THE PROPOSED GWAYANG INDUSTRIAL DEVELOPMENT, WESTERN CAPE PROVINCE, SOUTH AFRICA

Visual Impact Assessment: Scoping Report

Draft v_2

DATE: 31 May 2024

Document prepared for Cape EAPrac (Pty) Ltd
On behalf of George Local Municipality

Visual Resource Management Africa cc
P O Box 7233, George, 6531
Cell: +27 (83) 560 9911
E-Mail: steve@vrma.co.za
Web: www.vrma.co.za

TABLE OF CONTENTS

TABLE OF FIGURES

LIST OF TABLES

LIST OF ACRONYMS

APHP	Association of Professional Heritage Practitioners
BLM	Bureau of Land Management (United States)
BPEO	Best Practicable Environmental Option
CALP	Collaborative for Advanced Landscape Planning
DEM	Digital Elevation Model
DoC	Degree of Contrast
EIA	Environmental Impact Assessment
EMPr	Environmental Management Plan
GIS	Geographic Information System
GPS	Global Positioning System
IDP	Integrated Development Plan
IEMA	Institute of Environmental Management and Assessment (United Kingdom)
KOP	Key Observation Point
LVIA	Landscape and Visual Impact Assessment
MAMSL	Metres above mean sea level
NELPAG	New England Light Pollution Advisory Group
PNR	Private Nature Reserve
SDF	Spatial Development Framework
SEA	Strategic Environmental Assessment
VAC	Visual Absorption Capacity
VIA	Visual Impact Assessment
VRM	Visual Resource Management
VRMA	Visual Resource Management Africa
ZVI	Zone of Visual Influence

GLOSSARY OF TECHNICAL TERMS

Technical Terms	**Definition** (Oberholzer, 2005)
Degree of Contrast	The measure in terms of the form, line, colour and texture of the existing landscape in relation to the proposed landscape modification in relation to the defined visual resource management objectives.
Visual intrusion	Issues are concerns related to the proposed development, generally phrased as questions, taking the form of “what will the impact of some activity be on some element of the visual, aesthetic or scenic environment”.
Receptors	Individuals, groups or communities who would be subject to the visual influence of a particular project.
Sense of place	The unique quality or character of a place, whether natural, rural or urban.
Scenic corridor	A linear geographic area that contains scenic resources, usually, but not necessarily, defined by a route.
Viewshed	The outer boundary defining a view catchment area, usually along crests and ridgelines. Similar to a watershed. This reflects the area, or the extent thereof, where the landscape modification would probably be seen.

Visual Absorption Capacity	The potential of the landscape to conceal the proposed project.

Technical Term	**Definition** (USDI., 2004)
Key Observation Point	Receptors refer to the people located in the most critical locations, or key observation points, surrounding the landscape modification, who make consistent use of the views associated with the site where the landscape modifications are proposed. KOPs can either be a single point of view that an observer/evaluator uses to rate an area or panorama, or a linear view along a roadway, trail, or river corridor.
Visual Resource Management	A map-based landscape and visual impact assessment method development by the Bureau of Land Management (USA).
Zone of Visual Influence	The ZVI is defined as 'the area within which a proposed development may have an influence or effect on visual amenity.'

1 DFFE SPECIALIST REPORTING REQUIREMENTS

1.1 Specialist declaration of independence

Table 1. Specialist declaration of independence.

All intellectual property rights and copyright associated with VRM Africa's services are reserved, and project deliverables, including electronic copies of reports, maps, data, shape files and photographs, may not be modified or incorporated into subsequent reports in any form, or by any means, without the written consent of the author. Reference must be made to this report, should the results, recommendations or conclusions in this report be used in subsequent documentation. Any comments on the draft copy of the Visual Impact Assessment (VIA) must be put in writing. Any recommendations, statements or conclusions drawn from, or based upon, this report, must make reference to it.

This document was completed by Silver Solutions 887 cc trading as VRM Africa, a Visual Impact Study and Mapping organisation located in George, South Africa. VRM Africa cc was appointed as an independent professional visual impact practitioner to facilitate this VIA. I, Stephen Stead, hereby declare that VRM Africa, an independent consulting firm, has no interest or personal gains in this project whatsoever, except receiving fair payment for rendering an independent professional service.

Stephen Stead
APHP accredited VIA Specialist

1.2 Specialist report requirements in terms of Appendix 6 of the EIA Regulations (2014), as amended in 2017

Table 2: Specialist report requirements table

A specialist report prepared in terms of the Environmental Impact Regulations of 2014 (as amended in 2017) must contain:	**Relevant section in report**
Details of the specialist who prepared the report	Stephen Stead, owner / director of Visual Resource Management Africa. steve@vrma.co.za Cell: 0835609911
The expertise of that person to compile a specialist report including a curriculum vitae	Registration with Association of Professional Heritage Practitioners
A declaration that the person is independent in a form as may be specified by the competent authority	Table 1
An indication of the scope of, and the purpose for which, the report was prepared	Terms of Reference
A description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change	Baseline Assessment
The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment	4 November 2022
A description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Methodology
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 alternative;	Baseline Visual Inventory
An identification of any areas to be avoided, including buffers	Visual Resource Management Classes
A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Figure 14: Visual Resource Management Classes map.
A description of any assumptions made and any uncertainties or gaps in knowledge;	Assumptions and Limitations
A description of the findings and potential implications of such findings on the impact of the proposed activity or activities	Visual Impact Assessment
Any mitigation measures for inclusion in the EMPr	Environmental Management Plan
Any conditions for inclusion in the environmental authorisation	NA
Any monitoring requirements for inclusion in the EMPr or environmental authorisation	NA
A reasoned opinion as to whether the proposed activity or portions thereof should be authorised	Opportunities and Constraints
Regarding the acceptability of the proposed activity or activities; and	Conclusion
If the opinion is that the proposed activity or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	Pending comments from scoping phase.

A specialist report prepared in terms of the Environmental Impact Regulations of 2014 (as amended in 2017) must contain:	Relevant section in report
A description of any consultation process that was undertaken during the course of carrying out the study	NA
A summary and copies if any comments that were received during any consultation process	NA
Any other information requested by the competent authority.	NA

1.3 DFFE Screening Tool Site Sensitivity Verification

In terms of Part A of the Assessment Protocols published in GN 320 on 20 March 2020, site sensitivity verification is required relevant to the DFFE Screening Tool. As the proposed development is not listed in terms of the DFFE screening tool, no specific issues were raised but DFFE. Visual and landscape impact was a requirement in terms of Provincial Planning.

As the area is located in the Garden Route where landscapes are being used as a visual resource including the N2 National Highway receptors, visual input into the proposed development was a requirement. A detailed Site Sensitivity Verification was undertaken with survey points documenting the existing landscape context. The site photographs and sensitivity rating table can be viewed in Annexure A.

The following queries on the Alternative 1 layout was submitted to the planning team for review. The query points are located in Figure ## on the following page.

Table 3. Specialist queries submitted regarding the proposed Alternative 1 site development plan.

_ID	_NAME
1	High ground south of the R102 currently offers visual screening of the dump and proposed future development area. This area is also located on high ground where the trucks parked on the proposed road will generate skyline intrusion as seen from the lower lying R102 road receptors.
2	R102 View Corridor retain 50m buffer for existing infrastructure corridor and landscaping.
3	Amend road to exclude 1 in 10m slopes.
4	The proposed road is routed through an area identified as significant fynbos, as well as steeper slopes. Will the fynbos loss require an Off-ste, and will the steep slopes influence the movement of large vehicles that will need to access the industrial site?
5	Amend road to exclude 1 in 10m slopes.
6	There appears to be dead space between sewerage area and proposed dev. How will this be managed by the municipality?
7	Amend road to exclude 1 in 10m slopes and cut-fills as seen from highway.
8	Amend road to exclude wetland NoGo areas.
9	Query status of wetland/ dam hydrology in relation to the proposed road access through the area.
10	
11	
12	Review road access as lack of alignment with the natural contours is likely to require large cut and fills and will appear visually intrusive.
13	Not suitable for Heavy Industry in relation to the R102 view corridor and rural visual intrusion. Please provide specific information on the size and scale of the 'heavy industry' nature of the landscape change. Will this development require stacks and result in emission plumes.
14	Is Open Space necessary so close to the dump?

15	Please indicated land use is proposed to the west of the proposed industrial area, adjacent to the existing dump area?
16	The proposed development appears to impinge on the drainage line. The recommendation is to create more space on the drainage line for improved visual management

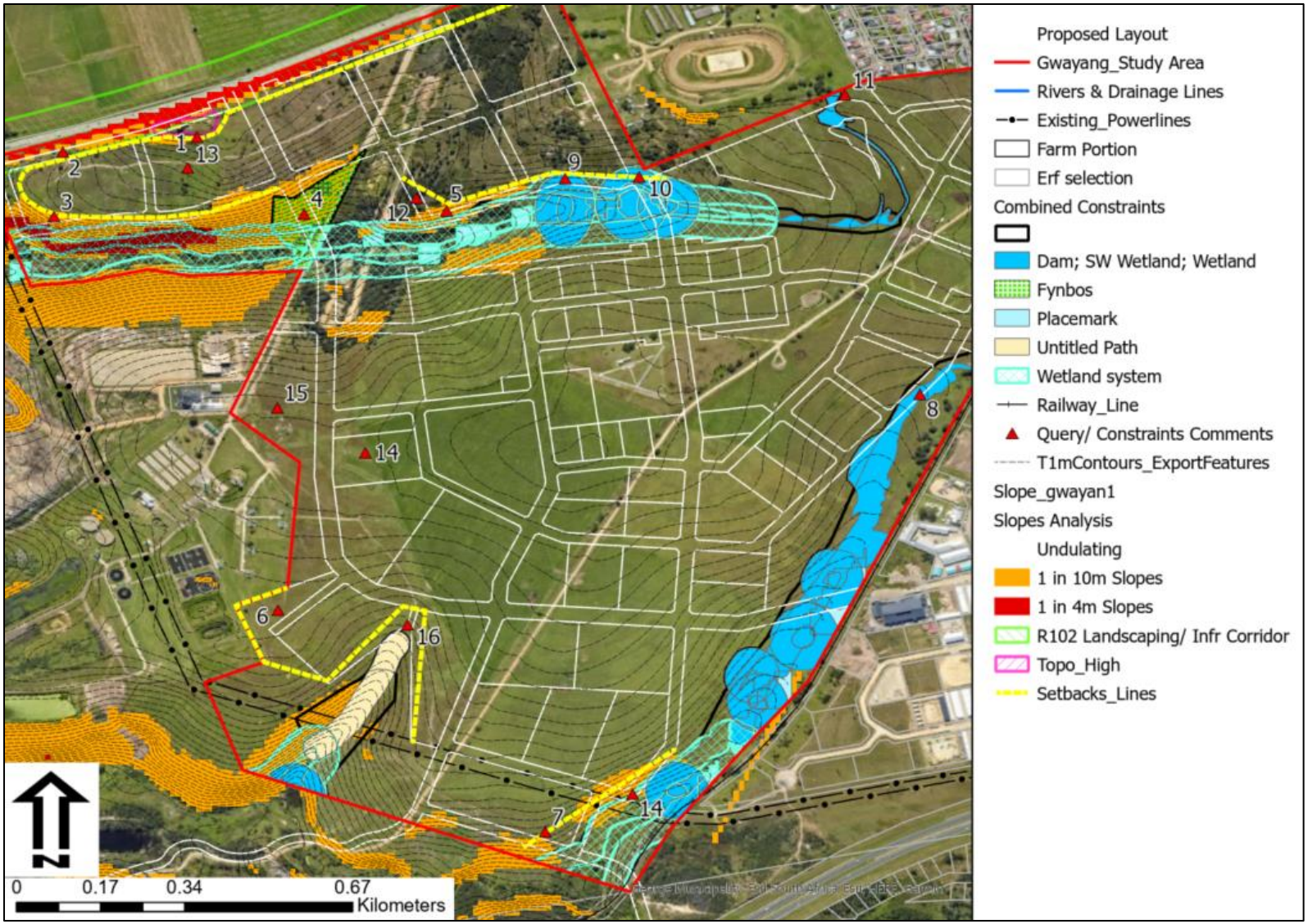


Figure 1: Preliminary landscape and visual issues map pertaining to the Alternative 1 site development plan.

2 EXECUTIVE SUMMARY: SCOPING PHASE

Visual Resource Management Africa CC (VRMA) was appointed by Cape EAPrac (Pty) Ltd to undertake a ***Visual Impact Assessment*** for the proposed Gwayang Industrial Development VIA on behalf of George Local Municipality A ***site visit that was undertaken on the 4th of November 2022.*** During the survey, photographs and comments were recorded and can be viewed in Annexure A, with the associated map of the survey points as well as the survey tracks. This report pertains to the Scoping Phase of the assessment.

PRELIMINARY FINDINGS (Pending final planning)

The finding of this visual and landscape scoping assessment is that there are areas suitable for industrial type development within the project areas. There are, however, also areas in close proximity to receptors who are likely to be sensitive to landscape change. These areas include the close proximity areas relating to the N2 Highway, the R102 District Road as well as the Groeneweide Park residential areas. These areas are suitable for residential type/ lower intensity type developments.

As the site is fairly degraded, **the recommendation of the Landscape and Visual Impact Assessment is that a Level 4 VIA is undertaken, that does include generic photomontages to adequately depict the landscape change as seen from the Key Observation Points. The following location should be used to assess the suitability of the landscape change:**

- N2 Highway.
- Groeneweide Park.
- Western rural farm access & R102 Road.
- Deville Park.

Due to the location of the proposed development to the R102 tourist view corridor, the Agricultural Research Farm and the rural agricultural areas to the west of the site that add value to the local scenic quality, further information on the nature and scale of the Heavy Industry landscape is required.

POLICY FIT ***High Positive***

In terms of *international best practice*, there were no significant cultural/ landscape resources found on the site or immediate surrounds that are flagged by international landscape guidelines.

In terms of the *local and regional planning*, the area has no significant landscape value other than the proximity to the N2 national Highway that is a recognised tourist view corridor. The area is located between an existing industrial area and the local municipality dump/ sewerage works where the local landscape is degraded to some degree. *In terms of regional and local planning fit for landscape and visual related themes, the* ***expected visual/ landscape policy fit of the landscape change is rated High Positive. Care would need to retain some of the open space sense of place that the area currently provides as seen from the N2 Highway receptors.***

METHODOLOGY **Bureau of Land Management's Visual Resource Management (VRM) method**

The methodology for determining landscape significance is based on the United States Bureau of Land Management's Visual Resource Management (VRM) method (USDI., 2004). This GIS-based method allows for increased objectivity and consistency by using standard assessment criteria to classify the landscape type into four VRM Classes, with Class I being the most valued and Class IV, the least. The Classes are derived from *Scenic Quality*, *Visual Sensitivity Levels*, and *Distance Zones*. Specifically, the methodology involved: site survey; review of legal framework; determination of Zone of Visual Influence (ZVI); identification of Visual Issues and Visual Resources; assessment of Potential Visual Impacts; and formulation of Mitigation Measures.

ZONE OF VISUAL INFLUENCE **Local**

The visible extent, or viewshed, is "the outer boundary defining a view catchment area, usually along crests and ridgelines" (Oberholzer, 2005). In order to define the extent of the possible influence of the proposed project, a viewshed analysis was undertaken from the proposed site at a specified height above ground level. the theoretical viewshed has the potential to be widespread within the local region, due to the slight prominence of the central area of the proposed development site. However, as depicted by the fragmented nature of the viewshed, the surrounding topography is undulating, with mainly higher elevation areas in the north and west having visual incidence. The expected Zone of Visual Influence reflects the most likely extent where the proposed development landscape change will be noticed by casual observers. This area is informed by the site survey as well as the surrounding area land uses where building and medium to large vegetation could restrict the actual views of the landscape change. As depicted by the blue dotted line in Figure 11, the expected ZVI is locally contained with most of the visibility contained within the 2km Foreground area. **For this reason, the expected ZVI is rated Low.**

RECEPTORS AND KEY OBSERVATION POINTS **Multiple Receptors and 4 Key Observation Points**

Key Observation Points (KOPs) are the people (receptors) located in strategic locations surrounding the property that make consistent use of the views associated with the site where the landscape modifications are proposed. ***Receptor sensitivity to landscape changes is rated Medium to Low.*** The areas in closer proximity to receptors are likely to have higher levels of sensitivity to landscape change. These areas include the R102, the Groeneweide Residential area as well as the southern portion of the property that is in close proximity to the N2 Highway. The remaining areas are strongly associated with industrial/ degraded landscapes where sensitivity to landscape change is expected to be low. **The following location should be used to assess the suitability of the landscape change:**

- N2 Highway.
- Groeneweide Park.
- Western rural farm access.
- Deville Park.

