

**PROPOSED DEVELOPMENT OF A NATURE ESTATE FOR BOTH  
RESIDENTIAL AND COMMERCIAL PURPOSES ADJACENT TO  
KOMATIPOORT, MPUMALANGA PROVINCE**

*ON PORTIONS 2 AND 3 TENBOS 661 JU AND ERF 814, LOCATED IN THE EHLANZENI  
DISTRICT MUNICIPALITY, MPUMALANGA PROVINCE*

**VISUAL IMPACT ASSESSMENT**

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# 1 INTRODUCTION

## 1.1 QUALIFICATION AND EXPERIENCE OF THE PROFESSIONAL TEAM

NuLeaf Planning and Environmental (Pty) Ltd, specialising in Visual Impact Assessment, undertook this visual assessment.

The team undertaking the visual assessment has extensive practical knowledge in spatial analysis, environmental modelling and digital mapping, and applies this knowledge in various scientific fields and disciplines. The expertise of these practitioners is often utilised in Environmental Impact Assessments, State of the Environment Reports and Environmental Management Plans.

The visual assessment team is familiar with the "Guidelines for Involving Visual and Aesthetic Specialists in EIA Processes" (Provincial Government of the Western Cape: Department of Environmental Affairs and Development Planning) and utilises the principles and recommendations stated therein to successfully undertake visual impact assessments. Although the guidelines have been developed with specific reference to the Western Cape province of South Africa, the core elements are more widely applicable.

**Derick Peacock Associates**, appointed NuLeaf Planning and Environmental as an independent specialist consultant to undertake the visual impact assessment. Neither the author, nor NuLeaf Planning and Environmental will benefit from the outcome of the project decision-making.

## 1.2 LEGAL FRAMEWORK

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

- The Environmental Impact Assessment Amendment Regulations, 2014;
- Guideline on Generic Terms of Reference for EAPs and Project Schedules (DEADP, Provincial Government of the Western Cape, 2011).
- Guideline for Involving Visual and Aesthetic Specialists in EIA Processes (DEADP, Provincial Government of the Western Cape, 2005).

## 1.3 INFORMATION BASE

This assessment was based on information from the following sources:

- Topographical maps and GIS generated data were sourced from the Surveyor General, Surveys and Mapping in Mowbray, Cape Town;
- Observations made and photographs taken during site visits;
- Professional judgement based on experience gained from similar projects; and
- Literature research on similar projects.

## 1.4 ASSUMPTIONS AND LIMITATIONS

This assessment was undertaken during the planning stage of the project and is based on information available at that time. This Visual Impact Assessment and all associated mapping has been undertaken according to the worst-case scenario.

## 1.5 LEVEL OF CONFIDENCE

Level of confidence<sup>1</sup> is determined as a function of:

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

These values are applied as follows:

**Table 1:** Level of Confidence

Information on the study area	Information on the project & experience of the practitioner			
		<b>3</b>	<b>2</b>	<b>1</b>
<b>3</b>		9	6	3
<b>2</b>		6	4	2
<b>1</b>		3	2	1

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

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

<sup>1</sup> Adapted from Oberholzer (2005).

## 2 METHODOLOGY

The study was undertaken using Geographic Information Systems (GIS) software as a tool to generate viewshed analyses and to apply relevant spatial criteria to the proposed development. A detailed Digital Terrain Model (DTM) for the study area was created from 0.5m and 5m interval contours from the National Geospatial Information data supplied by the Department: Rural Development and Land Reform.

A site visit as well as a desktop review was undertaken. No sensitive visual receptors were identified within the area with the exception of Shishangeni Lodge, located within the KNP to the north east of the proposed site. Under normal circumstances neighbouring homesteads would also be considered as sensitive visual receptors. However due to the close proximity of the N4, the Mozambique border and sugar cane fields, the area already experiences a high visual impact and as such, the proposed development will not be a new visual intrusion. Based on this, a decision was made to conduct a viewshed analysis from the perspective of Shishangeni Lodge only in order to determine which areas of the proposed development site would be most visible to the Lodge. This allowed for visually exposed areas to be excluded from the development zones.

To aid in this determination, 4 m high poles with white flags were placed in various locations on the northern border of the proposed site directly opposite of Shishangeni Lodge, particularly where the 150 bed safari lodge and certain river front chalets will be constructed. Photographs were then taken from Shishangeni to determine how visible the flags were.

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

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

This report (visual impact assessment) sets out to identify and quantify the possible visual impacts related to the proposed development of a nature estate for both residential and commercial purposes (including related infrastructure), offer recommendations as to where the proposed infrastructure should be placed as well as, offer potential mitigation measures where required.

The following methodology has been followed for the assessment of visual impact<sup>2</sup>:

- **Determine potential visual exposure**

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<sup>2</sup> This methodology is adapted from that developed by MetroGIS, and detailed in numerous Visual Impact Assessments undertaken by them (2010-2014).

The visibility or visual exposure of any development is the point of departure for the visual impact assessment. It stands to reason that if the proposed development were not visible, no impact would occur.

Viewshed analyses of the proposed development indicates the potential visibility.

Viewshed analysis was determined for the Shishangeni Lodge to determine how visible the proposed development will be.

- **Determine visual distance and observer proximity to the development**

In order to refine the visual exposure of the development on surrounding areas/receptors, the principle of reduced impact over distance is applied in order to determine the core area of visual influence.

Proximity radii for the proposed alignment corridors are created in order to indicate the scale and viewing distance of the development and to determine the prominence thereof in relation to their environment.

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

- **Determine viewer incidence, perception and sensitivity**

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

It is therefore necessary to identify areas of high viewer incidence and to classify certain areas according to the observer's visual sensitivity towards the proposed development and its related infrastructure.

It would be impossible not to generalise the viewer incidence and sensitivity to some degree, as there are many variables when trying to determine the perception of the observer; regularity of sighting, cultural background, state of mind, and purpose of sighting which would create a myriad of options.

- **Determine the visual absorption capacity**

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

The VAC would also be high where the environment can readily absorb the structure in terms of texture, colour, form and light / shade characteristics of the structure. On the other hand, the VAC for a structure contrasting markedly with one or more of the characteristics of the environment would be low.

The VAC also generally increases with distance, where discernible detail in visual characteristics of both environment and structure decreases.

