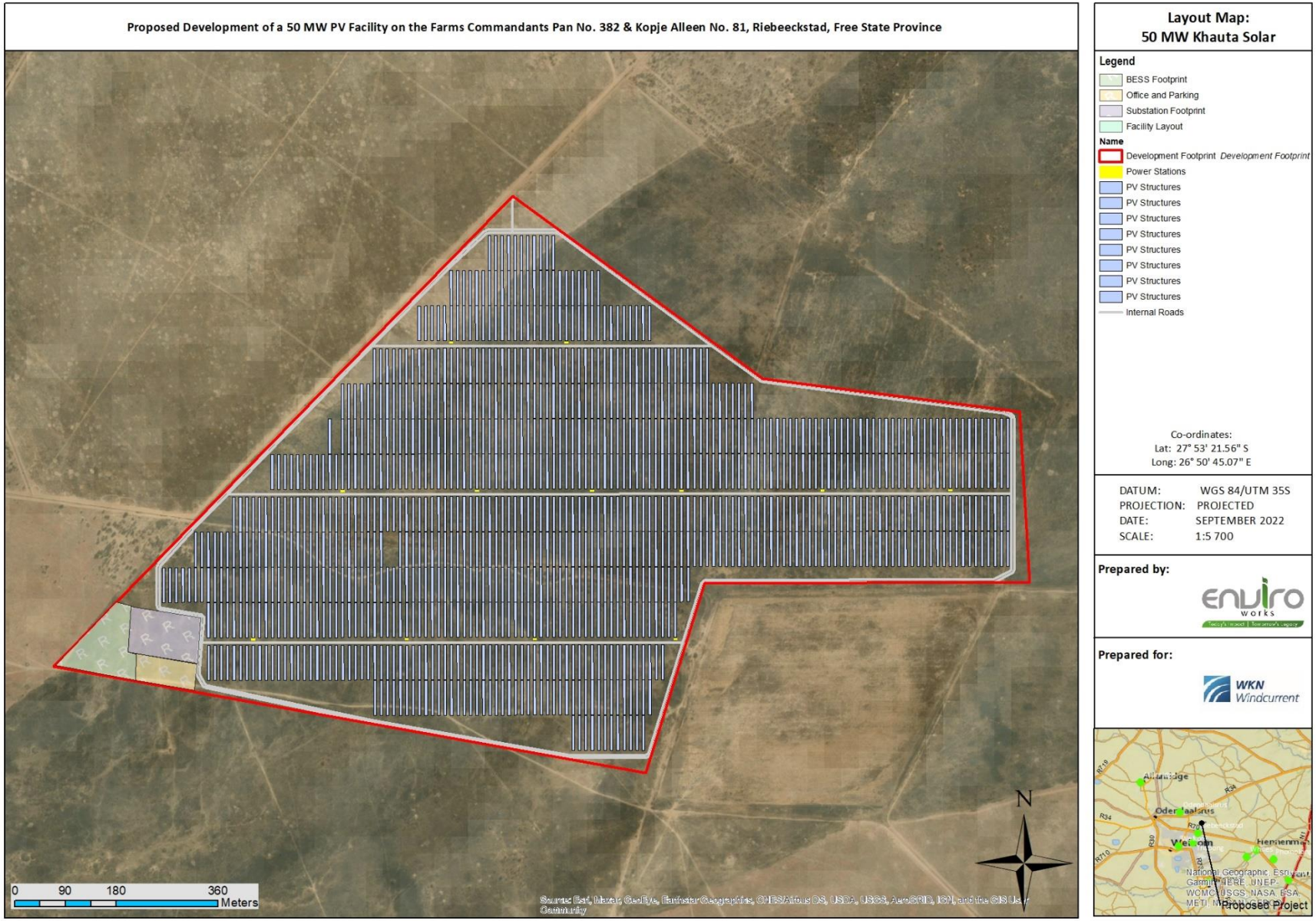

Figure 1: Layout Map of the proposed 50 MW SPV Facility near Welkom, Free State Province.

2.2 LOCATION ALTERNATIVES

Due to the nature of the proposed development, the location (Figure 5) of the project is largely dependent on technical factors such as solar irradiation, climatic conditions, extent to topography of the site and available grid connection. A preliminary cluster area of 980 ha was identified by the Applicant as a feasible parcel of land. Various Specialist Studies have been commissioned to outline the Site Sensitivity Verification (SSV) within the extent of the farm portions. The objective of the various specialist studies were to provide the following for their respective fields:

1. A brief description of the site with high-level feedback on the proposed development footprint;
2. Identify sensitive areas;
3. Identify no-go areas;
4. Provide buffers for sensitive areas; and,
5. Provide overall spatial files and maps that outline the sensitive areas, no-go areas and possible constructable areas for development (Schoeman, 2022).

Of the preliminary 980 ha assessed, 690 ha has been identified as suitable for development, considering the findings of the appointed Specialists. The outcome of the SSV Report was used to inform the Applicant in developing the project scope of works and Site Layout Plan (Figure 1) for the proposed development of the 50 MW Khauta SPV Facility. Therefore, no site alternatives will be further assessed.

2.3 HEIGHT ALTERNATIVE OF THE BATTERY ENERGY STORAGE SYSTEM (BESS)

The need for a Battery Energy Storage System (BESS) originates from the fact that photovoltaic panels can only generate electricity when the sun is shining, while peak demand may not necessarily occur during daylight hours. Therefore, the storage of electricity in BESS and supply thereof during peak demand will mean that the facility is more efficient, reliable and electricity supply more consistent. The proposal for the 50 MW Khauta SPV Facility includes the installation of an area up to one-point one hectares (1.1 ha) of the BESS situated directly adjacent to the on-site facility substation and auxiliary building (Figure 1) (Schoeman, 2022).

Two (2) height alternatives are proposed for the Battery Energy Storage System. Alternative 1 (Figure 2) was assessed at a maximum height of eight meters (8 m) and Alternative 2 (Figure 3) was assessed at a maximum height of fifteen meters (15 m). The viewshed analysis of both alternatives were overlain (Figure 4) to determine the best suitable option for the site. As illustrated by Figure 4 Alternative 1 is represented by the green viewshed analysis and Alternative 2 by the purple viewshed analysis. Although Alternative 2 will have a higher visual exposure especially towards the north, southeast and south is to a limited extent and as such will be assessed within this VIA Report.

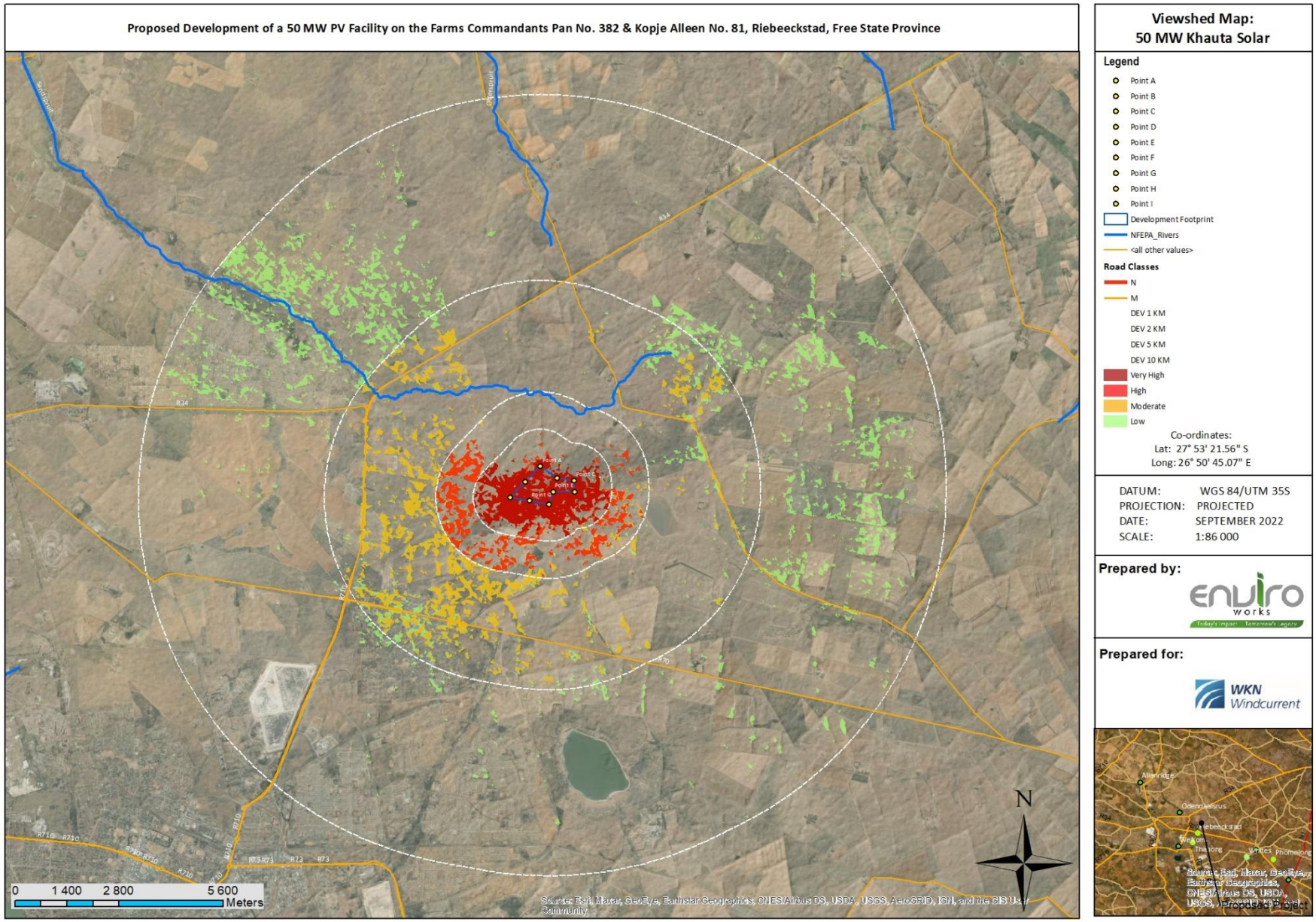

Figure 2: Eight Metre (8 m) Alternative for the Proposed Development of the 50 MW SPV Facility, Welkom, Free State Province.

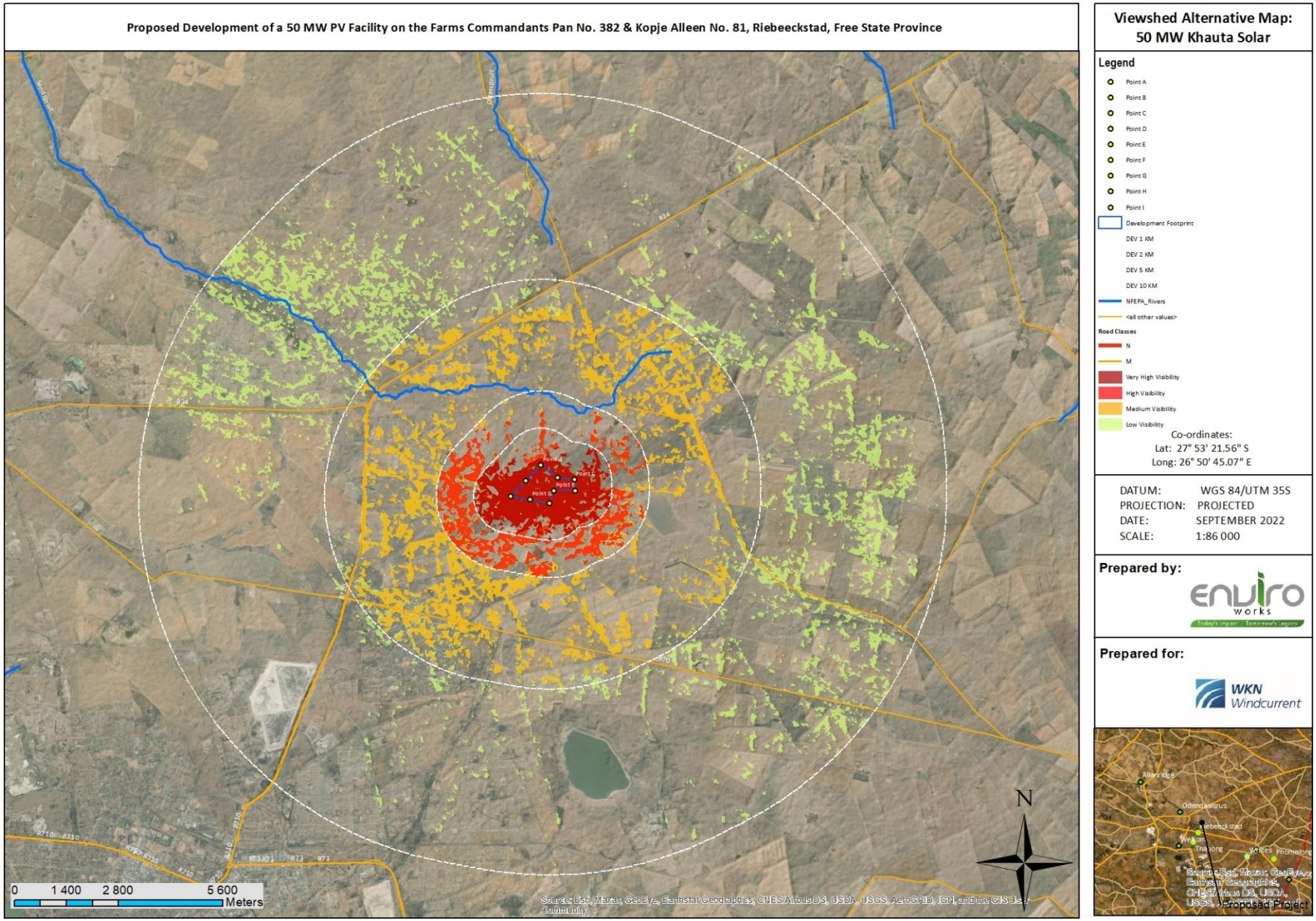

Figure 3: Fifteen Metre (15 m) Alternative for the Proposed Development of the 50 MW SPV Facility, Welkom, Free State Province.

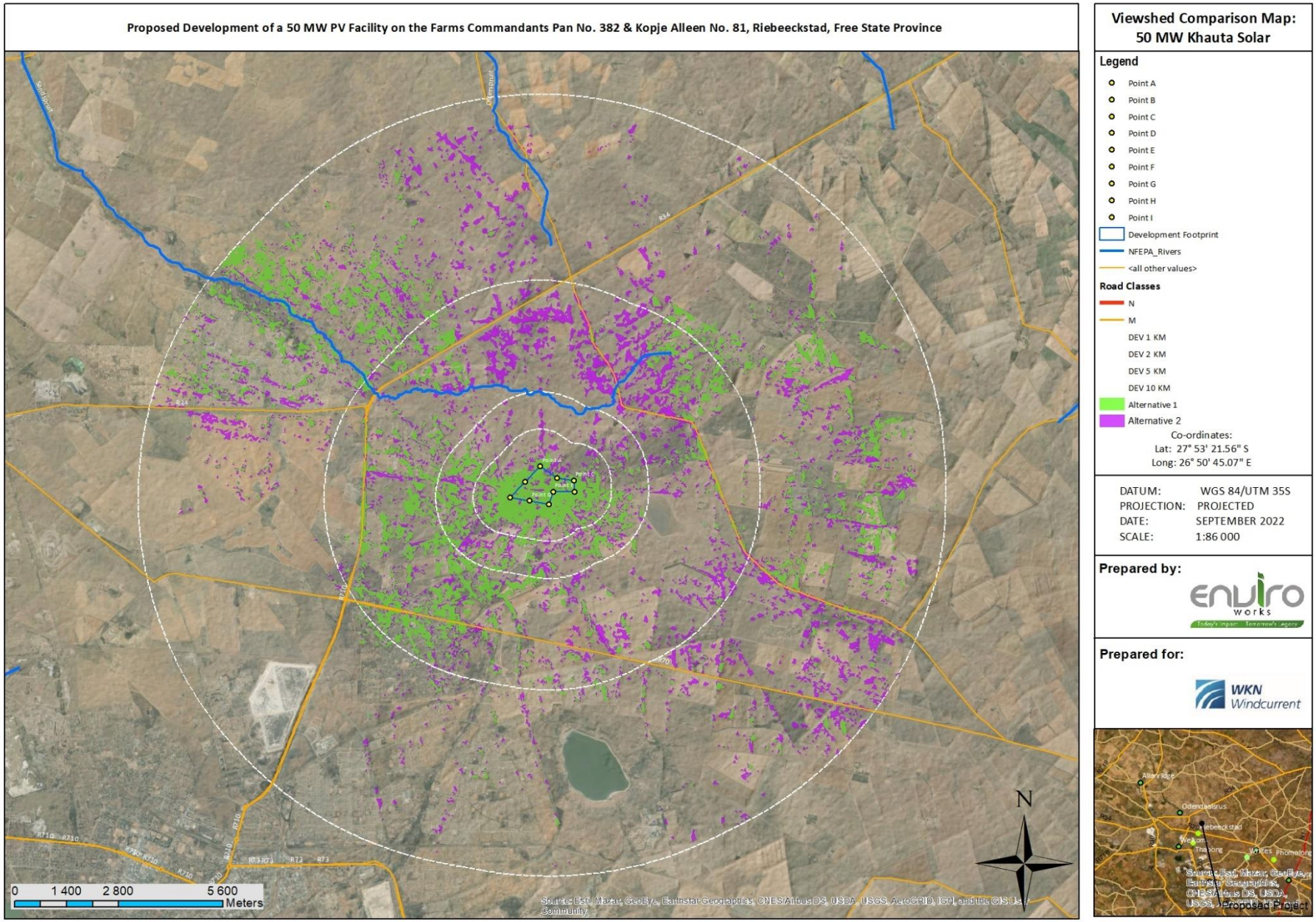

Figure 4: Viewshed Comparison for the Proposed Development of the 50 MW SPV Facility, Welkom, Free State Province.