SCENIC QUALITY ***Medium to Low***

The scenic quality of the proposed development site is rated ***Medium to Low.*** While there are elements of the site that do add to the local scenic quality and the visually

connect to the western rural agricultural areas, the close proximity of the dump and the industrial areas do degrade the local landscape characteristics. The southern river valley has some local topographic value adding to the southern scenic quality of the site. On the whole, the area is fairly degraded but with the existing low intensity agriculture adding some value to the local landscape character.

RECEPTOR SENSITIVITY TO LANDSCAPE CHANGE ***Medium to Low***

Receptor sensitivity to landscape changes is rated Medium to Low. The areas in closer proximity to receptors are likely to have higher levels of sensitivity to landscape change. These areas include the R102, the Groeneweide Residential area as well as the southern portion of the property that is in close proximity to the N2 Highway. The remaining areas are strongly associated with industrial/ degraded landscapes where sensitivity to landscape change is expected to be low.

VISUAL RESOURCE MANAGEMENT ASSESSMENT

The BLM has defined four Classes that represent the relative value of the visual resources of an area and are defined making use of the VRM Matrix:

i. **Classes I and II** are the most valued
ii. **Class III** represent a moderate value
iii. **Class IV** is of least value

Class I (No-go)	• Any river / streams and associated flood lines buffers identified as significant in terms of the WULA process. • Any wetlands identified as significant in terms of the WULA process. • Any ecological areas (or plant species) identified as having a high significance. • Any heritage area identified as having a high significance. • Hydrological drainage lines and associated setback areas as defined by the Surface Water Specialist (not mapped).
Class II (Not recommended)	• ***Steeper slope areas associated with the shallow river valley areas.***
Class III (suitable with mitigation)	• **R102, N2 Highway and Groeneweide Park sensitivity buffers.**
Class IV (applicable)	• **Semi-degraded undulating area outside of sensitivity buffers.**

EXPECTED IMPACT SIGNIFICANCE

Medium to High (-ve) *(without mitigation)*	Without mitigation, the visual intrusion is likely to be High, degrading the local N2 Highway and Groeneweide

	Suburb landscape character to some degree. As the sense of place already includes lower intensity industrial development, the visual significance is expected to be Medium to High.
Medium to Low (-ve) *(with mitigation)*	With mitigation and retaining a wide buffer on the southern drainage line, and no industrial development adjacent to the Groeneweide Residential area, and suitable buffering for landscaping along the R102 Road, the visual significance can be reduce to Medium to Low, creating a suitable urban mixed use area.

CUMULATIVE EFFECTS

Medium (-ve) *(without mitigation)*	Due to the existing negative visual elements in the local landscape context that include the waste dump and industrial land uses, the potential for negative cumulative effects is limited to some degree. However, the expansion of the Heavy Industry along the R102 is likely to visually degrade this area, as well as the existing scenic quality of the rural agricultural areas and the Agricultural Research Farm. The nature of this development would need to be suitably scaled such that a heavy industrial sense of place does not degrade the above mentioned visual resources along the R102. With suitable mitigation, the potential for landscape degradation can be limited with Low (-Ve) visual impacts as an outcome.
Low (-ve) *(with mitigation)*	

PRELIMINARY MITIGATIONS MEASURES (Subject to final layouts)

Landscape Element	Mitigation	Motivation
Local landscape sense of place	Retain wide buffer on southern drainage line.	To retain some of the existing land uses associated with community cattle grazing and retain the existing N2 Highway sense of place, a wide buffer on the southern drainage line should be retained for managed grazing of livestock.
Local landscape sense of place	Avenue tree planting down roads.	Reduce the visual intensity of the industrial landscape by avenue tree planting.
R102 tourist view corridor	Exclude heavy industry from adjacent the R102	The area adjacent to the R102 is not suitable for Heavy Industry. A smaller scale industrial development should be considered in this location.

3 INTRODUCTION

Visual Resource Management Africa CC (VRMA) was appointed by Cape EAPrac (Pty) Ltd to undertake the proposed Gwayang Industrial Development ***Visual Impact Assessment***

on behalf of George Local Municipality (Proponent). The site visit was undertaken on the 4th of November 2022. The proposed development site is located in Western Cape Province, Garden Route District Municipality and within the George Local Municipality. The Proponent proposes to construct an integrated mixed-use development on a site located in George.

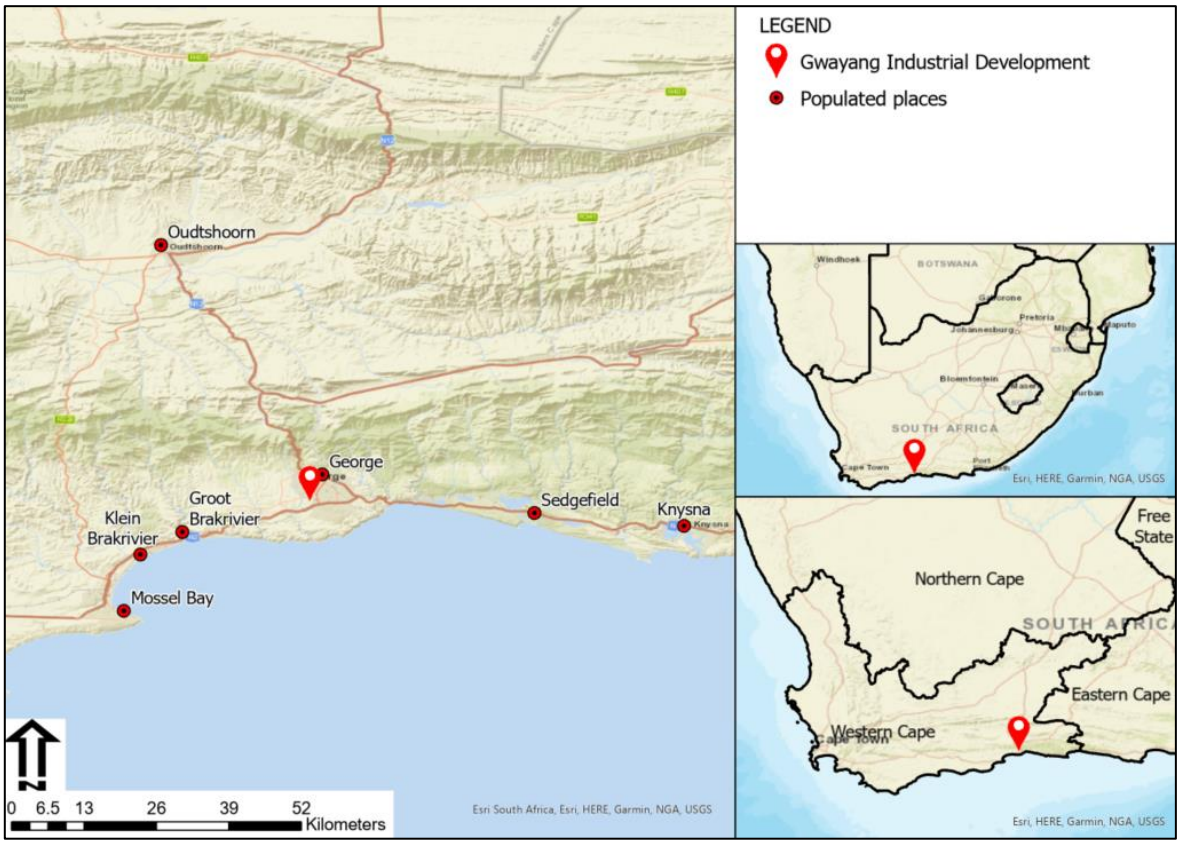


Figure 2: National and regional locality map.

3.1 Terms of Reference

The scope of this study is to cover the entire proposed project area. The broad terms of reference for the study are as follows:

- Collate and analyse all available secondary data relevant to the affected proposed project area. This includes a site visit of the full site extent, as well as of areas where potential impacts may occur beyond the site boundaries.
- Specific attention is to be given to the following:
  - Quantifying and assessing existing scenic resources/visual characteristics on, and around, the proposed site.
  - Evaluation and classification of the landscape in terms of sensitivity to a changing land use.
  - Determining viewsheds, view corridors and important viewpoints in order to assess the visual impacts of the proposed project.
  - Determining visual issues, including those identified in the public participation process.
  - Reviewing the legal framework that may have implications for visual/scenic resources.

- Assessing the significance of potential visual impacts resulting from the proposed project for the construction, operation and decommissioning phases of the proposed project.
- Assessing the potential cumulative impacts associated with the visual impact.
- Generate photomontages of the proposed landscape modification.
- Identifying possible mitigation measures to reduce negative visual impacts for inclusion into the proposed project design, including input into the Environmental Management Programme report (EMPr).

3.2 Study Team

Contributors to this study are summarised in the table below.

Table 4: Authors and Contributors to this Report.

Aspect	Person	Organisation / Company	Qualifications
Landscape and Visual Assessment (author of this report)	Stephen Stead MSc Geography, 2023 (UKZN, Pietermaritzburg)	VRMA	• 20 years of experience in visual assessments including 230 large scale landscape changes in five sub-Saharan African countries. • Registered with the Association of Professional Heritage Practitioners since 2014.

3.3 Visual Assessment Approach

The full methodology used in the assessment can be found in Annexure D, with this section outlining the key elements of the assessment process. The process that VRM Africa follows when undertaking a VIA is based on the United States Bureau of Land Management's (BLM) Visual Resource Management method (USDI., 2004). This mapping and GIS-based method of assessing landscape modifications allows for increased objectivity and consistency by using standard assessment criteria.

- *"Different levels of scenic values require different levels of management. For example, management of an area with high scenic value might be focused on preserving the existing character of the landscape, and management of an area with little scenic value might allow for major modifications to the landscape. Determining how an area should be managed first requires an assessment of the area's scenic values".*
- *"Assessing scenic values and determining visual impacts can be a subjective process. Objectivity and consistency can be greatly increased by using the basic design elements of form, line, colour, and texture, which have often been used to describe and evaluate landscapes, to also describe proposed projects. Projects that repeat these design elements are usually in harmony with their surroundings; those that don't create contrast. By adjusting project designs so the elements are repeated, visual impacts can be minimized"* (USDI., 2004).

Baseline Phase Summary

The VRM process involves the systematic classification of the broad-brush landscape types within the receiving environment into one of four VRM Classes. Each VRM Class is associated with management objectives that serve to guide the degree of modification of the proposed site. The Classes are derived by means of a simple matrix with the three

variables being the scenic quality, the expected receptor sensitivity to landscape change, and the distance of the proposed landscape modification from key receptor points. The Classes are not prescriptive and are utilised as a guideline to determine visual carrying capacity, where they represent the relative value of the visual resources of an area. Classes I and II are the most valued, Class III represents a moderate value; and Class IV is of least value. The VRM Classes are not prescriptive and are used as a guideline to determine the carrying capacity of a visually preferred landscape as a basis for assessing the suitability of the landscape change associated with the proposed project.

Table 5: VRM Class Matrix Table

		VISUAL SENSITIVITY LEVELS								
		High			Medium			Low		
SCENIC QUALITY	A (High)	II	II	II	II	II	II	II	II	II
	B (Medium)	II	III	III/ IV *	III	IV	IV	IV	IV	IV
	C (Low)	III	IV	IV	IV	IV	IV	IV	IV	IV
DISTANCE ZONES		Fore/middle ground	Background	Seldom seen	Fore/middle ground	Background	Seldom seen	Fore/middle ground	Background	Seldom seen

* If adjacent areas are **Class III** or lower, assign **Class III**, if higher, assign **Class IV**

The visual objectives of each of the classes are listed below:

- The Class I objective is to preserve the existing character of the landscape and the level of change to the characteristic landscape should be very low and must not attract attention. Class I is assigned when a decision is made to maintain a natural landscape.
- The Class II objective is to retain the existing character of the landscape and the level of change to the characteristic landscape should be low. The proposed development may be seen but should not attract the attention of the casual observer, and should repeat the basic elements of form, line, colour and texture found in the predominant natural features of the characteristic landscape.
- The Class III objective is to partially retain the existing character of the landscape, where the level of change to the characteristic landscape should be moderate. The proposed development may attract attention, but should not dominate the view of the casual observer, and changes should repeat the basic elements found in the predominant natural features of the characteristic landscape; and
- The Class IV objective is to provide for management activities that require major modifications of the existing character of the landscape. The level of change to the landscape can be high, and the proposed development may dominate the view and be the major focus of the viewer's (s') attention without significantly degrading the local landscape character.

Impact Phase Summary

To determine impacts, a degree of contrast exercise is undertaken. This is an assessment of the expected change to the receiving environment in terms of the form, line, colour and

texture, as seen from the surrounding Key Observation Points. This determines if the proposed project meets the visual objectives defined for each of the Classes. If the expected visual contrast is strong, mitigation recommendations are to be made to assist in meeting the visual objectives. To assist in the understanding of the proposed landscape modifications, visual representation, such as photomontages or photos depicting the impacted areas, can be generated. There is an ethical obligation in the visualisation process, as visualisation can be misleading if not undertaken ethically.

3.4 VIA Process Outline

The following approach was used in understanding the landscape processes and informing the magnitude of the impacts of the proposed landscape modification. The table below lists a number of standardised procedures recommended as a component of best international practice.

Table 6: Methodology Summary Table

Action	***Description***
Site Survey	The identification of existing scenic resources and sensitive receptors in and around the study area to understand the context of the proposed development within its surroundings to ensure that the intactness of the landscape and the prevailing sense of place are taken into consideration.
Project Description	Provide a description of the expected project, and the components that will make up the landscape modification.
Reviewing the Legal Framework	The legal, policy and planning framework may have implications for visual aspects of the proposed development. The heritage legislation tends to be pertinent in relation to natural and cultural landscapes, while Strategic Environmental Assessments (SEAs) for renewable energy provide a guideline at the regional scale.
Determining the Zone of Visual Influence	This includes mapping of viewsheds and view corridors in relation to the proposed project elements, in order to assess the zone of visual influence of the proposed project. Based on the topography of the landscape as represented by a Digital Elevation Model, an approximate area is defined which provides an expected area where the landscape modification has the potential to influence landscapes (or landscape processes) or receptor viewpoints.
Identifying Visual Issues and Visual Resources	Visual issues are identified during the public participation process, which is being carried out by others. The visual, social or heritage specialists may also identify visual issues. The significance and proposed mitigation of the visual issues are addressed as part of the visual assessment.
Assessing Potential Visual Impacts	An assessment is made of the significance of potential visual impacts resulting from the proposed project for the construction, operational and decommissioning phases of the project. The rating of visual significance is based on the methodology provided by the Environmental Assessment Practitioner (EAP).
Formulating Mitigation Measures	Possible mitigation measures are identified to avoid or minimise negative visual impacts of the proposed project. The intention is that these would be included in the project design, the Environmental Management Programme report (EMPr) and the authorisation conditions.

3.5 Impact Assessment Methodology

The following impact criteria were used to assess visual impacts. The criteria were defined by the Western Cape *DEA&DP Guideline for involving Visual and Aesthetic Specialists in EIA Processes* (Oberholzer, 2005).

Table 7. DEA&DP Visual and Aesthetic Guideline Impact Assessment Criteria table

Criteria	Definition
Extent	The spatial or geographic area of influence of the visual impact, i.e.: • *site-related:* extending only as far as the activity. • *local:* limited to the immediate surroundings. • *regional:* affecting a larger metropolitan or regional area. • *national:* affecting large parts of the country. • *international:* affecting areas across international boundaries.
Duration	The predicted life-span of the visual impact: • *short term,* (e.g., duration of the construction phase). • *medium term,* (e.g., duration for screening vegetation to mature). • *long term,* (e.g., lifespan of the project). • *permanent,* where time will not mitigate the visual impact.
Intensity	The magnitude of the impact on views, scenic or cultural resources. • *low,* where visual and scenic resources are not affected. • *medium,* where visual and scenic resources are affected to a limited extent. • *high,* where scenic and cultural resources are significantly affected.
Probability	The degree of possibility of the visual impact occurring: • *improbable,* where the possibility of the impact occurring is very low. • *probable,* where there is a distinct possibility that the impact will occur. • *highly probable,* where it is most likely that the impact will occur. • *definite,* where the impact will occur regardless of any prevention measures.
Significance	The significance of impacts can be determined through a synthesis of the aspects produced in terms of their nature, duration, intensity, extent and probability, and be described as: • *low,* where it will not have an influence on the decision. • *medium,* where it should have an influence on the decision unless it is mitigated. • *high,* where it would influence the decision regardless of any possible mitigation.