The digital terrain model utilised in the calculation of the visual exposure of the development does not incorporate the potential visual absorption capacity (VAC) of the natural vegetation of the region. It is therefore necessary to determine the VAC by means of the interpretation of the vegetation cover and other landscape characteristics.

- **Determine the visual impact index**

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

- **Determine impact significance**

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



**Figure 1:** Placement of white flags on the northern portion of the proposed site





**Figure 2:** View of white flags on proposed site from Shishangeni Lodge

### **3 PROJECT DESCRIPTION**

The proposed development entails the establishment of a nature estate for both residential and commercial purposes adjacent to the town of Komatipoort. All associated civil infrastructure (water, electricity and waste treatment) will be included.

The proposed development will consist of the following:

- A number of residences in a nature area located in the southern portion of the property
- A number of chalets located in the northern portion of the property
- A safari lodge located in the northern portion of the property
- An access road

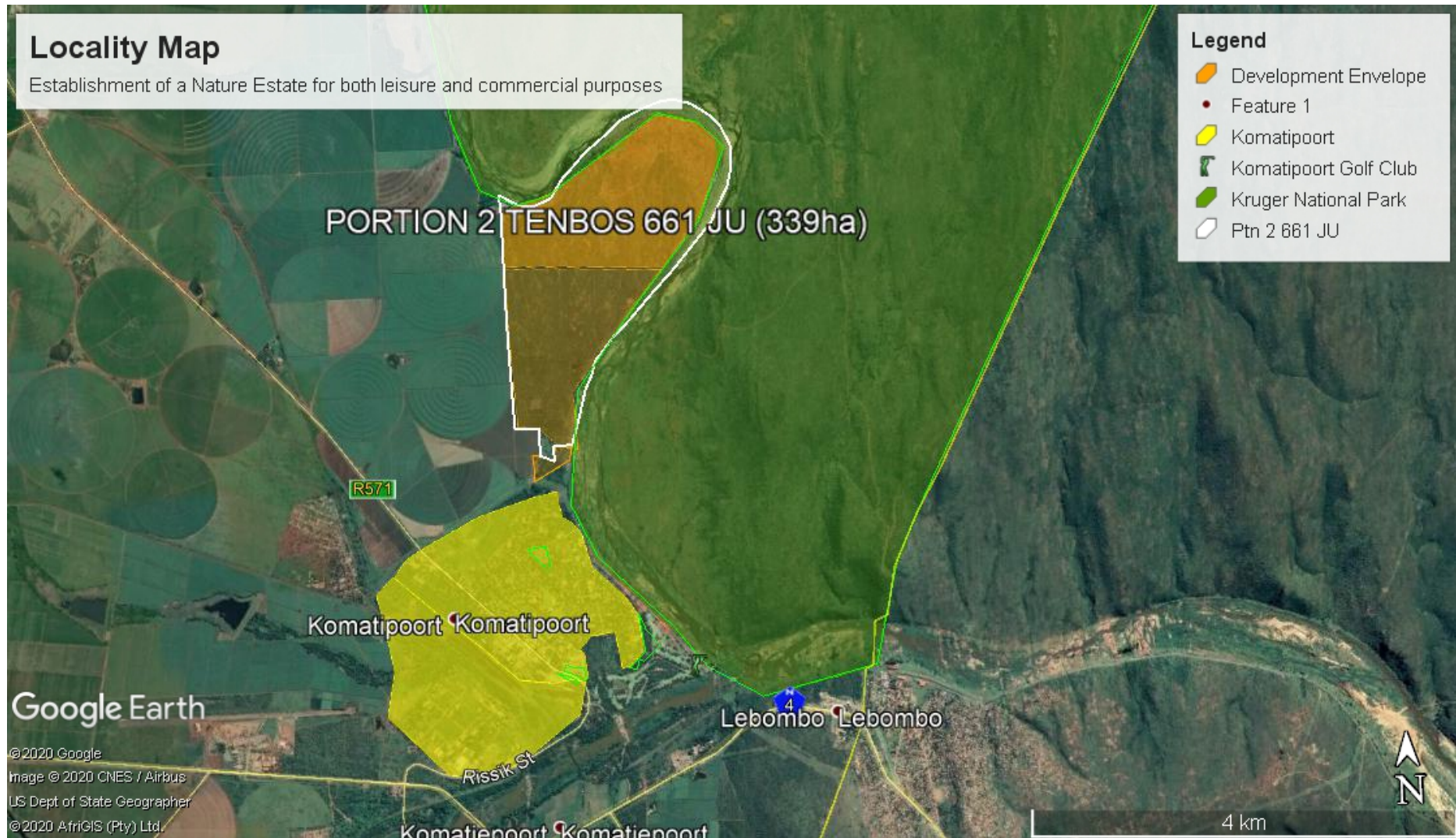
Refer to **Map 1 and 2 (locality and layout)**.

The affected properties, Portions 2 and 3 Tenbos 661 JU and ERF 814, are situated within the Nkomazi local Municipality, in the Ehlanzeni District Municipality, approximately 3 km north of the town of Komatipoort.

### **4 SCOPE OF WORK**

The scope of work for this assessment includes the determination of the potential visual impacts in terms of nature, extent, duration, magnitude, probability and significance of the construction and operation of the proposed development of a nature estate for both residential and commercial purposes on the receiving environment. Of note is that there is only one sensitive visual receptor, namely Shishangeni Lodge, located to the north east of the proposed Nature Estate in the

KNP. Based on the findings of this assessment, recommendations will be made as to the layout and positioning of the proposed development in order to reduce the visual impact on this sensitive visual receptors as far as possible. Mitigation measures are recommended where appropriate.