2.4 CONCLUSION AND RECOMMENDATIONS

Only one (1) residential dwelling / farmstead is situated within the short distance zone (0 km – 1 km); however, as illustrated within Figure 17 (Viewshed Analysis) the proposed development will not be visible from this vantage point given the undulating topography of the study area. The study area within the short distance zone predominantly consists of old agricultural farmland (not cultivated within recent years) and natural grassland from where no visual impact is expected at this stage as no signs of observer presence within these areas were noted. Should these areas be cultivated or developed in the future a high visual impact will occur from these vantage points. It must; however, be noted that a high temporary visual impact will occur from the internal farm roads.

The highest visual impact within the short to medium distance zone (1 km – 2 km) will occur from Superior Brick situated at kilometre two-point eight (km 2.8) from where the visual impact is expected to be low given the undulating topography of the study area and temporary as observers will only remain within the area periodically. The proposed development will only be visible from elevated vantage points within the Superior Bricks premises and as such a low visual impact has been assigned. It must be noted that a moderate and temporary visual impact will occur from the agricultural farmlands situated at kilometre one-point eight (km 1.8) towards the southeast of the proposed development as observers will only remain within the area for a set period of time. Furthermore, the proposed development will have a moderate and temporary visual impact from all internal farm roads.

Visibility beyond five kilometres (5km) from the proposed 50 MW Khauta SPV Facility is expected to be negligible due to the distance between the prosed development and the observer. As illustrated within Figure 17 (Viewshed Analysis) the proposed development will be visible towards the northwest and northeast within the long-distance zone (5 km – 10 km); however, no visual impact will occur within the long-distance zone given the high VAC of the study area coupled with the distance between the proposed development and the observer as illustrated by the photographic evidence taken from each of the vantage points within this zone.

It is advised that the eight metre (8 m) BESS be installed on site as the fifteen metre (15 m) BESS will have a higher visual impact on observers situated within the immediate vicinity. If all mitigation measures are implemented on site as listed under Section 18.1 of this Visual Impact Assessment Report the proposed 50 MW Khauta SPV Facility will have a low visual impact on the surrounding observers and as such can be authorised from a visual perspective.

Construction Phase:

- Access roads are to be kept clean;
- Site offices and structures should be limited to one location and carefully situated to reduce visual intrusions; Roofs should be grey and non-reflective;
- Construction camps as well as development areas should be screened with netting;
- Lights within the construction camp should face directly down (angle of 90˚);
- Vegetation clearance should be limited to the development footprint only;
- Litter should be strictly controlled, as the spread thereof through wind could have a very negative visual impact;

- All areas disturbed by construction activities must be subject to landscaping and rehabilitation;
- All spoil and waste will be disposed to a registered waste site and certificates of disposal provided;
- The project must be timed so that rehabilitation can take place at the optimal time for vegetation establishment;
- Litter should be strictly controlled, as the spread thereof through wind could have a very negative visual impact;
- Signage, if essential, should be discrete and confined to entrance gates. No corporate or advertising signage should be permitted.
- Avoid shiny materials in structures. Where possible shiny metal structures should be darkened or screened to prevent glare; and,
- Mitigation of visual impacts associated with the construction phase would entail proper planning, management and rehabilitation of the construction site. Mitigation measures include the following:
    - Reduce the time of construction through careful planning of logistics and ensure the productive implementation of resources;
    - Limit disturbance of the environment to the development footprint; and,
    - Limit construction activities to business hours (07:00 – 17:00).

Operation Phase:

- Avoid shiny materials in structures. Where possible shiny metal structures should be darkened or screened to prevent glare;
- Mitigation to minimise lighting impacts include the following:
    - Shielding the sources of light by physical barriers (walls, vegetation or structures itself);
    - Limit mounting heights of lighting fixtures, or alternatively using foot-lights or bollard level lights;
    - Make use of downward directional lighting fixtures;
    - Make use of minimum lumen or wattage in lights;
    - Any navigation lights must be shielded to prevent disturbance to adjacent landowners; and,
    - Use motion sensors to activate lighting ensuring light is available when needed.
- Indigenous Tree Species able to grow 10 m in height should be planted as a minimum along the northern, north-eastern and eastern borders;
- If the parameter fence consists of palisade fencing, the palisading must be painted either a red-brownish or light brown- colour;
- The power station buildings must be painted a light brown or red-brownish matt colour to ensure a higher landscape compatibility;
- Rehabilitation and Post-closure measures:
    - All above-ground structures should be removed, safely disposed of or possibly recycled for use elsewhere; and,
    - The affected area should be regarded to pre-development topographic conditions, unless the area is required for new specific uses.

3 DECLARATION OF THE SPECIALIST

I, **Christoff du Plessis**, **ID 911126 5012 084**, declare that I:

- am an Environmental Specialist at Enviroworks;
- act as an independent Specialist Consultant in the field of Visual Impacts;
- am assigned as Specialist Consultant by WKN Windcurrent for this proposed project;
- I do not have or will not have any financial interest in the undertaking of the activity other than remuneration for work as stipulated in the terms of reference;
- remuneration for services by the proponent in relation to this proposal is not linked to approval by decision-making Authorities responsible for permitting this proposal;
- the consultancy has no interest in secondary or downstream developments as a result of the Authorisation of this project.
- have no and will not engage in conflicting interests in the undertaking of the Activity;
- undertake to disclose to the Client and the Competent Authority any material, information that have or may have the potential to influence the decision of the Competent Authority required in terms of the Environmental Impact Assessment Regulations 2017; and,
- will provide the Client and Competent Authority with access to all information at my disposal, regarding this project, whether favourable or not.

Christoff du Plessis

Environmental Specialist

4 SPECIALIST CV AND DETAILS

Business name of Specialist:	Enviroworks
Specialist Name:	Christoff du Plessis
Physical address:	96 Merriman Street, George South, George, 6520
Postal address:	Suite 116, Private Bag X01, Brandhof
Postal code:	9324
Telephone:	051 436 0793
E-mail:	christoff@enviroworks.co.za
Fax:	086 601 7507

Christoff du Plessis

Relevant Qualifications

Baccalaureus Scientiae (B.Sc) in Environmental Geography: University of the Free State (2014)

Work Experience

January 2015 – Present: Environmental Specialist at Enviroworks

Key Specialist Experience

Visual Impact Assessment (VIA):

- Phalaborwa Wildlife Activity Hub, Kruger National Park, Limpopo Province (SANParks).
- 4.9ha Sand Mine on Portion 5 of the Farm Doornekraal No. 830, Western Cape Province (Greenmined).
- Proposed development of the Harvard Powerline, Bloemfontein, Free State Province (Centlec).
- Proposed development of the 35 m Buffeljagsrivier Monopole Mast, Buffeljagsrivier, Western Cape Province (Coast to Coast Towers).
- Proposed development of the 25 m Robertson Monopole Mast, Robertson, Western Cape Province (Coast to Coast Towers).
- Proposed development of the Klein Mooimaak Rest Camp Facility, West Coast National Park (SANParks).
- Proposed development of a Sand Mine near Malmesbury, Western Cape Province (Greenmined).
- Proposed upgrade of the R27 Gate and Geelbek Restaurant, West Coast National Park, Western Cape Province (SANParks).
- Proposed development of the 25 m Roodekrans Monopole Mast, Krugersdorp, Gauteng Province (Coast to Coast Towers).
- Proposed development of a 25 m Monopole Mast on Portion 25 of the Farm Klein Bottelary No. 17, Brackenfell, Western Cape Province (Coast to Coast Towers).

- Proposed development of a Landfill Site on Portion 3 of the Farm Katbosch No. 93, Sasolburg, Free State Province (Metsimaholo Landfill).
- Proposed development of numerous visitor information centres at Schroda and Mapungubwe Hill, Mapungubwe National Park, Limpopo Province (SANParks).
- Proposed development of a 35 m Monopole Mast on Portion 13 of the Farm Van Aries Kraal No. 455, Grabouw, Western Cape Province (Coast to Coast Towers).
- Proposed development of a 25 m Monopole Mast on Erf 532, Gansbaai, Western Cape Province (Coast to Coast Towers).
- Proposed development of a 35 m Lattice Mast on Portion 7 of the Farm Jagersvlakte No. 292, Grabouw, Western Cape Province (Warren Petterson Planning).
- Proposed development of a 35 m Lattice Mast on Erf 532, Stanford, Western Cape Province (Warren Petterson Planning).
- Proposed development of a 15 m Lattice Mast on Portion 4 of the Farm No. 53, Genadendal, Western Cape Province (Warren Petterson Planning).
- Proposed development of a 25 m Monopole Mast on Portion 8 of the Farm Delta No. 1003, Groot Drakenstein, Western Cape Province (Coast to Coast Towers).
- Proposed development of a 30 m Tree Mast on Portion 87 of the Farm Langverwacht No. 241, Kuils River, Western Cape Province (Warren Petterson Planning).
- Proposed development of a 20 m Tree Mast on Erf 679, Gouda, Western Cape Province (Atlas Towers).
- Proposed development of an IPP 400kV Power Line from Grommis to Aggeneys, Northern Cape Province (Eskom).
- Proposed development of a 30 m Lattice Mast on Erf 2819, Caledon, Western Cape Province (Atlas Towers).
- Proposed development of a 54 m Lattice Mast on Portion 7 of the Farm Haane Kuil No. 335, Beaufort West, Western Cape Province (Star Towers).
- Proposed development of a 25 m Monopole Mast on Erf 1035, Caledon, Western Cape Province (Atlas Towers).
- Proposed development of a 25 m Tree Mast on Erf 47, Birkenhead, Western Cape Province (Atlas Towers).
- Proposed development of a 25 m Monopole Mast on Erf 1201, Van Dyks Bay, Western Cape Province (Atlas Towers).
- Proposed development of a 20 m Tree Mast on Erf 1671, Melkbosstrand, Western Cape Province (Atlas Towers).
- Proposed development of a 15 m Tree Mast on Erf 740, Klein Brak River, Western Cape Province (Atlas Towers).
- Proposed Upgrades to the Alpha 1 Recreational Lounge, Robben Island, Western Cape Province (Robben Island Museum).
- Proposed development of a 25 m Tree Mast on Erf 969, Picaltsdorp, Western Cape Province (Atlas Towers).

- Proposed development of a 25 m Tree Mast on Erf 20601, George, Western Cape Province (Atlas Towers).
- Proposed development of a 25 m Monopole Mast on Erf 571, Dellville Park, Western Cape Province (Atlas Towers).
- Proposed development of a 15 m Tree Mast on Portion 113 of the Farm Ruygte Vally No. 205, Sedgefield, Western Cape Province (Atlas Towers).
- Proposed development of a 15 m Dome Mast on Erf 8281, Mossel Bay, Western Cape Province (Atlas Towers).
- Proposed development of a 35 m Tree Mast on Portion 42 of the Farm Harkerville No. 428, Plettenberg Bay, Western Cape Province (Atlas Towers).
- Proposed development of a 25 m Monopole Mast on the Remaining Extent of the Farm No. 790, Philippi, Western Cape Province (Atlas Towers).
- Proposed development of a 15 m Tree Mast on Portion 3 of the Farm No. 452, Grabouw, Western Cape Province (Atlas Towers).
- Proposed development of a 15 m Tree Mast on the Remainder of Erf 3331, Vredenburg, Western Cape Province (Atlas Towers).
- Proposed development of a 40 m Lattice Mast on Portion 24 of the Farm Olyven Boomen No. 83, Malan Valley, Western Cape Province (Atlas Towers).
- Proposed development of the Lendlovu Lodge, Addo Elephant Park, Eastern Cape Province (SANParks).
- Proposed development of a 25 m Tree Mast on Erf 2, Villiersdorp, Western Cape Province (Atlas Towers).
- Proposed development of a 25 m Tree Mast on Erf 270, Franschhoek, Western Cape Province (Galaxy Palms).
- Proposed development of a 25 m Lattice Mast on Erf 9, Nuwerus, Western Cape Province (Atlas Towers).
- Proposed development of the Karoo Power Reserve, Prieska, Northern Cape Province (Greenbox Consulting).
- Proposed development of the Khauta Solar PV Cluster (Three 100 MW PV Plants) near Welkom, Free State Province (WKN Windcurrent).
- Proposed development of the 25 m Monopole Mast on Erf 3266, Onrusrivier, Western Cape Province (Gyro).
- Proposed development of a 15 m Tree Mast on Erf 16 608, Zwelithemba, Western Cape Province (Gyro).
- Proposed development of a 15 m Tree Mast on Erf 1848, Hartenbos, Western Cape Province (Ilanga Technology).
- Proposed development of a 20 m Tree Mast on Erf 2037, Sedgefield, Western Cape Province (SBA Towers).
- Proposed development of a 45 m Lattice Mast on Erf 171, Franskraal, Western Cape Province (Gyro).
- Proposed development of a 25 m Monopole Mast on Erf 2548, Port Elizabeth, Eastern Cape Province (Star Towers).

- Proposed development of an Aggregate Mine on Portion 15 of the Farm Rietspruit No. 437, Ermelo, Mpumalanga Province (Greenmined Environmental).
- Proposed upgrade of an Existing Rooftop Base Telecommunication Station on the Remainder of Erf 4549, Kleinmond, Western Cape Province (Vodacom).

Wetland Delineation Studies:

- Wetlands Delineation study for the development of 13 borrow pits along National Road 8, Ladybrand, Free State Province (SANRAL).
- Wetland Delineation study for the development of a 12.5ha cemetery on Erf 4233, Western Cape Province (Theewaterskloof Local Municipality).
- Wetland Delineation study for the proposed development of an Agri-Hub near Cederville, Eastern Cape Province (Femplan).
- Wetland Delineation study for the proposed development of an Agri-Hub near Lambasi, Eastern Cape Province (Femplan).
- Wetland Delineation study for the proposed development of the Blue Hills Curro Castle, Midrand, Gauteng Province (Curro Holdings).

Stormwater Management Plans:

- Stormwater Management Plan for the Agri-World Recycling Plant, Swellendam, Western Cape Province (Agri-World Recycling Plant).
- Stormwater Management Plan for the Klaasvoogds Granite Mine, Springbok, Northern Cape Province (Greenmined Environmental).
- Stormwater Management Plan for the Moreson Poultry Project, Brandfort, Free State Province (Moreson Poultry).
- Stormwater Management Plan for the Sintier Poultry Project, Bronkhorstspruit, Gauteng Province (Sintier Poultry).
- Stormwater Management Plan for the maintenance and extending of a canal near Karatera, Western Cape Province (Eden Municipality).
- Stormwater Management Plan for Layer Hen Houses on the Remaining Extent of Portion 1 of the Farm Elandsfontein No. 21, Moloti City, North West Province (Bramakama Poultry).
- Stormwater Management Plan for the Proposed Installation of Battery Energy Storage Systems on Erf 2202, Ashton, Western Cape Province (Eskom).

5 ABBREVIATIONS

BESS	-	Battery Energy Storage System
CBA	-	Critical Biodiversity Area
DEA	-	Department of Environmental Affairs
DEA&DP	-	Department of Environmental Affairs & Development Planning
DEM	-	Digital Elevation Model
DTM	-	Digital Terrain Model
EIA	-	Environmental Impact Assessment
ESA	-	Ecological Support Area
GIS	-	Geographical Information System
Km	-	Kilometre
KV	-	Kilovolt
M	-	Metre
MAP	-	Mean Annual Precipitation
MAT	-	Mean Annual Temperature
MW	-	Megawatt
RF	-	Radio Frequency
SPV	-	Solar Photovoltaic
SSV	-	Site Sensitivity Verification
USGS	-	United States Geological Survey
UTM	-	Universal Transverse Mercator
VAC	-	Visual Absorption Capacity
VIA	-	Visual Impact Assessment

6 REQUIREMENTS OF A SPECIALIST REPORT

Appendix 6 of Government Notice Regulation No. 326 of 7 April 2017 outlines the basic requirements of a Specialist Report. Please refer to Table 3 below for all requirements.

Table 1: Requirements of a Specialist Report as set out in GN R. 326 of 07 April 2017.

