



PROJECT 58

VISUAL IMPACT ASSESSMENT

FOR THE PROPOSED DEVELOPMENT ON PORTION 58 OF THE FARM KROMDRAAI,
CRADLE OF HUMANKIND, MOGALE CITY LOCAL MUNICIPALITY, GAUTENG

DFFE REF No. 14/12/16/3/3/1/2325
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THE PROPOSED PROJECT 58 DEVELOPMENT ON PORTION 58 OF THE FARM KROMDRAAI 520 JQ

VISUAL IMPACT ASSESSMENT REPORT

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I, **Hanlie Van Greunen**, in my capacity as a specialist consultant, hereby declare that I –

- Act as an independent consultant;
- Do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998 (NEMA) as amended);
- Have and will not have vested interest in the proposed activity proceeding;
- Have no, and will not engage in, conflicting interests in the undertaking of the activity;
- Undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of NEMA;
- Will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not;
- Based on information provided to me by the project proponent, and in addition to information obtained during the course of this study, have presented the results and conclusion within the associated document to the best of my professional judgement; and



13.09.2023

Hanlie Van Greunen
Landscape Architect

Date

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GLOSSARY OF TERMS

Glare	Is caused by a harsh uncomfortably bright light emitting from a luminaire shining into the cone of vision causing reduced vision or momentary blindness when shining into one's cone of vision.
Landscape characterisation/ character	This covers the gathering of information during the desktop study and field survey work relating to the existing elements, features, and extent of the landscape (character). It includes the analysis and evaluation of the above and the supporting illustration and documentary evidence.
Landscape impact	Changes to the physical landscape resulting from the development that include; the removal of existing landscape elements and features, the addition of new elements associated with the development and altering of existing landscape elements or features in such a way as to have a marked effect on the value of the landscape.
Up-light	Any light from a luminaire that shines above the horizontal at angles above the horizontal plane, causing illumination of the sky.
Viewer exposure	The extent to which viewers are exposed to views of the landscape in which the proposed development will be located. Viewer exposure considers the visibility of the site, the viewing conditions, the viewing distance, the number of viewers affected the activity of the viewers (tourists or workers) and the duration of the views.
Viewer sensitivity	The assessment of the receptivity of viewer groups to the visible landscape elements and visual character and their perception of visual quality and value. The sensitivity of viewer groups depends on their activity and awareness within the affected landscape, their preferences, preconceptions and their opinions.
Visual absorption capacity (VAC)	The inherent ability of a landscape to accept change or modification to the landscape character and/or visual character without diminishment of the visual quality or value, or the loss of visual amenity. A high VAC rating implies a high ability to absorb visual impacts while a low VAC implies a low ability to absorb or conceal visual impacts.
Visual character	This addresses the viewer response to the landscape elements and the relationship between these elements that can be interpreted in terms of aesthetic characteristics such as pattern, scale, diversity, continuity and dominance.
Visual impact	Changes to the visual character of available views resulting from the development that include: obstruction of existing views; removal of screening elements thereby exposing viewers to unsightly views; the introduction of new elements into the view shed experienced by visual receptors and intrusion of foreign elements into the view shed of landscape features thereby detracting from the visual amenity of the area.
Visual impact assessment	A specialist study to determine the visual effects of a proposed development on the surrounding environment. The primary goal of this specialist study is to identify potential risk sources resulting from the project that may impact on the visual environment of the study area, and to assess their significance. These impacts include landscape impacts and visual impacts.
Visual receptors	Includes viewer groups such as the local community, residents, workers, the broader public and visitors to the area, as well as public or community areas from which the development is visible. The existing visual amenity enjoyed by the viewers can be considered a visual receptor such that changes to the visual amenity would affect the viewers.

1. INTRODUCTION

Environmental Consultants International (Pty) Ltd (ECI) was appointed by **Anderbridge Investments (Pty) Ltd** (Proponent) as Environmental Assessment Practitioner (EAP) for the development of a tourism facility on Portion 58 of the Farm Kromdraai 520 JQ in the Cradle of Humankind, Mogale City Local Municipality, Gauteng. The property size is approximately 163.3 hectares (ha) in extent and the proposed development will have a maximum footprint of approximately 8.16 ha (therefore below 5% of the total property size).

This report addresses the expected visual impacts of the proposed project on the receiving environment and also recommends appropriate mitigation measures in order to reduce these impacts.

1.1. STUDY AREA

The proposed development is located on Portion 58 of the Farm Kromdraai 520 JQ (21-digit SG code: T0JQ0000000005200058) within the core of the Cradle of Humankind World Heritage Site (CHKWHS), Mogale City Local Municipality, Gauteng.

The site is located approximately 10 km north of Krugersdorp and to the south-east of the intersection between roads R540 and R374. **Figure 1** indicates the location of the proposed site in relation to nearby roads and urban areas (Refer to **Annexure A** for A3 size map).

The property is predominantly vacant; there are existing dams and dam foundations dotted around the site, there is also a small farmhouse and limited outbuildings as well as some agricultural activities. All existing structures will be renovated and incorporated into the Proposed Activity.

1.2. STUDY APPROACH

1.2.1. INFORMATION BASE

This assessment is based on information from the following sources:

- Topographical maps and GIS generated data sourced from the Surveyor General, Surveys and Mapping in Mowbray, Cape Town;
- Aerial photography obtained from Google Earth;
- Observations made and photographs taken during site visit (5 March 2021) and observation from the surrounding features/roads and vantage points 28 October 2022;
- Information with regards to the proposed residential buildings and associated infrastructure;
- Professional judgement based on experience gained from similar projects; and
- Literature research on similar projects.

1.2.2. TERMS OF REFERENCE

The terms of reference for the Level 3 Visual Impact Assessment (VIA) for the study area have been summarised below (adapted from Oberholzer (2005):

- Identification of potential visual issues raised in the scoping phase, and site visit;
- Description of the receiving environment and the proposed project;
- Establishment of view catchment area, view corridors, viewpoints and receptors;
- Indication of potential visual impacts using established criteria;
- Assessing the potential lighting impacts at night; and
- Recommend mitigation measures.



Figure 1: Location of the proposed development (including co-ordinates of corners and centre)

1.3. METHODOLOGY

In order to address the objectives of the terms of reference the following study method has been used:

- Provide a project overview which focuses on the project components and activities from a visual point of view;
- Determine the landscape character of the study area, as well as surrounding areas, in terms of:
 - Topography;
 - Hydrology;
 - Land use;

- Vegetation Cover; and
- Built Environment

- Determine the visual character and quality of the study area, as well as surrounding areas;
- Identify visual receptors and their sensitivity. To assist in determining visual receptor sensitivity a commonly used rating system is utilised. This is a generic classification of visual receptors and enables the visual impact specialist to establish a logical visual receptor sensitivity rating for viewers who will be involved in different activities without engaging in extensive public surveys;
- Determine the viewshed of the proposed development by utilising digital elevation model (DEM) with 20m contour intervals analysed by the Geographic Information System (GIS), algorithms available in ArcView software;
- Outline aspects which will determine the intensity of the impact that the proposed project will have on visual receptors including the following:
 - Visual Exposure;
 - Viewing Distance;
 - Visual Receptor Sensitivity;
 - Critical Views;
 - Visual Absorption Capacity; and
 - Obtrusive lighting

- Evaluate visual impacts on identified receptors against impact criteria ratings based on DEAT's (1998) Guideline Document: EIA Regulations. The assessment will consider impacts arising from the construction and operational phases of the proposed project both before and after the implementation of appropriate mitigation measures.

1.4. ASSUMPTIONS AND LIMITATIONS

This assessment has been undertaken during the conceptual stage of the project and is based on information available at the time. The following assumptions and limitations are applicable:

- In the absence of detailed designs for the proposed buildings, a maximum height for a 1 storey, flat roof building (3 meters) was used;
- The visibility map (**Figure 16**) is computer generated and does not take into account visual intrusions such as vegetation and minor landforms and existing structures;
- No alternative site was available at the time of this study, meaning that no comparison study could be done in order to compare different outcomes per site selection.
- The "No-Go" alternative was not specifically addressed as it is likely that the existing landscape will remain in its existing condition from a visual point of view.