**Map 1:** Locality map of the broader study area



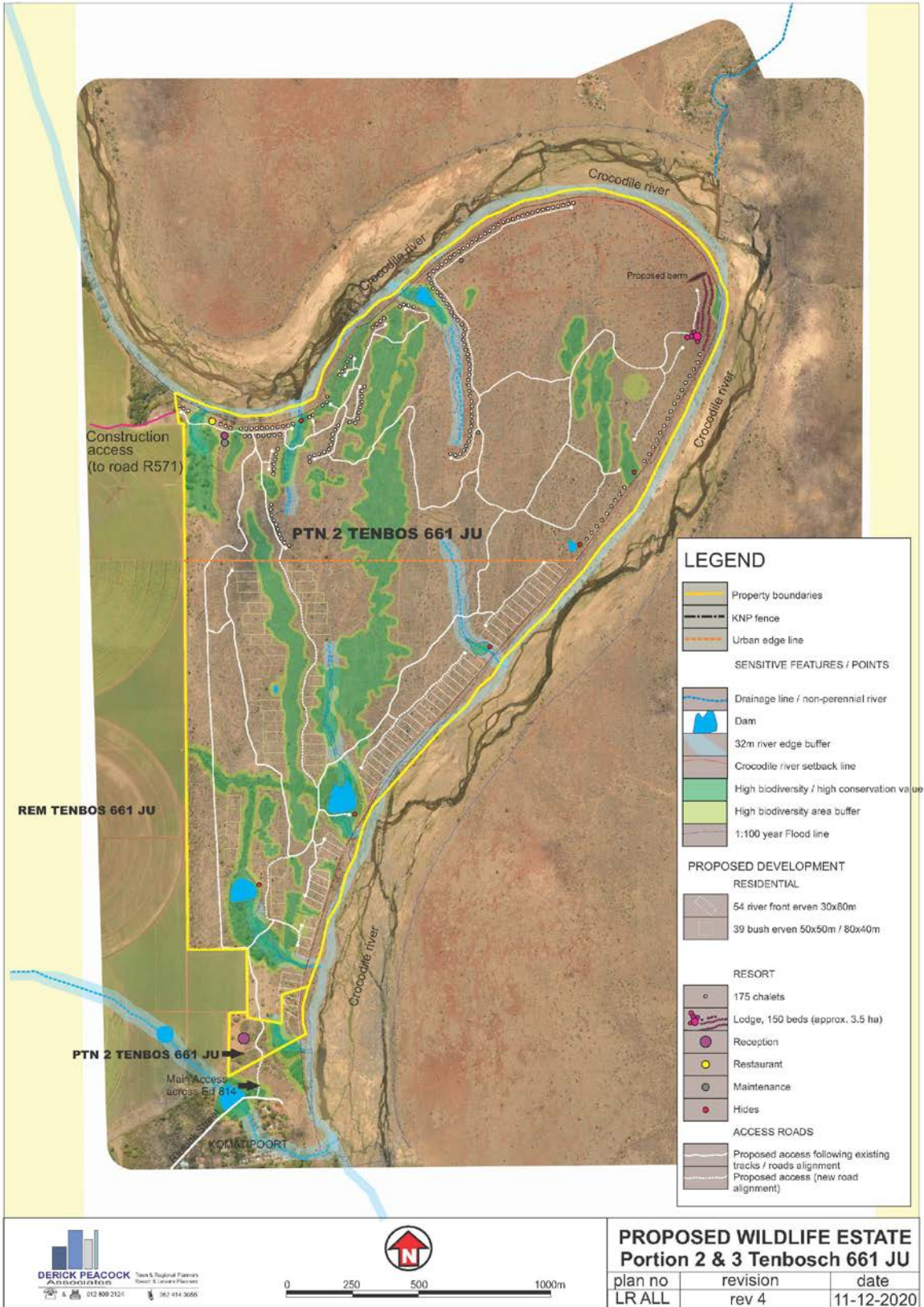


Figure 3: Development layout

## 5 THE AFFECTED ENVIRONMENT

The proposed development is located on Portions 2 and 3 Tenbos 661 JU and ERF 814, which are situated within the Nkomazi local Municipality, in the Ehlanzeni District Municipality, approximately 3 km north of the town of Komatipoort. Mozambique lies 3 km east and the N4 lies approximately 3.5 km to the south.

The northern and eastern boundaries of the properties are formed by the Kruger National Park and the Crocodile River. Cultivated farmlands (sugarcane) forms the western boundary and the town of Komatipoort lies to the south.

Surface hydrology within the study area is dominated by the Crocodile River system, located to the north and east of the proposed site. Additionally seven ephemeral drainage lines, two riparian zones and three palustrine wetlands were identified.



**Figure 4:** Surface hydrology of the site in the north (Crocodile River)





**Figure 5:** Surface hydrology of the site in the east (Crocodile River)



**Figure 6:** Surface hydrology of the site (dam)





**Figure 7:** Surface hydrology of the site (access road)

Land cover within the study area is characterised as being entirely natural with the KNP to the north and east, however cultivated lands can be found to the west and south with some urban development present. Land use is deemed predominately cultivation and recreation.

The town of Komatipoort is the largest populated town just outside the study area and is situated approximately 3 km south from the site. Shishangeni Lodge is located 500m to the north east of the proposed development site, within the KNP.

Shishangeni is a 4-star lodge consisting of 22 individual chalets. Of note is that the chalets are orientated to the east and south east and do not look directly onto the proposed development site.

The areas surrounding the proposed site consist of predominately cultivated lands, tourism resorts and small residential areas. Overall, the population density within the study area is low to moderate.

The visual quality of the broader study area is moderate to high, generally as a result of the large areas given over to conservation within the region. There is no evidence of widespread erosion or natural degradation, and development, where this occurs, is domestic and residential in nature.



**Figure 8:** Topography of the site and surrounds





**Figure 9:** Topography of the site and surrounds



**Figure 10:** Visual quality of the region (along the Crocodile River in the north)





**Figure 11:** Visual quality of the region (along the Crocodile River in the east)



**Figure 12:** Powerlines near the access road to the site.





**Figure 13:** Shishangeni staff accommodation viewed from the north



**Figure 14:** The town of Komatipoort as viewed from the southern portion of the site



**Figure 15:** Sugarcane fields bordering the west of the proposed site



**Figure 16:** View of the proposed site (northern portion) from Shishangeni



## **6 ANTICIPATED ISSUES RELATED TO VISUAL IMPACT**

Anticipated issues related to the potential visual impact of the proposed establishment of a nature estate for both residential and commercial purposes include the following:

- The visibility of the development to, and potential visual impact on Shishangeni Lodge in KNP.
- The potential visual impact associated with the construction of the development on Shishangeni Lodge.
- The potential visual impact of safety and security lighting of the development at night on Shishangeni Lodge.
- The potential visual impact of the development on the visual character of the landscape and sense of place of the region.
- The potential visual impact on tourist access routes and tourist destinations within the region.
- The potential cumulative visual impacts of the development within the study area.

Of those listed above, the main concerns regarding visual impact in the context of this development relate to the potential visual impact that the development will have on the only sensitive visual receptor, Shishangeni Lodge situated 500 m north of the site within the KNP and the adjacent Kruger National Park.