REQUIREMENTS	SECTION
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;	4
b. A declaration that the Specialist is independent in a form as may be specified by the Competent Authority;	3
c. An indication of the scope of, and the purpose for which, the report was prepared; i. An indication of the quality and age of base data used for the Specialist Report; ii. A description of existing impacts on site, cumulative impacts of the proposed development and levels of acceptable change;	8
d. The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	10
e. A description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	8 & 10
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;	15
g. An identification of any areas to be avoided, including buffers;	15
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;	11
i. A description of any assumptions made and any uncertainties or gaps in knowledge;	9
j. A description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	15 & 18
k. Any mitigation measures for inclusion in the EMP'r	18 & 19
l. Any conditions for inclusion in the Environmental Authorisation;	19
m. Any monitoring requirements for inclusion in the EMP'r or Environmental Authorisation;	19
n. A reasoned opinion – i. Whether the proposed activity, activities or portions thereof should be authorised; 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 EMP'r, and where applicable, the closure plan;	19
o. A description of any consultation process that was undertaken during the course of preparing the specialist report;	N/A
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.	T.B.C

7 VISUAL IMPACT EVALUATION CRITERIA CHECKLIST

As per the Provincial Government of the Western Cape Guideline for involving Visual and Aesthetic Specialists in the EIA Process (DEA&DP, 2005), a high-quality visual impact assessment should include the following criteria:

Table 2: Requirements of a Visual Impact Assessment.

REQUIREMENTS	SECTION
Meet the minimum requirements for a visual assessment;	8
Is appropriate to the nature and scale of the proposed development;	13
Provides a full description of the environment and the project;	14
Considers the project within its wider context;	16
Provides a clear methodology using accepted conventions for visual assessment;	10
All sources of information and references are given;	20
Graphics, including maps and visual simulations, are clear;	8, 9, 10, 11, 12, 13, 14, 15 & 16
Include both quantitative and qualitative criteria;	15, 16, 17 & 18
Cumulative visual impacts have been considered;	18
An evaluation of alternatives has been made;	18 & 19
An explanation of significance ratings, related to bench-marks, is given;	17
Recommendations for visual mitigation are sensible and practical;	18 & 19
Recommendations for monitoring programmes have been outlined;	19
The best practical environmental option has been considered;	19
All the visual issues raised in the scoping have been addressed;	N/A at this stage
A clear summary of mitigation measures, including essential and optional measures, is given.	19

CONTENTS

LIST OF FIGURES:

LIST OF TABLES:

8 STUDY APPROACH

8.1 Methodology

The study was undertaken using Geographical Information System (GIS) software as a tool to generate a viewshed analyses and to apply relevant spatial criteria to the proposed development. A detailed Digital Elevation Model (DEM) for the study area (S28E26, S28E27, S29E26 & S29E27) was obtained from the National Aeronautic Space Administration (NASA). The methodology utilised to identify issues to the visual impact include the following activities:

- The creation of a detailed digital terrain model of the potentially affected environment;
- The identification of sensitive environments upon which the proposed 50 MW Khauta SPV Facility could have a potential impact on; and,
- The creation of viewshed analyses from the proposed 50 MW Khauta SPV Facility in order to determine the visual exposure and the topography's potential to absorb the potential visual impact. The viewshed analysis takes into account the maximum dimensions of the proposed infrastructure and was calculated at a height of eight meters (8 m) and 15 m respectively.

This Report (Visual Impact Assessment) sets out to identify and quantify the possible visual impacts related to the proposed 50 MW Khauta SPV Facility, as well as offer potential mitigation measures where required. The following methodology has been adopted for the assessment of the Visual Impact Assessment:

- **Determine the Potential Visual Exposure**

  The visibility or visual exposure of any structure or activity is the point of departure for the VIA. It stands to reason that if the proposed infrastructure was not visible, no impact will occur. Viewshed analyses of the proposed structures indicate the potential areas where visibility can occur.

- **Determine Visual Distance/Observer Proximity to the facility**

  In order to refine the visual exposure of the proposed SPV 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 structures.

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

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

- **Determine Viewer Incidence/Viewer Perception**

  The number of observers and their perception of a structure determine the concept of visual impact. If there are no observers, then there would be no visual impact. If the visual perception of the structure is favourable to all observers, the visual impact will be positive.

  It is therefore necessary to identify areas of higher viewer incidence and to classify certain areas according to the observer's visual sensitivity towards the proposed infrastructure. It would be impossible not to generalise the viewer incidence and sensitivity to some degree, as there are many

variables when trying to determine the perception of the observer; regularity of sighting, cultural background, state of mind, and purpose of sighting which would create a myriad of options.

- **Determine the Visual Absorption Capacity of the Natural Vegetation**

  This is defined as the capacity of the receiving environment to absorb the potential visual impact of the proposed development. The VAC is primarily a function of the vegetation, and will be high if the vegetation is tall, dense and continuous. Conversely, low growing sparse and patchy vegetation will have a low VAC.

  The VAC will be high where the environment can readily absorb the structure in terms of texture, colour, form and light/shade characteristics of the structure. On the other hand, the VAC for a structure contrasting markedly with one or more of the characteristics of the environment will be low. The VAC generally increases with distance, where discernible detail in visual characteristics of both environment and structure decreases.

  The Digital Terrain Model (DTM) utilised in the calculation of the visual exposure of the proposed SPV Facility does not incorporate the potential VAC of the natural vegetation of the region. It is therefore necessary to determine the VAC by means of the interpretation of the vegetation cover, supplemented with field observation.

- **Determine the Visual Impact Index**

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

- **Determine the Impact Significance**

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

8.2 Projections

Projected coordinate systems are defined by ArcGIS Resource Centre (The developers of ArcMap V10.3) as "*a flat, two dimensional surface. Unlike a geographical coordinate system, a projected coordinate system has constant lengths, angles, and areas across the two dimensions. A projected coordinate system is always based on a geographic coordinate system located on a sphere or spheroid".* Projected Coordinates systems are world based and thus the larger the area the larger the distortion. To minimise the distortion the Universal Transverse Mercator (UTM) coordinate reference system divides the Earth into 60 equal zones that are all 6 degrees wide in longitude from East to West. Riebeeckstad is situated within the thirty-five degree (35˚) UTM Zone, thus the WGS84/UTM S35 (32735) was used as projection.

9 ASSUMPTIONS AND LIMITATIONS

- Information is assumed to be the latest available information.
- Visual Impact Studies and Assessments depend, to some extent, on subjective judgements. The subjectivity, of the analysis relates to the value driven nature of VIA. However, to deal with subjectivity, the methodology of this VIA is explained, and rating categories clearly defined.
- It is assumed that site alternatives were investigated by WKN Windcurrent and the most suitable recommended by their acquisition Specialists.

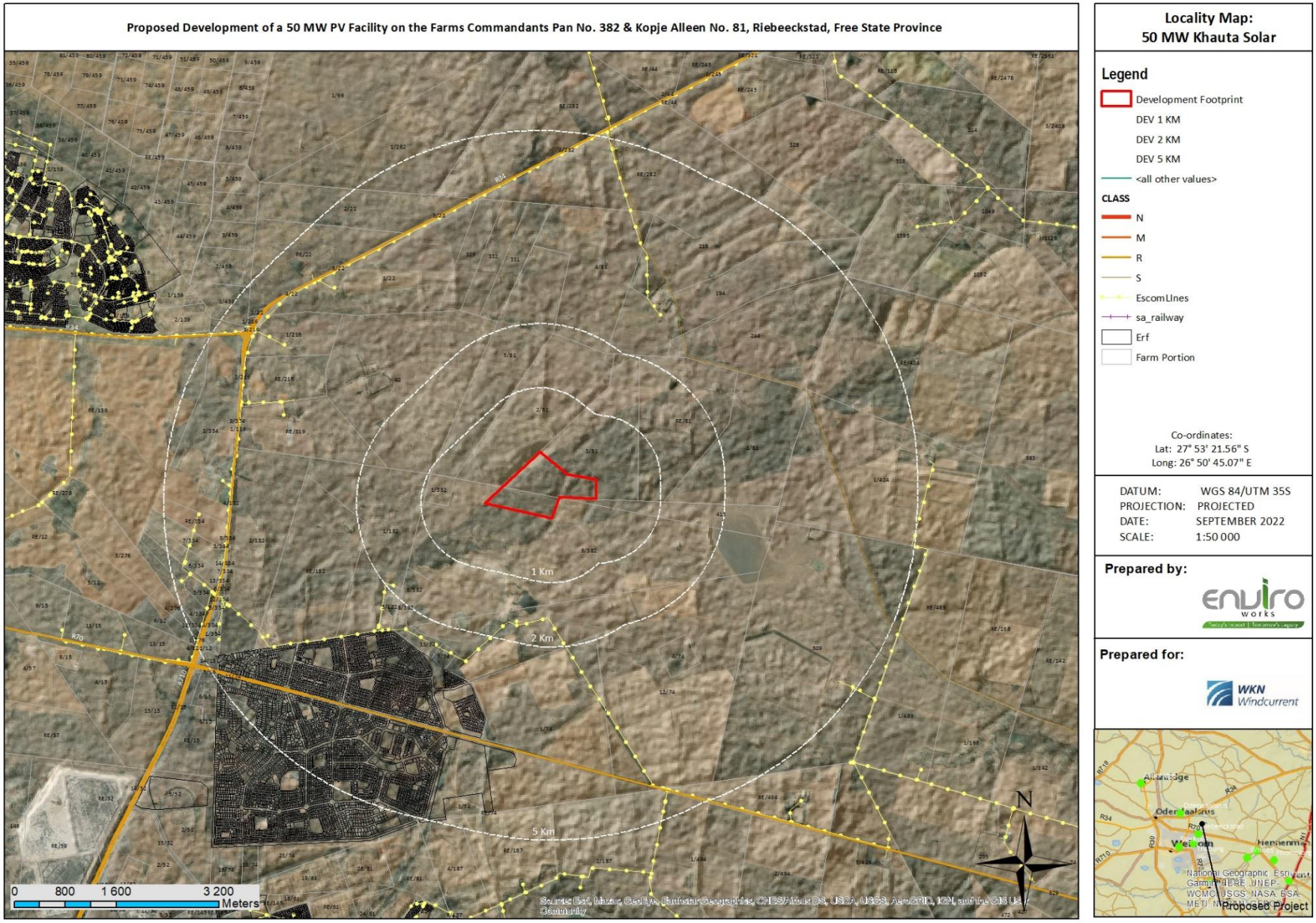

Figure 5: Locality Map of the Proposed 50 MW SPV Facility near Welkom, Free State Province.

10 SCOPE OF WORK

The determination of the potential visual impacts is undertaken in terms of nature, extent, duration, magnitude, probability and significance of the construction and operational phases of the proposed project. The study area for the visual impact assessment encompasses a geographical area of 130 km^2 (extent of the maps) and includes a ten kilometre (10 km) buffer zone from the proposed 50 MW Khauta SPV Facility. The study area constitutes of local tourist attractions, residential areas, agriculture, mining and natural environments. The proposed development will be situated four kilometres (4 km) towards the northeast of Riebeeckstad.

Anticipated issues related to the potential visual impact of the proposed 50 MW Khauta SPV Facility include the following:

- The visibility of the PV Facility to, and potential visual impact on, observers travelling along the R70, R730, R34, Mc Lean Street and Lois Street;
- The visibility of the facility to, and potential visual impacts on tourists visiting tourist attraction near Riebeeckstad (Whistler Rum, Helderwater Guest Farm, Rhino's Rest Luxury Guest House, Bundu Game Lodge, Phakisa Raceway, Restaurants and numerous bed and breakfasts in the surrounding area);
- The visibility of the facility to, and potential visual impact on observers residing within Riebeeckstad, Odendaalsrus and the surrounding environment;
- The visual absorption capacity of natural or planted vegetation as well as man-made topographical features;
- Potential visual impacts associated with the construction- and operational phase; and,
- The potential to mitigate visual impacts.

It is anticipated that the issues listed above may constitute a visual impact at a local scale.

11 THE AFFECTED ENVIRONMENT

The proposed SPV Facility will be situated on Portion 3 of the Farm Kopje Alleen No. 81 and Portion 9 of the Farm Commandants Pan No. 382, Riebeeckstad, Free State Province. The study area constitutes of urban residential areas, Informal Settlements, agricultural farmland and recreational activities (Whistler Rum, Helderwater Guest Farm, Rhino's Rest Luxury Guest House, Bundu Game Lodge, Phakisa Raceway, Restaurants and numerous bed and breakfasts in the surrounding area).

11.1 TOPOGRAPHY, VEGETATION AND HYDROLOGY

11.1.1 VEGETATION

The study area is described by Smith, 2022, as a mixture of mostly natural terrestrial areas interspersed with agricultural farmlands and areas associated with wetlands on a mostly flat topography with slightly undulating hills. The study area is dominated by indigenous species such as *Themeda triandra, Cymbopogon sp., Panicum coloratum* and *Cynodon sp.* Although the development is mapped within the Highveld Alluvial Vegetation Type, the vegetation found on site is more botanically representative of Western Free State Clay Grassland or Central Free State Grassland. Although dominated by *Themeda triandra* and *Cymbopogon sp.* there are areas that have a high abundance of *Vachelia karoo* which is most likely a result of increased moisture in the soil or clay. Figure 6 (Sensitivity Map of the study area) below illustrate areas that are considered to be ecologically significant (i.e.,

Critical Biodiversity Areas (CBA), Other Natural Areas and Ecological Support Areas (ESA)) and where natural vegetation is most likely to occur.

11.1.2 GEOLOGY

The Geology predominantly consists of deep sandy to clayey (but mostly coarse sand) alluvial soils developed over Quaternary alluvial (fluviatile) sediments. Oakleaf, Dundee, Shortlands, Glenrosa and Mispah soil forms were identified in the Vaal River floodplain. The rivers are perennial, often in flood during summer. Erosion of banks and deposition of new fine soil on alluvium can be of considerable extent. Some smaller anastomosing channels of major rivers can dry out during winter (Mucina & Rutherford, 2006).

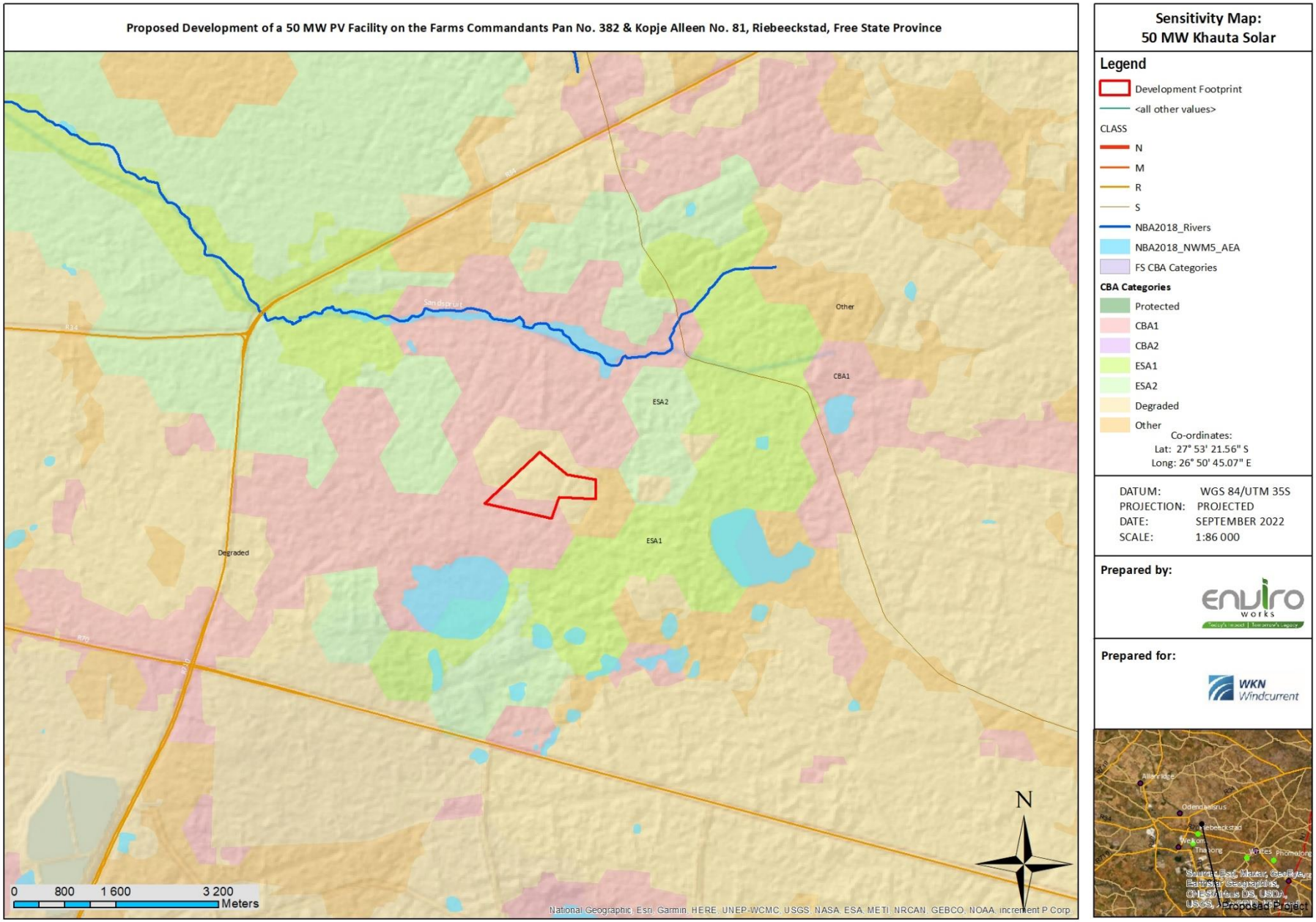

Figure 6: Sensitivity Map of the Study Area.