1.5. LEVEL OF CONFIDENCE

The level of confidence assigned to the findings of this assessment is based on:

- The level of information available and/or understanding of the study area (rated 3a); and
- The information available and/or knowledge and experience of the project (rated 2b).

The findings in this VIA are rated with a confidence level of 6 out of 9. This rating indicates that the author's confidence in the accuracy of the findings is high (see **Table 1** below)

Table 1: Confidence level chart and description

CONFIDENCE LEVEL CHART				
		Information, knowledge and experience of the project		
		3b	2b	1b
Information, and knowledge of the study area	3a	9	6	3
	2a	6	4	2
	1a	3	2	1

3a – A high level of information is available of the study area in the form of recent aerial photographs, GIS data, documented background information and a thorough knowledge base could be established during site visits, surveys etc. The study area is readily accessible.

2a – A moderate level of information is available of the study area in the form of aerial photographs GIS data and documented background information and a moderate knowledge base could be established during site visits, surveys etc. Accessibility to the study area is acceptable for the level of assessment.

1a – Limited information is available of the study area and a poor knowledge base could be established during site visits and/or surveys, or no site visit and/or surveys were carried out.

3b – A high level of information and knowledge is available of the project in the form of up-to-date and detailed engineering/architectural drawings, site layout plans etc. and the visual impact assessor is well experienced in this type of project and level of assessment.

2b – A moderate level of information and knowledge is available of the project in the form of conceptual engineering/architectural drawings, site layout plans etc. and/or the visual impact assessor is moderately experienced in this type of project and level of assessment.

1b – Limited information and knowledge is available of the project in the form of conceptual engineering/architectural drawings, site layout plans etc. and/or the visual impact assessor has a low experience level in this type of project and level of assessment (Adapted from Oberholzer. B, 2005)

2. PROJECT DESCRIPTION

1.6. PROJECT LAYOUT

Project Fifty-Eight aims to develop a tourism facility on Portion 58 of the Farm Kromdraai 520 JQ. The proposed facility can be defined as “a place to restore conscious appreciation for life in all its manifestations and create a model for a regenerative society”.

The property size is approximately 163.3 hectares (ha) in extent and the proposed development will include the following facilities with a total footprint of 6500m².

- Six (6) 300m² residential villas.
- Ten (10) 175m² residential villas.
- Twelve (12) 20m² pods and Eight (8) Hikers huts with 100m² service facilities.
- 200m² wellbeing facility (incl. hydrotherapy, treatments rooms and a gym).
- Existing building that has been renovated and is operational.
- Erected on the existing slab of the former stables and staff accommodation.
- 300m² “third space” and will be a communal lounge, library and covering area for guests and the community.
- 15 rooms, guest services, reception, practitioners' rooms, toilet and administration facilities
- to be erected on the existing building that is an old workshop, has been renovated.
- 500m² AGRI-HUB packing, sorting, storing and distributing community farm produce, implements, tools, workshop and staff quarters.
- All guest parking will be at Nirox Sculpture Park but there will be a parking area on property.

Refer to **Figure 2** for the proposed Layout Plan (Refer to **Annexure B** for an A3 size plan).

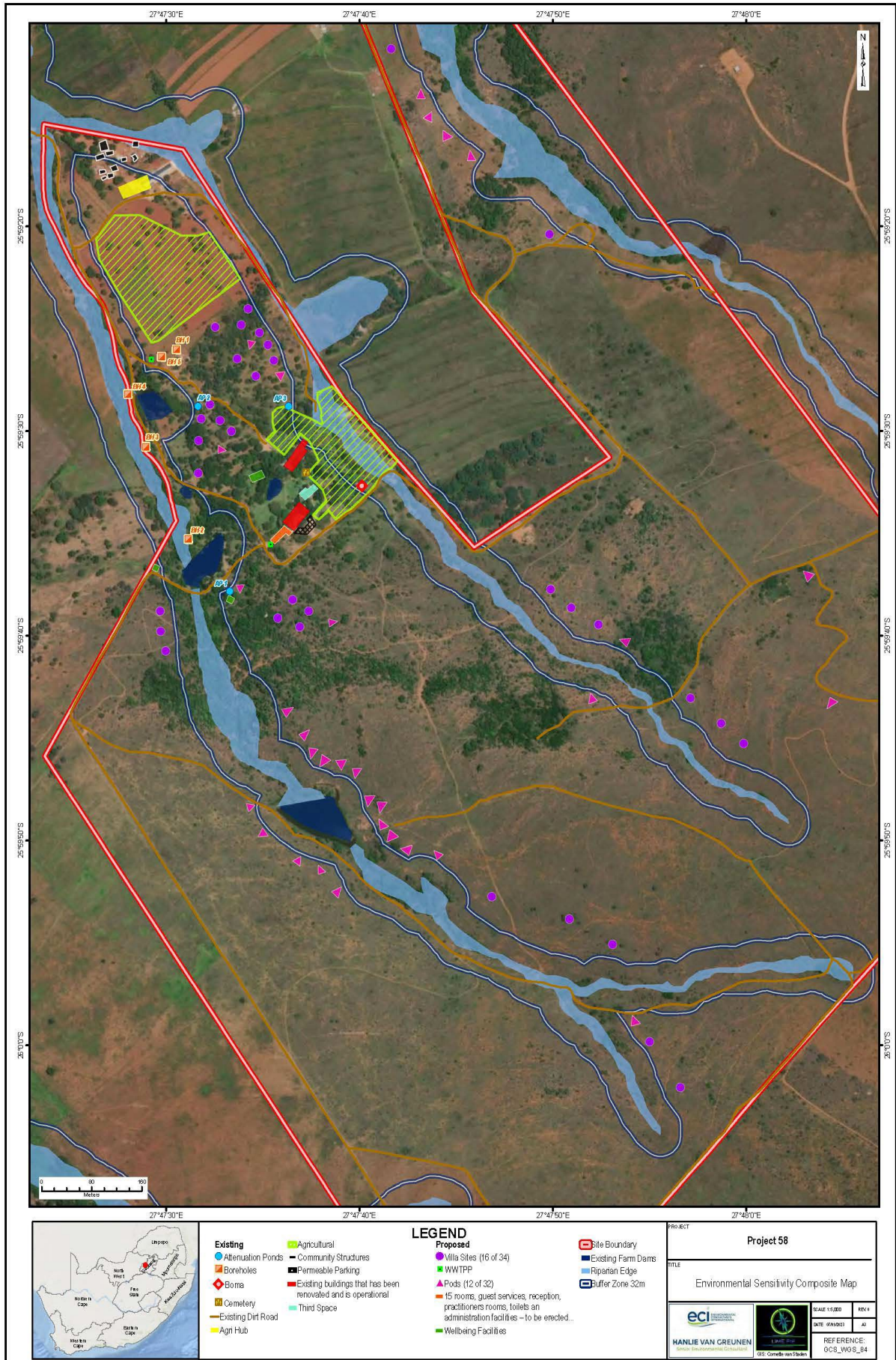


Figure 2: Layout Plan

1.7. BUILDING MATERIALS

The Proposed Activity will utilise environmentally responsible materials, employing sustainable building techniques and avoiding reliance on non-renewable resources. Sustainable practices that will be implemented as part of the Proposed Activity include: (Refer to **Figure 3** for conceptual perspectives of the proposed facilities):

- Water conservation;
- Rainwater harvesting and water recycling;
- Utilising green materials (see section 2.3.1 below);
- Green energy (solar);
- Recycling;
- Composting; and
- Agroecology
- Rammed earth