3.6 Assumptions and Uncertainties

- Digital Elevation Models (DEM) and viewsheds were generated using ASTER elevation data (NASA, 2009). Although every effort to maintain accuracy was undertaken, as a result of the DEM being generated from satellite imagery and not being a true representation of the earth's surface, the viewshed mapping is approximate and may not represent an exact visibility incidence. Thus, specific features identified from the DEM and derive contours (such as peaks and conical hills) would need to be verified once a detailed survey of the project area has taken place.
- The use of open-source satellite imagery was utilised for base maps in the report.
- Some of the mapping in this document was created using Bing Maps, Open-Source Map, ArcGIS Online and Google Earth Satellite imagery.
- The project deliverables, including electronic copies of reports, maps, data, shape files and photographs are based on the author's professional knowledge, as well as available information.
- VRM Africa reserves the right to modify aspects of the project deliverables if and when new/additional information may become available from research or further work in the applicable field of practice or pertaining to this study.
- As access to farms and private property is often limited due to security reasons, limiting access to private property in order that photographs from specific locations are taken. 3D modelling is used to reflect the expected landscape change area where applicable.
- Mapping makes use of the SANBI BGIS webmap (SANBI, 2018)
- The slopes analysis is approximate and is subject to detailed survey and detailed slopes analysis.

4 PROJECT DESCRIPTION

The following table outlines the project information that was provided by the client that will be incorporated into the assessment and proposed infrastructure relating to the project.

Table 8: Project Information Table

PROPONENT SPECIFICATIONS	
Applicant Details	**Description**
Applicant Name:	George Local Municipality
Project Name:	Gwayang Industrial Development

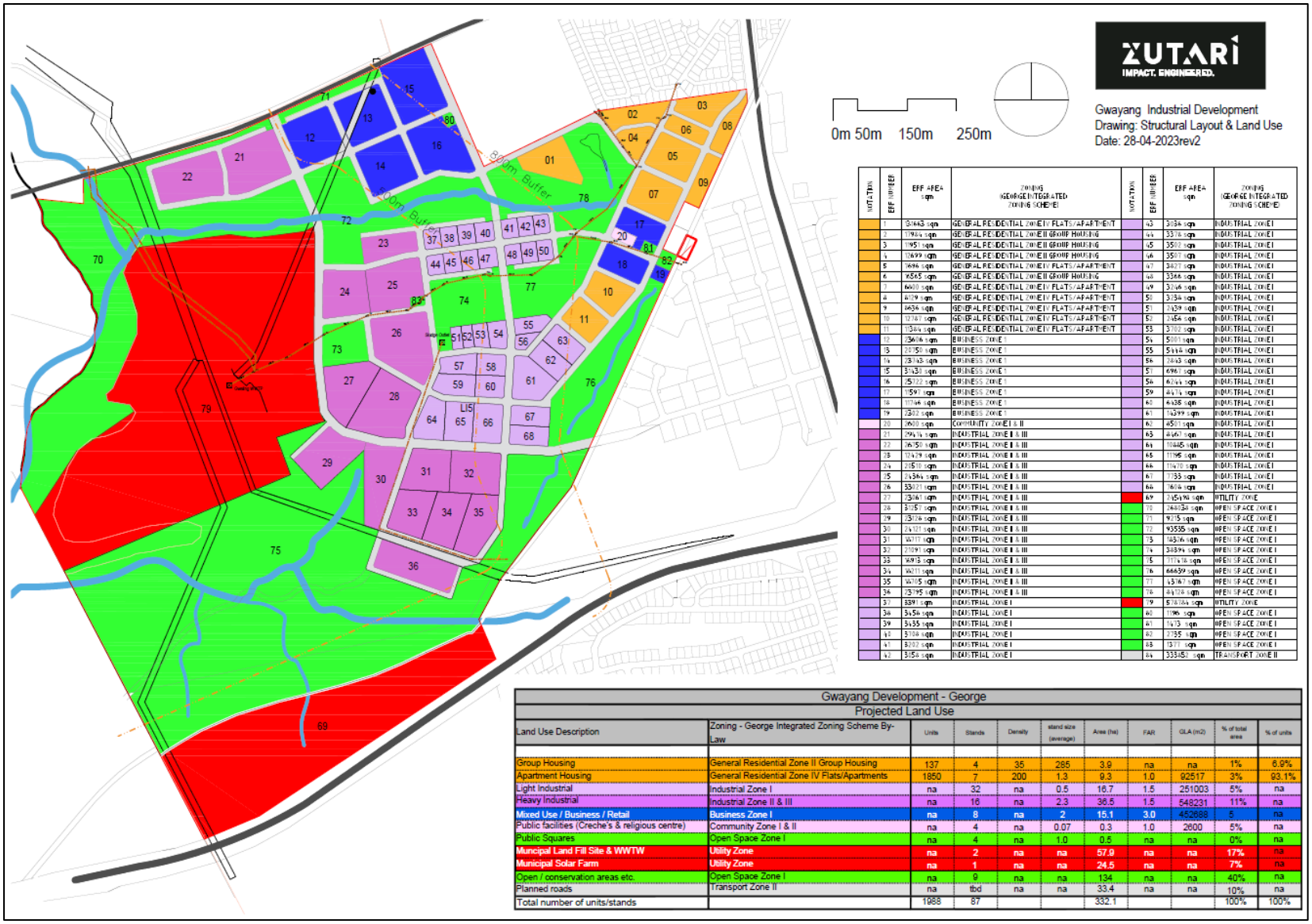
The project involves the development of an integrated mixed-use development. The subject site has been identified as land to accommodate a mixed-use development, integrating the land use requirements of the Municipality, releasable land for residential, industrial, and urban supportive functions/uses, in a creative urban design, which makes the most of the opportunity afforded by the site attributes and context. The development must reflect a vibrant urban development which creates an integrated living environment pragmatically combined with maximum investment/economic benefit to facilitate job-creation and economic enablement. The proposed project will include the following infrastructure:

Table 9: Project Description Table (Preliminary)

TECHNOLOGY DETAILS	
Project Components	• A municipal utility area (existing Utility Zone (George Integrated Zoning Scheme Bylaw, 2017: GIZSB) footprint area) component.
	• A heavy industry precinct.
	• A light industry component.
	• A residential area including various typologies and urban-living supportive uses.
	• A continuous and sustainable conservation/open space system which ties into a sustainable urban drainage system (SUDS).
	• Sustainable urban drainage system (SUDS).
	• A tourism/trade corridor area and urban gateway uses.
	• Possible Energy projects.

In terms of alternative assessment, three alternatives are proposed:

- Alternative 1 (conceptual layout February 2024)
- Alternative 2 (updated layout informed by more detailed environmental constraints May 2024)
- Alternative 3 – will be the Status Quo (or otherwise referred to as the No-Go option) where the site remains as is, with the Municipality not developing the site into a industrial area. The current land uses will remain the same.

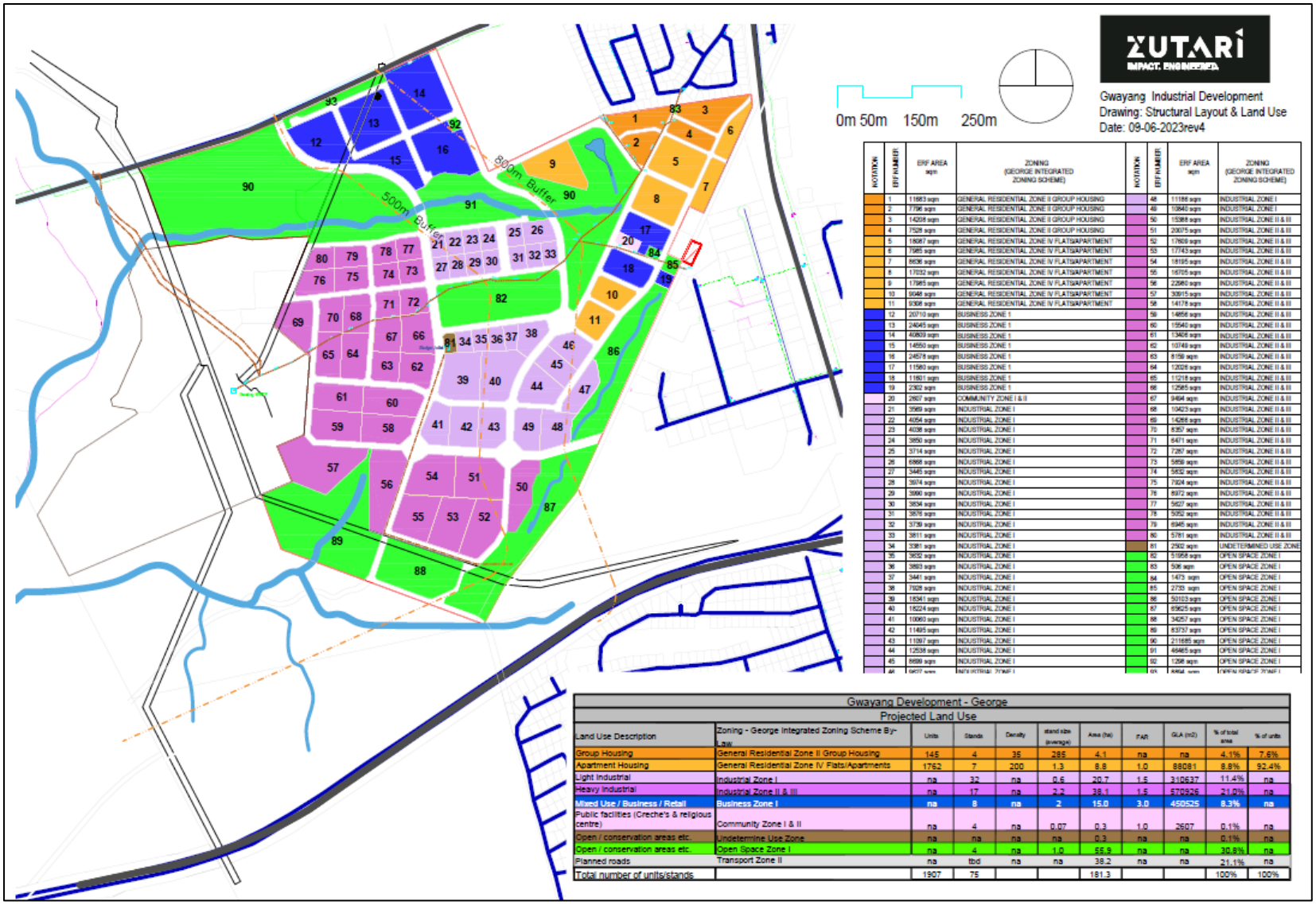


NOTATION	ERF NUMBER	ERF AREA sqm	ZONING (GEORGE INTEGRATED ZONING SCHEME)
	1	30663 sqm	GENERAL RESIDENTIAL ZONE IV FLATS/APARTMENT
	2	11984 sqm	GENERAL RESIDENTIAL ZONE II GROUP HOUSING
	3	19551 sqm	GENERAL RESIDENTIAL ZONE II GROUP HOUSING
	4	12699 sqm	GENERAL RESIDENTIAL ZONE II GROUP HOUSING
	5	7696 sqm	GENERAL RESIDENTIAL ZONE IV FLATS/APARTMENT
	6	9565 sqm	GENERAL RESIDENTIAL ZONE II GROUP HOUSING
	7	6600 sqm	GENERAL RESIDENTIAL ZONE IV FLATS/APARTMENT
	8	6029 sqm	GENERAL RESIDENTIAL ZONE IV FLATS/APARTMENT
	9	6636 sqm	GENERAL RESIDENTIAL ZONE IV FLATS/APARTMENT
	10	12787 sqm	GENERAL RESIDENTIAL ZONE IV FLATS/APARTMENT
	11	13844 sqm	GENERAL RESIDENTIAL ZONE IV FLATS/APARTMENT
	12	23606 sqm	BUSINESS ZONE I
	13	22750 sqm	BUSINESS ZONE I
	14	28743 sqm	BUSINESS ZONE I
	15	51438 sqm	BUSINESS ZONE I
	16	15122 sqm	BUSINESS ZONE I
	17	11597 sqm	BUSINESS ZONE I
	18	10746 sqm	BUSINESS ZONE I
	19	23202 sqm	BUSINESS ZONE I
	20	2600 sqm	COMMUNITY ZONE I & II
	21	29414 sqm	INDUSTRIAL ZONE I & III
	22	26750 sqm	INDUSTRIAL ZONE I & III
	23	12429 sqm	INDUSTRIAL ZONE I & III
	24	21510 sqm	INDUSTRIAL ZONE I & III
	25	24364 sqm	INDUSTRIAL ZONE I & III
	26	53021 sqm	INDUSTRIAL ZONE I & III
	27	23061 sqm	INDUSTRIAL ZONE I & III
	28	31057 sqm	INDUSTRIAL ZONE I & III
	29	23126 sqm	INDUSTRIAL ZONE I & III
	30	24121 sqm	INDUSTRIAL ZONE I & III
	31	14711 sqm	INDUSTRIAL ZONE I & III
	32	21091 sqm	INDUSTRIAL ZONE I & III
	33	16913 sqm	INDUSTRIAL ZONE I & III
	34	14211 sqm	INDUSTRIAL ZONE I & III
	35	14115 sqm	INDUSTRIAL ZONE I & III
	36	23195 sqm	INDUSTRIAL ZONE I & III
	37	8391 sqm	INDUSTRIAL ZONE I
	38	8456 sqm	INDUSTRIAL ZONE I
	39	8435 sqm	INDUSTRIAL ZONE I
	40	8108 sqm	INDUSTRIAL ZONE I
	41	8202 sqm	INDUSTRIAL ZONE I
	42	8156 sqm	INDUSTRIAL ZONE I
	43	8134 sqm	INDUSTRIAL ZONE I
	44	8378 sqm	INDUSTRIAL ZONE I
	45	8502 sqm	INDUSTRIAL ZONE I
	46	8507 sqm	INDUSTRIAL ZONE I
	47	8627 sqm	INDUSTRIAL ZONE I
	48	8366 sqm	INDUSTRIAL ZONE I
	49	8246 sqm	INDUSTRIAL ZONE I
	50	8134 sqm	INDUSTRIAL ZONE I
	51	7459 sqm	INDUSTRIAL ZONE I
	52	7456 sqm	INDUSTRIAL ZONE I
	53	8702 sqm	INDUSTRIAL ZONE I
	54	5001 sqm	INDUSTRIAL ZONE I
	55	51114 sqm	INDUSTRIAL ZONE I
	56	2643 sqm	INDUSTRIAL ZONE I
	57	6961 sqm	INDUSTRIAL ZONE I
	58	6744 sqm	INDUSTRIAL ZONE I
	59	8474 sqm	INDUSTRIAL ZONE I
	60	6438 sqm	INDUSTRIAL ZONE I
	61	14299 sqm	INDUSTRIAL ZONE I
	62	8501 sqm	INDUSTRIAL ZONE I
	63	8467 sqm	INDUSTRIAL ZONE I
	64	10485 sqm	INDUSTRIAL ZONE I
	65	11995 sqm	INDUSTRIAL ZONE I
	66	11470 sqm	INDUSTRIAL ZONE I
	67	7755 sqm	INDUSTRIAL ZONE I
	68	7604 sqm	INDUSTRIAL ZONE I
	69	245496 sqm	UTILITY ZONE
	70	268038 sqm	OPEN SPACE ZONE I
	71	9215 sqm	OPEN SPACE ZONE I
	72	93535 sqm	OPEN SPACE ZONE I
	73	145376 sqm	OPEN SPACE ZONE I
	74	34899 sqm	OPEN SPACE ZONE I
	75	377478 sqm	OPEN SPACE ZONE I
	76	666359 sqm	OPEN SPACE ZONE I
	77	45767 sqm	OPEN SPACE ZONE I
	78	47178 sqm	OPEN SPACE ZONE I
	79	516764 sqm	UTILITY ZONE
	80	1196 sqm	OPEN SPACE ZONE I
	81	1473 sqm	OPEN SPACE ZONE I
	82	2735 sqm	OPEN SPACE ZONE I
	83	1577 sqm	OPEN SPACE ZONE I
	84	333453 sqm	TRANSPORT ZONE II

Gwayang Development - George
Projected Land Use

Land Use Description	Zoning - George Integrated Zoning Scheme By-Law	Units	Stands	Density	stand size (average)	Area (ha)	FAR	GLA (m2)	% of total area	% of units
Group Housing	General Residential Zone II Group Housing	137	4	35	285	3.9	na	na	1%	6.9%
Apartment Housing	General Residential Zone IV Flats/Apartments	1850	7	200	1.3	9.3	1.0	92517	3%	93.1%
Light Industrial	Industrial Zone I	na	32	na	0.5	16.7	1.5	251003	5%	na
Heavy Industrial	Industrial Zone II & III	na	16	na	2.3	36.5	1.5	548231	11%	na
Mixed Use / Business / Retail	Business Zone I	na	8	na	2	15.1	3.0	452688	5	na
Public facilities (Creche's & religious centre)	Community Zone I & II	na	4	na	0.07	0.3	1.0	2600	5%	na
Public Squares	Open Space Zone I	na	4	na	1.0	0.5	na	na	0%	na
Muncipal Land Fill Site & WWTW	Utility Zone	na	2	na	na	57.9	na	na	17%	na
Municipal Solar Farm	Utility Zone	na	1	na	na	24.5	na	na	7%	na
Open / conservation areas etc.	Open Space Zone I	na	9	na	na	134	na	na	40%	na
Planned roads	Transport Zone II	na	tbd	na	na	33.4	na	na	10%	na
Total number of units/stands		1988	87			332.1			100%	100%

Figure 3: Proposed Alternative 1 concept layout plan provided by George Local Municipality.