11.1.3 CLIMATE

The proposed project will be situated within the Highveld Alluvial Vegetation bio-region. The Mean Annual Precipitation (MAP) of the study area is 495 mm occurring within the summer months (Figure 7) (Mucina & Rutherford, 2006). The Mean Annual Temperature (MAT) recorded for the study area is sixteen and a half degrees Celsius (16.6˚ C) with summer temperatures averaging at thirty degrees Celsius (30˚ C).

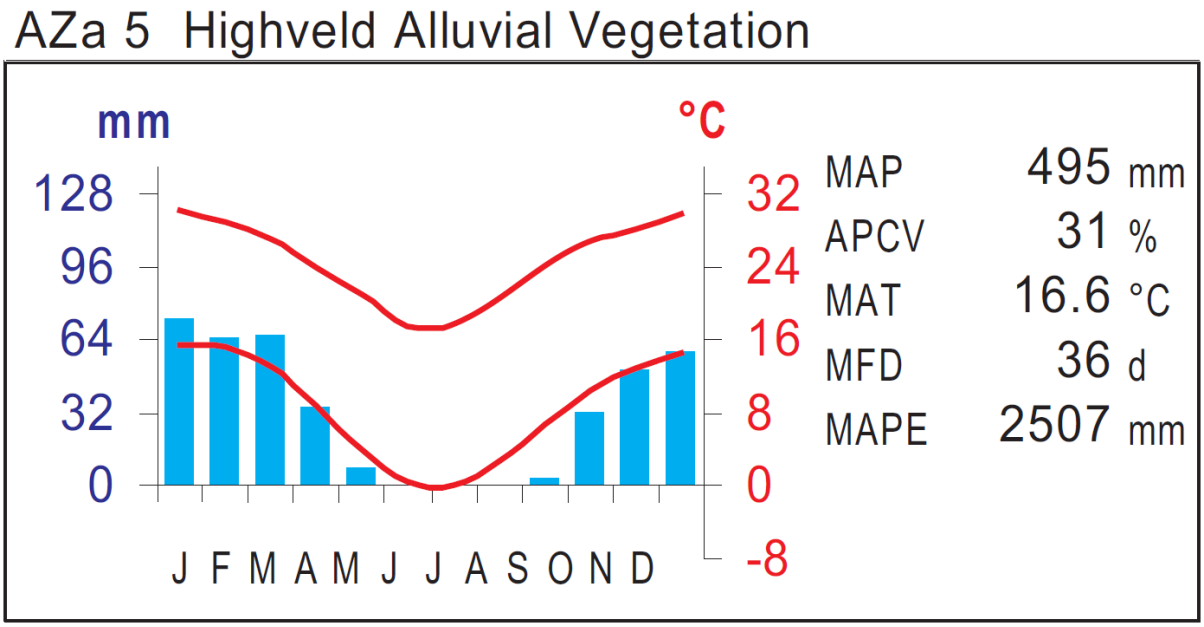

Figure 7: Climate Diagram for the Highveld Alluvial Vegetation.

12 RELEVANT LEGISLATION AND GUIDELINES

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

- This Visual Impact Assessment was undertaken in accordance with the Guidelines for Involving Visual and Aesthetic Specialists in EIA Processes, as issued by the Department of Environmental Affairs and Development Planning (DEA&DP).
- The Environmental Impact Assessment Regulation as outlined in Government Notice Regulation 326 of 7 April 2017.

13 DEVELOPMENT CATEGORY

As per the Guidelines for Involving Visual and Aesthetic Specialists in EIA Processes, the development categories are as follow:

Table 3: Development Categories.

Category 1	Items listed in this category include: ➢ Nature reserves; ➢ Nature related recreation; ➢ Camping; ➢ Picnicking; and, ➢ Trails and minimal visitor facilities.
Category 2	Items listed in this category include: ➢ Low-key recreation/resort/residential type developments; ➢ Small scale agriculture/nurseries/narrow roads; and,

	➢ Small scale infrastructure
Category 3	Items listed in this category include: ➢ Low density residential/resort type development; ➢ Golf or polo estates; and, ➢ Low to medium-scale infrastructure.
Category 4	These include: ➢ Medium density residential development; ➢ Sport facilities; ➢ Small-scale commercial facilities/office parks; ➢ One-stop petrol stations; ➢ Light industry; ➢ Medium scale infrastructure.
Category 5	These include: ➢ High density township/residential developments; ➢ Retail and office complexes; ➢ Industrial facilities; ➢ Refineries; ➢ Treatment plants; ➢ Power stations; ➢ Wind energy farms; ➢ Powerlines; ➢ Freeways; ➢ Toll roads; ➢ Large scale infrastructure generally; ➢ Large scale development of agriculture land and commercial tree plantations; ➢ Quarrying and mining activities with related processing plants.

Derived from Table 3, the proposed project falls within Category 5 (Large scale development of agriculture land and commercial tree plantations). From the aforementioned, Table 4 was compiled in order to determine the Visual Impact of any proposed development.

Table 4: Expected Visual Impact of the Proposed Development.

Type of Environment	**Type of Development**				
	Category 1	**Category 2**	**Category 3**	**Category 4**	**Category 5**
Protected/wild areas of international or regional significance.	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected	Very high visual impact expected
Areas or routes of high scenic, cultural, historical significance.	Minimal visual impact expected.	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected

Areas or routes of medium scenic, cultural or historical significance.	Little or no visual impact expected	Minimal visual impact expected.	Moderate visual impact expected	High visual impact expected	High visual impact expected
Areas or routes of low scenic, cultural or historical significance/disturbed.	Little or no visual impact expected	Little or no visual impact expected	Minimal visual impact expected.	Moderate visual impact expected	High visual impact expected
Disturbed or degraded sites/run-down urban areas/wasteland.	Little or no visual impact expected	Little or no visual impact expected	Little or no visual impact expected	Minimal visual impact expected.	Moderate visual impact expected

From the table above, it is anticipated that the proposed 50 MW Khauta SPV Facility will have a high visual impact on the surrounding areas. Riebeeckstad is considered to have areas or routes of low scenic, cultural and historical significance. The aim of this report will be to determine the accurracy of Table 4, the visual impact of the proposed development and the level of compatibility thereof with the surrounding landscape.

14 DESCRIPTION OF THE RECEIVING ENVIRONMENT

Landscape character is defined by the U.K Institute of Environmental Management and Assessment (IEMA) as the "*distinct and recognizable pattern of elements that occurs consistently in a particular type of landscape, and how this is perceived by people. It reflects particular combinations of geology, landform, soil, vegetation, land use and human settlement*" (GLVIA, 2002). According to DEA&DP Guideline Section 9.2, information describing the current state of the affected environment, as well as trends in the area, is required for visual input into the EIA process. The receiving environment was determined using the 2013-2014 South African National Land-Cover data as provided by the National Department of Environmental Affairs (DEA) and field observation conducted on 17 August 2022.

14.1 SENSE OF PLACE

The term sense of place captures the identity of places we recognize. It embraces natural and cultural features, the distinctive sights, sounds and experiences to the people residing in or nearby that place. Places with a strong sense of place have a clear identity and character that is recognisable by inhabitants and visitors alike.

Sense of place differs from place attachment by considering the social geographical context of place bonds and the sensing of place, such as aesthetic and a feeling of dwelling. An impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light.

The Free State has a rich archaeological and historical history going back millions of years and includes significant aspects such as Later Stone Age rock art, Anglo Boer War Battlefields and Iron Age stonewalled enclosures. The general surroundings of the area became a melting pot of contact and conflict as it represents one of many frontiers where San/Bushman hunter gatherers, Nguni and Sotho-Tswana agro-pastoralists, Dutch Voortrekkers and British Colonists all came together. The ravages of war also swept across these plains, and in particular the South African War (1899 – 1902) as well as the Boer Rebellion (1914 – 1915) (Kaplan, 2022).

Welkom is regarded as South Africa's youngest city and was established in 1947 amid the discovery of goldfields within the region. The discovery of gold brought rapid growth to the area escalating Welkom to the second largest town within the Free State Province just in a few years. Welkom is unique as it is one of the few cities in the world that was pre-planned from the beginning around a horseshoe shaped shopping and administrative complex that surrounds a park of four and a half hectares (4.5 ha) (McKenna, 2001).

Today Welkom is the leading example of what happens when mining declines and dies within an area. Founded only 71 years ago at the heart of the newly discovered Free State goldfields, Welkom experienced a dramatic boom. The town achieved city status in 1968 only 20 years after its establishment as a green fields development. As mentioned, Welkom is in decay and most economic indicators will illustrate that it is the worst-performing urban area in South Africa. At its peak the mining sector employed roughly 184 600 people; however, in 2010 almost 150 000 of those jobs have been lost. The vast majority of the region's manufacturing sector was linked to mining; however, with the decline of the mining industry 71 % of this sector has been lost (Vegter, 2019).

Given the short history of Welkom and the decline of the mining sector the town was not able to accumulate any significant heritage status and as such in today's terms is considered an area of low scenic, cultural and historical significance. As per Figure 12 (Landcover Map) the area consists of Urban Residential Areas, Urban Built-up Areas, Cultivated Commercial Farming, Woodlands, Plantations and Mining Areas.

The following tourist attractions can be visited in Welkom:

- The Gold Museum – a fascinating history of gold mining and the origins of Welkom;
- Underground mine tours through a modern mine;
- The Phakisa Freeway Race Track – one of the fastest tracks in the world;
- The Harmony and Sibanye gold mines;
- The Welkom Flea Market event, held every second week of the month;
- The challenging and well-kept Oppenheimer Park Golf Course;
- Klippan Farm, featuring a variety of animals and traditional Free State farming equipment;
- Aandenk Monument, where the first borehole was drilled in search of gold; and,
- Thabong Township, where most migrant workers on the Welkom Mines lived (Info SA, 2021).

The following buildings and facilities of historical value can be observed within Welkom:

Figure 8: Aandenk Monument (Source: Vaughanoblapski, 2008)

Figure 9: WWII Memorial Monument (Source: Wikipedia)

Figure 10: Voortrekker Memorial (Source: Wikipedia)

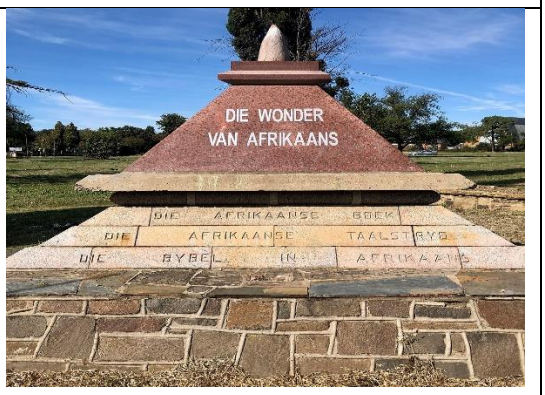

Figure 11: Afrikaans Language Monument (Source: Wikipedia).

Given the low heritage significance of Welkom a Moderate Visual Impact is expected.

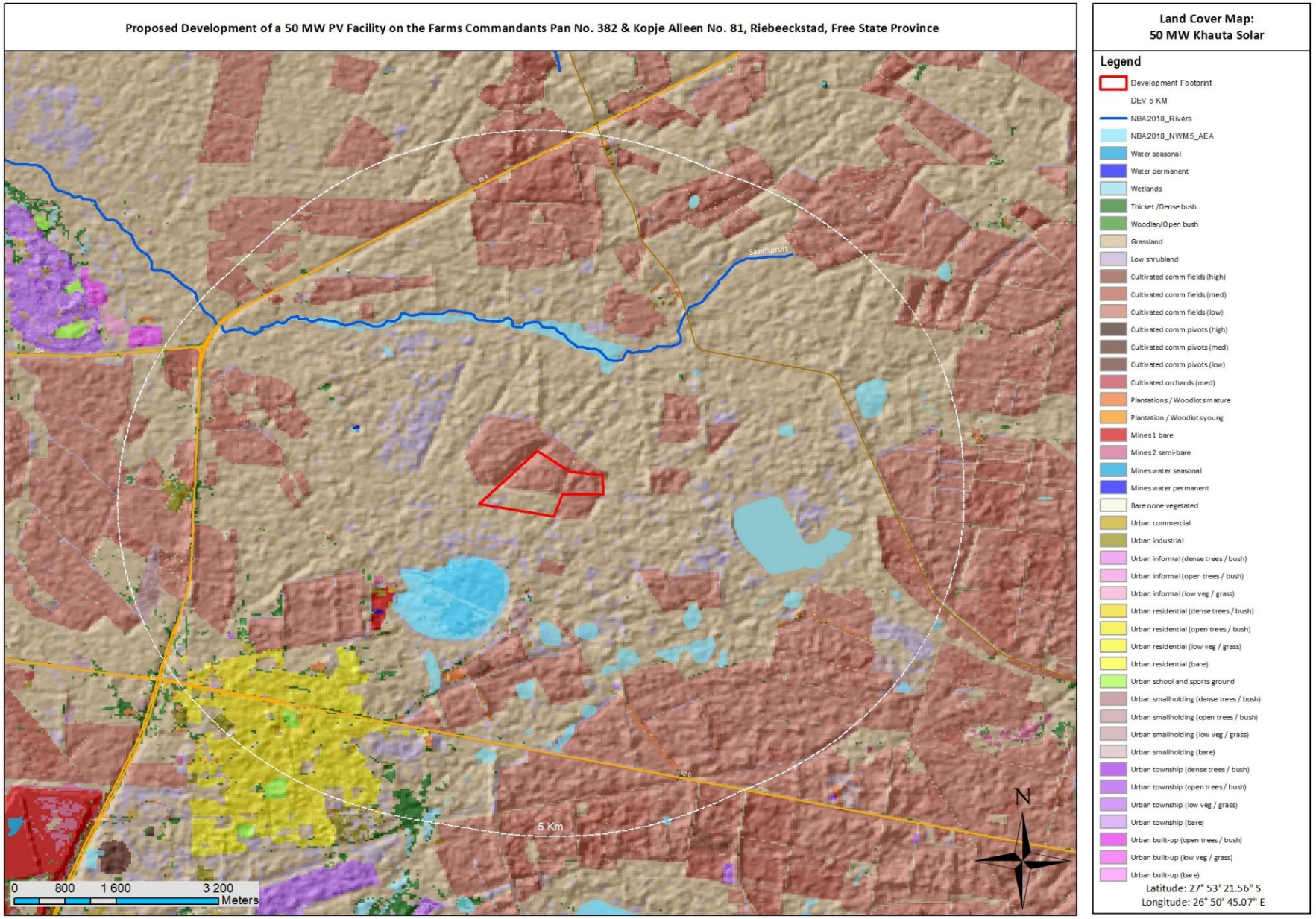

Figure 12: Land Cover Map of the Study Area.

15 RESULTS

15.1 POTENTIAL VISUAL EXPOSURE (PREFERRED POSITION)

The combined result of the viewshed analysis for the proposed 50 MW Khauta SPV Facility is displayed on the map below (Figure 17). The visibility analysis was undertaken at the height of the SPV Panels and the associated infrastructure measuring in at eight metres (8 m), in order to simulate the view from the 50 MW Khauta SPV Facility and to indicate prominence of the structures within the landscape. Furthermore; Figure 17 (Viewshed Analysis) indicates proximity radii from the proposed 50 MW SPV Facility as a reference to determine the Visual Absorption Capacity. It must be noted that the Digital Terrain Model (DTM) utilised from the viewshed analysis does not include the effect of vegetation cover and built structures. These features may influence the visual exposure to some degree.

15.2 50 MW KHAUTA PV SOLAR FACILITY PREFERRED POSITION

15.2.1 0 KM – 1 KM (SHORT DISTANCE)

The proposed development will be highly visible within the short distance zone due to the short distance between the proposed development and the observer. Only one (1) residential dwelling / farmstead is situated within the short distance zone; however, as illustrated within Figure 17 (Viewshed Analysis) the proposed development will not be visible from this vantage point given the undulating topography of the study area. The study area within the short distance zone predominantly consists of old agricultural farmland (have not been cultivated in recent years) and natural grassland from where no visual impact is expected at this stage as no signs of observer presence within these areas were noted. Should these areas be cultivated or developed in the future a high visual impact will occur from these vantage points. It must; however, be noted that a high temporary visual impact will occur from the internal farm roads situated at m 491 towards the south, m 707 towards the southeast, kilometre one-point three (km 1.3) towards the west, m 786 towards the north and m 777 towards the west of the proposed development.