## **7 RESULTS**

### **7.1 VISUAL DISTANCE AND OBSERVER PROXIMITY**

NuLeaf Planning and Environmental determined proximity offsets based on the anticipated visual experience of the observer over varying distances. In general, the severity of the visual impact on visual receptors decreases with increased distance from the proposed development.

Therefore, in order to refine the visual exposure of the development on surrounding areas/receptors, the principle of reduced impact over distance is applied in order to determine the core area of visual influence for the proposed development.

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

The proximity radii will be based on the anticipated visual experience of the observer over varying distances. The distances are adjusted upwards for larger facilities and downwards for smaller facilities (i.e. depending on the size and nature of the proposed development).

Typically, the proximity radii, calculated from the boundary of the property, would be as follows for the establishment of a nature estate for both leisure and commercial purposes:

- 0 – 500 m - Short distance views where the development would be easily and comfortably visible and recognisable.
- 500 m – 1 km - Medium distance view where the development would become part of the visual environment, but could still be visible and recognisable.

- 1 - 2 km - Long distance view where the development might be visible, although this is unlikely.
- 2-3 Km- Highly unlikely that the development will be visible.

## 7.2 POTENTIAL VISUAL EXPOSURE

In order to understand the potential visual exposure of the proposed development, a viewshed analysis was undertaken for Shishangeni Lodge based on a transmitter (development) offset of 3 m above average ground level (i.e. the approximate height of a single storey building with a flat roof). This was done in order to determine the general visual exposure of the area under investigation, simulating the proposed structures associated with the development. A receptor height of 2m above average ground level was used. Refer to **Map 3**.

The analysis does not include the potential shielding effect (i.e. VAC) of the existing environment and does not take into consideration the limitations of the human eye, therefore signifying a worst-case scenario.

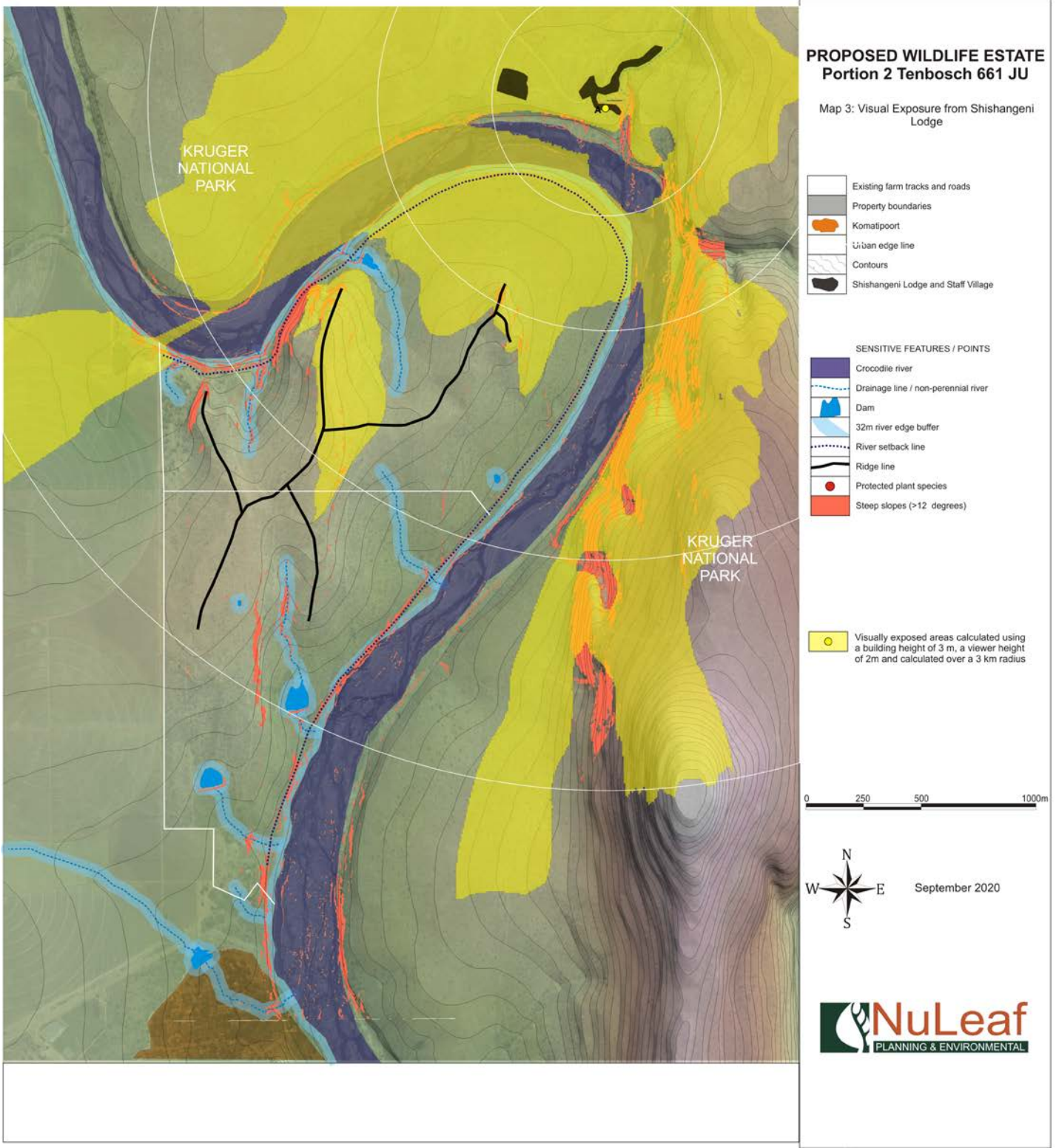
- Visual exposure for Shishangeni Lodge

Potential visual exposure is concentrated on the site itself and within the area in the immediate vicinity thereof. Potential visual exposure within 1km from the site is high, with visually exposed areas located to the north, east, south, south west and west. Within the visually exposed area is the bend in the Crocodile River where the proposed development of a nature estate for leisure purposes could potentially take place i.e. river front chalets and the 150 bed safari lodge.

The extent of potential visual exposure is moderate between 1km and 2km from the site. Within this zone, visually exposed areas are located mostly to the west and south east. Visually screened areas occur over the centre of the proposed development site.

Between 2km and 3km from the site, potential visual exposure decreases dramatically in extent. Only a small pocket to the south east within the KNP and west is visually exposed. Visually screened areas occur over the proposed development site.