ROTATION	ERF NUMBER	ERF AREA sqm	ZONING (GEORGE INTEGRATED ZONING SCHEME)
	1	11683 sqm	GENERAL RESIDENTIAL ZONE II GROUP HOUSING
	2	7796 sqm	GENERAL RESIDENTIAL ZONE II GROUP HOUSING
	3	14208 sqm	GENERAL RESIDENTIAL ZONE II GROUP HOUSING
	4	7526 sqm	GENERAL RESIDENTIAL ZONE II GROUP HOUSING
	5	18987 sqm	GENERAL RESIDENTIAL ZONE IV FLATS/APARTMENT
	6	7985 sqm	GENERAL RESIDENTIAL ZONE IV FLATS/APARTMENT
	7	8636 sqm	GENERAL RESIDENTIAL ZONE IV FLATS/APARTMENT
	8	17032 sqm	GENERAL RESIDENTIAL ZONE IV FLATS/APARTMENT
	9	17985 sqm	GENERAL RESIDENTIAL ZONE IV FLATS/APARTMENT
	10	9046 sqm	GENERAL RESIDENTIAL ZONE IV FLATS/APARTMENT
	11	6308 sqm	GENERAL RESIDENTIAL ZONE IV FLATS/APARTMENT
	12	20710 sqm	BUSINESS ZONE I
	13	24045 sqm	BUSINESS ZONE I
	14	40809 sqm	BUSINESS ZONE I
	15	14550 sqm	BUSINESS ZONE I
	16	24578 sqm	BUSINESS ZONE I
	17	11560 sqm	BUSINESS ZONE I
	18	11501 sqm	BUSINESS ZONE I
	19	2302 sqm	BUSINESS ZONE I
	20	2607 sqm	COMMUNITY ZONE I & II
	21	3569 sqm	INDUSTRIAL ZONE I
	22	4054 sqm	INDUSTRIAL ZONE I
	23	4038 sqm	INDUSTRIAL ZONE I
	24	3850 sqm	INDUSTRIAL ZONE I
	25	3714 sqm	INDUSTRIAL ZONE I
	26	6868 sqm	INDUSTRIAL ZONE I
	27	3445 sqm	INDUSTRIAL ZONE I
	28	3804 sqm	INDUSTRIAL ZONE I
	29	3990 sqm	INDUSTRIAL ZONE I
	30	3834 sqm	INDUSTRIAL ZONE I
	31	3876 sqm	INDUSTRIAL ZONE I
	32	3739 sqm	INDUSTRIAL ZONE I
	33	3811 sqm	INDUSTRIAL ZONE I
	34	3381 sqm	INDUSTRIAL ZONE I
	35	3832 sqm	INDUSTRIAL ZONE I
	36	3893 sqm	INDUSTRIAL ZONE I
	37	3441 sqm	INDUSTRIAL ZONE I
	38	7028 sqm	INDUSTRIAL ZONE I
	39	18341 sqm	INDUSTRIAL ZONE I
	40	18224 sqm	INDUSTRIAL ZONE I
	41	10060 sqm	INDUSTRIAL ZONE I
	42	11495 sqm	INDUSTRIAL ZONE I
	43	11097 sqm	INDUSTRIAL ZONE I
	44	12538 sqm	INDUSTRIAL ZONE I
	45	8699 sqm	INDUSTRIAL ZONE I
	46	6407 sqm	INDUSTRIAL ZONE I
	47	11186 sqm	INDUSTRIAL ZONE I
	48	10840 sqm	INDUSTRIAL ZONE I
	49	15388 sqm	INDUSTRIAL ZONE II & III
	50	20075 sqm	INDUSTRIAL ZONE II & III
	51	17609 sqm	INDUSTRIAL ZONE II & III
	52	17743 sqm	INDUSTRIAL ZONE II & III
	53	18195 sqm	INDUSTRIAL ZONE II & III
	54	16705 sqm	INDUSTRIAL ZONE II & III
	55	22560 sqm	INDUSTRIAL ZONE II & III
	56	30815 sqm	INDUSTRIAL ZONE II & III
	57	14178 sqm	INDUSTRIAL ZONE II & III
	58	14656 sqm	INDUSTRIAL ZONE II & III
	59	19540 sqm	INDUSTRIAL ZONE II & III
	60	13406 sqm	INDUSTRIAL ZONE II & III
	61	10749 sqm	INDUSTRIAL ZONE II & III
	62	8159 sqm	INDUSTRIAL ZONE II & III
	63	12026 sqm	INDUSTRIAL ZONE II & III
	64	11218 sqm	INDUSTRIAL ZONE II & III
	65	12585 sqm	INDUSTRIAL ZONE II & III
	66	9464 sqm	INDUSTRIAL ZONE II & III
	67	10423 sqm	INDUSTRIAL ZONE II & III
	68	14266 sqm	INDUSTRIAL ZONE II & III
	69	6357 sqm	INDUSTRIAL ZONE II & III
	70	6471 sqm	INDUSTRIAL ZONE II & III
	71	7267 sqm	INDUSTRIAL ZONE II & III
	72	5859 sqm	INDUSTRIAL ZONE II & III
	73	5852 sqm	INDUSTRIAL ZONE II & III
	74	7924 sqm	INDUSTRIAL ZONE II & III
	75	8972 sqm	INDUSTRIAL ZONE II & III
	76	5627 sqm	INDUSTRIAL ZONE II & III
	77	5052 sqm	INDUSTRIAL ZONE II & III
	78	6945 sqm	INDUSTRIAL ZONE II & III
	79	5781 sqm	INDUSTRIAL ZONE II & III
	80	2502 sqm	UNDETERMINED USE ZONE
	81	51958 sqm	OPEN SPACE ZONE I
	82	506 sqm	OPEN SPACE ZONE I
	83	1473 sqm	OPEN SPACE ZONE I
	84	2733 sqm	OPEN SPACE ZONE I
	85	50103 sqm	OPEN SPACE ZONE I
	86	65625 sqm	OPEN SPACE ZONE I
	87	34257 sqm	OPEN SPACE ZONE I
	88	63737 sqm	OPEN SPACE ZONE I
	89	211685 sqm	OPEN SPACE ZONE I
	90	46465 sqm	OPEN SPACE ZONE I
	91	1256 sqm	OPEN SPACE ZONE I
	92		

Gwayang Development - George
Projected Land Use

Land Use Description	Zoning - George Integrated Zoning Scheme By-Law	Units	Stands	Density	stand size (average)	Area (ha)	FAR	GLA (m2)	% of total area	% of units
Group Housing	General Residential Zone II Group Housing	145	4	35	285	4.1	na	na	4.1%	7.6%
Apartment Housing	General Residential Zone IV Flats/Apartments	1762	7	200	1.3	8.8	1.0	88081	8.8%	92.4%
Light Industrial	Industrial Zone I	na	32	na	0.6	20.7	1.5	310637	11.4%	na
Heavy Industrial	Industrial Zone II & III	na	17	na	2.2	38.1	1.5	570926	21.0%	na
Mixed Use / Business / Retail	**Business Zone I**	**na**	**8**	**na**	**2**	**15.0**	**3.0**	**450525**	**8.3%**	**na**
Public facilities (Creche's & religious centre)	Community Zone I & II	na	4	na	0.07	0.3	1.0	2607	0.1%	na
Open / conservation areas etc.	Undetermine Use Zone	na	na	na	na	0.3	na	na	0.1%	na
Open / conservation areas etc.	Open Space Zone I	na	4	na	1.0	55.9	na	na	30.8%	na
Planned roads	Transport Zone II	na	tbd	na	na	38.2	na	na	21.1%	na
Total number of units/stands		1907	75			181.3			100%	100%

Figure 4: Proposed Alternative 2 concept layout plan provided by George Local Municipality.

5 LEGAL FRAMEWORK

In order to comply with the Visual Resource Management requirements, it is necessary to relate the proposed landscape modification in terms of international best practice in understanding landscapes and landscape processes. The proposed project also needs to be evaluated in terms of 'policy fit'. This requires a review of International, National and Regional best practice, policy and planning for the area to ensure that the scale, density and nature of activities or developments are harmonious and in keeping with the planned sense of place and character of the area.

5.1 International Good Practice

For cultural landscapes, the following documentation provides good practice guidelines, specifically:

- Guidelines for Landscape and Visual Impact Assessment (GLVIA), Second Edition.
- International Finance Corporation (IFC).
- Millennium Ecosystem Assessment (MEA).
- United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Convention (WHC).

5.1.1 Guidelines for Landscape and Visual Impact Assessment, Second Edition

The Landscape Institute and the Institute of Environmental Management and Assessment (United Kingdom) have compiled a book outlining best practice in landscape and visual impact assessment. This has become a key guideline for LVIA in the United Kingdom. "The principal aim of the guideline is to encourage high standards for the scope and context of landscape and visual impact assessments, based on the collegiate opinion and practice of the members of the Landscape Institute and the Institute of Environmental Management and Assessment. The guidelines also seek to establish certain principles and will help to achieve consistency, credibility and effectiveness in landscape and visual impact assessment, when carried out as part of an EIA" (The Landscape Institute, 2003);

In the introduction, the guideline states that 'Landscape encompasses the whole of our external environment, whether within village, towns, cities or in the countryside. The nature and pattern of buildings, streets, open spaces and trees – and their interrelationships within the built environment – are an equally important part of our landscape heritage" (The Landscape Institute, 2003: Pg. 9). The guideline identifies the following reasons why landscape is important in both urban and rural contexts, in that it is:

- An essential part of our natural resource base.
- A reservoir of archaeological and historical evidence.
- An environment for plants and animals (including humans).
- A resource that evokes sensual, cultural and spiritual responses and contributes to our urban and rural quality of life; and
- Valuable recreation resources. (The Landscape Institute, 2003).

5.1.2 International Finance Corporation (IFC)

The IFC Performance Standards (IFC, 2012) do not explicitly cover visual impacts or assessment thereof. Under IFC PS 6, ecosystem services are organized into four categories, with the third category related to cultural services which are defined as "the non-

material benefits people obtain from ecosystems" and "may include natural areas that are sacred sites and areas of importance for recreation and aesthetic enjoyment" (IFC, 2012).

However, the IFC Environmental Health and Safety Guidelines for Electric Power Transmission and Distribution (IFC, 2007) specifically identifies the risks posed by power transmission and distribution projects to create visual impacts to residential communities. It recommends mitigation measures to be implemented to minimise visual impact. These should include the siting of powerlines and the design of substations with due consideration to landscape views and important environmental and community features. Prioritising the location of high-voltage transmission and distribution lines in less populated areas, where possible, is promoted.

IFC PS 8 recognises the importance of cultural heritage for current and future generations and aims to ensure that projects protect cultural heritage. The report defines Cultural Heritage as "(i) tangible forms of cultural heritage, such as tangible moveable or immovable objects, property, sites, structures, or groups of structures, having archaeological (prehistoric), paleontological, historical, cultural, artistic, and religious values; (ii) unique natural features or tangible objects that embody cultural values, such as sacred groves, rocks, lakes, and waterfalls" (IFC, 2012). The IFC PS 8 defines Critical Heritage as "one or both of the following types of cultural heritage: (i) the internationally recognized heritage of communities who use or have used within living memory the cultural heritage for long-standing cultural purposes; or (ii) legally protected cultural heritage areas, including those proposed by host governments for such designation" (IFC, 2012).

Legally protected cultural heritage areas are identified as important in the IFC PS 8 report. This is for "the protection and conservation of cultural heritage, and additional measures are needed for any projects that would be permitted under the applicable national law in these areas". The report states that "in circumstances where a proposed project is located within a legally protected area or a legally defined buffer zone, the client, in addition to the requirements for critical cultural heritage, will meet the following requirements:

- Comply with defined national or local cultural heritage regulations or the protected area management plans.
- Consult the protected area sponsors and managers, local communities and other key stakeholders on the proposed project; and
- Implement additional programs, as appropriate, to promote and enhance the conservation aims of the protected area". (IFC, 2012).

5.1.3 Millennium Ecosystem Assessment

In the Ecosystems and Human Well-being document compiled by the Millennium Ecosystem Assessment in 2005, Ecosystems are defined as being "essential for human well-being through their provisioning, regulating, cultural, and supporting services. Evidence in recent decades of escalating human impacts on ecological systems worldwide raises concerns about the consequences of ecosystem changes for human well-being". (Millennium Ecosystem Assessment, 2005)

The Millennium Ecosystem Assessment defined the following non-material benefits that can be obtained from ecosystems*:*

- Inspiration: Ecosystems provide a rich source of inspiration for art, folklore, national symbols, architecture, and advertising.

- Aesthetic values: Many people find beauty or aesthetic value in various aspects of ecosystems, as reflected in the support for parks, scenic drives, and the selection of housing locations.
- Sense of place: Many people value the “sense of place” that is associated with recognised features of their environment, including aspects of the ecosystem.
- Cultural heritage values: Many societies place high value on the maintenance of either historically important landscapes (“cultural landscapes”) or culturally significant species; and
- Recreation and ecotourism: People often choose where to spend their leisure time based in part on the characteristics of the natural or cultivated landscapes in a particular area. (Millennium Ecosystem Assessment, 2005)

The Millennium Ecosystem Assessment Ecosystems and Human Well-being: Synthesis report indicates that there has been a “rapid decline in sacred groves and species” in relation to spiritual and religious values, and aesthetic values have seen a “decline in quantity and quality of natural lands”. (Millennium Ecosystem Assessment, 2005)

5.2 National and Regional Legislation and Policies

In order to comply with the Visual Resource Management requirements, it is necessary to clarify which National and Regional planning policies govern the proposed development area to ensure that the scale, density and nature of activities or developments are harmonious and in keeping with the sense of place and character of the area as mapped in Figure 5 below.

- DEA&DP Visual and Aesthetic Guidelines.
- Regional and Local Municipality Planning and Guidelines.

Table 10: List of key planning informants to the project.

Theme	Requirements
Province	Western Cape
District Municipality	Garden Route District Municipality (formally Eden)
Local Municipality	George Local Municipality

Figure 5: Planning locality map depicting the local, district and national planning zones.

5.2.1 DEA&DP Visual and Aesthetic Guidelines

Reference to the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) Guideline for involving visual and aesthetic specialists in Environmental Impact Assessment (EIA) processes is provided in terms of southern African best practice in Visual Impact Assessment. The report compiled by Oberholzer states that the Best Practicable Environmental Option (BPEO) should address the following:

- Ensure that the scale, density and nature of activities or developments are harmonious and in keeping with the sense of place and character of the area. The BPEO must also ensure that development must be located to prevent structures from being a visual intrusion (i.e., to retain open views and vistas).
- Long term protection of important scenic resources and heritage sites.
- Minimisation of visual intrusion in scenic areas.
- Retention of wilderness or special areas intact as far as possible.
- Responsiveness to the area's uniqueness, or sense of place." (Oberholzer, 2005)

5.2.2 Local and Regional Planning

The following tables list key regional and local planning that has relevance to the project pertaining to landscape-based tourism, and renewable energy projects.

Table 11: District Planning reference table relevant to the project.

Theme	Requirements	Page
Economic growth	• Garden Route's future economic growth will not be determined by any single, dominating sector, but its competitive advantage lies in the relative strength of several niches of the key growth sectors, in other words, the diversification of its economic base. This remains a challenge and the driving force behind the regional economic development strategy which had been developed and has shaped the strategy document.	192
Tourism	• The district's profound natural, scenic and landscape beauty contributes to its appeal as a popular tourism destination. Tourism plays a key role in the economy of the district, which is linked to the retail, wholesale, catering and accommodation sector.	117
Landscape	• There is an urgent need to reverse the continuing degradation or loss of biodiversity and functioning ecosystems within the Garden Route district. 'Sustaining our ecosystems and • using natural resources efficiently' is one of the strategic focus areas of the Garden Route DM.	120

(Garden Route District Municipality Draft Reviewed 2020-2021 IDP)

Table 12: Local Planning reference table relevant to the project.