15.2.2 1 KM – 2 KM (SHORT TO MEDIUM DISTANCE)

The highest visual impact within the short to medium distance zone will occur from Superior Brick situated at kilometre two-point eight (km 2.8) from where the visual impact is expected to be low given the undulating topography of the study area and temporary as observers will only remain within the area periodically. The proposed development will only be visible from elevated vantage points within the Superior Bricks premises and as such a low visual impact is assigned. Only one (1) residential dwelling/farmstead is situated within the short to medium distance zone; however, no visual impact will occur from this vantage point due to the undulating topography of the study area. It must be noted that a moderate and temporary visual impact will occur from the agricultural farmlands situated at kilometre one-point eight (km 1.8) towards the southeast of the proposed development as observers will only remain within the area temporarily. Furthermore, the proposed development will have a moderate and temporary visual impact from the internal farm roads situated at kilometre one-point six (km 1.6) towards the southeast, kilometre two-point one (km 2.1) towards the southwest, kilometre two (km 2) towards the west and kilometre one-point nine (km 1.9) towards the east. No visual impact will occur towards the northwest, north and northeast due to the undulating topography of the study area.

15.2.3 2 KM – 5 KM (MEDIUM TO LONG DISTANCE)

Within the medium to long distance zone 14 vantage points were inspected to determine the visual impact; however, the proposed development will only be visible from two (2) of these vantage points. It was determined that a high visual impact will occur from Photo Position 24 (Figure 41) situated four kilometres (4 km) towards the north of the proposed development from where the visual impact will be high and temporary as it will be situated within the direct line of sight of the observer. Furthermore, the proposed development will be visible from Photo Position 26 (Figure 43) situated four-point seven kilometres (4.7 km) towards the east of the proposed development from where the visual impact will be low as it will be temporary due to the higher elevation of the vantage point and the fact that the observer will only traverse through the area. It must be noted that the proposed development will not be visible from Riebeeckstad given the moderate vegetation cover, built-up environment and the undulating topography of the study area which result in a high VAC of the study area.

15.2.4 GREATER THAN 5 KM (LONG-DISTANCE)

Visibility beyond five kilometres (5km) from the proposed 50 MW Khauta SPV Facility is expected to be negligible due to the distance between the proposed development and the observer. As illustrated within Figure 17 (Viewshed Analysis) the proposed development will be visible towards the northwest and northeast within the long-distance zone; however, no visual impact will occur within the long-distance zone given the high VAC of the study area coupled with the distance between the proposed development and the observer as illustrated by the photographic evidence taken from each of the vantage points within this zone. Within the long-distance zone the VAC is predominantly influenced by the moderate vegetation cover, built-up environment of Riebeeckstad and the undulating topography of the study area.

15.2.5 CONCLUSION

Only one (1) residential dwelling / farmstead is situated within the short distance zone (0 km – 1 km); however, as illustrated within Figure 17 (Viewshed Analysis) the proposed development will not be visible from this vantage point given the undulating topography of the study area. The study area within the short distance zone predominantly consists of old agricultural farmland (not cultivated within recent years) and natural grassland from where no visual impact is expected at this stage as no signs of observer presence within these areas were noted. Should these areas be cultivated or developed in the future a high visual impact will occur from these vantage points. It must; however, be noted that a high temporary visual impact will occur from the internal farm roads.

The highest visual impact within the short to medium distance zone (1 km – 2 km) will occur from Superior Brick situated at kilometre two-point eight (km 2.8) from where the visual impact is expected to be low given the undulating topography of the study area and temporary as observers will only remain within the area periodically. The proposed development will only be visible from elevated vantage points within the Superior Bricks premises and as such a low visual impact has been assigned. It must be noted that a moderate and temporary visual impact will occur from the agricultural farmlands situated at kilometre one-point eight (km 1.8) towards the southeast of the proposed development as observers will only remain within the area for a set period of time. Furthermore, the proposed development will have a moderate and temporary visual impact from all internal farm roads.

Visibility beyond five kilometres (5km) from the proposed 50 MW Khauta SPV Facility is expected to be negligible due to the distance between the prosed development and the observer. As illustrated within Figure 17 (Viewshed Analysis) the proposed development will be visible towards the northwest and northeast within the long-distance zone (5 km – 10 km); however, no visual impact will occur within the long-distance zone given the high VAC of the study area coupled with the distance between the proposed development and the observer as illustrated by the photographic evidence taken from each of the vantage points within this zone.

It is advised that the eight metre (8 m) BESS be installed on site as the fifteen metre (15 m) BESS will have a higher visual impact on observers situated within the immediate vicinity. If all mitigation measures are implemented on site as listed under Section 18.1 of this Visual Impact Assessment Report the proposed 50 MW Khauta SPV Facility will have a low visual impact on the surrounding observers and as such can be authorised from a visual perspective.

15.3 ELEVATION OF THE AREA

Section 15.3 and Section 16 must be read in conjunction with Section 15.2. The graphs (Figures 13 to 16) illustrated below provide a visual reference of the capability of the landscape to absorb the visual impact associated with the proposed 50 MW Khauta SPV Facility. The graphs were compiled within a five-kilometre (5 km) radius in the eight (8) major wind directions from the proposed development.

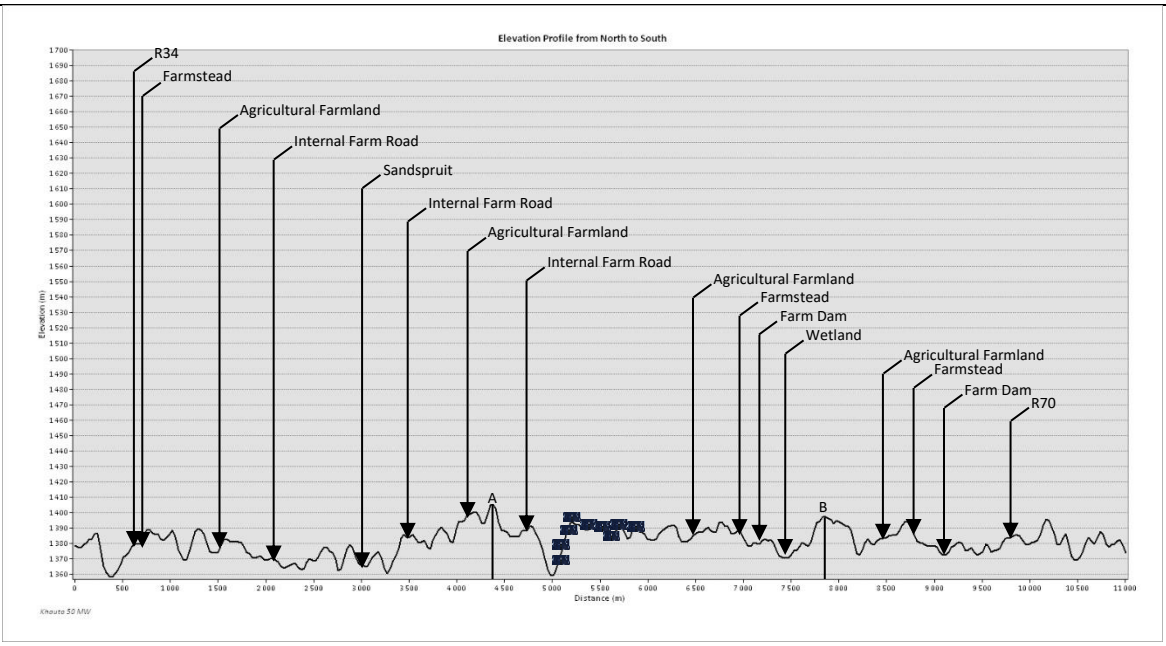

Figure 13: Elevation Profile from North to South of the study area.

Figure 13 illustrates the elevation profile of the study area from north to south. Towards the north the area over the first (1st) 432 m consist of the 50 MW Khauta SPV Facility from where no visual impact will occur as it forms part of the proposed development. The area between m 432 and m 797 consist of old agricultural farmlands from where no visual impact is anticipated as the farmlands have not been cultivated in recent years; however, a temporary visual impact will occur from the internal farm road situated at m 798 as observers will only traverse through the area. No visual impact is expected between m 798 and kilometre two-point three (km 2.3) as the study area predominantly consist of natural grassland; however, it must be noted that old farm roads are situated within this area from where the visual impact will be temporary. The Sandspruit is situated at kilometre two-point four (km 2.4) from where no visual impact will occur as it does

not allow for any recreational activities. The area beyond the Sandspruit up to kilometre three-point six (km 3.6) consist of natural grassland from where no visual impact is expected. A farmstead is situated at kilometre five-point three (km 5.3) from where the visual impact will be permanent; however, as per Figure 13 (Elevation Profile from North to South) the visual impact towards the north will be restricted to m 990. As illustrated within Figure 17 (Viewshed Analysis) no visual impact will occur from the R34 situated at kilometre five-point two (km 5.2) towards the north. Towards the south the area over the first (1st) 440 m consist of the 50 MW Khauta SPV Facility. Between m 440 and kilometre one-point nine (km 1.9) the study area consists of natural grassland; however, numerous internal farm roads are situated within this area from where the visual impact will be temporary. A permanent visual impact would have occurred from the farmstead situated at kilometre one-point four (km 1.4); however, as illustrated within Figure 17 (Viewshed Analysis) no visual impact will occur due to the undulating topography of the study area. It must be noted that the proposed development will only be visible from certain elevated vantage points beyond kilometre one-point two (km 1.2) as evident within Figure 13 (Elevation Profile from North to South). The visual exposure will ultimately be restricted at kilometre two-point four (km 2.4) as illustrated by Point B within Figure 13 (Elevation Profile from North to South).

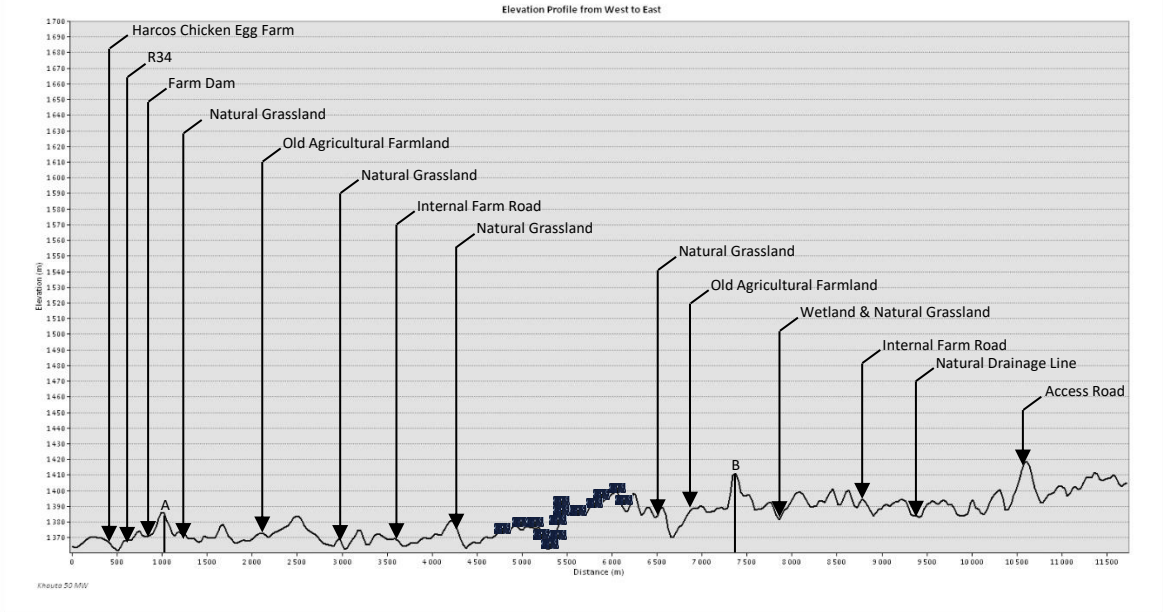

Figure 14: Elevation Profile from West to East of the study area.

Figure 14 illustrates the elevation profile of the study area from west to east. Towards the west the proposed development encompasses the first (1st) 765 m from where no visual impact will occur. Beyond the proposed development the study area consists of natural grassland up to kilometre three-point three (km 3.3) from where no visual impact is expected; however, internal farm roads are situated at kilometre one-point nine (km 1.9) and kilometre three (km 3) from where the visual impact will be temporary as observers will only traverse through the area. Between kilometre three-point three (km 3.3) and kilometre three-point eight (km 3.8) the study area consists of old agricultural farmlands which have not been cultivated for some years and as such no visual impact is expected. A temporary visual impact will occur from the R34 situated at kilometre four-point nine (km 4.9) as motorists will only traverse through the area. It must be noted that beyond the R34 no visual impact will occur towards the west as illustrated by Point A within Figure 14 (Elevation Profile from West to East). Towards the east the proposed development will be visible over the first (1st) one-point

three kilometres (1.3 km) from where it will be restricted by the undulating topography of the study area as illustrated by Point B. Beyond Point B the proposed development will be visible from certain vantage points only. The proposed development covers the first (1st) 694 m towards the east from where the landscape changes into natural grassland up to kilometre one-point three (km 1.3) with no signs of any observers within this area.

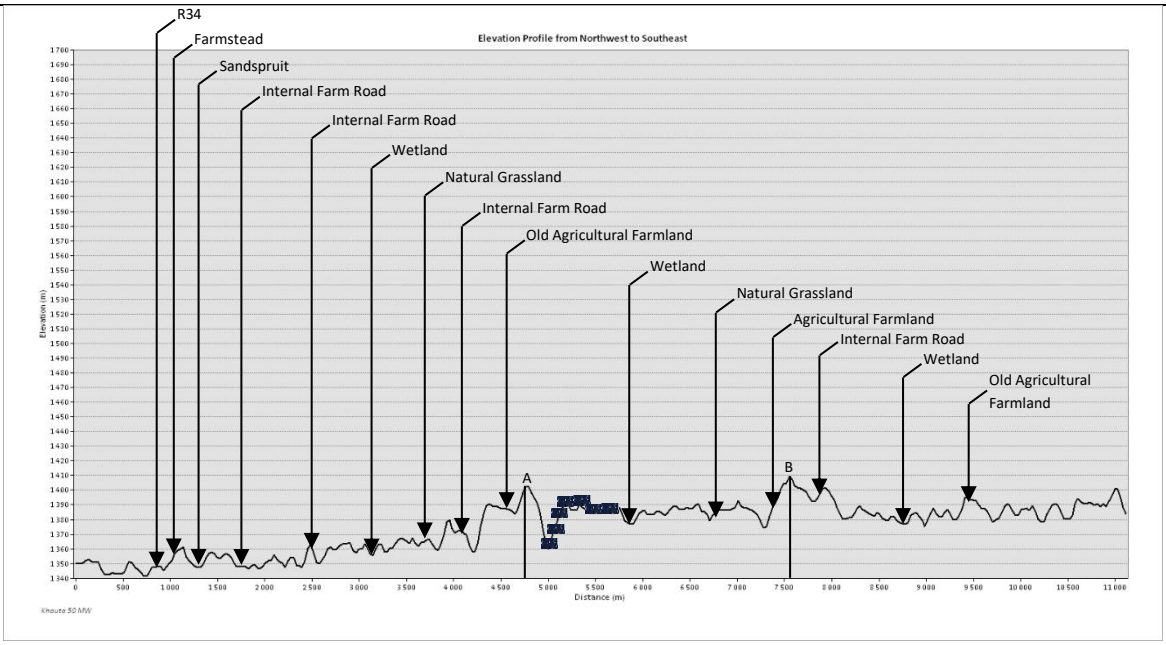

Figure 15: Elevation Profile from Northwest to Southeast of the study area.

The elevation of the landscape from northwest to southeast can be described as undulating topography varying between 1 340 m above sea level and 1 400 m above sea level. Towards the northwest the proposed development will be visible over the first (1st) 818 m from where the visual impact will be restricted due to the undulating topography of the study area as illustrated by Point A. Within the 818 m the proposed development ecompasses the first (1st) 562 m from where no visual impact will occur; however, an internal farm road is situated at m 563 from where the visual impact will be temporary as observers will only traverse through the study area. Beyond m 563 and m 818 the study area consist of old agricultural farmlands which have not been cultivated for some time and as such no visual impact is expected from this vantage point. Towards the southeast the proposed development will be visible over the first two-point one kilometres (km 2.1) from where the visual impact will be restricted as illustrated by Point B within Figure 15 (Elevation Profile from Northwest to Southeast). The highest visual impact will occur between m 687 and kilometre one-point seven (km 1.7) which consist of an internal farm road from where the visual impact will be temporary as observers will only traverse through the area. Furthermore, between kilometre one-point seven (km 1.7) and kilometre two-point one (km 2.1) the area consist of agricultural farmlands which is actively cultivated; however, it must be noted that the visual impact will only be temporary as observers will remain within the area for a set period of time.