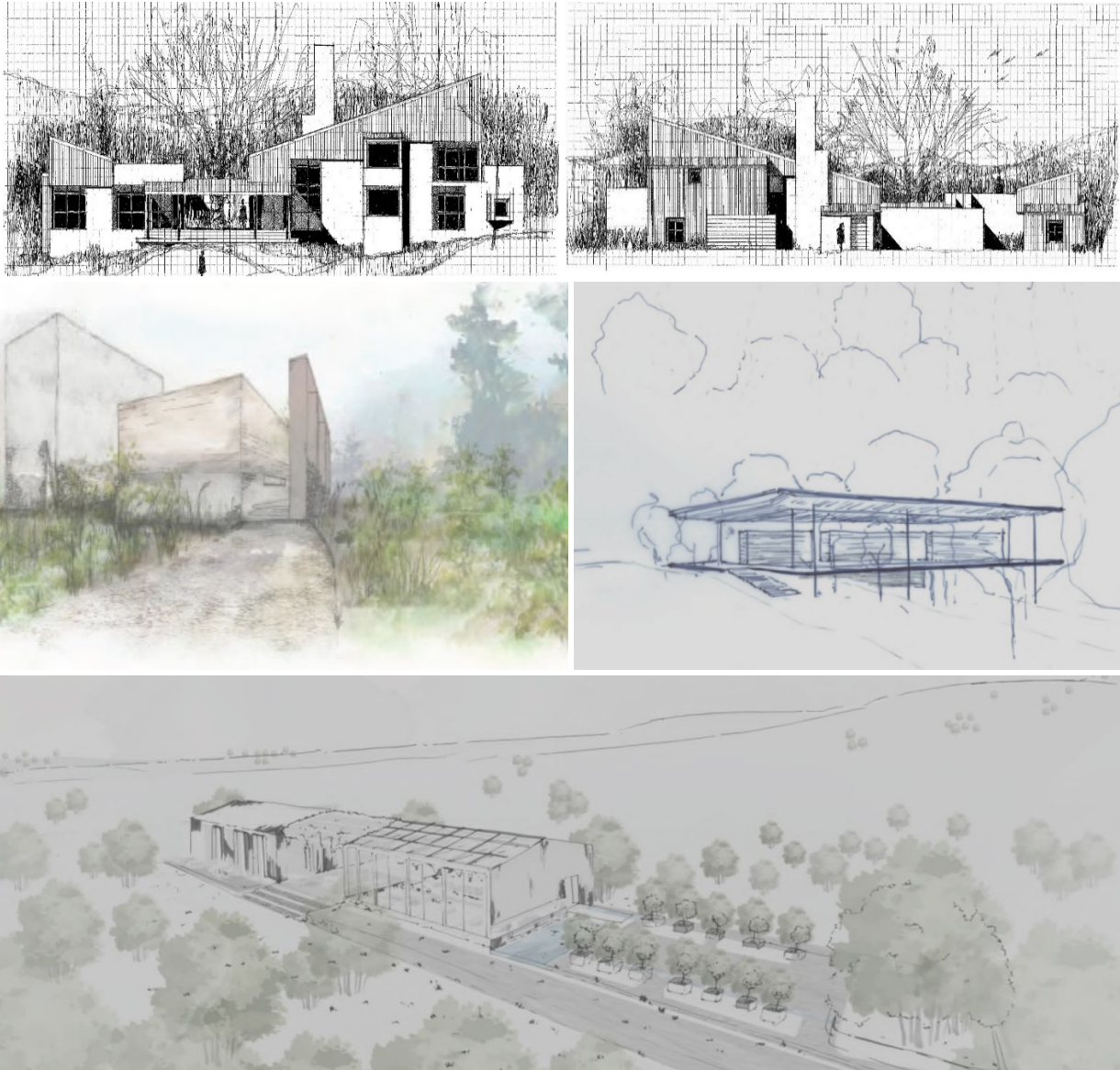


Figure 3: Conceptual perspectives of proposed facilities

1.8. PROJECT PHASES

The project will be discussed in two phases, namely the Construction Phase and the Operational Phase:

Construction Phase: All the construction related activities on site, until the contractor leaves the site.

Operational Phase: All activities, including the operation and maintenance of the proposed development.

1.8.1. CONSTRUCTION PHASE

The initial construction phase is estimated to continue for approximately 10 - 12 months and is expected to progress as follows (not in specific chronological order):

- Construction materials will be off-loaded, from delivery vehicles and trucks, and stockpiled on site (this will take place for the duration of the construction period);
- The footprint for service infrastructure will be cleared;
- Services (roads, water, sewer, stormwater and electricity) will be installed and connected to the various bulk supplies;
- Pods
- The footprint of the new proposed residential units will be cleared and foundations will be laid;
- Residential units will be constructed¹; and
- Landscaping will be implemented around new units.

1.8.2. OPERATIONAL PHASE

The relevant major visible elements of the proposed project are expected to include the following:

- The completed facilities and residential villas and pods;
- Solar panels on roofs of new buildings; and
- Internal and external lighting.

1.9. IMPACTS IDENTIFIED

The following impacts are anticipated from a visual point of view:

Construction Phase Impact:

- Views experienced by visual receptors, of vegetation clearance, construction activities including, delivery vehicles and general construction operations.

¹ The residents and the pods will be built over a longer period of time as they will be developed on a demand basis, which could exceed the 10–12-month development window.

Operational Phase Impacts:

- Views of the completed Project 58 development (predominantly villas and pods on the eastern ridge).

3. RECEIVING ENVIRONMENT (VISUAL RESOURCE)

Visual impacts generally occur as a result of changes to the landscape (i.e. development). A distinction, however, should be made between impacts on the visual resource (physical landscape) and impacts on the visual receptor (viewer).

This section describes the visual resource in terms of its landscape character, perceived visual character and visual quality. Changes to the visual resource will impact on the viewing experience of its visual receptors. The intensity of these impacts will be determined by a range of visual aspects (as discussed in **Section 4**).

2.1. LANDSCAPE CHARACTER

Landscape Character can be classified as elements, components and features within a landscape that individually and collectively define the landscape's characteristics. These characteristics include the following:

2.1.1. TOPOGRAPHY AND HYDROLOGY

The site generally slopes to the north-west with gradual upper slopes and steep mid slopes. Three natural gullies formed by non-perennial drainage line run south to north towards the Bloubankspruit. Refer to **Figure 4** for a Digital Elevation Model and **Figure 5** for images of the Topography and Hydrology of the proposed site.

Most of the site is covered by natural grassveld and dense vegetation around the current infrastructure. In the gullies denser trees and shrubs are present. The north-western parts of the site have some structures, such as houses and farm buildings that are surrounded by lawns and larger trees. The proposed facilities are mostly concentrated on the existing development footprint with new facilities proposed in lower lying areas amongst dense vegetation.

A few of the potential Villa and Pod sites located on the eastern ridge may be visible from the R374. No proposed structures will be visible from the R540. Refer to **Figure 6** or views of the site from the two nearby public roads.