Theme	Requirements	Page
Environment	• In order for the economy to grow it is essential that the correct • infrastructure is in place to accommodate current and new business activities. Therefore, infrastructure investment has to be a primary focus for the next 10 to 15 years.	67
Spatial Development Objectives	• Strengthening the Economic Vitality by enhancing the Regional and Local Space Economy, Strategic Developments to diversify and strengthen the Economy, Consolidating and reinforcing nodes of economic activity, and Infrastructure Services Provision. • Creating Quality Living Environments through Sustainable Urban Growth Management, managing a hierarchy of City Activity Nodes, the use of Strategic vacant land to take up new development demand, the densification of Urban Areas, and the provision of Housing & Public Facilities • Safeguarding the Environmental Integrity and Assets by establishing a city-wide open space system and environmental corridors, maintaining the functionality of Critical Biodiversity Areas, applying the principles of the Spatial Planning Categories, mitigating against impacts of Climate Change, managing Visual landscapes and corridors as well as Heritage resources. • Enhance the Rural Character and Livelihood by protecting the Productive Landscape, managing the Subdivision of Land and by enhancing the Rural Livelihood and promoting integrated rural development	84
Tourism	• It is essential to retain the value and attraction of these assets that can contribute to the growth in George's tourism and agricultural sectors.	
Landscape	• ## Notwithstanding the area's rich and varied natural capital, it remains a sensitive and vulnerable environment. The challenge	84

Theme	Requirements	Page
	is ensuring the on-going functioning of eco-system services, that climate change is taken seriously, and the Municipality's towns and rural areas are developed sustainably. Whilst the Municipality's natural assets and productive rural landscapes need to be safeguarded, they also need to be opened up to all – particularly those denied access in the apartheid era	

(George Municipality IDP, 2017)

George Local Municipality Spatial Development Framework (2019)

Issue	Motivation	Page
Gateways	• At the scale of the George city area, its surrounding natural and rural environment provides a distinctive frame for the city which gives the city an identity by providing clear green edges and gateways supporting its attraction as a place to live and work. At the same time, there are "green fingers" or corridors linking the sea and the mountain, which pass through the urban area providing ecosystem services, amenity and opportunities for positive connections between different communities of George. • Careful management of land use and the urban-rural interface at the gateways to the George city area is therefore important to this MSDF. Landscapes speak to the unique sense of place experienced as one approaches George from the east, west and north. • Land use in the gateways entering and leaving the George city area identified in this MSDF should enhance the gateway function of these local areas and not pursue a form that is essentially urban.	32
Pacaltsdorp	• Historically Pacaltsdorp developed as an independent settlement distinct from George. Albeit part of the greater George urban area today, the area remains predominantly residential in nature. There are heritage assets and cultural landscapes in the Pacaltsdorp area that should be carefully understood. • Sufficient provision of public- and social infrastructure to accommodate the future growth and development of Pacaltsdorp should receive priority.	130
Landscape	• Protect valuable view corridors, undeveloped ridge lines, heritage assets and existing vistas should not be compromised by any development proposal or cumulative impact of development proposals. The proportion of urban development up the slope of a prominent hill or mountain should not degrade its aesthetic/ visual value • Scenic routes provide public access to the enjoyment of these landscapes. The routes and the land use alongside these routes should be managed in such a way as to not compromise the views offered but to mark and celebrate the landscapes and the origins or nature of their significance.	82

(George Municipality, 2019)

5.3 Landscape Planning Policy Fit

Policy fit refers to the degree to which the proposed landscape modifications align with International, National, Provincial and Local planning and policy.

In terms of *international best practice*, there were no significant cultural/ landscape resources found on the site or immediate surrounds that are flagged by international landscape guidelines.

In terms of the *local and regional planning*, the area has no significant landscape value other than the proximity to the N2 national Highway that is a recognised tourist view corridor. The area is located between an existing industrial area and the local municipality dump/ sewerage works where the local landscape is degraded to some degree. *In terms of regional and local planning fit for landscape and visual related themes, the* ***expected visual/ landscape policy fit of the landscape change is rated High Positive. Care would need to retain some of the open space sense of place that the area currently provides as seen from the N2 Highway receptors.***

6 BASELINE VISUAL INVENTORY

Landscape character is defined by the U.K. Institute of Environmental Management and Assessment (IEMA) as the 'distinct and recognisable 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, soils, vegetation, land use and human settlement'. It creates the specific sense of place or essential character and 'spirit of the place' (IEMA, 2002). This section of the VIA identified the main landscape features that define the landscape character, as well as the key receptors that make use of the visual resources created by the landscape.

6.1 Landscape Context

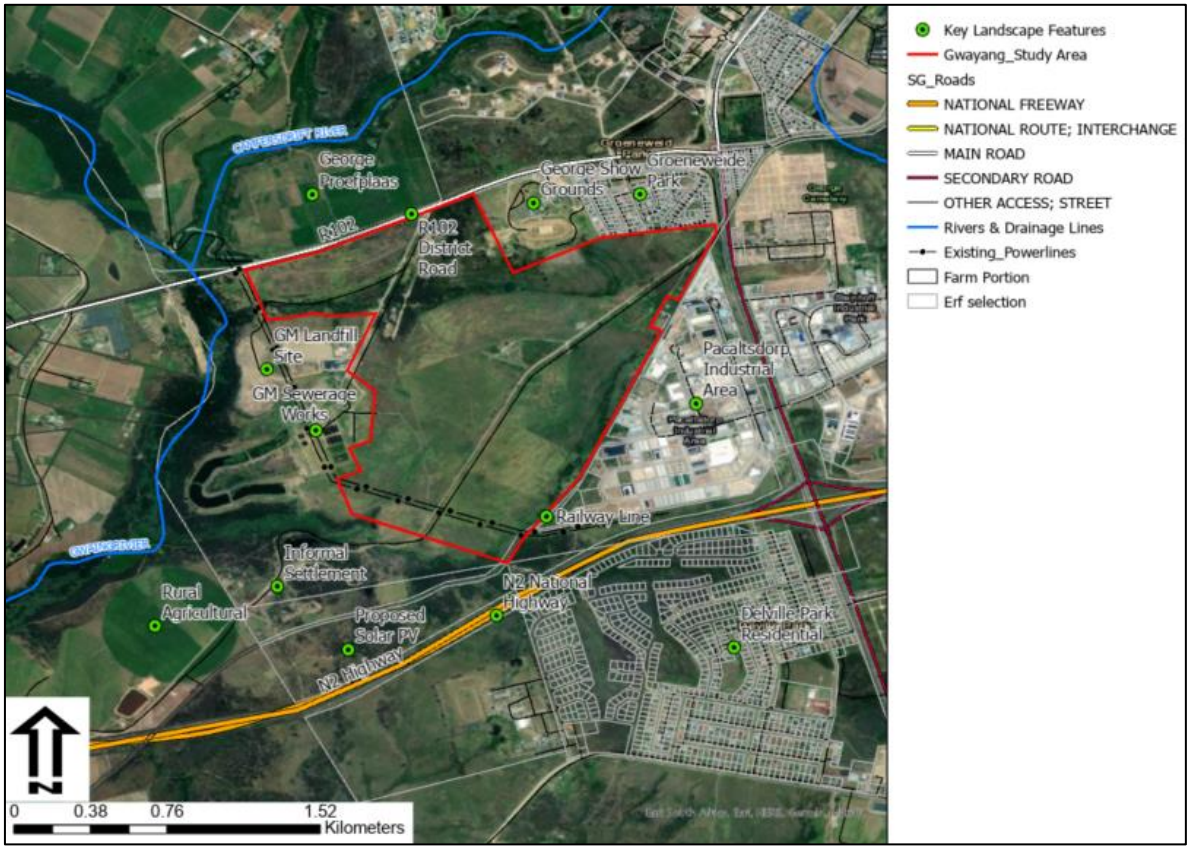


Figure 6. Local landscape themes map.

The region where the project is proposed is in the city of George, east of the Gwayang River, south of the R102, west of York Street and north of the N2. As mapped in Figure 6 above, the key landscape themes within the Foreground / Middle Ground (6km) distance are tabled below:

Table 13:Key Landscape Themes

Theme	Description	Site survey Photo Reference
Pacaltsdorp Industrial Area	Location adjacent the site to the east, the Pacaltsdorp Industrial Area comprises a 51 Ha of industrial structures of a medium height (less than 10m approx.). There is still some development taking place to the southwestern corner that will further establish this as a large industrial node.	4
N2 National Highway	Located on the southern boundary of the project area, the N2 National Highway is an important tourist corridor through the Garden Route.	5 and 10
Delville Park Residential	Located approximately 1km to the southeast is the suburban residential area of Deville Park. There is a large open space buffer between the proposed development area, as well as the visual presence of the Pacaltsdorp Industrial Area.	8

GM Landfill Site	The GM Landfill site is located within the proposed development area. The landfill site has grown in height and area over a number of years and now is beginning to be a visual disturbance in the local area.	1
GM Sewerage Works	The GM Sewerage works is located to the south of the Landfill and has a low visual presence in the landscape with limited views from receptors due to vegetation and topographic screening.	2
George Show Grounds	The George Show Grounds are located to the north of the project area and include a number of large sheds, as well as small oval motor vehicle racing track.	7
Groeneweide Park	Located to the north of the project area is the residential suburb of Groeneweide Park. Views from this area to the south are limited by the built nature of the urban area as well as numerous shade trees planted around the dwellings.	6
Rural Agricultural	Located to the southwest on the opposite side of the Gwaing River are smaller agricultural farming areas.	
George Proefplaas	Located to the north of the study area is the George 'Proefplaas', a research farm that has been well established over many years. This area is outside the project visual influence.	
Informal Settlement	Located on the property area in the southwest corner is a small but growing informal settlement. It is proposed by the municipality that the community will be relocated closer to urban municipal services.	
Railway Line	The only major infrastructure in the area is the railway line connecting George to Mossel Bay. This route is not often in use but is likely to have increased usage in the future.	3

6.1.1 Vegetation

Vegetation type is a large factor in determining the scenic quality or the site in terms of colour and texture, as well as influencing the local ability of the landscape to absorb the landscape change. The map below outlines the vegetation type based on BGIS mapping (South African National Biodiversity Institute, 2018).

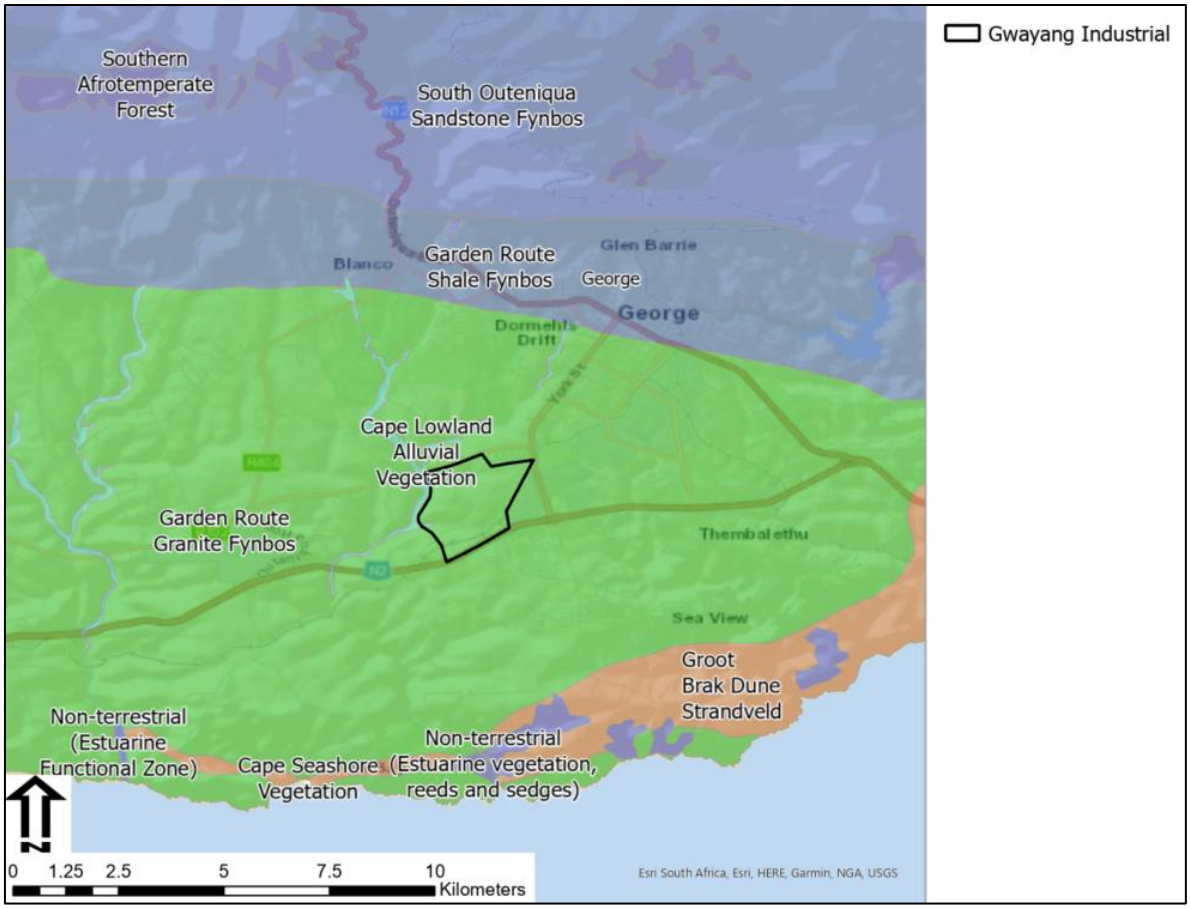


Figure 7. BGIS Biome and Vegetation Type Map (South African National Biodiversity Institute, 2018)

Figure 8. Photo of the south-eastern portion of the property with the railway line in the foreground, a wetland area behind and the veld grasses that cover much of the property.

According to the South African National Biodiversity Institute (SANBI) 2012 Vegetation Map of South Africa, Lesotho and Swaziland (South African National Biodiversity Institute, 2012)

the project area is located in the Fynbos Biome with the main vegetation types being Garden Route Granite Fynbos. As depicted in the photograph below, much of the area has been transformed and is currently being used for low intensity grazing of cattle on short-term contracts. The photograph taken in the south-eastern portion of the property with the railway line in the foreground, a wetland area behind and the veld grasses that cover much of the property.

Of relevance to the project is that the natural fynbos type vegetation offers very little vegetation screening. There are some alien trees in the area that provide some vegetation screening from the surrounding receptors, and these areas should be retained while other indigenous of landscaping trees are grown.

6.1.2 Nature and Tourism Activities

The site survey found no tourist related activities to be in the area. The main tourist related issues is the location within the Garden Route that is a tourist attraction and as such, the main roads in the area would carry tourist traffic and should be viewed as tourist view corridors. **As the N2 National Highway is listed in planning documentation as an important transport route, this road should be used as a Key Observation Point.**

6.2 Project Zone of Visual Influence

The visible extent, or viewshed, is "the outer boundary defining a view catchment area, usually along crests and ridgelines" (Oberholzer, 2005). In order to define the extent of the possible influence of the proposed project, a viewshed analysis was undertaken from the proposed site at a specified height above ground level as indicated in the table below. The viewshed analysis makes use of open-source NASA ASTER Digital Elevation Model data (NASA, 2009).

The extent of the viewshed analysis was restricted to a defined distance that represents the approximate zone of visual influence (ZVI) of the proposed activities, which takes the scale, and size of the proposed projects into consideration in relation to the natural visual absorption capacity of the receiving environment. The maps are informative only as visibility tends to diminish exponentially with distance, which is well recognised in visual analysis literature (Hull & Bishop, 1988). The viewshed is strongly associated with the regional topography and as such this topic is addressed before the viewshed analysis.

6.2.1 Regional Landscape Topography

Making use of the NASA STRM digital elevation model, profile lines were generated for the area within 24km on either side of the project area predominantly in the North to South and East to West compass reference but orientated to take into account dominant topographic trends that could influence the local landscape and viewscape. The map depicting the regional elevation profile lines can be view on the following page.

The general topography depicts no significant landform features, with the majority of the area characterised by undulating terrain that drains to the south via a number of incised river valleys that are small to medium is size and scale. The gradual decline in elevation from north to south is well depicted in the profile graph with the project area located in the centre between the Outeniqua Mountains in the north and the Indian Ocean in the south. The undulation of the terrain is well depicted in the East to West Profile, with the number of

steeper river valleys showing. Notably, the Gwayang River located to the west with hydrological drainage to the west. As a result of undulation, the Zone of Visual Influence (ZVI) is located to be locally contained in the east-west axis.