Beyond 3km from the site, potential visual exposure is negligible.



**Map 2:** Potential visual exposure of Shishangeni Lodge

### 7.3 VIEWER INCIDENCE, PERCEPTION AND SENSITIVITY

It is necessary to identify areas of high viewer incidence, and to classify certain areas according to the observer's visual sensitivity towards the proposed development.

Tourists and residential receptors in natural contexts are more sensitive than those in more built-up contexts, due to the absence of visual clutter in these undeveloped and undisturbed areas. In this instance, Shishangeni Lodge, tourist accommodation located within the KNP is considered to be highly sensitive to visual intrusion.

Receptors within built up areas are less sensitive to potential visual impact due to the presence of structures, infrastructure and general visual clutter.

Viewer perception regarding this proposed development appears to be neutral. The project does not appear to be controversial, and to the knowledge of the author, there are no action groups or individuals opposing the development.

Considering the proximity of the development to the Kruger National Park, it is expected that any potential visual impact within this protected area would be viewed in a negative light.

### 7.4 VISUAL ABSORPTION CAPACITY

Visual Absorption Capacity (VAC) is the capacity of the receiving environment to absorb the potential visual impact of the proposed development. VAC is primarily a function of the vegetation, and will be high if the vegetation is tall, dense and continuous. Conversely, low growing sparse and patchy vegetation will have a low VAC.

The VAC would also be high where the environment can readily absorb the development in terms of texture, colour, form and light / shade characteristics of the structure. On the other hand, the VAC for a development contrasting markedly with one or more of the characteristics of the environment would be low.

The VAC also generally increases with distance, where discernible detail in visual characteristics of both environment and development decreases.

Overall, the Visual Absorption Capacity (VAC) of the site and surrounds is *moderate to high*, mainly due to the vegetation being intact and undisturbed and the KNP bordering the site. Towards the centre of the site, the VAC is considered to be high, while the edges of the property have a low-moderate VAC owing to the vegetation having been cleared for the road that circles the property.





**Figure 17:** High to moderate VAC of the natural bush in the centre of the site



**Figure 18:** Low VAC of the fringes of the property

## 7.5 VISUAL IMPACT INDEX

For the purpose of this study visual exposure, viewer incidence/ perception and visual distance maps were generated for Shishangeni Lodge in order to determine what the visual impact would be from their point of view. Refer to map 4. Here the weighted impact and the likely areas of impact have been indicated as a visual impact index.

Values have been assigned for each potential visual impact per data category and merged in order to calculate the visual impact index. An area with short distance, a high viewer incidence and a predominantly negative perception would therefore have a higher value (greater impact) on the index. This helps in focussing the attention to the critical areas of potential impact when evaluating the issues related to the visual impact.

The visual impact index for Shishangeni Lodge is further described as follows:

- The visual impact index map indicates a core zone of **high** visual impact within 1km of Shishangeni Lodge.

Areas of high visual exposure include the northern portion of the proposed development inclusive of river front chalets and the safari lodge at the bend in the Crocodile River.

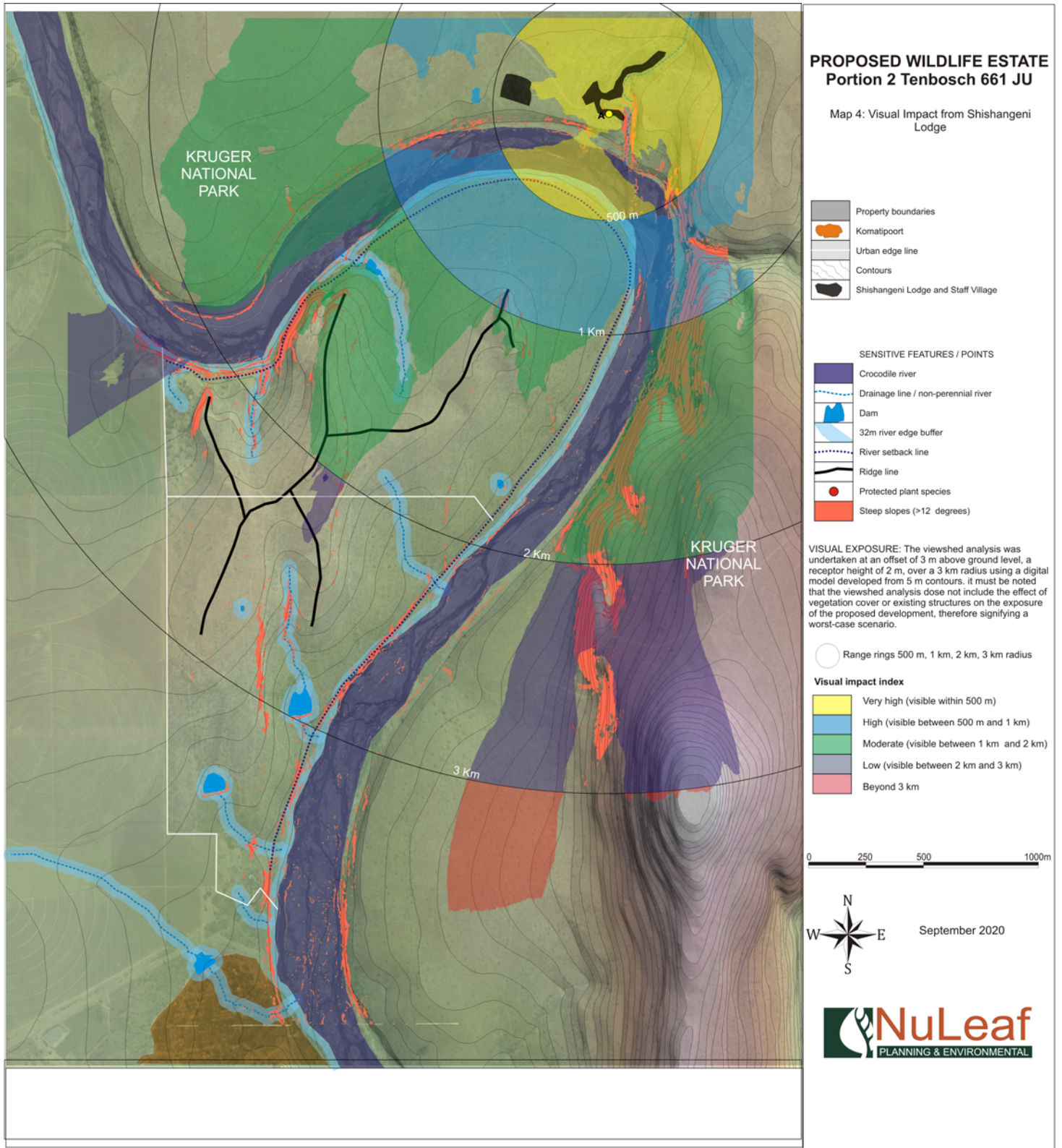
- Anticipated visual impact is **moderate** between 1km and 2km of Shishangeni Lodge.