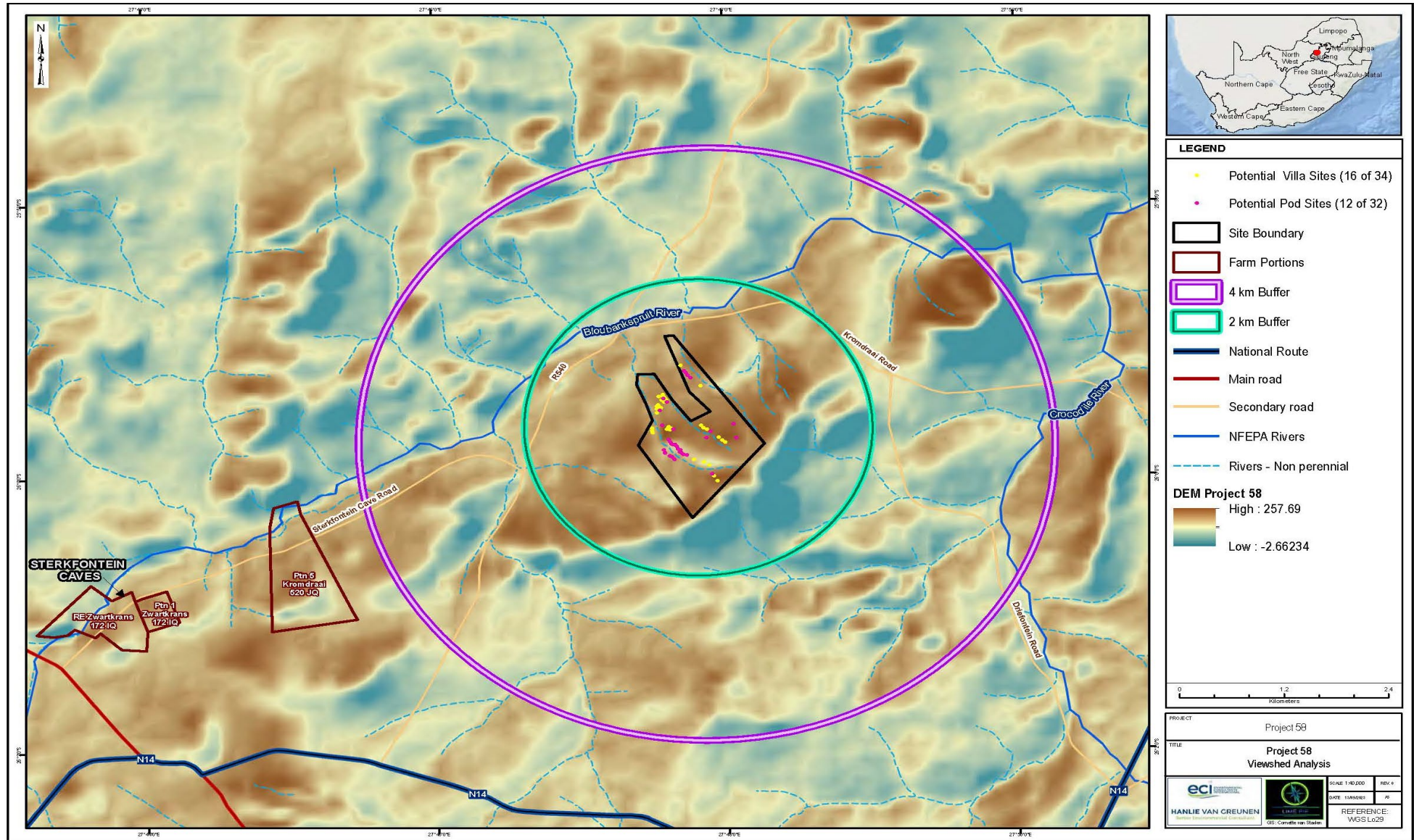


Figure 4: Digital Elevation Model (DEM)

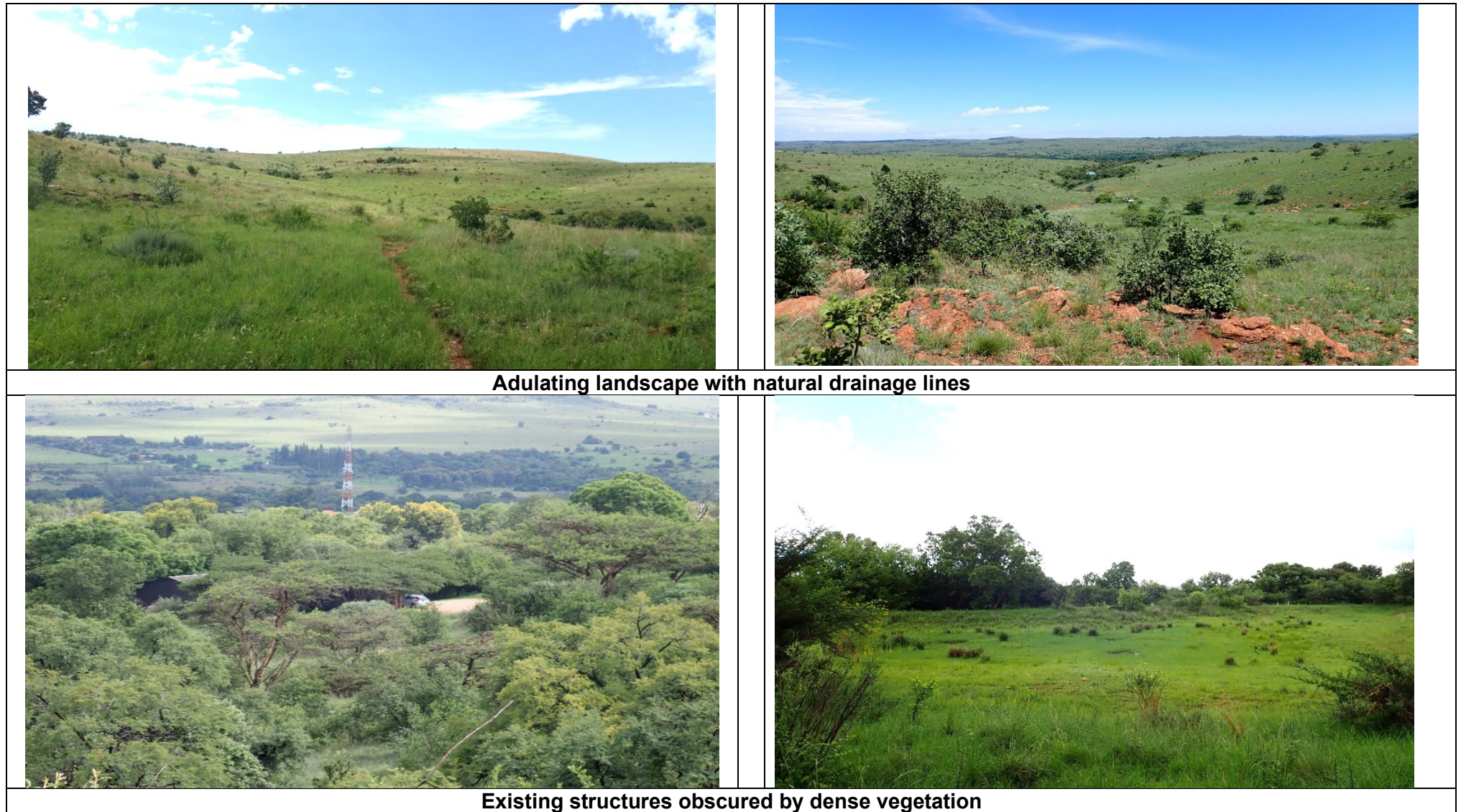


Figure 5: Topography, Hydrology and Vegetation



Figure 6: Potential views from nearby roads

2.1.2.SENSITIVE RECEPTORS

The South African Heritage Resources Agency (SAHRA) acknowledged two sensitive visual receptors along the relevant ridgeline in a south-western direction. These receptors are:

- Portion 5 of Kromdraai (located **4.5km** away from the proposed development); and
- The Sterkfontein Caves World Heritage Site (WHS) (located on Portion 1 of Zwartkrans 172 IQ and the Remaining Extent of Zwartkrans 172 IQ (**6km** away from the proposed development)).

The existing large concrete structure right on top of the ridge on the proposed development site is barely visible from these two locations. Because of the great distance (4.5km and 6m respectively) and the proposed location of the Villas and Pod sites, lower down the ridge and tucked away next to the drainage lines, **it can be confirmed that no components of the proposed development will be visible from these two sensitive receptors.** Refer to **Figure 7** and **Figure 8**. No proposed structures will break the ridgeline.



Figure 7: View towards the proposed development site from Ptn 5 Kromdraai 520 JQ



Figure 8: View towards the development site from the Sterkfontein Caves WHS

2.1.3. VEGETATION COVER

A desktop study was undertaken and according to The Vegetation of South Africa, Lesotho and Swaziland by Mucina & Rutherford as well as the Vegmap of the South African National Biodiversity Institute's (SANBI) Biodiversity Geographic Information System (BGIS) the following vegetation information is relevant to the site:

- **Biome** – Savannah & Grassland
- **Bioregion** – Central Bushveld Bioregion & Mesic Highveld Grassland
- **Vegetation type** – Andesite Mountain Bushveld & Egoli Granite Grassland

Andesite Mountain Bushveld – Vegetation Landscape Features

Dense, medium-tall thorny bushveld with a well-developed grass layer on hill slopes and some valleys with undulating landscape.