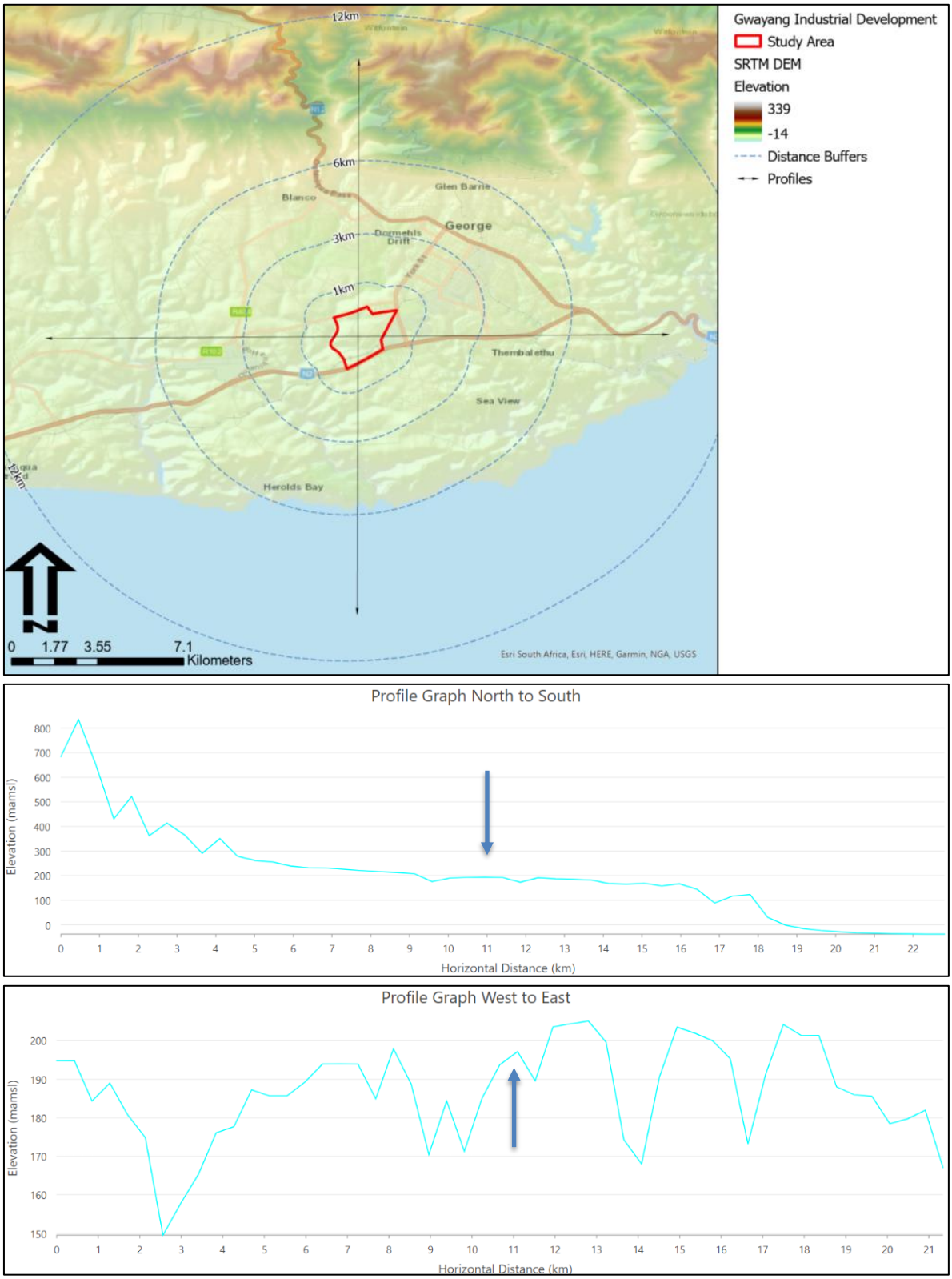


Figure 9: Regional Digital Elevation Mapping and Profiles Graphs.

6.2.2 Topographic Features

To determine if any gradient constraints were located on the project area, a slopes analysis was undertaken.

The map below depicts the STRM DEM ranging from 0 to 255mamsl, with the steep slopes overlay. The two main landform characteristic areas are defined as Undulating terrain, and the local valley context. This area does have landscape value as seen from the N2 Highway, as there are close proximity views of the shallow valley that increase the scenic value. While there are no 1 in 4m slopes, the 1 in 10m slopes in proximity to the valley should be retained as a component of the broader valley context.

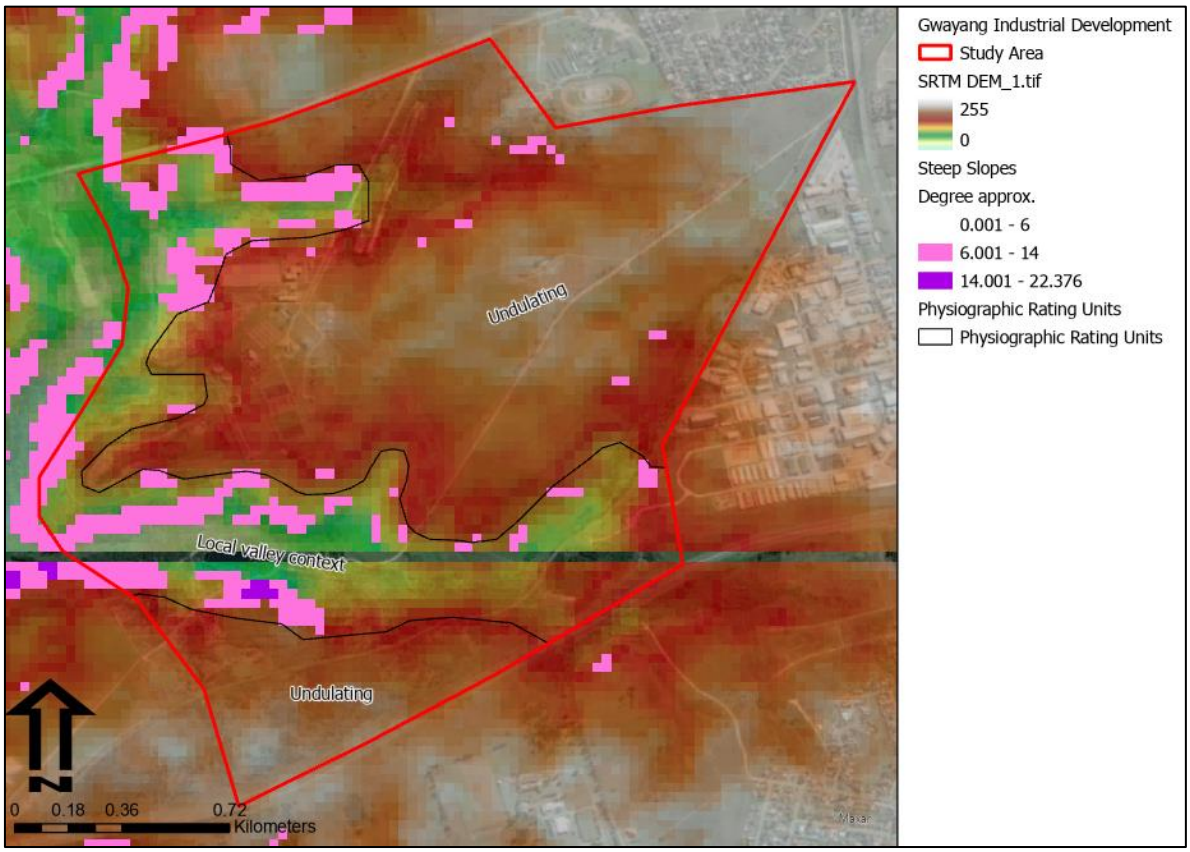


Figure 10: Key topographic features map.

6.2.3 Viewshed Analysis

A viewshed analysis was undertaken for the site making use of NASA SRTM 30m Digital Elevation Model data. An Offset value representing the height of the PV panels was used to represent the approximate height of the proposed development as reflected in the table below. The viewshed was also capped at a defined extent to take atmospheric influences into consideration where the landscape change would not be clearly visible from.

Table 14: Proposed Project Heights Table

Proposed Activity	Height (m)	Model Extent	Motivation
Industrial structures	8m	12km	Due to the existing precedent for industrial development increasing the visual absorption capacity, and the undulation of the terrain where the ZVI would be

			reduced, the extent of the viewshed was capped as 12km.

Preliminary Viewshed Findings

As a specific layout and project description is not provided, the following viewshed findings needs to be viewed as preliminary and could change.

As can be viewed in Figure 11, the theoretical viewshed has the potential to be widespread within the local region, due to the slight prominence of the central area of the proposed development site. However, as depicted by the fragmented nature of the viewshed, the surrounding topography is undulating, with mainly higher elevation areas in the north and west having visual incidence.

The expected Zone of Visual Influence reflects the most likely extent where the proposed development landscape change will be noticed by casual observers. This area is informed by the site survey as well as the surrounding area land uses where building and medium to large vegetation could restrict the actual views of the landscape change. As depicted by the blue dotted line in Figure 11, the expected ZVI is locally contained with most of the visibility contained within the 2km Foreground area. For this reason, the expected ZVI is rated Low.

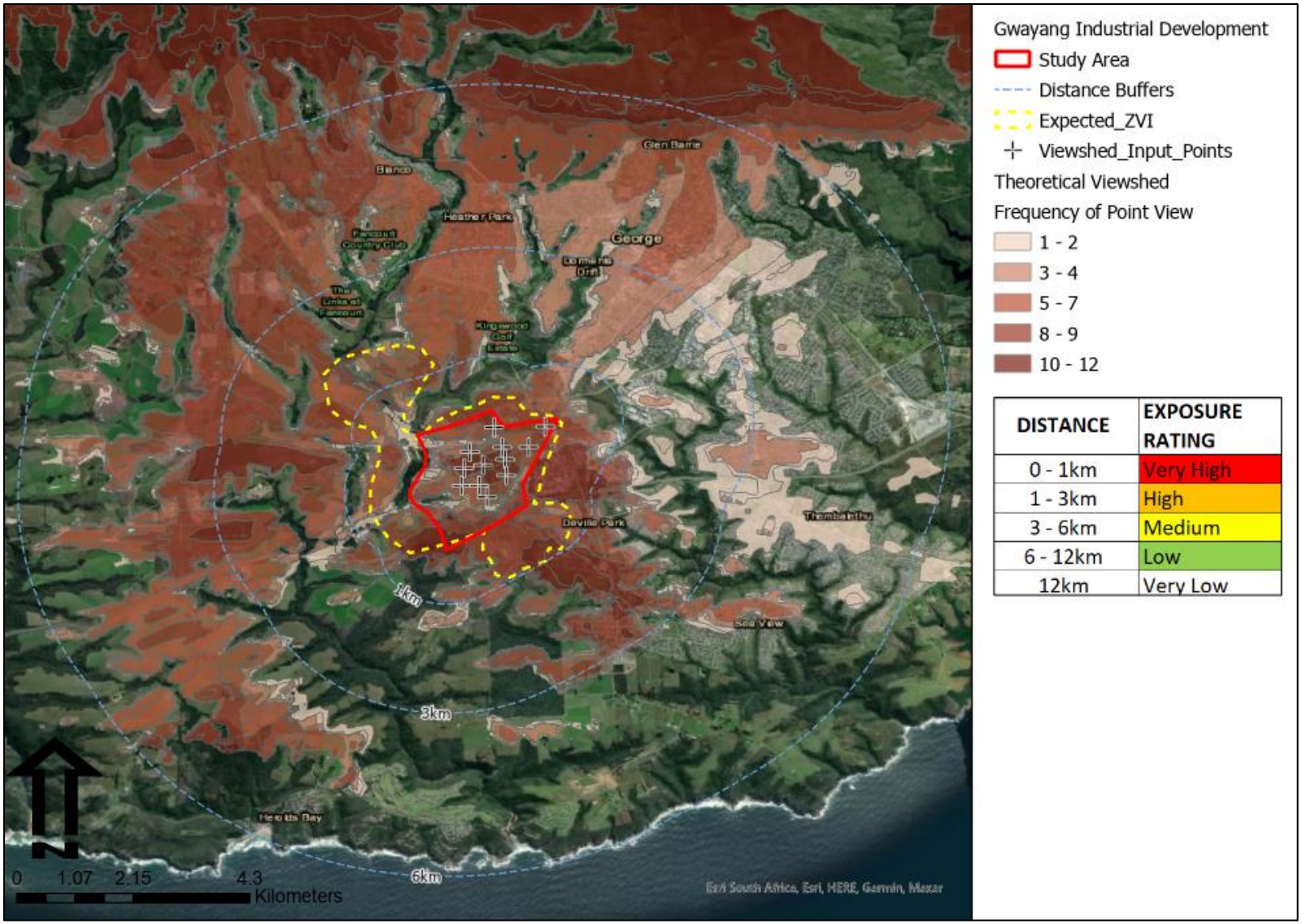


Figure 11: Viewshed analysis map of Gwayang Industrial Development project.

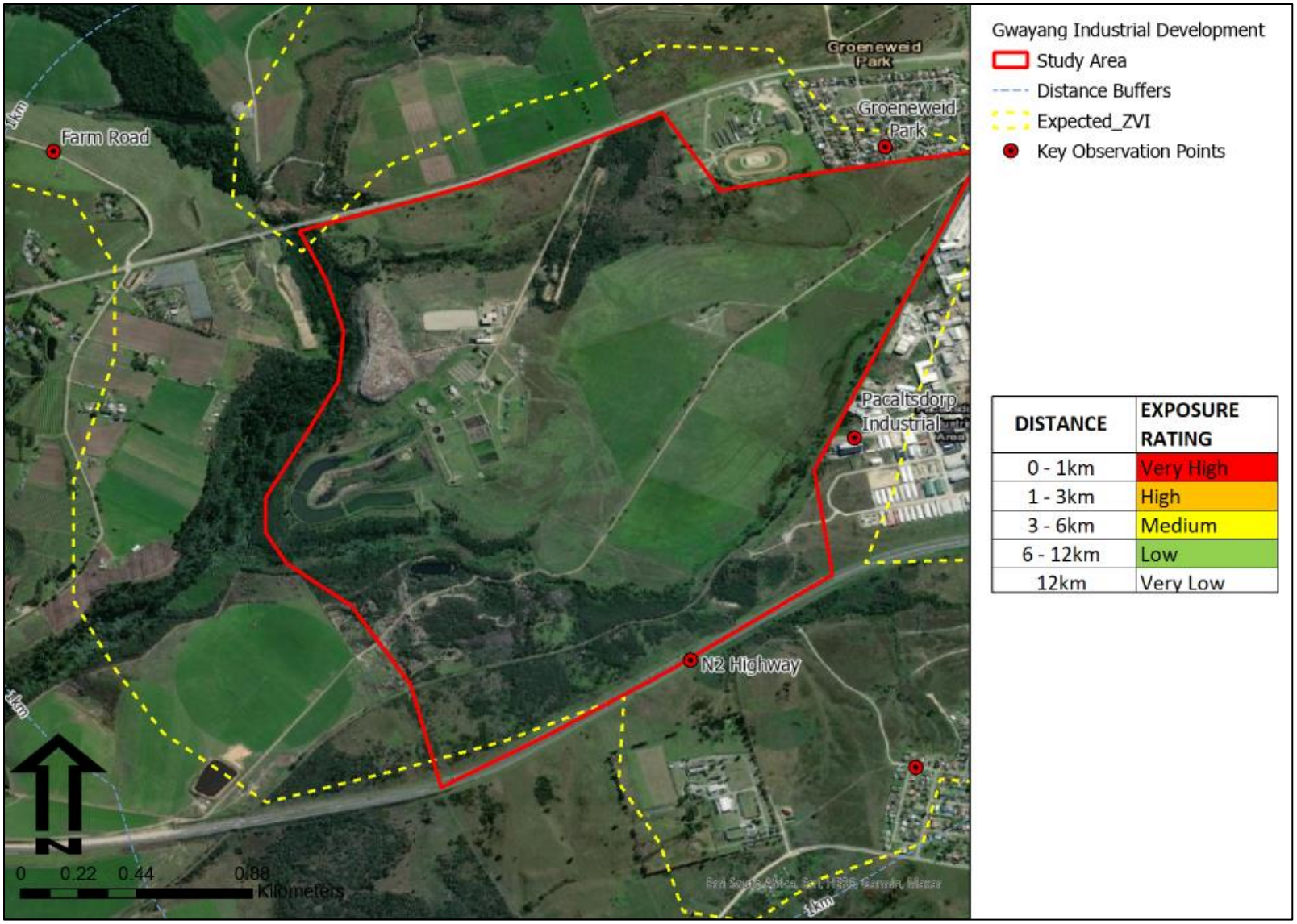


Figure 12: Receptor Key Observation Point and Visual Exposure Map.

6.3 Receptors and Key Observation Points

As defined in the methodology, KOPs are defined by the Bureau of Land Management as the people (receptors) located in strategic locations surrounding the property that make consistent use of the views associated with the site where the landscape modifications are proposed. The following table identifies the receptors identified within the ZVI, as well as motivates if they have significance and should be defined as KOP. The receptors located within the ZVI, and KOPs view lines are indicated the map on the following page. As motivated in Table 15 below and mapped in Figure 12 on the previous page, the following receptors have been identified as Key Observation Points and should be used as locations to assess the suitability of the landscape change.

Table 15: KOP Motivation Table.

Name	Theme	Exposure	Motivation
N2 Highway	Tourist view corridor	Very High	Located in close proximity to residential and tourist related receptors where the proposed industrial landscape change could influence the local landscape character.
GroeneweidePark.	Residential	Very High	
Deville Park		High	
Western rural farm access.	Rural agricultural	Medium	Located to the northwest of the project where rural agricultural land uses take place, where the proposed industrial landscape change could influence the local sense of place.

7 VISUAL RESOURCE MANAGEMENT

In terms of the VRM methodology, landscape character is derived from a combination of scenic quality, receptor sensitivity to landscape change, and distance of the proposed landscape modification from key receptor points. Making use of the key landscape elements defined in the landscape contextualisation sections above, landscape units are defined which are then rated to derive their intrinsic scenic value, as well as how sensitive people living in the area would be to changes taking place in these landscapes.