The only visually exposed area within the proposed development site is a small portion in the north west where a small portion of chalets will be located.

- Between 2km and 3km of Shishangeni Lodge, there are no visually exposed areas within the proposed development site, so visual impacts are likely to be negligible.

It should be noted that the southern portion of the site (i.e. the residential development) does not pose a visual impact to Shishangeni Lodge.





**Map 3:** Visual Impact Index – Shishangeni Lodge

## 7.6 VISUAL IMPACT ASSESSMENT: METHODOLOGY

The previous section of the report identified specific areas where likely visual impacts would occur. This section will attempt to quantify these potential visual impacts in their respective geographical locations and in terms of the identified issues related to the visual impact.

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

- **Extent** - international (very high = 5), national (high = 4), regional (medium = 3), local (low = 2) or site specific (very low = 1)
- **Duration** - very short (0-1 yrs = 1), short (2-5 yrs = 2), medium (5-15 yrs = 3), long (>15 yrs = 4), and permanent (= 5)
- **Magnitude** - None (= 0), minor (= 2), low (= 4), medium/moderate (= 6), high (= 8) and very high (= 10). This value is read off the Visual Impact Index maps.
- **Probability** – very improbable (= 1), improbable (= 2), probable (= 3), highly probable (= 4) and definite (= 5)
- **Status** (positive, negative or neutral)
- **Reversibility** - reversible (= 1), recoverable (= 3) and irreversible (= 5)
- **Significance** - low, medium or high

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

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

- <30 points: Low (where the impact would not have a direct influence on the decision to develop in the area)
- 31-60 points: Medium/moderate (where the impact could influence the decision to develop in the area)
- >60: High (where the impact must have an influence on the decision to develop in the area)

## 7.7 VISUAL IMPACT ASSESSMENT: PRIMARY IMPACTS

### 7.7.1 POTENTIAL VISUAL IMPACT ON SENSITIVE VISUAL RECEPTORS IN CLOSE PROXIMITY TO THE PROPOSED DEVELOPMENT.

The proposed establishment of a nature estate for both residential and commercial purposes, as well as, all site-associated infrastructure are taken into account during the impact assessment. Since the height of the associated infrastructure is unlikely to exceed the expected height of the proposed development, the visual exposure of these components will fall within the viewsheds generated for the development.

Access roads will be required during both the construction and operational phase of the development. These access roads have the potential of manifesting as landscape scarring, and thus represent a potential visual impact within the viewshed areas. However, as access roads and servitudes have no elevation or height, so the visual impact of this associated infrastructure will be absorbed by the visual impact of the primary development.

The tables below illustrates this impact assessment.

**Table 2:** Impact table summarising the significance of the development on Shishangeni Lodge

The visual impact on tourist camps and lodges within close proximity to the proposed development (i.e. within 1km) is expected to be of **high** significance before mitigation and of **moderate** significance after mitigation.

<b>Nature of Impact:</b>		
Visual impact on tourist camps and lodges within the immediate area (Shishangeni Lodge in KNP).		
	<b>No mitigation</b>	<b>Mitigation considered</b>
<b>Extent</b>	Local <b>(2)</b>	Local <b>(2)</b>
<b>Duration</b>	Permanent <b>(5)</b>	Permanent <b>(5)</b>
<b>Magnitude</b>	High <b>(8)</b>	High <b>(8)</b>
<b>Probability</b>	Definite <b>(5)</b>	Probable <b>(3)</b>
<b>Significance</b>	High <b>(75)</b>	Moderate <b>(45)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Recoverable <b>(3)</b>	Recoverable <b>(3)</b>
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation / Management:</b>		
<u>Planning:</u>		
<ul style="list-style-type: none"> <li>➤ Respond to the natural environment during the planning of buildings and infrastructure.</li> <li>➤ Consolidate development and make use of already disturbed sites rather than pristine areas.</li> <li>➤ Do not exceed single storey heights for all structures.</li> <li>➤ Retain all large trees and protected species as identified, and adapting the development footprint to accommodate these.</li> <li>➤ Retain / re-establish and maintain natural vegetation in all areas outside of the development footprint.</li> <li>➤ Retain buffer areas (wetland, river and other sensitive vegetation zones) as natural pockets within the development plan.</li> <li>➤ Retain vegetation in all areas outside of actual built footprints wherever possible.</li> <li>➤ Soften hard spaces and parking areas through the retention of existing vegetation or the introduction of appropriate indigenous planting.</li> <li>➤ Make use of earth tones and natural materials rather than primary colours and high-tech finishes.</li> </ul>		

<ul style="list-style-type: none"> <li>➤ Visually break up large bulky buildings into smaller, subtler, less prominent shapes and planes.</li> <li>➤ Avoid large areas of un-shaded reflective surface.</li> <li>➤ Avoid the placement of unsightly services and infrastructure in visually prominent areas.</li> <li>➤ Appropriate placement and screening of service areas.</li> <li>➤ Use of vegetated earth berms for visual screening.</li> </ul> <p><u>Construction:</u></p> <ul style="list-style-type: none"> <li>➤ Rehabilitate all construction areas.</li> <li>➤ Ensure that vegetation is not cleared unnecessarily to make way for infrastructure.</li> </ul> <p><u>Operations:</u></p> <ul style="list-style-type: none"> <li>➤ Maintain the general appearance of the development as a whole.</li> <li>➤ Monitor rehabilitated areas, and implement remedial action as and when required.</li> </ul>
<p><b>Cumulative impacts:</b> The proposed development will contribute to built-up environments within an otherwise natural area.</p>
<p><b>Residual impacts:</b> N/A</p>

### 7.7.2 POTENTIAL VISUAL IMPACT OF CONSTRUCTION ON SENSITIVE VISUAL RECEPTORS IN CLOSE PROXIMITY TO THE DEVELOPMENT

During the construction period there will be an increase in heavy vehicles utilising the roads to the construction sites that may cause, at the very least, a visual nuisance to other road users, residents of Komatipoort, tourists visiting KNP and landowners in the area. Mitigation entails proper planning, management and rehabilitation of all construction sites to forego visual impacts.