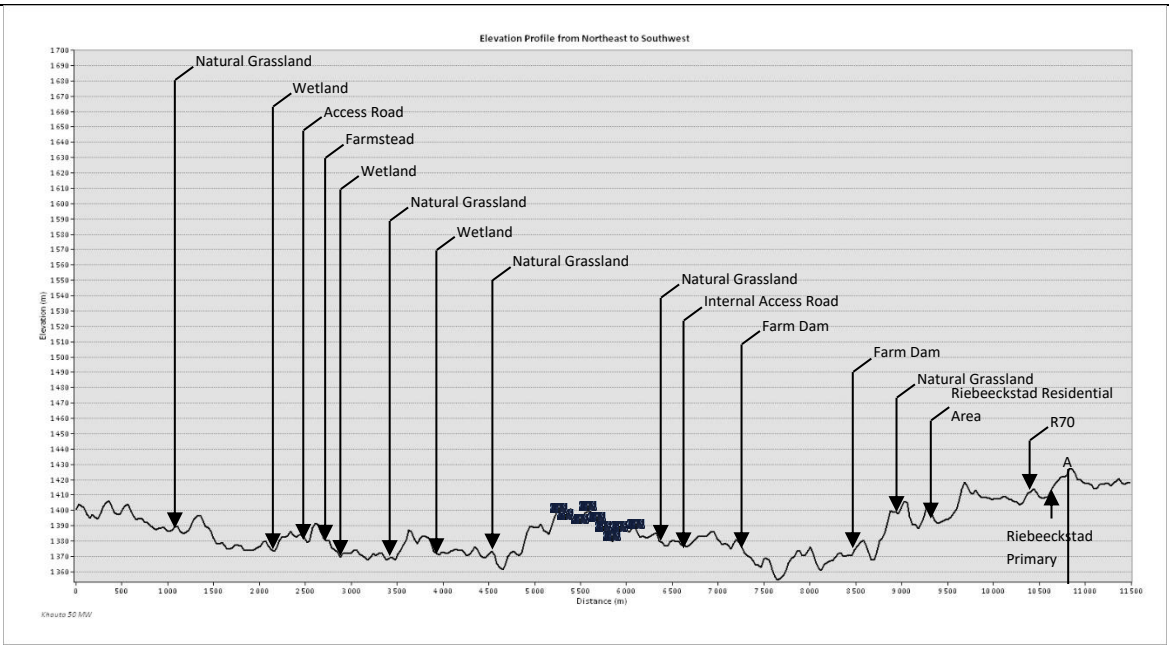

Figure 16: Elevation Profile from Northeast to Southwest of the study area.

Figure 16 illustrates the elevation profile of the study area from northeast to southwest. Towards the northeast the proposed development will be visible over the first (1st) 659 m; whereafter, the visual impact will be restricted up to kilometre four-point one (km 4.1) due to the undulating topography of the study area. No visual impact will occur over the first (1st) 386 m as the area consist of the proposed development. Between m 386 and m 659 the study area consists of natural grassland with no evidence of observers and as such no visual impact is expected from this vantage point. As mentioned no visual impact will occur between m 659 and kilometre four-point one (km 4.1) and as such no description of the study area will be provided. A temporary visual impact is expected between kilometre four-point one (km 4.1) and kilometre five and a half (km 5.5) as the study area consist of natural grassland with internal farm roads situated at kilometre five (km 5) and kilometre five point three (km 5.3); however, a permanent visual impact is expected from the tourist accommodation facilities situated at kilometre five-point one (km 5.1). The highest visual impact will occur towards the southwest as illustrated by Figure 17 (Viewshed Analysis). The proposed development encompasses the first (1st) 550 m from where no visual impact will originate. A temporary visual impact is expected from the internal farm roads situated at m 798 and kilometre one-point two (km 1.2) as observers will only traverse through the area. No visual impact is expected from the surrounding areas between m 550 and kilometre one and a half (km 1.5) as the area consist of natural grassland. Furthermore, no visual impact will occur between kilometre one and a half (km 1.5) and kilometre two-point eight (km 2.8) as the area consist of a dam with no signs of the dam being used for recreational activities. Furthermore, no visual impact will occur between kilometre two-point eight (km 2.8) and kilometre three-point eight (km 3.8) as the area consist of natural grassland with no signs of observer presence. The proposed development; however, will be permanently visible from the residential areas of Riebeeckstad situated between kilometre three-point eight (km 3.8) and kilometre five-point eight (km 5.8) and a high visual impact is expected as the residential dwellings are of medium density. A temporary visual impact will occur from the R70 situated at kilometre four-point eight (km 4.8) as motorists will only traverse through the area. Areas of high observer incidence include the Riebeeckstad Primary School situated at kilometre five-point one (km 5.1) and the Mc Clean Shopping Centre situated at kilometre five-point three (km 5.3); however, it must be noted that the visual

impact will be temporary from both these vantage points as observers will only reside within the area periodically.

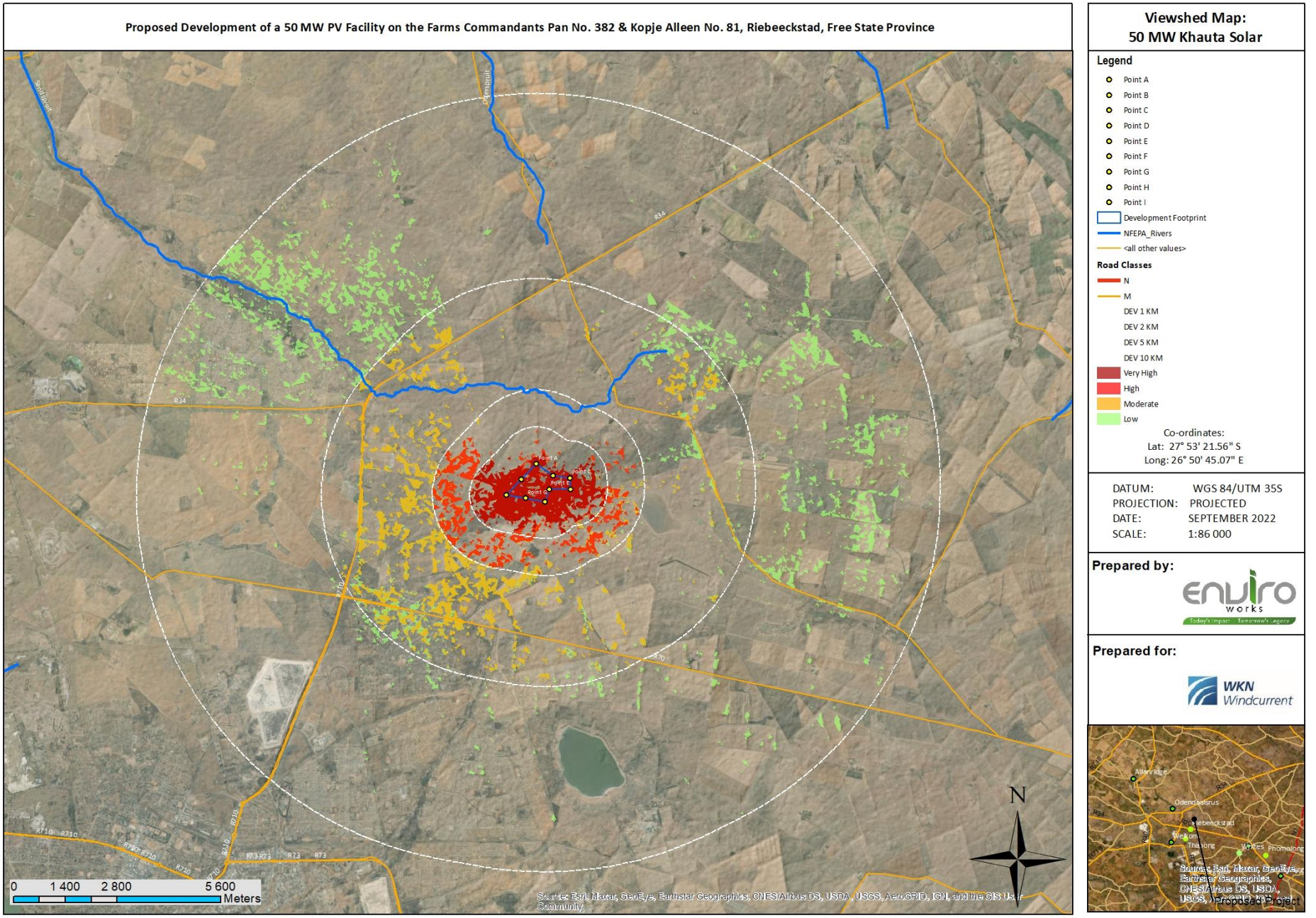

Figure 17: Viewshed Analysis of the proposed 50 MW Khauta SPV Facility near Welkom, Free State Province.

16 VISUAL ABSORPTION CAPACITY

The following section provides a description of the viewshed analysis via photographic evidence taken at a height of one point eight metres (1.8 m). This will enable the reader to understand the Visual Absorption Capacity (VAC) of the study area and provide a visual reference. The Visual Absorption Capacity of the surrounding area is considered to be moderate within five kilometres (5 km) of the proposed Khauta SPV Facility due to the built-up environment, moderate vegetation cover and the undulating topography.

Figure 18: Photo Position 1 situated towards the southeast of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact
Photo Position 1 was taken 16.8 km towards the southeast of the proposed development along the R70. The proposed development will not be visible from Photo Position 1 due to the distance between the proposed development and the observer coupled with the undulating topography of the study area as can be observed within the background.	

Figure 19: Photo Position 2 situated towards the southeast of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact

Photo Position 2 was taken 14.2 km towards the southeast of the Proposed Development along the R70. The proposed development will not be visible from Photo Position 2 due to the high VAC of the study area. The VAC is predominantly influenced by the dense vegetation cover as evident within the foreground and the undulating topography of the study area as evident within the background. Furthermore; given the distance between the proposed development and the observer no visual impact will occur.

Figure 20: Photo Position 3 situated towards the southeast of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact

Figure 20 is situated nine kilometres (9 km) towards the southeast of the Proposed Development and was taken adjacent to the entrance of Whistler Rum along the R70. Given the low vegetation cover and the undulating topography of the study area as can be observed within the background no visual impact will occur from Photo Position 3. The VAC of the study area is further influenced by the distance between the proposed development and the observer. As no visual impact will occur from this vantage point the proposed development will have a high landscape compatibility.

Figure 21: Photo Position 4 situated towards the southeast of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact

Figure 21 was taken five point six kilometres (5.6 km) towards the southeast of the proposed development adjacent to the Helderwater Farm situated along the R70. The VAC from Figure 21 is considered to be high as no visual impact will occur from this vantage point. The VAC is predominantly influenced by the undulating topography of the study area coupled with the low vegetation cover as can be observed within the background. It must be noted that according to Figure 17 (Viewshed Analysis) the visual impact will be restricted to two-point one kilometres (2.1 km) towards the southeast. As no visual impact will occur from this vantage point the proposed development is considered to have a high landscape compatibility.

Figure 22: Photo Position 5 situated towards the south of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	Moderate Compatibility
Visibility	No Visual Impact

Photo Position 5 was taken four point one kilometres (4.1 km) towards the south of the proposed development to the alternative access road along the R70. No visual impact will occur from Photo Position 5 given the high VAC of study area. The VAC is predominantly influenced by the dense vegetation cover as can be observed within the foreground. Should the vegetation be cleared, the proposed development will be visible from this vantage point; however, the visual impact will be low and temporary.

Figure 23: Photo Position 6 situated towards the south of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact

Figure 23 was taken along Craib Avenue situated five-point four kilometres (5.4 km) towards the south of the proposed development. No visual impact will occur from Photo Position 6 (Figure 23) given the dense vegetation cover as can be observed within the foreground. The dense vegetation cover is the direct cause for the high VAC of the study area.

Figure 24: Photo Position 7 situated towards the southwest of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact

Figure 24 was taken along Holden Avenue situated six-point three kilometres (6.3 km) towards the southwest of the proposed development. No visual impact will occur from Photo Position 7 given the built-up environment and moderate vegetation cover as can be observed within the foreground. The high VAC is; furthermore, influenced by the distance between the proposed development and the observer.

Figure 25: Photo Position 8 situated towards the southwest of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact

Figure 25 was taken six and a half kilometres (6.5 km) towards the southwest of the proposed development adjacent to the Koppie Alleen Primary School. No visual impact will occur from Photo Position 8 due to the built-up environment as can be observed within the foreground. This fact is furthermore confirmed by Figure 45 (Photo Position Map) which illustrates that no visual impact will occur from this vantage point.

Figure 26: Photo Position 9 situated towards the southwest of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact

Photo Position 9 is situated six-point seven kilometres (6.7 km) towards the southwest of the proposed development and was taken from the Nederduitsch Reformed Church. The proposed development will not be visible from Photo Position 9 due to the high VAC of the study area. The high VAC is predominantly influenced by the moderate vegetation cover and built-up environment as can be observed within the foreground. The high VAC is furthermore influenced by the distance between the proposed development and the observer.

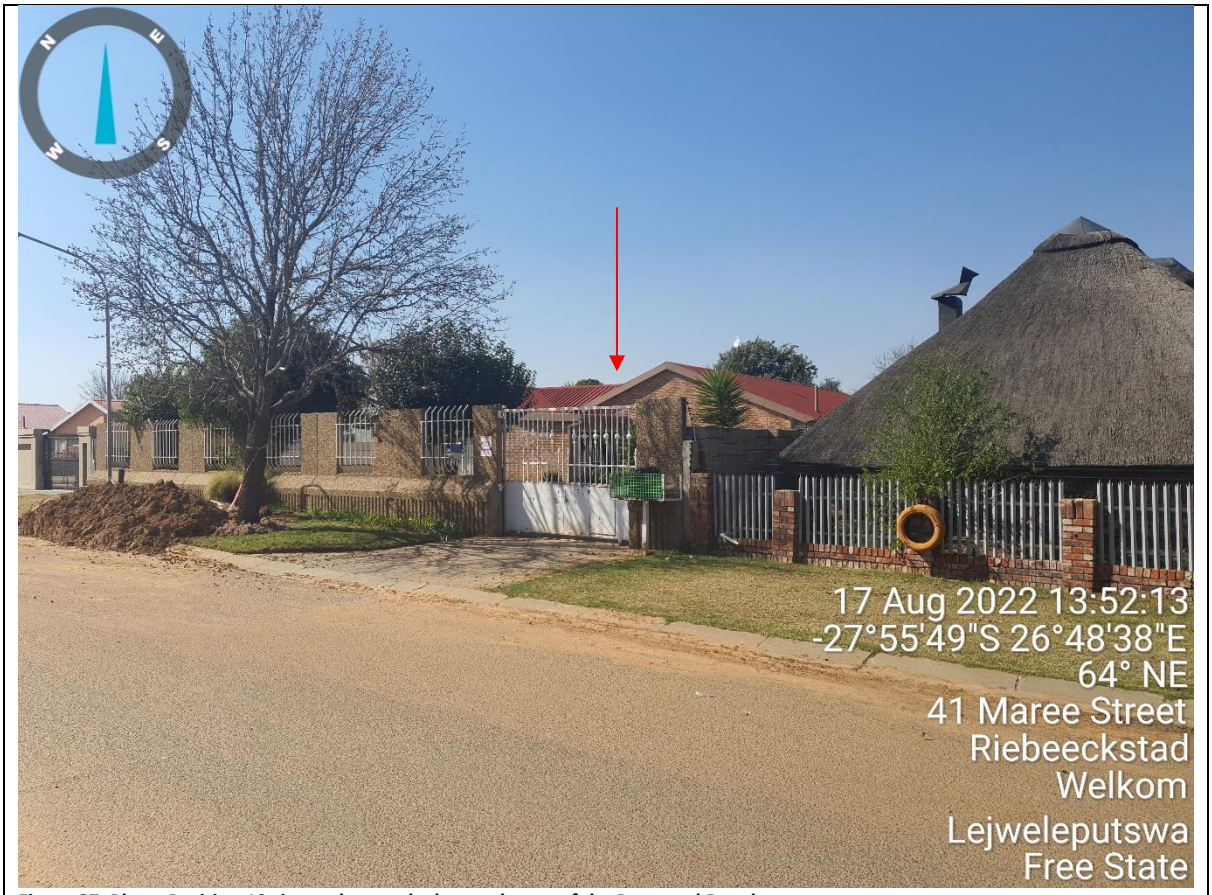

Figure 27: Photo Position 10 situated towards the southwest of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact

Figure 27 was taken five-point seven kilometres (5.7 km) towards the southwest of the proposed development adjacent to the Riebeeckstad Secondary School. The proposed development will not be visible from this vantage point given the built-up environment as can be observed within the foreground and the low vegetation cover as can be observed within the fore- and back-ground. As per Figure 45 (Photo Position Map) no visual impact will occur from Photo Position 10 which indicates that the undulating topography of the study area does influence the visual exposure of the proposed development.

Figure 28: Photo Position 11 situated towards the south of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact

Figure 28 was taken five kilometres (5 km) towards the south of the proposed development on the eastern edge of the town of Riebeeckstad. No visual impact will occur from Photo Position 11 due to the dense vegetation cover as illustrated within the foreground; however, the undulating topography of the study area is another driver of the high VAC as proven by Figure 45 (Photo Position Map). Given the fact that no visual impact will occur, the proposed development will have a high landscape compatibility from this vantage point.