7.1 Physiographic Rating Units

The Physiographic Rating Units are the areas within the proposed development area that reflect specific physical and graphic elements that define a particular landscape character. These unique landscapes within the project development areas are rated to assess the scenic quality and receptor sensitivity to landscape change, which is then used to define a Visual Resource Management Class for each of the site's unique landscape/s. The exception is Class I, which is determined based on national and international policy / best practice and landscape significance and as such are not rated for scenic quality and receptor sensitivity to landscape change. Based on the SANBI vegetation mapping and the site visit to define key landscape features, the following broad-brush areas were tabled and mapped in Figure 13 below.

Table 16: Physiographic Landscape Rating Units.

PRU	Description
Undulating veld grasses	Undulating veld grasses located on the central area of the property with medium exposure to the receptors and close proximity to the waste dump and the Pacaltsdorp Industrial area.
Local valley context	Shallow valley in close proximity to the N2 Highway (southern section) that adds scenic quality to the area and buffer the N2 Highway.
N2 High Exposure Alien veg Invaded	Small area located to the southwest of the project area in high exposure to the N2 Highway where skyline intrusion could take place. Also currently associated in informal settlement.
Transformed	Transformed areas related to the Waste Dump and the Waste Water Treatment facility.
Sensitivity buffers	Undulating terrain with high exposure to the R102 road, George Show Grounds and the Groeneweide Park receptors.

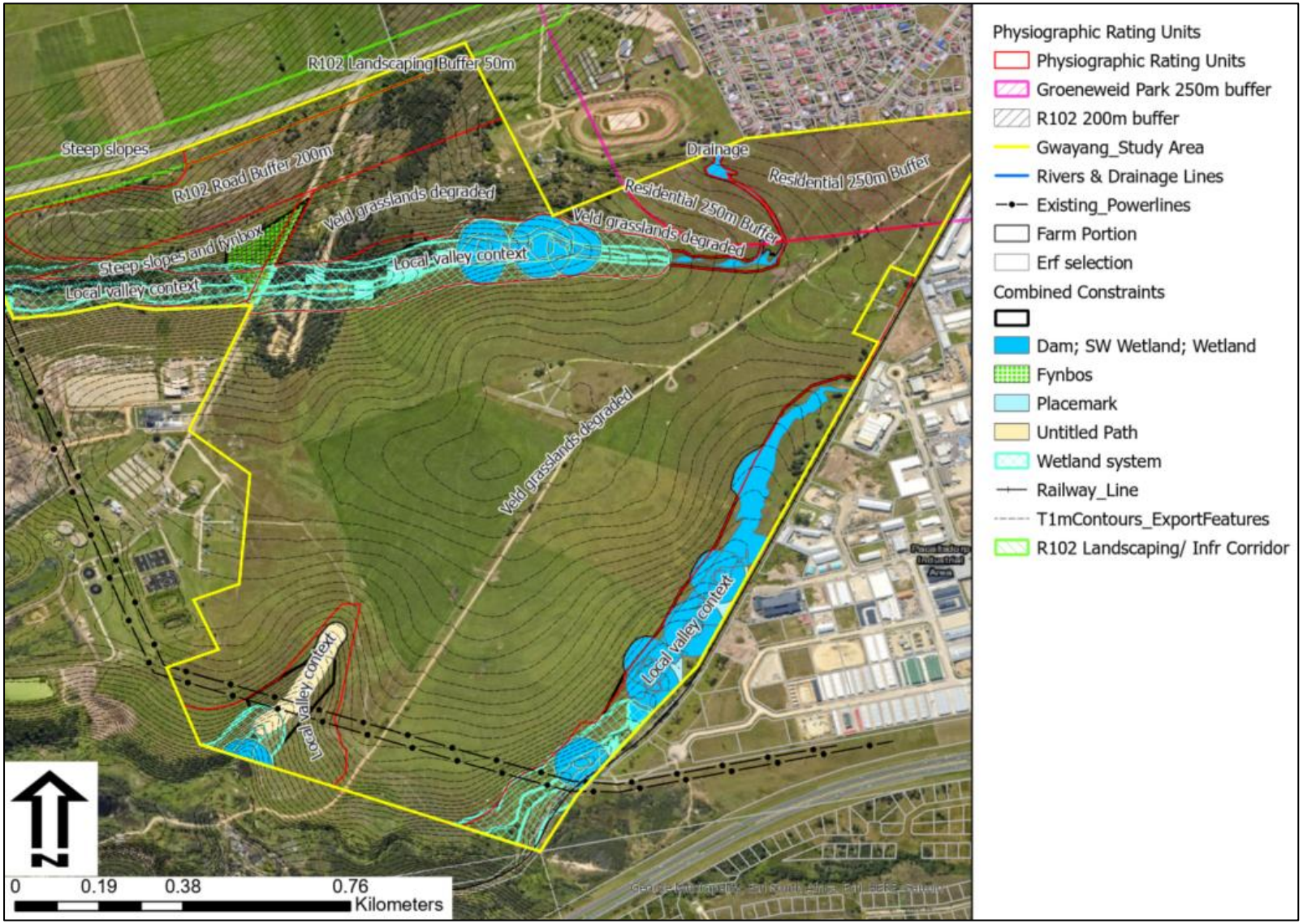


Figure 13: Physiographic Rating Units identified within the defined study area.

Table 17: Scenic Quality and Receptor Sensitivity Rating.

Landscape Rating Units	**Scenic Quality**									**Receptor Sensitivity**						**VRM**	
	A= scenic quality rating of ≥19; B = rating of 12 – 18, C= rating of ≤11									H = High; M = Medium; L = Low							
Attribute	**Landform**	**Vegetation**	**Water**	**Colour**	**Scarcity**	**Adjacent Landscape**	**Cultural Modifications**	**Sum**	**Rating**	**Type of Users**	**Amount of Use**	**Public Interest**	**Adjacent Land Uses**	**Special Areas**	**Rating**	**Inventory Class**	**Management Class**
Significant Heritage / Ecological / Hydrology. Steep slopes (pending survey).	**(Class I is not rated)**																**I**
Undulating veld grasses	2	1	0	1	1	1	2	**8**	**C**	M	H	L	L	L	**L**	**IV**	**IV**
Local valley context	3	2	2	3	3	2	2	**17**	**B**	M	M	M	M	H	**M**	**III**	**II**
N2 High Exposure Alien veg Invaded	2	1	0	1	1	1	-2	**3**	**C**	L	L	L	L	L	**L**	**IV**	**III**
Sensitivity buffers R102, Residential	2	1	0	1	1	1	2	**8**	**C**	H	H	H	H	L	**H**	**III**	**II**

Red colour indicates change in rating from Visual Inventory to Visual Resource Management Classes motivated in the following section.

The ***Scenic Quality*** scores are totalled and assigned an A (High scenic quality), B (Moderate scenic quality) or C (Low scenic quality) category based on the following split: *A= scenic quality rating of ≥19; B = rating of 12 – 18, C= rating of ≤11* (USDI., 2004).
Receptor Sensitivity levels are a measure of public concern for scenic quality. Receptor sensitivity to landscape change is determined by rating the key factors relating to the perception of landscape change in terms of Low to High.

Figure 14: Visual Resource Management Classes map.

7.2 Scenic Quality Assessment

The scenic quality of the proposed development site is rated Medium to Low. While there are elements of the site that do add to the local scenic quality and the visually connect to the western rural agricultural areas, the close proximity of the dump and the industrial areas do degrade the local landscape characteristics. The southern river valley has some local topographic value adding to the southern scenic quality of the site. On the whole, the area is fairly degraded but with the existing low intensity agriculture adding some value to the local landscape character.

7.3 Receptor Sensitivity Assessment

Receptor sensitivity to landscape changes is rated Medium to Low. The areas in closer proximity to receptors are likely to have higher levels of sensitivity to landscape change. These areas include the R102, the Groeneweide Residential area as well as the southern portion of the property that is in close proximity to the N2 Highway. The remaining areas are strongly associated with industrial/ degraded landscapes where sensitivity to landscape change is expected to be low.

7.4 Visual Resource Management (VRM) Classes

The BLM has defined four Classes that represent the relative value of the visual resources of an area and are defined in terms of the VRM Matrix as follows:

i. **Classes I and II** are the most valued
ii. **Class III** represent a moderate value
iii. **Class IV** is of least value

7.4.1 VRM Class I

Class I is assigned when legislation restricts development in certain areas. The visual objective is to preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract attention. A Class I visual objective was assigned to the following features within the proposed development area due to their protected status within the South African legislation:

- **Any river / streams and associated flood lines buffers identified as significant in terms of the WULA process.**
- **Any wetlands identified as significant in terms of the WULA process.**
- **Any ecological areas (or plant species) identified as having a high significance.**
- **Any heritage area identified as having a high significance.**
- **Hydrological drainage lines and associated setback areas as defined by the Surface Water Specialist (not mapped).**

These area should be excluded from the development footprint.

7.4.2 VRM Class II

The Class II objective is to retain the existing character of the landscape and the level of change to the characteristic landscape should be low. The proposed development may be seen but should not attract the attention of the casual observer, and should repeat the basic elements of form, line, colour and texture found in the predominant natural features of the characteristic landscape.

- ***Steep slope areas associated with the shallow river valley areas.***

These areas should be retained for hydrological and aesthetic reason that would allow for the continuation of some low intensity grazing for cattle that currently takes place.

7.4.3 VRM Class III

The Class III objective is to partially retain the existing character of the landscape, where the level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer, and changes should repeat the basic elements found in the predominant natural features of the characteristic landscape. The following landscape was defined as having Class III Visual Objectives where development would be most suitable:

- **R102, N2 Highway and Groeneweide Park sensitivity buffers.**

These areas are suitable for development but should not include industrial type landscape change that will degrade the visual resources of the visual buffers. Where not valley landscape associated, there can be utilised for residential type developments.

7.4.4 VRM Class IV

The Class IV objective is to provide for management activities that require major modifications of the existing character of the landscape. Due to the degraded sense of place, the following areas were rated Class IV:

- **Semi-degraded undulating area outside of sensitivity buffers.**

The level of change to the landscape can be high, and the proposed development may dominate the view and be the major focus of the viewer's (s') attention without ***significantly degrading the local landscape character and would be suitable without mitigation.***

8 PRELIMINARY FINDINGS

The finding of this visual and landscape scoping assessment is that there are areas suitable for industrial type development within the project areas. There are, however, also areas in close proximity to receptors who are likely to be sensitive to landscape change. These areas include the close proximity areas relating to the N2 Highway, the R102 District Road as well as the Groeneweide Park residential areas. These areas are suitable for residential type/ lower intensity type developments.

As the site is fairly degraded, **the recommendation of the Landscape and Visual Impact Assessment is that a Level 4 VIA is undertaken, that does include generic photomontages to adequately depict the landscape change as seen from the Key Observation Points. The following location should be used to assess the suitability of the landscape change:**

- N2 Highway.
- Groeneweide Park.
- Western rural farm access & R102 Road.
- Deville Park.

Due to the location of the proposed development to the R102 tourist view corridor, the Agricultural Research Farm and the rural agricultural areas to the west of the site that add value to the local scenic quality, further information on the nature and scale of the Heavy Industry landscape is required.

9 BIBLIOGRAPHY

Garden Route District Municipality Draft Reviewed 2020-2021 IDP. (n.d.).

George Municipality. (2019). *Spatial Development Framework (2019).* George.

George Municipality IDP. (2017). *GEORGE FINAL APPROVED _IDP 2017-2022.*

Hull, R. B., & Bishop, I. E. (1988). *Scenic Impacts of Electricity Power Mine: The Influence of Landscape Type and Observer Distance. Journal of Environmental Management.(27) Pg 99-108.*

IEMA. (2002). *U.K Institute of Environmental Management and Assessment (IEMA). 'Guidelines for Landscape and Visual Impact Assessment' Second Edition, Spon Press. Pg 44.*

IFC. (2012). *International Finance Corporation (IFC) prescribes eight performance standards (PS) on environmental and social sustainability. Millennium Ecosystem Assessment. 2005.*

Millennium Ecosystem Assessment. (2005). *Ecosystems and Human Well-Being: Synthesis.* Washington D.C: Island Press.

NASA, A. G. (2009). *Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) Global Digital Elevation Model Version 2 (GDEM V2 2011). Ministry of Economy, Trade, and Industry (METI) of Japan and United States National Aeronauti.*

NELPAG. (n.d.). *New England Light Pollution Advisory Group (NELPAG) http://cfa/ www.harvard .edu /cfa/ps/nelpag.html) and Sky & Telescope http://SkyandTelescope.com/). NELPAG and Sky & Telescope support the International Dark-Sky Association (IDA) (http://www.darksky.o.*

Oberholzer, B. (2005). *Guideline for involving visual and aesthetic specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 F. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs and Deve.*

SANBI. (2018). *www.sanbi.org*. Retrieved from 2018 National Biodiversity Assessment (NBA): https://www.sanbi.org/link/bgis-biodiversity-gis/

Sheppard, D. S. (2000). *Guidance for crystal ball gazers: Developing a code of ethics for landscape visualization.* Department of Forest Resources Management and Landscape Architecture Program, University of British Columbia, Vancouver, Canada .

South African National Biodiversity Institute. (2018). *Vegetation Map of South Africa, Lesotho and Swaziland.*

The Landscape Institute. (2003). *Guidelines for Landscape and Visual Impact Assessment* (Second ed.). Spon Press.

USDI., B. (2004). *Bureau of Land Management, U.S. Department of Interior. 2004. Visual Resource Management Manual 8400.*

10 ANNEXURE A: SITE VISIT PHOTOGRAPHS AND COMMENTS

The following photographs were taken during the field survey as mapped below. The text below the photograph describes the landscape and visual issues of the locality, if applicable.

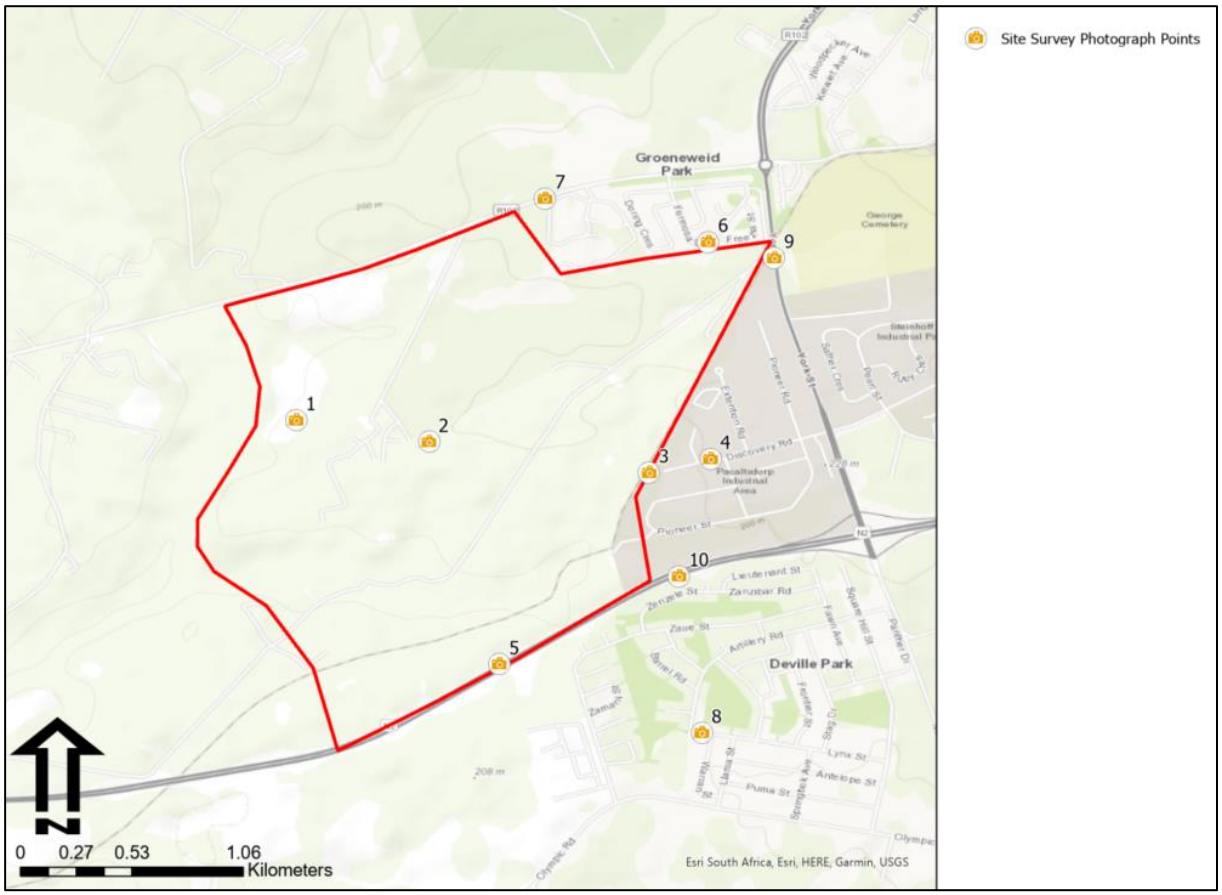


Figure 15: Site Survey Point Map

ID	1
PHOTO	Dump sense of place
DIRECTION	E
COMMENT	View of site as seen from the existing rubbish dump.