Egoli Granite Grassland – Vegetation Landscape Features

Moderate undulating plains and low hills supporting tall, usually *Hyperthermia hirta*, dominated grassland with some woody species on rocky outcrops or rock sheets. The rocky habitats show a high diversity of woody species, which occur in the form of scattered shrub groups or solitary small trees.

2.1.4. LANDSCAPE CHARACTER (SENSE OF PLACE)

The main landscape types/units present on the study site are undulating grassy plains, rocky ridges, non-perennial streams, with well-developed riparian vegetation components, in certain areas along the streams.

The upper reaches of the study site remain relatively undisturbed with the major anthropogenic disturbances being a few buildings, old agricultural fields in an advanced stage of succession and man-made soil dams, primarily in the middles to lower lying areas of the site. The Magageng community, of approximately 100 residents live, on the most northern portion of the site.

The adjacent land use activities include residential, agriculture and tourism related activities. From the conceptual images (see **Figure 3**) it is evident that the proposed structures will use natural materials to blend in with its surroundings and will also be positioned sensitively in the landscape with minimal disturbance to surrounding vegetation and limited change to the landscape character and sense of place.

Refer to **Figure 9** for images of existing adjacent land use activities in the immediate area.



Figure 9: Landscape Character of the area

2.2. VISUAL QUALITY

Visual quality is a qualitative evaluation of the composition of landscape components and their influence on scenic attractiveness (FHWA, 1981). Several factors contribute to the visual quality of the landscape and are grouped under the following three main categories that are internationally accepted indicators of visual quality (Refer to **Table 2**).

Table 2: Criteria of Visual Quality (FHWA, 1981)

INDICATOR	CRITERIA
Vividness	The memorability of the visual impression received from contrasting landscape elements as they combine to form a striking and distinctive visual pattern.
Intactness	The integrity of visual order in the natural and man-built landscape, and the extent to which the landscape is free from visual encroachment.
Unity	The degree to which the visual resources of the landscape join together to form a coherent, harmonious visual pattern. Unity refers to the compositional harmony of inter-compatibility between landscape elements.

The landscape is allocated a rating from an evaluation scale of 1 to 7 and divided by 3 to get an average. The evaluation scale is as follows: Very Low =1; Low =2; Moderately Low =3; Moderate =4; Moderately High =5; High =6; Very High =7;

The landscape is assessed against each indicator separately. The evaluation is summarised in **Table 3** below:

Table 3: Visual Quality of the regional landscape

VIVIDNESS	INTACTNESS	UNITY	VISUAL QUALITY
7	5	6	$7 + 5 + 6 / 3 = 6.3$ 6 = High

The visual quality of the site as well as the regional landscape is considered high due to the striking visual impression it leaves on the viewer.

The intactness and unity would have been higher if it wasn't for the level of visual encroachment on the natural landscape by the alien and invasive vegetation (Spanish reed and Populus species) as well as existing disorderly development in the area.

4. VISUAL ASPECTS

This section outlines aspects to be considered in order to establish the intensity of the impact that the proposed development would have on identified visual receptors.

These aspects include: visual receptor sensitivity, visual exposure, viewing distance, critical views, visual absorption capacity (VAC) of the landscape, visual contrast (VC) and obtrusive lighting.

3.1. VISUAL RECEPTOR SENSITIVITY

Viewers (visual receptors) within the study area will visually experience the proposed development in different ways. Alteration to their existing views is therefore identified as part of the receiving and affected environment. The viewers are grouped according to their sensitivity and similarity in views and activity.

To determine viewer sensitivity a commonly used rating system (Refer to **Table 4**), is utilised. This is a generic classification of viewers and enables the visual impact specialist to establish a logical and consistent viewer sensitivity rating for visual receptors who are involved in different activities without engaging in extensive public surveys.

Table 4: Visual Receptor Sensitivity

VISUAL RECEPTOR SENSITIVITY	DEFINITION
Exceptional	<ul style="list-style-type: none"> Views from major tourist or recreational attractions or viewpoints promoted for or related to appreciation of the landscape, or from important landscape features.
High	<ul style="list-style-type: none"> Users of all outdoor recreational facilities including public and local roads or tourist routes whose attention or interest may be focussed on the landscape; Communities where the development results in changes in the landscape setting or valued views enjoyed by the community; Residents with views affected by the development.
Moderate	<ul style="list-style-type: none"> People engaged in outdoor sport or recreation (other than appreciation of the landscape);
Low	<ul style="list-style-type: none"> People at their place of work or focussed on other work or activity; Views from urbanised areas, commercial buildings or industrial zones; People travelling through or passing the affected landscape on transport routes.
Negligible (Uncommon)	<ul style="list-style-type: none"> Views from heavily industrialised or blighted areas

Based on the above Table, the sensitivity of the identified viewer groups of the can be described as follows:

- **Tourists** are classified as visual receptors of **exceptionally high sensitivity**. The site is located in a world heritage site which is a major tourist attraction. **The two identified sensitive receptors (Ptn 5 Kromdraai 520 JQ and the Sterkfontein Caves WHS) also fall within this category.**
- **Residents** are classified as visual receptors of **high sensitivity** due to their sustained visual exposure to the proposed development.
- **Motorists** are classified as visual receptors of **low sensitivity** due to their momentary view and experience of the proposed development. As a road user's speed increases, the sharpness of lateral vision declines and the road user tends to focus on the line of travel (USDOT, 1981). This adds weight to the assumption that under normal conditions motorist will show low levels of sensitivity as their attention is focused on the road.

3.2. VIEWING DISTANCE

According to Hull and Bishop (1988), the visual impact of an object in the landscape diminishes at an exponential rate as the distance between the observer and the object increases.

What this entails is that the visual impact on receptors 2km away from the proposed development would be twice as intimidating as for those 4km away from the proposed development. Receptors 8km away would only experience on sixteenth of the impact that is experienced by those 2km away. Refer to **Figure 10** for an illustration of the exponential rate at which an impact is reduced with increase in distance.