Figure 29: Photo Position 12 situated towards the southwest of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact

Figure 29 was taken five kilometres (5 km) towards the southwest of the proposed development along Alan Street. No visual impact will occur from Photo Position 29 given the built-up environment evident within the foreground and the moderate vegetation cover as can be observed within the background. The undulating topography of the study area does not influence the Visual Absorption Capacity of the study area; however, a VAC is still assigned due to the reasons provided.

Figure 30: Photo Position 13 situated towards the southwest of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact

Figure 30 was taken five point two kilometres (5.2 km) towards the southwest of the proposed development along Mc Lean Street adjacent to Mc Leans Shopping Centre. No visual impact will occur from this vantage point given the high VAC of the study area. The VAC is predominantly influenced by the built-up environment evident within the foreground and the dense vegetation cover evident within background. Although not evident within Figure 30 (Photo Position 13) the undulating topography of the study area does play a role in the high VAC as illustrated by Figure 45 (Photo Position Map).

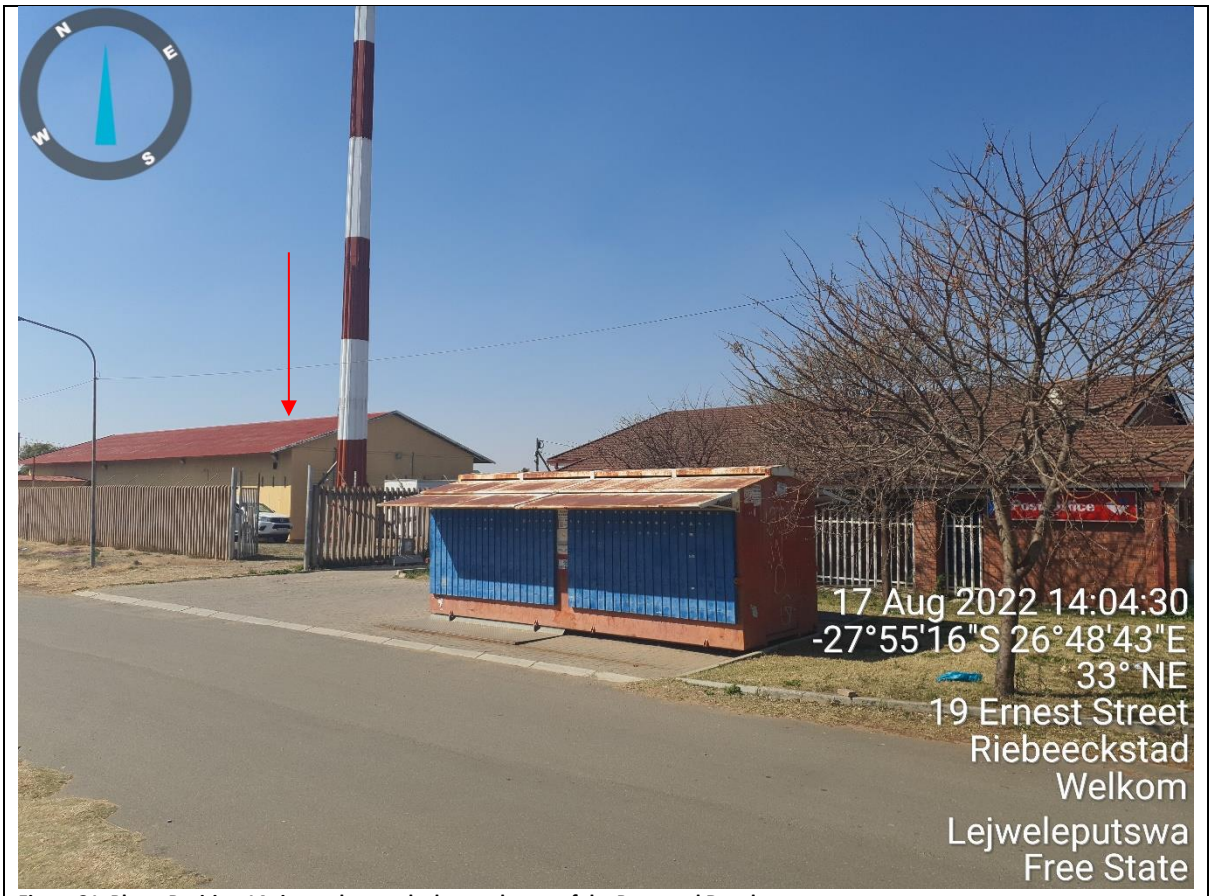

Figure 31: Photo Position 14 situated towards the southwest of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact

Figure 31 was taken four-point eight kilometres (4.8 km) towards the southwest of the proposed development adjacent to the Riebeeckstad Primary School. No visual impact will occur from Photo Position 14 due to the built-up environment as evident within the foreground. It must be noted that the built-up environment is the only parameter influencing the VAC as vegetation cover can be described as scattered and according to Figure 45 (Photo Position Map) the landscape can't absorb the visual exposure of the proposed development from this vantage point.

Figure 32: Photo Position 15 situated towards the south of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact

Figure 32 was taken five point four kilometres (5.4 km) towards the southwest of the proposed development along Europa Street. The proposed development will not be visible from Photo Position 15 due to the high VAC of the study area. The VAC is predominantly influenced by the built-up environment as evident within the foreground, the moderate vegetation cover as evident within the fore- and back-ground and the undulating topography of the study area as evident within Figure 45 (Photo Position Map).

Figure 33: Photo Position 16 situated towards the west of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact

Figure 33 was taken five-point one kilometre (5.1 km) towards the west of the proposed development along the R730 adjacent to the Rhino's Rest Luxury Guest House. The proposed development will not be visible from Photo Position 16 due to the high VAC of the study area which is predominantly influenced by the undulating topography of the study area as evident within Figure 45 (Photo Position Map) and the moderate vegetation cover as evident within the foreground of Figure 33 (Photo Position 16). A high landscape compatibility is assigned as the proposed development will blend in with the colour hue of the vegetation cover situated within the foreground.

Figure 34: Photo Position 17 situated towards the west of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact

Figure 34 was taken four-point six kilometres (4.6 km) towards the west of the proposed development along the R730 adjacent to Harcos Chicken Egg Farms. The proposed development will not be visible from this vantage point due to the dense vegetation cover as evident within the foreground. It must; however, be noted that the vegetation cover is the only parameter that influences the visual exposure of the proposed development.

Figure 35: Photo Position 18 situated towards the northwest of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact

Figure 35 was taken five point seven kilometres (5.7 km) towards the northwest of the proposed development along the R34 leading to Odendaalsrus. No visual impact will occur from Photo Position 18 due to the moderate vegetation cover as can be observed within the foreground and the undulating topography of the study area as can be observed within the fore- and back-ground. The visual exposure will not be influenced by any built-up environments.

Figure 36: Photo Position 19 situated towards the northwest of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact

Figure 36 was taken eight-point six kilometres (8.6 km) towards the northwest of the proposed development along the R34. No visual impact will occur from Photo Position 19 given the undulating topography of the study area as evident within the foreground, manmade topographical structures as evident within the foreground and the moderate vegetation cover as evident within the fore- and back-ground. Furthermore, the distance between the proposed development and the observer does play a role in the Visual Absorption Capacity of the study area.

Figure 37: Photo Position 20 situated towards the west of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact

Figure 37 was taken 12.3 km towards the west of the proposed development along the R34. The proposed development will not be visible from Photo Position 20 given the distance between the proposed development and the observer, the moderate vegetation cover scattered throughout the study area and the undulating topography as can be observed within the foreground.

Figure 38: Photo Position 21 situated towards the north of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact

Photo Position 21 was taken four and a half kilometre (4.5 km) towards the north of the proposed development along the R34. No visual impact will occur from Photo Position 21 given the undulating topography as can be observed within the foreground and the low vegetation cover scattered within the background. As per Figure 45 (Photo Position Map) the undulating topography of the study area is the main driver of the high VAC of the study area.

Figure 39: Photo Position 22 situated towards the north of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact
Photo Position 22 was taken five-point six kilometre (5.6 km) towards the north of the proposed development along the R34 at the preferred entrance road to the site. Due to the undulating topography of the study area as evident within the background and the scattered vegetation as evident within the fore- and back-ground no visual impact will occur from this vantage point.	

Figure 40: Photo Position 23 situated towards the northeast of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact

Photo Position 23 was taken 10.1 km towards the northeast of the proposed development along the R34. No visual impact will occur from Figure 40 due to the undulating topography of the study area as evident within the foreground. It must be noted that Photo Position 23 was taken from an elevated vantage point along the R34. As per Figure 45 (Photo Position Map) no visual impact will occur towards the north and northeast along the R34 due to the undulating topography of the study area.

Figure 41: Photo Position 24 situated towards the northwest of the Proposed Development.

Visual Exposure of the Area	High Visual Exposure
Visual Absorption Capacity	Low VAC
Landscape Integrity	Moderate Compatibility
Visibility	High Visual Impact

Photo Position 24 was taken four-point one kilometre (4.1 km) towards the northeast of the proposed development along the access road leading to the 50 MW Khauta SPV Facility. The proposed development will have a high visual impact from Figure 41 given the distance between the proposed development and the observer. Photo Position 24 is situated at a higher elevation than the proposed development and as such the visual impact will be high due to the low VAC of the study area from this vantage point. The proposed development will have a moderate compatibility as the solar panels will blend in with the colour hue of the scattered vegetation cover as can be observed within the background.

Figure 42: Photo Position 25 situated towards the northeast of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact

Figure 42 was taken three and a half kilometre (3.5 km) towards the northeast of the proposed development along the alternative access road leading to the 50 MW Khauta SPV Facility. No visual impact will occur from Photo Position 25 given the undulating topography of the study area as illustrated by Figure 45 (Photo Position Map). The vegetation cover from Photo Position 25 can be described as low as species are scattered throughout the study area.

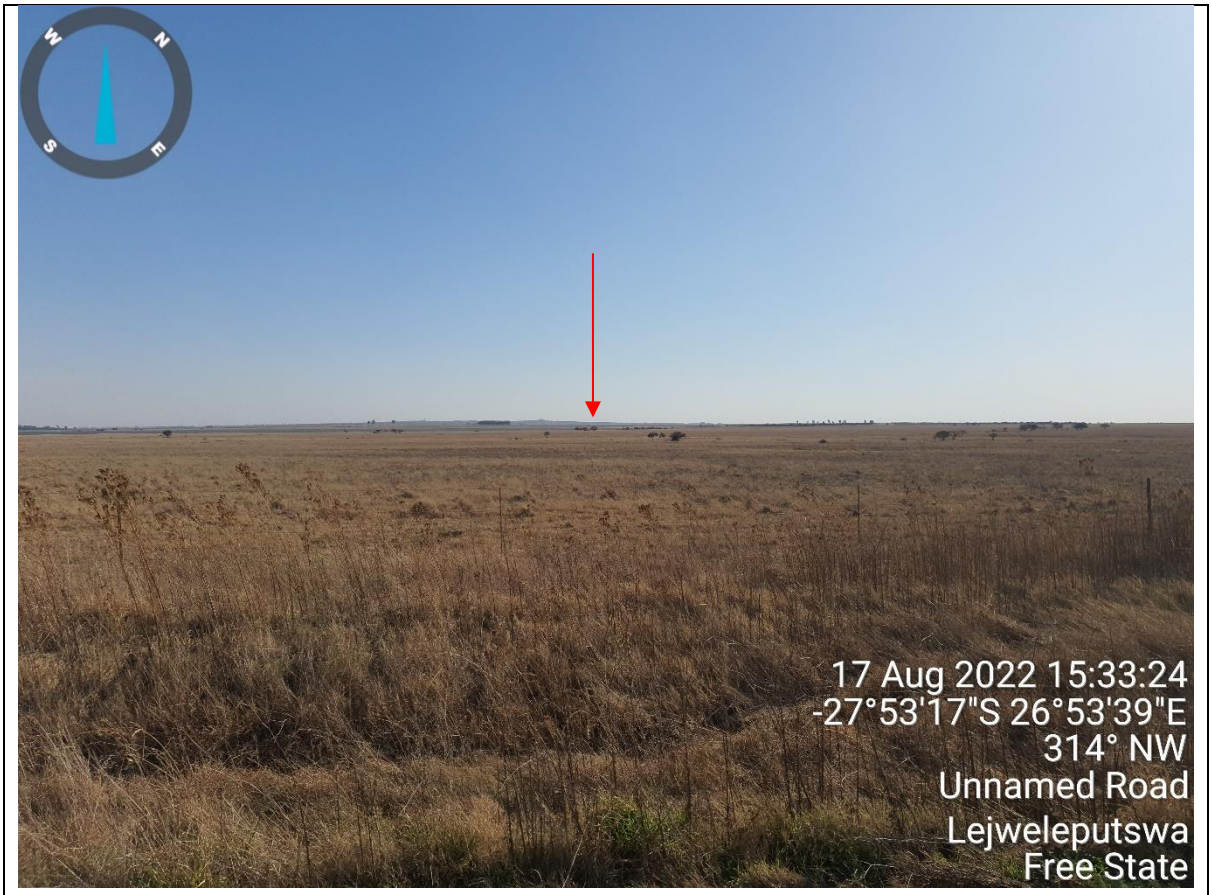

Figure 43: Photo Position 26 situated towards the east of the Proposed Development.

Visual Exposure of the Area	Low Visual Exposure
Visual Absorption Capacity	Low VAC
Landscape Integrity	High Compatibility
Visibility	Low Visual Impact

Figure 43 was taken four point nine kilometres (4.9 km) towards the east of the proposed development along the alternative access road leading to the 50 MW SPV Facility. A low visual impact will occur from Photo Position 26 as the proposed development will be visible from this vantage point; however, the visual impact will be low given the undulating topography of the site as the proposed development will blend in with the background to some degree. A low VAC has been assigned as the study area predominantly consist of agricultural farmland as evident within the foreground. Given the fact that the proposed development will blend in with the background of the study area the proposed development will have a high landscape compatibility.

Figure 44: Photo Position 27 situated towards the west of the Proposed Development.

Visual Exposure of the Area	No Visual Exposure
Visual Absorption Capacity	High VAC
Landscape Integrity	High Compatibility
Visibility	No Visual Impact

Photo Position 27 was taken twelve-point two kilometres (12.2 km) towards the west of the proposed development adjacent to Phakisa Raceway and Phakisa Mine along the R70. No visual impact will occur from Photo Position 27 given the built-up environment as evident within the foreground. The built-up environment consists of the Phakisa Mining Shaft and its associated infrastructure. Furthermore, a high VAC is assigned given the distance between the proposed development and the observer coupled with the undulating topography of the study area.

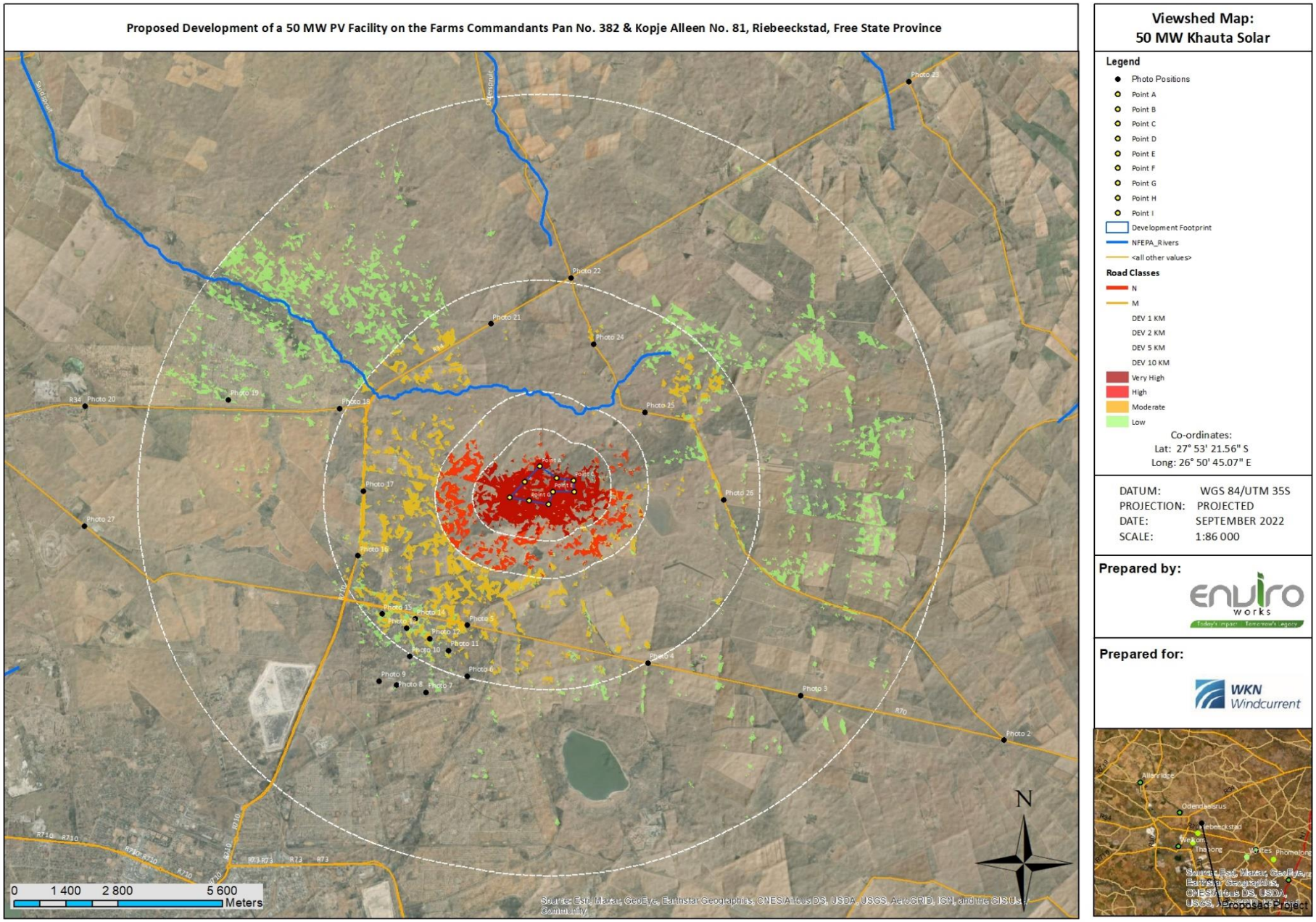

Figure 45: Locations from where the photos have been taken.