The table below illustrates the assessment of the anticipated visual impact of construction on sensitive visual receptors in close proximity to the proposed development. Visual impacts are likely to be of **high** significance, and may be mitigated to **moderate**.

**Table 3:** Impact table summarising the significance of visual impact of construction on visual receptors in close proximity to the proposed development

<b>Nature of Impact:</b>		
Visual impact of construction activities, vehicles and dust on Shishangeni Lodge		
	<b>No mitigation</b>	<b>Mitigation considered</b>
<b>Extent</b>	Local (2)	Local (2)
<b>Duration</b>	Short term (2)	Short term (2)
<b>Magnitude</b>	Very High (10)	High (8)
<b>Probability</b>	Definite (5)	Highly Probable (4)
<b>Significance</b>	High (70)	Moderate (48)
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Recoverable (3)	Recoverable (3)
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation / Management:</b>		
<u>Planning:</u>		
<ul style="list-style-type: none"> <li>➤ Respond to the natural environment during the planning of buildings and infrastructure.</li> <li>➤ Consolidate development and make use of already disturbed sites rather than pristine areas.</li> <li>➤ Do not exceed single storey heights for all structures.</li> <li>➤ Retain all large trees and protected species as identified, and adapting the development footprint to accommodate these.</li> </ul>		

<ul style="list-style-type: none"> <li>➤ Retain / re-establish and maintain natural vegetation in all areas outside of the development footprint.</li> <li>➤ Retain buffer areas (wetland, river and other sensitive vegetation zones) as natural pockets within the development plan.</li> <li>➤ Retain vegetation in all areas outside of actual built footprints wherever possible.</li> <li>➤ Soften hard spaces and parking areas through the retention of existing vegetation or the introduction of appropriate indigenous planting.</li> <li>➤ Make use of earth tones and natural materials rather than primary colours and high-tech finishes.</li> <li>➤ Visually break up large bulky buildings into smaller, subtler, less prominent shapes and planes.</li> <li>➤ Avoid large areas of un-shaded reflective surface.</li> <li>➤ Avoid the placement of unsightly services and infrastructure in visually prominent areas.</li> <li>➤ Appropriate placement and screening of service areas.</li> </ul> <p><u>Construction:</u></p> <ul style="list-style-type: none"> <li>➤ Rehabilitate all construction areas.</li> <li>➤ Ensure that vegetation is not cleared unnecessarily to make way for infrastructure.</li> </ul> <p><u>Operations:</u></p> <ul style="list-style-type: none"> <li>➤ Maintain the general appearance of the development as a whole.</li> <li>➤ Monitor rehabilitated areas, and implement remedial action as and when required.</li> </ul>
<p><b>Cumulative impacts:</b> None.</p>
<p><b>Residual impacts:</b> None, provided rehabilitation works are carried out as specified.</p>

**7.7.3 POTENTIAL VISUAL IMPACT OF LIGHTING AT NIGHT ON SENSITIVE VISUAL RECEPTORS IN CLOSE PROXIMITY TO THE DEVELOPMENT**

The natural areas surrounding the proposed activity represent a low incidence of light sources, resulting in a low level of existing light impact outside of the town of Komatipoort.

The use of floodlights and high impact lights would create light trespass in an otherwise dark environment. This would be especially problematic for sensitive receptors in close proximity, particularly Shishangeni Lodge within Kruger National Park who may experience potential negative impact if the lighting for the facility is not responsively and sensitively designed. The use of floodlights and high mast lights would create light trespass and sky glow for sensitive receptors in close proximity.

In addition to the above, sky glow is the condition where the night sky is illuminated when light reflects off particles in the atmosphere such as moisture, dust or smog. The sky glow intensifies with the increase in the amount of light sources. Each new light source, especially upwardly directed lighting, contributes to the increase in sky glow.

The table below illustrates the assessment of the anticipated visual impact of lighting at night on sensitive visual receptors in close proximity to the proposed development. Visual impacts are likely to be of **moderate** significance, and may be mitigated to **low**.

**Table 4:** Impact table summarising the significance of visual impact of lighting at night on visual receptors in close proximity to the proposed development

<b>Nature of Impact:</b> Visual impact of direct lighting and sky glow on sensitive visual receptors in close proximity to the proposed development.		
	<b>No mitigation</b>	<b>Mitigation considered</b>

<b>Extent</b>	Local <b>(2)</b>	Local <b>(2)</b>
<b>Duration</b>	Permanent <b>(5)</b>	Permanent <b>(5)</b>
<b>Magnitude</b>	High <b>(8)</b>	Moderate <b>(6)</b>
<b>Probability</b>	Probable <b>(3)</b>	Improbable <b>(2)</b>
<b>Significance</b>	Moderate <b>(45)</b>	Low <b>(26)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Recoverable <b>(3)</b>	Recoverable <b>(3)</b>
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		
Planning & operation:		
<ul style="list-style-type: none"> <li>➤ Shield the sources of light by physical barriers (walls, vegetation, or the structure itself).</li> <li>➤ Limit mounting heights of lighting fixtures, or alternatively use foot-lights or bollard level lights.</li> <li>➤ Make use of minimum lumen or wattage in fixtures.</li> <li>➤ Make use of down-lighters, or shielded fixtures.</li> <li>➤ Make use of Low Pressure Sodium lighting or other types of low impact lighting.</li> <li>➤ Make use of motion detectors on security lighting. This will allow the site to remain in relative darkness, until lighting is required for security or maintenance purposes.</li> </ul>		
<b>Cumulative impacts:</b>		
The proposed establishment of a nature estate for both leisure and commercial purposes is likely to contribute to a local and regional increase in lighting impact.		
<b>Residual impacts:</b>		
N/A		

## 7.8 VISUAL IMPACT ASSESSMENT: SECONDARY IMPACTS

### 7.8.1 POTENTIAL VISUAL IMPACT ON THE VISUAL CHARACTER AND SENSE OF PLACE OF THE REGION.

Sense of place refers to a unique experience of an environment by a user based on his or her cognitive experience of the place. Visual criteria, and specifically the visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.) play a significant role.

A visual impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light.