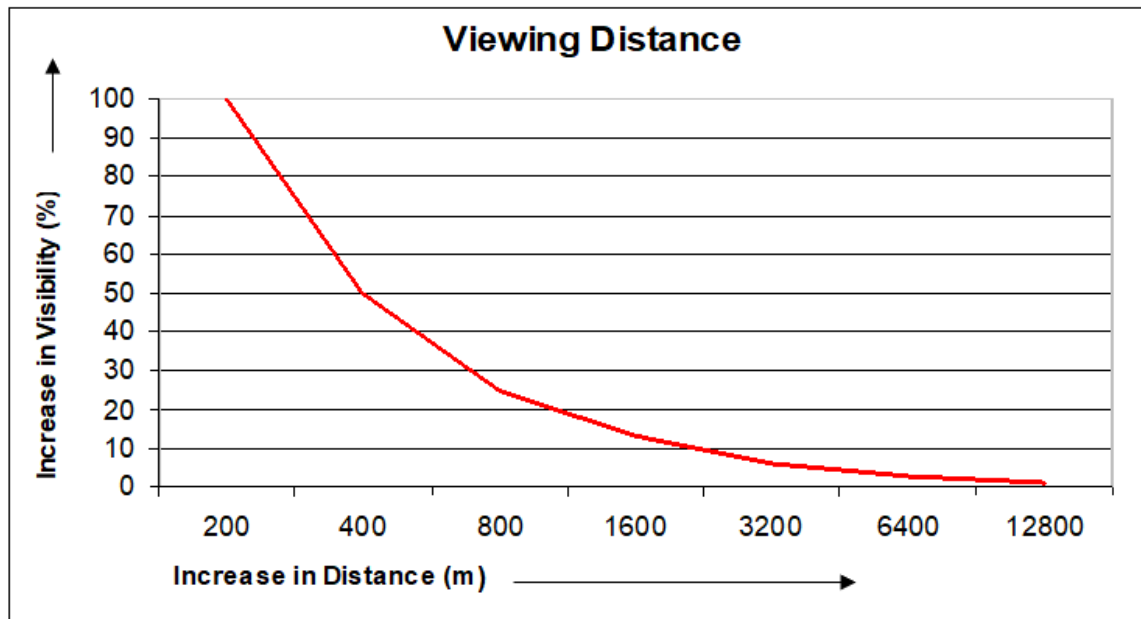


Figure 10: Viewing Distance Chart

3.3. VISUAL ABSORPTION CAPACITY

Visual Absorption Capacity (VAC) is the inherent ability of a landscape to accept change or modification to the landscape character and/or visual character without diminishment of the visual quality or value, or the loss of visual amenity. A high VAC rating implies a high ability to absorb visual impacts while a low VAC implies a low ability to absorb or conceal visual impacts. VAC is dependable on three characteristics: slope, vegetation height and visual pattern as outlined in **Figure 11** below.

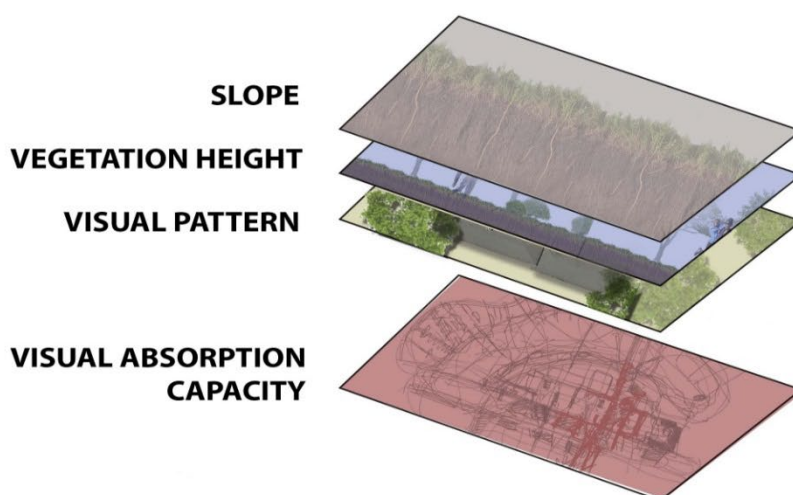


Figure 11: Overlay Methodology to define VAC of the landscape

The proposed site can be described as moderately steep to steep in higher lying areas and the terrain will therefore be able to absorb change and modifications very well in terms of topography. The VAC of the site in terms of slope is therefore MODERATE TO HIGH. Refer to **Figure 12**.



Figure 12: Slope and VAC

Vegetation in the study area is very dense in lower lying areas, particularly next to the drainage lines, where the majority of existing and proposed facilities are concentrated. These areas will be able to absorb change and modifications to the landscape very well. A few isolated villa and pod sites, however, were identified further up the ridges and these sites are more exposed with sparse vegetation and low growing vegetation. The VAC in terms of vegetation is therefore HIGH in the lower areas next to the drainage channels but gets lower as one moves up the slope and further away from the drainage channels. Refer to **Figure 13**.

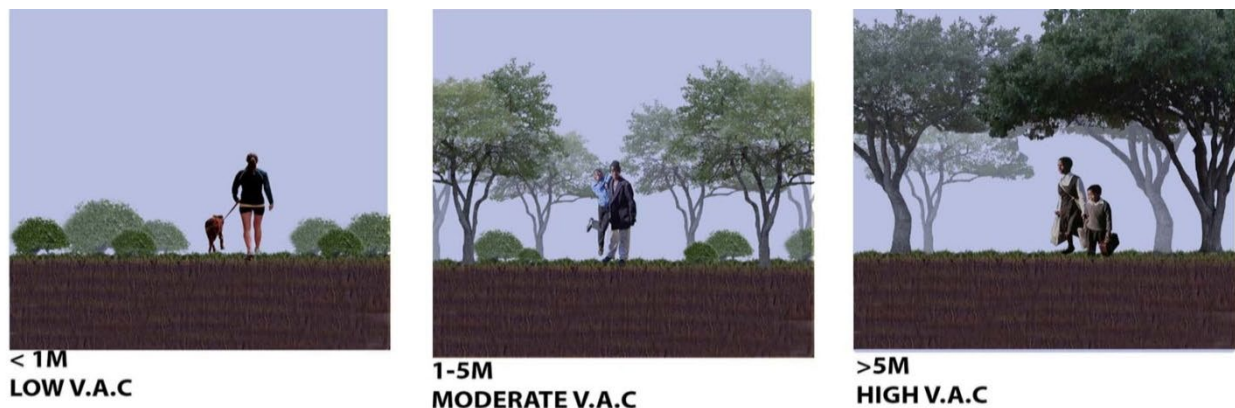


Figure 13: Vegetation and VAC

The visual pattern in the area is diverse with a lack of uniformity. The huge variety of architectural styles and boundary treatments together with large scale alien and invasive infestation causes the landscape to absorb change and modifications very well. The VAC in terms of visual pattern is therefore HIGH. Refer to **Figure 14**.



Figure 14: Visual pattern and VAC

The study area is therefore considered to have an overall **HIGH VAC** which means that it will be able to conceal the proposed development very well with exception of a few villa and pod sites proposed in higher lying areas, which have a **LOW VAC**.

3.4. OBTRUSIVE LIGHTING

Obtrusive lighting occurs when a light source intrudes on, or interrupts a visual receptor's normal night time activity to detrimental effect (Refer to **Figure 15**). Obtrusive lighting can be described in terms of light trespass, which is a result of poor lighting design causing glare and light spillage to a degree where it may disturb neighbouring visual receptors.

In the areas where existing and proposed facilities are concentrated the light will be obscured by the topography and vegetation and will not cause a disturbance to receptors. The few villa and pod sites, proposed in higher lying areas, will be visible for many kilometres at night. Several light deflecting mitigation measures exist to ensure that visual receptors in the area do not experience impacts of obtrusive lighting.

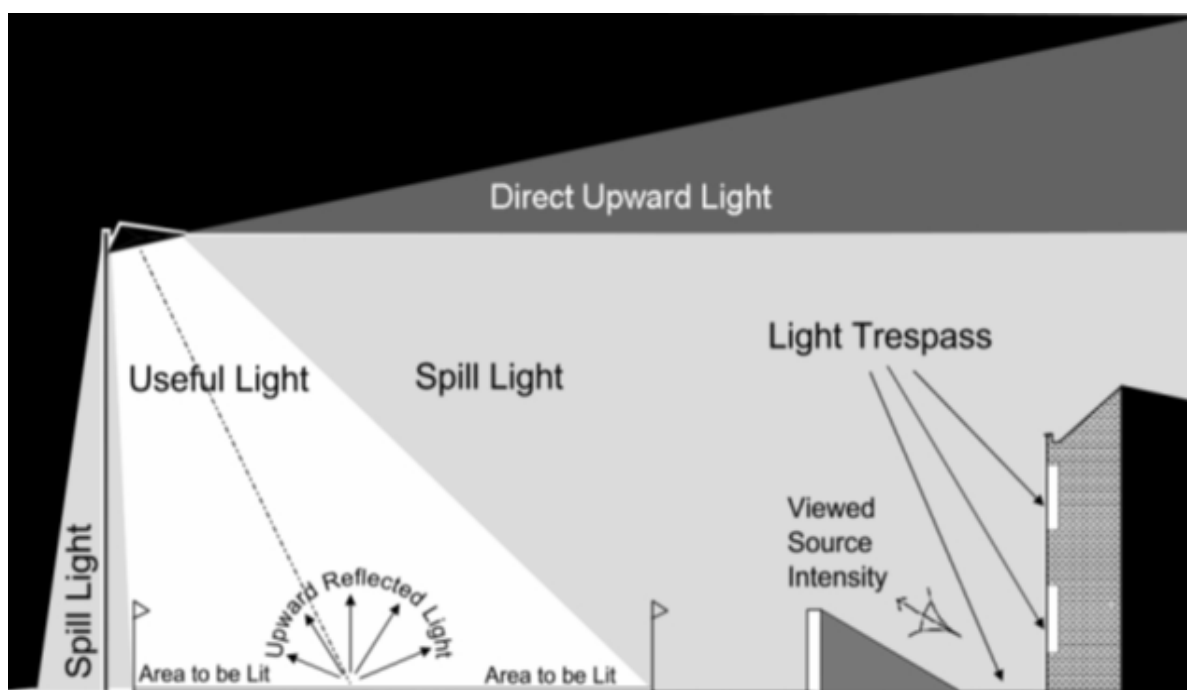


Figure 15: Obtrusive Lighting (ILE,2005)