17 VISUAL IMPACT ASSESSMENT: IMPACT RATING METHODOLOGY

The previous section outlines all areas visible from the 50 MW Khauta SPV Facility (viewshed analysis). This section will attempt to quantify these potential visual impacts in their respective geographical locations and in terms of the identified issues related to the visual impact. The methodology for the assessment of potential visual impacts states the nature of the potential visual impact (e.g. observers travelling along the R70, R730, R34, Mc Lean Street and Lois Street as well as those residing within and visiting the project extent) and includes a table quantifying the potential significance of visual impact according to the following criteria:

- Duration of the impact (time scale);
- Extent of the impact (spatial scale);
- Magnitude (or nature) of negative or positive impacts;
- Probability of the impact occurring;
- Cumulative Impacts; and the,
- Degree to which the impact can be mitigated.

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

Table 5: Evaluation components, ranking scales and descriptions (criteria).

Evaluation component	Ranking scale and description (criteria)
DURATION	**5 – Permanent:** Where time will not mitigate the visual impact. **4 - Long term**: Impact might occur for the lifespan of the project. **3 - Medium term**: Impact might occur for the duration for screening vegetation to mature. **2 - Short term**: Impact might occur for the duration of the construction phase. **1 - Immediate**
EXTENT (or spatial scale / influence of impact)	**5 - International**: Affecting areas across International Boundaries. **4 - National**: Affecting large parts of the country. **3 - Regional**: Affecting a larger metropolitan or regional area. **2 - Local**: Limited to the immediate surroundings. **1 - Site-specific**: Extending only as far as the activity. **0 - None**
INTENSITY Magnitude of the impact on views, scenic or cultural resources	**5 - Definite** where scenic and cultural resources are definitely affected. **4 - High** where scenic and cultural resources are significantly affected. **3 - Moderate** where visual and scenic resources are affected to a limited extent. **2 - Low** where visual and scenic resources are not affected. **1 - Very low** the proposed development will not be visible.
PROBABILITY (of occurrence)	**5 - Definite**: Where time will not mitigate the visual impact. **4 – Long Term Probability**: Lifespan of the project. **3 - Medium probability**: Duration for screening vegetation to mature. **2 - Low probability**: Screening vegetation matured and development has a high Landscape Compatibility. **1 – Short Term**: Duration of the construction phase.

Evaluation component	Ranking scale and description (criteria)
CUMULATIVE impacts	**High**: The activity is one of several similar past, present or future activities in the same geographical area, and might contribute to a very significant combined impact on the natural, cultural, and/or socio-economic resources of local, regional or national concern. **Medium**: The activity is one of a few similar past, present or future activities in the same geographical area, and might have a combined impact of moderate significance on the natural, cultural, and/or socio-economic resources of local, regional or national concern. **Low**: The activity is localised and might have a negligible cumulative impact. **None**: No cumulative impact on the environment.

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

SP (Significance Points) = (**Duration** + **Extent** + **Intensity**) x **Probability**

The maximum value is 75 significance points (SP). The unmitigated and mitigated scenarios for each potential environmental impact should be rated as per the table below.

Table 6: Definition of significance ratings (positive and negative).

Significance Points	Environmental Significance	Description
60 – 75	**Very High (VH)**	An impact of very high significance will mean that the project cannot proceed, and that impacts are irreversible, regardless of available mitigation options.
45 – 59	**High (H)**	An impact of high significance which could influence a decision about whether or not to proceed with the proposed project, regardless of available mitigation options.
30 – 44	**Medium-high (MH)**	If left unmanaged, an impact of medium-high significance could influence a decision about whether or not to proceed with a proposed project. Mitigation options should be relooked.
15 – 29	**Medium (M)**	If left unmanaged, an impact of moderate significance could influence a decision about whether or not to proceed with a proposed project.
0 – 14	**Low (L)**	An impact of low is likely to contribute to positive decisions about whether or not to proceed with the project. It will have little real effect and is unlikely to have an influence on project design or alternative motivation.
+	**Positive impact (+)**	A positive impact is likely to result in a positive consequence/effect and is likely to contribute to positive decisions about whether or not to proceed with the project.

18 VISUAL IMPACT ASSESSMENT

The primary visual impacts of the proposed 50 MW SPV Facility are further assessed as follow:

18.1 POTENTIAL VISUAL IMPACT ON SENSITIVE VISUAL RECEPTORS, LOCATED WITHIN A 10 KM RADII OF THE 50 MW KHAUTA FACILITY.

The Operational Phase of the 50 MW SPV Facility could have a moderate-high visual impact (significance rating= 30) on observers within a one-kilometre (1 km) radius.

Table 7: Impact Ratings of the Construction Phase within a 5 km radius.

Planning, design and construction phase	Design Alternative 1		Design Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
POTENTIAL VISUAL IMPACTS:					
Nature of impact: Impact on the sense of place for surrounding users.	**Activity:** The movement of construction vehicles, machinery and personnel on site shall result in a visual impact on surrounding users. Furthermore to this, the storage of materials and excavation shall result in disturbance and an unsightly character.				No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Duration:	2		2		-
Extent:	2		2		-
Intensity:	3		3		-
Probability:	1		1		-
Total SP:	7		7		-
Significance rating:	Low (L)		Low (L)		-
Cumulative impact:	-		-		-
Proposed Mitigation:	• Access roads are to be kept clean; • Site offices and structures should be limited to one location and carefully situated to reduce visual intrusions; Roofs should be grey and non-reflective; • Construction camps as well as development areas should be screened with netting; • Lights within the construction camp should face directly down (angle of 90˚); • Vegetation clearance should be limited to the development footprint only; • Litter should be strictly controlled, as the spread thereof through wind could have a very negative visual impact; • All areas disturbed by construction activities must be subject to landscaping and rehabilitation; • All spoil and waste will be disposed to a registered waste site and certificates of disposal provided; • The project must be timed so that rehabilitation can take place at the optimal time for vegetation establishment; • Litter should be strictly controlled, as the spread thereof through wind could have a very negative visual impact;				N/A

Planning, design and construction phase	Design Alternative 1		Design Alternative 2		No-Go Alternative
	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	

	• Signage, if essential, should be discrete and confined to entrance gates. No corporate or advertising signage should be permitted.
	• Avoid shiny materials in structures. Where possible shiny metal structures should be darkened or screened to prevent glare; and,
	• Mitigation of visual impacts associated with the construction phase would entail proper planning, management and rehabilitation of the construction site. Mitigation measures include the following:
	  • Reduce the time of construction through careful planning of logistics and ensure the productive implementation of resources;
	  • Limit disturbance of the environment to the development footprint; and,
	  • Limit construction activities to business hours (07:00 – 17:00).				

Table 8: Impact Ratings of the Operational Phase within a 1 km radius.

Operational Phase	Design Alternative 1	Design Alternative 2	No-Go Alternative
POTENTIAL VISUAL IMPACTS:			
Nature of impact: Impact on the sense of place for surrounding users.	**Activity:** The development of the 50 MW PV Facility can cause a visual intrusion to observers within a one-kilometre (1 km) radius from the proposed development.		No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Duration:	3	4	5
Extent:	3	3	0
Intensity:	4	4	0
Probability:	3	4	5
Total SP:	30	44	25
Significance rating:	Moderate-High (MH)	Moderate-High (MH)	P (+)
Cumulative impact:	-	-	-

Operational Phase	Design Alternative 1	Design Alternative 2	No-Go Alternative

Proposed Mitigation:	• Avoid shiny materials in structures. Where possible shiny metal structures should be darkened or screened to prevent glare;
	• Mitigation to minimise lighting impacts include the following:
	  • Shielding the sources of light by physical barriers (walls, vegetation or structures itself);
	  • Limit mounting heights of lighting fixtures, or alternatively using foot-lights or bollard level lights);
	  • Make use of downward directional lighting fixtures;
	  • Make use of minimum lumen or wattage in lights;
	  • Any navigation lights must be shielded to prevent disturbance to adjacent landowners; and,
	  • Use motion sensors to activate lighting ensuring light is available when needed.
	• Indigenous Tree Species able to grow ten metres in height should be planted as a minimum along the northern, north-eastern and eastern borders;
	• If the parameter fence consist of palisade fencing, the palisading must be painted either a red-brownish or light brown- colour;
	• The power station buildings must be painted a light brown or red-brownish matt colour to ensure a higher landscape compatibility;
	• Rehabilitation and Post-closure measures:
	  • All above-ground structures should be removed, safely disposed of or possibly recycled for use elsewhere; and,
	  • The affected area should be regarded to pre-development topographic conditions, unless the area is required for new specific uses.
			N/A

Table 9: Impact Ratings of the Operational Phase within a 2 km radius.

Operational Phase	Design Alternative 1	Design Alternative 2	No-Go Alternative
POTENTIAL VISUAL IMPACTS:			

Operational Phase	Design Alternative 1	Design Alternative 2	No-Go Alternative
Nature of impact: Impact on the sense of place for surrounding users.	**Activity:** The development of the 50 MW PV Facility can cause a visual intrusion to observers within a two-kilometre (2 km) radius from the proposed development.		No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Duration:	3	3	5
Extent:	3	3	0
Intensity:	2	3	0
Probability:	3	3	5
Total SP:	24	27	25
Significance rating:	Moderate (M)	Moderate (M)	P (+)
Cumulative impact:	-	-	-
Proposed Mitigation:	• Please refer to Mitigation Measures listed above.		N/A

Table 10: Impact Ratings of the Operational Phase within a 5 km radius.

Operational Phase	Design Alternative 1	Design Alternative 2	No-Go Alternative
POTENTIAL VISUAL IMPACTS:			
Nature of impact: Impact on the sense of place for surrounding users.	**Activity:** The development of the 50 MW PV Facility can cause a visual intrusion to observers within a five-kilometre (5 km) radius from the proposed development.		No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Duration:	3	3	5
Extent:	2	3	0
Intensity:	2	2	0
Probability:	2	2	5
Total SP:	14	16	25
Significance rating:	Low (L)	Moderate (M)	P (+)
Cumulative impact:	-	-	-
Proposed Mitigation:	• Please refer to Mitigation Measures listed above.		N/A

Table 11: Impact Ratings of the Operational Phase within a 10 km radius.

Operational Phase	Design Alternative 1	Design Alternative 2	No-Go Alternative
POTENTIAL VISUAL IMPACTS:			
Nature of impact: Impact on the sense of place for surrounding users.	**Activity:** The development of the 50 MW PV Facility can cause a visual intrusion to observers within a ten-kilometre (10 km) radius from the proposed development.		No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Duration:	3	3	5
Extent:	0	0	0
Intensity:	2	3	0
Probability:	2	2	5
Total SP:	10	12	25
Significance rating:	Low (L)	Low (L)	P (+)
Cumulative impact:	-	-	-
Proposed Mitigation:	Please refer to Mitigation Measures listed above.		N/A

19 CONCLUSION AND RECOMMENDATIONS

Only one (1) residential dwelling / farmstead is situated within the short distance zone (0 km – 1 km); however, as illustrated within Figure 17 (Viewshed Analysis) the proposed development will not be visible from this vantage point given the undulating topography of the study area. The study area within the short distance zone predominantly consists of old agricultural farmland (not cultivated within recent years) and natural grassland from where no visual impact is expected at this stage as no signs of observer presence within these areas were noted. Should these areas be cultivated or developed in the future a high visual impact will occur from these vantage points. It must; however, be noted that a high temporary visual impact will occur from the internal farm roads.

The highest visual impact within the short to medium distance zone (1 km – 2 km) will occur from Superior Brick situated at kilometre two-point eight (km 2.8) from where the visual impact is expected to be low given the undulating topography of the study area and temporary as observers will only remain within the area periodically. The proposed development will only be visible from elevated vantage points within the Superior Bricks premises and as such a low visual impact has been assigned. It must be noted that a moderate and temporary visual impact will occur from the agricultural farmlands situated at kilometre one-point eight (km 1.8) towards the southeast of the proposed development as observers will only remain within the area for a set period of time. Furthermore, the proposed development will have a moderate and temporary visual impact from all internal farm roads.

Visibility beyond five kilometres (5km) from the proposed 50 MW Khauta SPV Facility is expected to be negligible due to the distance between the prosed development and the observer. As illustrated within Figure 17 (Viewshed Analysis) the proposed development will be visible towards the northwest and northeast within the long-distance zone (5 km – 10 km); however, no visual impact will occur within the long-distance zone given the high VAC of the study area coupled with the distance between the proposed development and the observer as illustrated by the photographic evidence taken from each of the vantage points within this zone.

It is advised that the eight metre (8 m) BESS be installed on site as the fifteen metre (15 m) BESS will have a higher visual impact on observers situated within the immediate vicinity. If all mitigation measures are implemented on site as listed under Section 18.1 of this Visual Impact Assessment Report the proposed 50 MW Khauta SPV Facility will have a low visual impact on the surrounding observers and as such can be authorised from a visual perspective.

Construction Phase:

- Access roads are to be kept clean;
- Site offices and structures should be limited to one location and carefully situated to reduce visual intrusions; Roofs should be grey and non-reflective;
- Construction camps as well as development areas should be screened with netting;
- Lights within the construction camp should face directly down (angle of 90˚);
- Vegetation clearance should be limited to the development footprint only;
- Litter should be strictly controlled, as the spread thereof through wind could have a very negative visual impact;

- All areas disturbed by construction activities must be subject to landscaping and rehabilitation;
- All spoil and waste will be disposed to a registered waste site and certificates of disposal provided;
- The project must be timed so that rehabilitation can take place at the optimal time for vegetation establishment;
- Litter should be strictly controlled, as the spread thereof through wind could have a very negative visual impact;
- Signage, if essential, should be discrete and confined to entrance gates. No corporate or advertising signage should be permitted.
- Avoid shiny materials in structures. Where possible shiny metal structures should be darkened or screened to prevent glare; and,
- Mitigation of visual impacts associated with the construction phase would entail proper planning, management and rehabilitation of the construction site. Mitigation measures include the following:
    - Reduce the time of construction through careful planning of logistics and ensure the productive implementation of resources;
    - Limit disturbance of the environment to the development footprint; and,
    - Limit construction activities to business hours (07:00 – 17:00).

Operation Phase:

- Avoid shiny materials in structures. Where possible shiny metal structures should be darkened or screened to prevent glare;
- Mitigation to minimise lighting impacts include the following:
    - Shielding the sources of light by physical barriers (walls, vegetation or structures itself);
    - Limit mounting heights of lighting fixtures, or alternatively using foot-lights or bollard level lights);
    - Make use of downward directional lighting fixtures;
    - Make use of minimum lumen or wattage in lights;
    - Any navigation lights must be shielded to prevent disturbance to adjacent landowners; and,
    - Use motion sensors to activate lighting ensuring light is available when needed.
- Indigenous Tree Species able to grow ten metres in height should be planted as a minimum along the northern, north-eastern and eastern borders;
- If the parameter fence consist of palisade fencing, the palisading must be painted either a red-brownish or light brown- colour;
- The power station buildings must be painted a light brown or red-brownish matt colour to ensure a higher landscape compatibility;
- Rehabilitation and Post-closure measures:
    - All above-ground structures should be removed, safely disposed of or possibly recycled for use elsewhere; and,
    - The affected area should be regarded to pre-development topographic conditions, unless the area is required for new specific uses.

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21. SITE PHOTOGRAPHS

Figure 46: Northern View from the Site

Figure 47: Eastern View of the Site.

Figure 48: Southern View of the Site.

Figure 49: Western View of the Site.