ID	2
PHOTO	Sewerage works sense of place.
DIRECTION	
COMMENT	Photo from site towards the existing sewerage works

ID	3
PHOTO	Possible road access over railway line and drainage line
DIRECTION	NW
COMMENT	

ID	4
PHOTO	Industrial context with medium height
DIRECTION	E
COMMENT	

ID	5
PHOTO	N2 Eastbound
DIRECTION	NE
COMMENT	Partial view due to alien vegetation screening but could be clear felled increasing visual exposure to road receptors.

ID	6
PHOTO	Groeneweide residential
DIRECTION	SW
COMMENT	Vacant lot that will be built

ID	7
PHOTO	R102
DIRECTION	SW
COMMENT	Limited views as seen from the R102 travelling west.

ID	8
PHOTO	Lynx Street Pacaltsdorp
DIRECTION	N
COMMENT	View from Delville Park suburban with the proposed project area located in the background.

ID	9
PHOTO	York Street bridge
DIRECTION	W
COMMENT	View from the bridge with the project area located in the background.

ID	10
PHOTO	N2 Westbound
DIRECTION	NW
COMMENT	Null views due to topographical screening.

11 ANNEXURE B: SPECIALIST INFORMATION

11.1 Professional Registration Certificate

APHP

Association of Professional Heritage Practitioners

MEMBERSHIP CERTIFICATE

THIS CERTIFIES THAT

Stephen Stead

MEMBERSHIP NUMBER: PHP0063

has been awarded membership as a

PROFESSIONAL MEMBER (PHP)

This membership is subject to the *Standards for Membership* and *Code of Conduct*, referred to in Sections 2 and 3 of the APHP Constitution respectively. The definition of a Professional may be found at: www.aphp.org.za/membership

Please contact us via info@aphp.org.za should further information be required.

THIS CERTIFICATE IS VALID FROM 1 JUNE 2023 – 1 JULY 2024

VICE-CHAIRPERSON

[Issued by the Association of Professional Heritage Practitioners Executive Committee]

Watermark Image: Plate XXIII drawn by Mr J F Schofield, A.R.I.B.A.
Watermark Reference: Fouche, L. (1937) *Mapungubwe Ancient Bantu Civilization on the Limpopo* Cambridge University Press: London

Association of Professional Heritage Practitioners
info@aphp.org.za
www.aphp.org.za

11.2 Curriculum Vitae (CV)

1. **Position**: Owner / Director

2. **Name of Firm**: Visual Resource Management Africa cc *(www.vrma.co.za)*

3. **Name of Staff**: Stephen Stead

4. **Date of Birth**: 9 June 1967

5. **Nationality:** South African

6. **Contact Details:** **Cell: +27 (0) 83 560 9911**
   Email: steve@vrma.co.za

7. **Educational qualifications**:
   - University of Natal (Pietermaritzburg):
   - Bachelor of Arts: Psychology and Geography
   - Bachelor of Arts (Hons): Human Geography and Geographic Information Management Systems
   - MSc Geography, University of KwaZulu-Natal (2023)

8. **Professional Accreditation**
   - Association of Professional Heritage Practitioners (APHP) Western Cape
     - Accredited VIA practitioner member of the Association (2011)

9. **Association involvement:**
   - International Association of Impact Assessment (IAIA) South African Affiliate
     - Past President (2012 - 2013)
     - President (2012)
     - President-Elect (2011)
     - Conference Co-ordinator (2010)
     - National Executive Committee member (2009)
     - Southern Cape Chairperson (2008)

10. **Conferences Attended:**
    - International Geographical Congress, Lisbon (2017)
    - IAIAsa 2012
    - IAIAsa 2011
    - IAIA International 2011 (Mexico)
    - IAIAsa 2010
    - IAIAsa 2009
    - IAIAsa 2007

11. **Continued Professional Development:**
    - Integrating Sustainability with Environment Assessment in South Africa (IAIAsa Conference, 1 day)
    - Achieving the full potential of SIA (Mexico, IAIA Conference, 2 days 2011)

- Researching and Assessing Heritage Resources Course (University of Cape Town, 5 days, 2009)

12. Countries of Work Experience:

- South Africa, Mozambique, Malawi, Lesotho, Kenya and Namibia

13. Relevant Experience:

Stephen gained six years of experience in the field of Geographic Information Systems mapping and spatial analysis working as a consultant for the KwaZulu-Natal Department of Health and then with an Environmental Impact Assessment company based in the Western Cape. In 2004 he set up the company Visual Resource Management Africa that specializes in visual resource management and visual impact assessments in Africa. The company makes use of the well-documented Visual Resource Management methodology developed by the Bureau of Land Management (USA) for assessing the suitability of landscape modifications. Stephen has assessed of over 150 major landscape modifications throughout southern and eastern Africa. The business has been operating for eighteen years and has successfully established and retained a large client base throughout Southern Africa which include amongst other, Rio Tinto (Pty) Ltd, Bannerman (Pty) Ltd, Anglo Coal (Pty) Ltd, Eskom (Pty) Ltd, NamSolar and Vale (Pty) Ltd, Ariva (Pty) Ltd, Harmony Gold (Pty) Ltd, Millennium Challenge Account (USA), Pretoria Portland Cement (Pty) Ltd

14. Languages:

- English – First Language
- Afrikaans – fair in speaking, reading and writing.

15. Projects:

Table 18: VRM Africa Projects Assessments Table

DESCRIPTION	COUNT	DESCRIPTION	COUNT
Dam	1	UISP	8
Mari-culture	1	Structure	8
Port	1	OHPL	12
Railway	1	Industrial	12
Power Station	3	Wind Energy	22
Hydroelectric	4	Battery Storage	14
Resort	4	Mine	20
Golf/Residential	1	Residential	45
Road Infrastructure	5	Solar Energy	62
Substation	5	**TOTAL**	**237**

12 ANNEXURE D: METHODOLOGY DETAIL

12.1 Baseline Analysis Stage

In terms of VRM methodology, landscape character is derived from a combination of ***scenic quality***, ***receptor sensitivity*** to landscape change and ***distance*** from the proposed landscape change. The objective of the analysis is to compile a mapped inventory of the visual resources found in the receiving landscape, and to derive a mapped Visual Resource sensitivity layer from which to evaluate the suitability of the landscape change.

12.1.1 Scenic Quality

The scenic quality is determined making use of the VRM Scenic Quality Checklist that identifies seven scenic quality criteria which are rated with 1 (low) to 5 (high) scale. The scores are totalled and assigned an A (High), B (Moderate) or C (low) based on the following split:
A= scenic quality rating of ≥19;
B = rating of 12 – 18,
C= rating of ≤11

The seven scenic quality criteria are defined below:

- **Land Form**: Topography becomes more of a factor as it becomes steeper, or more severely sculptured.
- **Vegetation**: Primary consideration given to the variety of patterns, forms, and textures created by plant life.
- **Water**: That ingredient which adds movement or serenity to a scene. The degree to which water dominates the scene is the primary consideration.
- **Colour**: The overall colour(s) of the basic components of the landscape (e.g., soil, rock, vegetation, etc.) are considered as they appear during seasons or periods of high use.
- **Scarcity**: This factor provides an opportunity to give added importance to one, or all, of the scenic features that appear to be relatively unique or rare within one physiographic region.
- **Adjacent Land Use**: Degree to which scenery and distance enhance, or start to influence, the overall impression of the scenery within the rating unit.
- **Cultural Modifications**: Cultural modifications should be considered and may detract from the scenery or complement or improve the scenic quality of an area.

12.1.2 Receptor Sensitivity

Receptor sensitivity to landscape change is determined by rating the following factors in terms of Low to High:

- **Type of Users**: Visual sensitivity will vary with the type of users, e.g. recreational sightseers may be highly sensitive to any changes in visual quality, whereas workers who pass through the area on a regular basis may not be as sensitive to change.
- **Amount of Use**: Areas seen or used by large numbers of people are potentially more sensitive.
- **Public Interest**: The visual quality of an area may be of concern to local, or regional, groups. Indicators of this concern are usually expressed via public controversy created in response to proposed activities.

- **Adjacent Land Uses**: The interrelationship with land uses in adjacent lands. For example, an area within the viewshed of a residential area may be very sensitive, whereas an area surrounded by commercially developed lands may not be as visually sensitive.
- **Special Areas**: Management objectives for special areas such as Natural Areas, Wilderness Areas or Wilderness Study Areas, Wild and Scenic Rivers, Scenic Areas, Scenic Roads or Trails, and Critical Biodiversity Areas frequently require special consideration for the protection of their visual values.
- **Other Factors**: Consider any other information such as research or studies that include indicators of visual sensitivity.

12.1.3 Exposure

The area where a landscape modification starts to influence the landscape character is termed the Zone of Visual Influence (ZVI) and is defined by the U.K. Institute of Environmental Management and Assessment's (IEMA) *'Guidelines for Landscape and Visual Impact Assessment'* as 'the area within which a proposed development may have an influence or effect on visual amenity (of the surrounding areas).'

The inverse relationship of distance and visual impact is well recognised in visual analysis literature *(Hull, R.B. and Bishop, I.E., 1988)*. According to Hull and Bishop, exposure, or visual impact, tends to diminish exponentially with distance. The areas where most landscape modifications would be visible are located within 2 km from the site of the landscape modification. Thus, the potential visual impact of an object diminishes at an exponential rate as the distance between the observer and the object increases due to atmospheric conditions prevalent at a location, which causes the air to appear greyer, thereby diminishing detail. For example, viewed from 1000 m from a landscape modification, the impact would be 25% of the impact as viewed from 500 m from a landscape modification. At 2000m it would be 10% of the impact at 500 m.

Distance from a landscape modification influences the size and clarity of the landscape modification viewing. The Bureau of Land Management defines three distance categories:

i. ***Foreground / Middle ground***, up to approximately 6km, which is where there is potential for the sense of place to change;
ii. ***Background areas***, from 6km to 24km, where there is some potential for change in the sense of place, but where change would only occur in the case of very large landscape modifications; and
iii. ***Seldom seen areas***, which fall within the Foreground / Middle ground area but, as a result of no receptors, are not viewed or are seldom viewed.

12.1.4 Key Observation Points

During the Baseline Inventory Stage, Key Observation Points (KOPs) are identified. KOPs are defined by the Bureau of Land Management as the people (receptors) located in strategic locations surrounding the property that make consistent use of the views associated with the site where the landscape modifications are proposed. These locations are important in terms of the VRM methodology, which requires that the Degree of Contrast (DoC) that the proposed landscape modifications will make to the existing landscape be measured from these most critical locations, or receptors, surrounding the property. To define the KOPs, potential receptor locations were identified in the viewshed analysis, and screened, based on the following criteria:

- Angle of observation.

- Number of viewers.
- Length of time the project is in view.
- Relative project size.
- Season of use.
- Critical viewpoints, e.g., views from communities, road crossings; and
- Distance from property.

12.2 Assessment and Impact Stage

The analysis stage involves determining whether the potential visual impacts from proposed surface-disturbing activities or developments will meet the management objectives established for the area, or whether design adjustments will be required. This requires a contrast rating to assess the expected DoC the proposed landscape modifications would generate within the receiving landscape in order to define the Magnitude of the impact.

12.2.1 Contrast Rating

The contrast rating is undertaken to determine if the VRM Class Objectives are met. The suitability of landscape modification is assessed by comparing and contrasting existing receiving landscape to the expected contrast that the proposed landscape change will generate. This is done by evaluating the level of change to the existing landscape by assessing the line, colour, texture and form, in relation to the visual objectives defined for the area. The following criteria are utilised in defining the DoC:

- **None**: The element contrast is not visible or perceived.
- **Weak**: The element contrast can be seen but does not attract attention.
- **Moderate**: The element contrast begins to attract attention and begins to dominate the characteristic landscape.
- **Strong**: The element contrast demands attention, will not be overlooked, and is dominant in the landscape.

As an example, in a Class I area, the visual objective is to preserve the existing character of the landscape, and the resultant contrast to the existing landscape should not be notable to the casual observer and cannot attract attention. In a Class IV area example, the objective is to provide for proposed landscape activities that allow for major modifications of the existing character of the landscape. Based on whether the VRM objectives are met, mitigations, if required, are defined to avoid, reduce or mitigate the proposed landscape modifications so that the visual impact does not detract from the surrounding landscape sense of place.

Based on the findings of the contrast rating, the Magnitude of the Landscape and Visual Impact Assessment is determined.

12.2.2 Photomontages

As a component in this contrast rating process, visual representation, such as photo montages are vital in large-scale modifications, as this serves to inform Interested & Affected Parties and decision-making authorities of the nature and extent of the impact associated with the proposed project/development. There is an ethical obligation in this process, as visualisation can be misleading if not undertaken ethically. In terms of adhering to standards

for ethical representation of landscape modifications, VRMA subscribes to the Proposed Interim Code of Ethics for Landscape Visualisation developed by the Collaborative for Advanced Landscape Planning (CALP) (Sheppard, 2000). This code states that professional presenters of realistic landscape visualisations are responsible for promoting full understanding of proposed landscape changes, providing an honest and neutral visual representation of the expected landscape, by seeking to avoid bias in responses and demonstrating the legitimacy of the visualisation process. Presenters of landscape visualisations should adhere to the principles of:

- Access to Information
- Accuracy
- Legitimacy
- Representativeness
- Visual Clarity and Interest

The Code of Ethical Conduct states that the presenter should:

- Demonstrate an appropriate level of qualification and experience.
- Use visualisation tools and media that are appropriate to the purpose.
- Choose the appropriate level of realism.
- Identify, collect and document supporting visual data available for, or used in, the visualisation process.
- Conduct an on-site visual analysis to determine important issues and views.
- Seek community input on viewpoints and landscape issues to address in the visualisations.
- Provide the viewer with a reasonable choice of viewpoints, view directions, view angles, viewing conditions and timeframes appropriate to the area being visualised.
- Estimate and disclose the expected degree of uncertainty, indicating areas and possible visual consequences of the uncertainties.
- Use more than one appropriate presentation mode and means of access for the affected public.
- Present important non-visual information at the same time as the visual presentation, using a neutral delivery.
- Avoid the use, or the appearance of, ‘sales’ techniques or special effects.
- Avoid seeking a particular response from the audience.
- Provide information describing how the visualisation process was conducted and how key decisions were taken (Sheppard, 2000).

13 ANNEXURE E: DFFE DECLARATION OF INDEPENDENCE

environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

	(For official use only)
File Reference Number:	
NEAS Reference Number:	DEA/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

PROJECT TITLE

Gwayang Industrial Development

Kindly note the following:

1. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
2. This form is current as of 01 September 2018. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at https://www.environment.gov.za/documents/forms.
3. A copy of this form containing original signatures must be appended to all Draft and Final Reports submitted to the department for consideration.
4. All documentation delivered to the physical address contained in this form must be delivered during the official Departmental Officer Hours which is visible on the Departmental gate.
5. All EIA related documents (includes application forms, reports or any EIA related submissions) that are faxed; emailed; delivered to Security or placed in the Departmental Tender Box will not be accepted, only hardcopy submissions are accepted.

Departmental Details

Postal address:
Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Private Bag X447
Pretoria
0001

Physical address:
Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Environment House
473 Steve Biko Road
Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:
Email: EIAAdmin@environment.gov.za

1. SPECIALIST INFORMATION

Specialist Company Name:	VRM Africa			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	4	Percentage Procurement recognition	0
Specialist name:	Stephen Stead			
Specialist Qualifications:	BA Honours Geography			
Professional affiliation/registration:	Association of Professional Heritage Practitioners			
Physical address:	Farm D3, Bossie Alleen Road, Moerasrivier			
Postal address:	P.O. Box 7233, Blanco			
Postal code:	6531	Cell:	0835609911	
Telephone:		Fax:		
E-mail:	steve@vrma.co.za			

2. DECLARATION BY THE SPECIALIST

I, S. STEAD, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the Specialist

Visual Resource Management Africa

Name of Company:

8 DEC 2022

Date

Details of Specialist, Declaration and Undertaking Under Oath

3. UNDERTAKING UNDER OATH/ AFFIRMATION

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

Signature of the Specialist

VRWA

Name of Company

8 DEC 2022

Date

Signature of the Commissioner of Oaths

6/12/2022

Date

SUID-AFRIKAANSE POLISIEDIENS
STATION COMMANDER
COMMUNITY SERVICE CENTRE
2022 -12- 08
GEORGE
SOUTH AFRICAN POLICE SERVICE