3.5. VISUAL EXPOSURE

In order to assess the extent of visual exposure in the area, a Geographical Information System (GIS) was utilised. A viewshed analysis was created by utilising a digital elevation model (DEM) with 20m contour intervals which provided the following information (**Figure 16**).

- The areas that may experience views of the proposed project (shaded green); and
- Areas that will not experience views of the proposed project (shaded red)

Based on the graphical representation of **Figure 16** visual receptors that would experience views of the proposed development include the following:

- Residents that live within a 2km radius of the site.
- Motorists (including tourists) traveling on traveling along the R540 and R374.

3.5.1. RESIDENTS

These receptors fall in the “**Highly Sensitive Category**” because of their continuous exposure to the visual impact. Due to the topography, dense vegetation and overall and high VAC of the landscape, Residents in the area will not experience direct views of the area where the development is concentrated. Views of isolated Villas and/or Pods located higher up the ridge may be possible from adjacent areas. The impact on Residents is therefore considered to be **MODERATE**.

3.5.2. MOTORISTS (WHICH INCLUDES TOURISTS)

These receptors fall in the “**Low Sensitive Category**” because of their momentary exposure to the visual impact. Motorists traveling along the R540 and R374 will for most part not experience views of the proposed development due to the high VAC. Views of the proposed villas and pods placed high up on the eastern ridge may be possible from the R374 looking in a south western direction, however, the overall impact on motorists (including tourists) will be **LOW**.

3.5.3. SENSITIVE RECEPTORS

The two identified sensitive receptors (Ptn 5 Kromdraai 520 JQ and the Sterkfontein Caves WHS) are tourism related activities and fall within the “**Exceptionally High sensitivity Category**”.

Although there are small green shaded patches showing on the two identified “sensitive receptor sites” it was confirmed during a site visit on 13 September 2023 that because of the great distance (4.5km and 6m respectively) and the proposed location of the Villas and Pod sites, lower down the ridge and tucked away next to the drainage lines, it can be confirmed that **no components of the proposed development will be visible from these two sensitive receptors**. Refer to **Figure 7** and **Figure 8**. No proposed structures will break the ridgeline.

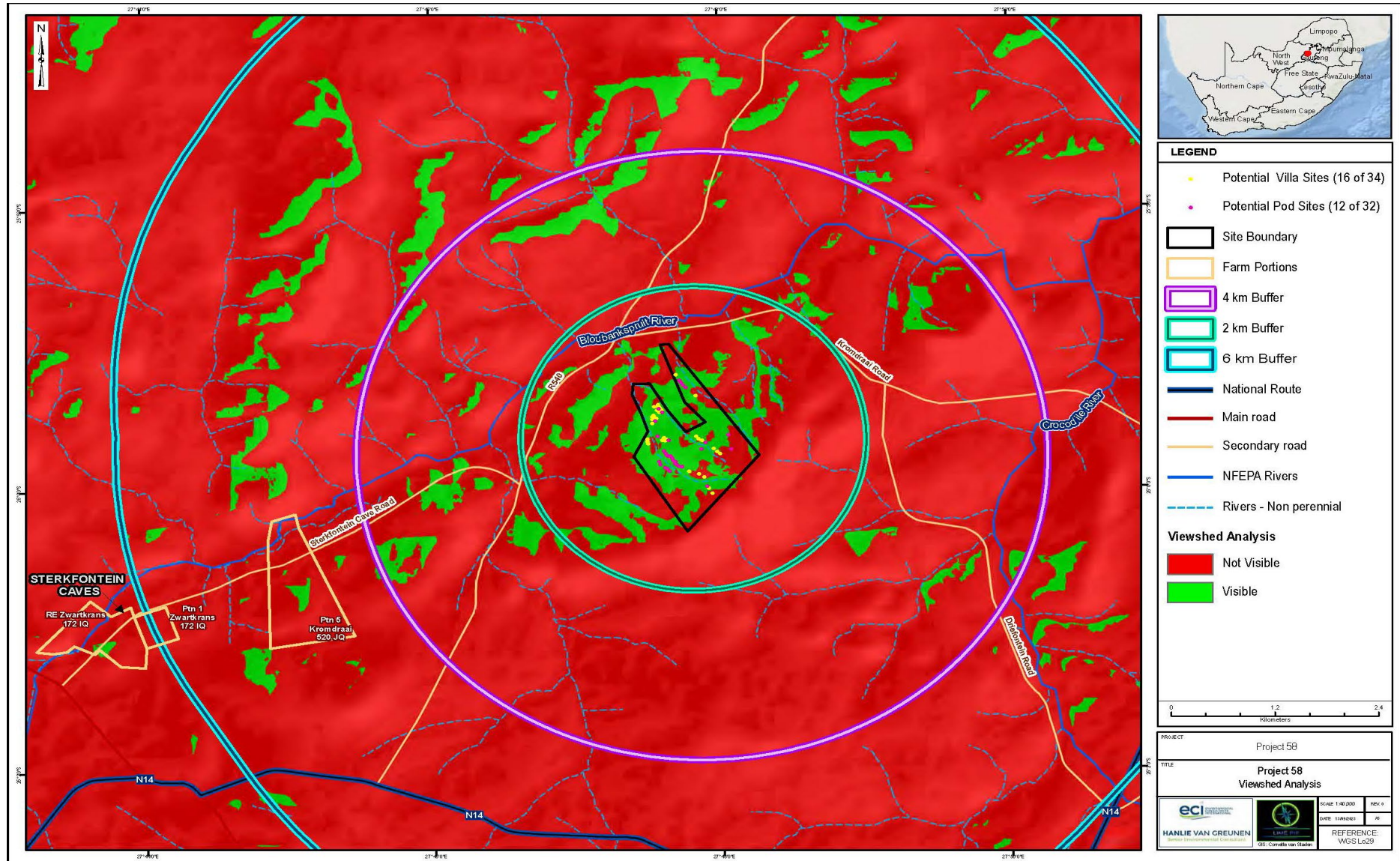


Figure 16: Visibility Map

5. ASSESSMENT CRITERIA

4.1. ASSESSMENT METHODOLOGY

For the purpose of assessing visual impacts of the proposed project on the landscape and its visual receptors, the project will be divided into two phases from which impacting activities can be identified, namely:

Construction Phase:	All the construction related activities on site, until the contractor leaves the site.
Operational Phase:	All activities, including the operation and maintenance of the proposed development.

The activities arising from each of the above phases will be included in the impact assessment tables. This is to identify activities that require certain environmental management actions to mitigate the impacts arising from them. The assessment of the impacts will be conducted according to a synthesis of criteria required by the integrated environmental management procedure.

Extent The physical and spatial scale of the impact.	Footprint	The impacted area extends only as far as the activity, such as footprint occurring within the total site area.
	Site	The impact could affect the whole, or a significant portion of the site.
	Regional	The impact could affect the area including the neighbouring farms, the transport routes and the adjoining towns.
	National	The impact could have an effect that expands throughout the country (South Africa).
	International	Where the impact has international ramifications that extend beyond the boundaries of South Africa.
Duration The lifetime of the impact, that is measured in relation to the lifetime of the proposed development.	Short Term	The impact will either disappear with mitigation or will be mitigated through a natural process in a period shorter than that of the construction phase.
	Short-Medium Term	The impact will be relevant through to the end of a construction phase.
	Medium Term	The impact will last up to the end of the development phases, where after it will be entirely negated.
	Long Term	The impact will continue or last for the entire operational lifetime of the development, but will be mitigated by direct human action or by natural processes thereafter.
	Permanent	This is the only class of impact, which will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient.
Intensity Is the impact destructive or benign, does it destroy the impacted environment, alters its functioning, or slightly alter the environment itself?	Low	The impact alters the affected environment in such a way that the natural processes or functions are not affected.
	Medium	The affected environment is altered, but functions and processes continue, albeit in a modified way.
	High	Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.

Probability The likelihood of the impacts actually occurring. The impact may occur for any length of time during the life cycle of the activity, and not at any given time.	Improbable	The possibility of the impact occurring is none, due either to the circumstances, design or experience. The chance of this impact occurring is zero (0%).
	Possible	The possibility of the impact occurring is very low, due either to the circumstances, design or experience. The chances of this impact occurring is defined as 25%.
	Likely	There is a possibility that the impact will occur to the extent that provisions must therefore be made. The chances of this impact occurring is defined as 50%.
	Highly Likely	It is most likely that the impacts will occur at some stage of the development. Plans must be drawn up before carrying out the activity. The chances of this impact occurring is defined as 75%.
	Definite	The impact will take place regardless of any prevention plans, and only mitigation actions or contingency plans to contain the effect can be relied on. The chance of this impact occurring is defined as 100%.

Significance Rating (WOM) = (Extent + Intensity + Duration + Probability) x Weighting Factor

Extent	Duration	Intensity	Probability	Weighting Factor (WF)	Significance Rating (SR)	Mitigation Efficiency (ME)	Significance Following Mitigation (SFM)
Footprint 1	Short term 1	Low 1	Probable 1	Low 1	Low 0-19	High 0,2	Low 0-19
Site 2	Short to medium 2	Medium 2	Possible 2	Low to medium 2	Low to medium 20-39	Medium to high 0,4	Low to medium 20-39
Regional 3	Medium term 3	Medium 3	Likely 3	Medium 3	Medium 40-59	Medium 0,6	Medium 40-59
National 4	Long term 4	High 4	Highly Likely 4	Medium to high 4	Medium to high 60-79	Low to medium 0,8	Medium to high 60-79
International 5	Permanent 5	High 5	Definite 5	High 5	High 80-100	Low 1,0	High 80-100

Figure 17: Description of visual assessment parameters with its respective weighting

6. IMPACT ASSESSMENT

5.1. CONSTRUCTION PHASE IMPACTS

Views of delivery vehicles, dust and general construction operations will have a high visual contrast with the landscape character and cause a negative visual impact on Residents and Motorists.

Table 5: Visual impact of the Construction Phase on sensitive visual receptors

Impact source(s)	Construction activities including delivery vehicles, dust and general construction operations.	
Nature of impact	Views of the above-mentioned construction activities which are out of character with the surrounding landscape and which will progressively increase in intensity as the development and the ancillary components increase in scale.	
Reversibility of impact	The impact is partially reversible through the implementation of adequate visual mitigation measure during the construction phase.	
Degree of irreplaceable loss of resource	High	
Affected stakeholders	Adjacent Residents and Motorists (including Tourists)	
Magnitude	Extent	Regional - 3
	Intensity	High - 5

	<i>Duration</i>	Short – Medium Term - 2	
	<i>Probability</i>	Likely- 3	
Significance	<i>Without mitigation</i>	$(Extent + Intensity + Duration + Probability) \times WF$ $(3+5+2+3) \times 4 = 52$ Medium	M
	<i>With mitigation</i>	$WOM \times ME = WM$ $52 \times 0.6 = 31$ Low to Medium	L-M

5.1.1. MITIGATION MEASURES

- They ridgeline should not be broken by any protruding structures.
- The potential villa and pod sites on the eastern ridge should be relocated to lower areas and/or areas where denser vegetation are present.
- Locate the construction camps in areas that are already disturbed or where it is not necessary to remove established vegetation;
- Exposed soil must be covered or 'camouflaged' using a biodegradable soil mat and vegetation cover to reduce the duration of visible scarring of the landscape;
- Retain the existing vegetation cover of the site through selective clearing, where practical;
- Dust suppression techniques should be implemented especially on windy days, preferably using biodegradable binding agent;
- Remove rubble and other construction rubbish off site as soon as possible or place it in containers in order to keep the construction site free from additional unsightly elements;
- Keep the construction sites and camps neat, clean and organised in order to portray a tidy appearance; and
- Monitor all areas for rehabilitation failure and implement remedial action immediately.

5.1.2. SIGNIFICANCE OF CONSTRUCTION PHASE IMPACTS

The construction activities (as discussed above) will have high contrast with the landscape character which will cause negative visual impacts on adjacent Residents. The implementation of the mitigation measures (as discussed above) will decrease the significance of the impact to **Low - Medium**.

5.2. OPERATIONAL PHASE IMPACTS

The majority of the facility will be concealed by the high VAC of the landscape and will not be visible to Resident or Motorists. Villas and/or pods may be visible (especially from the R374).

Table 6: Visual impact of the Operational Phase on sensitive visual receptors

Impact source(s)	Completed Project 58 Development
Nature of impact	Views of the completed villas and/or pods
Reversibility of impact	The impact is permanent
Degree of irreplaceable loss of resource	High

Affected stakeholders	Adjacent Residents and Motorists (including Tourists)		
Magnitude	<i>Extent</i>	Regional - 3	
	<i>Intensity</i>	High - 5	
	<i>Duration</i>	Permanent - 5	
	<i>Probability</i>	Likely - 4	
Significance	<i>Without mitigation</i>	$(Extent + Intensity + Duration + Probability) \times WF$ $(3+5+5+4) \times 5 = 85$ High	H
	<i>With mitigation</i>	$WOM \times ME = WM$ $85 \times 0.8 = 51$ Medium to High	M

5.2.1. MITIGATION MEASURES

- They ridgeline should not be broken by any protruding structures.
- The potential villa and pod sites on the eastern ridge should be relocated to lower areas and/or areas where denser vegetation are present.
- Natural trees, shrubbery and grass species must be retained wherever possible;
- Trees with good screening properties must be utilised in sections where direct views is visible.
- The ecologist must approve the tree species to be utilised for screening purposes.
- Restrict villas/pods to 1 storey;
- All structures must be painted using earthy colours to blend in with ridgeline and vegetation;
- Treat all steelwork with a matt paint to limit reflection;
- Be sensitive towards the use of glass or materials with a high reflectivity to avoid glare from the shiny surfaces and to avoid visual discomfort for viewers during the day;
- Deflect all external lighting downwards, and
- Maintain the development to a high standard (buildings as well as landscaping).

5.2.2. SIGNIFICANCE OF THE OPERATIONAL PHASE IMPACTS

The operational activities (as discussed above) will have high contrast with the landscape character which will cause very high visual impacts on Residents and Motorists (including Tourists). The implementation of the mitigation measures (as discussed above) will decrease the significance of the impact to **Medium**.

7. VISUAL IMPACT STATEMENT

Due to the type of development, vast viewing distance, the adulating typography and dense vegetation associated with areas earmarked for development the site's ability to absorb changes to landscape will be very high with exception of a few villa/pod sites identified in higher laying areas.

The visual impact of the proposed development on visual receptors in the area such as the **identified Sensitive Receptors (Ptn 5 Kromdraai 520 JQ and the Sterkfontein Caves WHS)**, Residents and Motorists (including Tourists) can be mitigated and is considered to be of **LOW to MEDIUM** significance after implementation of recommended mitigation measures.