In general the landscape character of the greater study area presents as natural with commercial agricultural activities adjacent to the site. The site itself is largely natural with 2 small huts and a boma along the northern boundary. The visual quality of the region is generally high and large tracts of intact vegetation characterise most of the visual environment to the north and east of the study area. The Kruger National Park, which forms the northern and eastern boundaries of the site contributes significantly to the high quality of the visual environment and sense of place within the region. As such, the entire study area is considered sensitive to new visual impacts. The key visual experience is linked to the use of the road network and associated views of the surrounding landscape.

The anticipated visual impact on the visual character and sense of place of the study area is expected to be of **moderate** significance.

The table below illustrates the assessment of this anticipated impact.

**Table 5:** Impact table summarising the significance of visual impacts on landscape character and sense of place within the region



<b>Nature of Impact:</b> Visual impact of the proposed development on the visual quality of the landscape and sense of place of the region		
	<b>No mitigation</b>	<b>Mitigation considered</b>
<b>Extent</b>	Regional <b>(3)</b>	N/A
<b>Duration</b>	Permanent <b>(5)</b>	N/A
<b>Magnitude</b>	High <b>(8)</b>	N/A
<b>Probability</b>	Probable <b>(3)</b>	N/A
<b>Significance</b>	Moderate <b>(48)</b>	N/A
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Recoverable <b>(3)</b>	Recoverable <b>(3)</b>
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation / Management:</b>		
<u>Planning:</u>		
<ul style="list-style-type: none"> <li>➤ Respond to the natural environment during the planning of buildings and infrastructure.</li> <li>➤ Consolidate development and make use of already disturbed sites rather than pristine areas.</li> <li>➤ Do not exceed single storey heights for all structures.</li> <li>➤ Retain all large trees and protected species as identified, and adapting the development footprint to accommodate these.</li> <li>➤ Retain / re-establish and maintain natural vegetation in all areas outside of the development footprint.</li> <li>➤ Retain buffer areas (wetland, river and other sensitive vegetation zones) as natural pockets within the development plan.</li> <li>➤ Retain vegetation in all areas outside of actual built footprints wherever possible.</li> <li>➤ Soften hard spaces and parking areas through the retention of existing vegetation or the introduction of appropriate indigenous planting.</li> <li>➤ Make use of earth tones and natural materials rather than primary colours and high-tech finishes.</li> <li>➤ Visually break up large bulky buildings into smaller, subtler, less prominent shapes and planes.</li> <li>➤ Avoid large areas of un-shaded reflective surface.</li> <li>➤ Avoid the placement of unsightly services and infrastructure in visually prominent areas.</li> <li>➤ Appropriate placement and screening of service areas.</li> </ul>		
<u>Construction:</u>		
<ul style="list-style-type: none"> <li>➤ Rehabilitate all construction areas.</li> <li>➤ Ensure that vegetation is not cleared unnecessarily to make way for infrastructure.</li> </ul>		
<u>Operations:</u>		
<ul style="list-style-type: none"> <li>➤ Maintain the general appearance of the development as a whole.</li> <li>➤ Monitor rehabilitated areas, and implement remedial action as and when required.</li> </ul>		
<b>Cumulative impacts:</b>		
The proposed development will contribute to built-up environments within an otherwise natural area.		
<b>Residual impacts:</b>		
N/A		

#### 7.8.2 POTENTIAL VISUAL IMPACT ON TOURIST ACCESS ROUTES AND OTHER TOURIST DESTINATIONS WITHIN THE REGION

The greater region is generally seen as having a high scenic value and tourism value potential. Outside of towns, the landscape is characterised by wide-open spaces with a high visual quality and strong sense of place. The roads in the region are considered to be routes that are likely to carry tourists.

In terms of tourist destinations and accommodation, Komatipoort, Marloth Park and its surrounding area is known to host a relatively high concentration of attractions and overnight facilities. Although all of these facilities have not been

specifically mapped, they are known to occur, and are likely to coincide with homesteads and farmsteads in close proximity to the site.

The anticipated visual impact of the proposed activity on tourist access routes and tourist destinations (i.e. attractions and accommodation) within the region is therefore expected to be of **low** significance. The table below illustrates the assessment of this anticipated impact.

**Table 6:** Impact table summarising the significance of visual impacts on tourist access routes and other tourist destinations within the region

<b>Nature of Impact:</b>		
Visual impact of the proposed development on tourist access routes and other tourist destinations within the region		
	<b>No mitigation</b>	<b>Mitigation considered</b>
<b>Extent</b>	Regional <b>(3)</b>	N/A
<b>Duration</b>	Permanent <b>(5)</b>	N/A
<b>Magnitude</b>	Moderate <b>(6)</b>	N/A
<b>Probability</b>	Improbable <b>(2)</b>	N/A
<b>Significance</b>	Low <b>(28)</b>	N/A
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Recoverable <b>(3)</b>	Recoverable <b>(3)</b>
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation / Management:</b>		
<u>Planning:</u>		
<ul style="list-style-type: none"> <li>➤ Respond to the natural environment during the planning of buildings and infrastructure.</li> <li>➤ Consolidate development and make use of already disturbed sites rather than pristine areas.</li> <li>➤ Do not exceed single storey heights for all structures.</li> <li>➤ Retain all large trees and protected species as identified, and adapting the development footprint to accommodate these.</li> <li>➤ Retain / re-establish and maintain natural vegetation in all areas outside of the development footprint.</li> <li>➤ Retain buffer areas (wetland, river and other sensitive vegetation zones) as natural pockets within the development plan.</li> <li>➤ Retain vegetation in all areas outside of actual built footprints wherever possible.</li> <li>➤ Soften hard spaces and parking areas through the retention of existing vegetation or the introduction of appropriate indigenous planting.</li> <li>➤ Make use of earth tones and natural materials rather than primary colours and high-tech finishes.</li> <li>➤ Visually break up large bulky buildings into smaller, subtler, less prominent shapes and planes.</li> <li>➤ Avoid large areas of un-shaded reflective surface.</li> <li>➤ Avoid the placement of unsightly services and infrastructure in visually prominent areas.</li> <li>➤ Appropriate placement and screening of service areas.</li> </ul>		
<u>Construction:</u>		
<ul style="list-style-type: none"> <li>➤ Rehabilitate all construction areas.</li> <li>➤ Ensure that vegetation is not cleared unnecessarily to make way for infrastructure.</li> </ul>		
<u>Operations:</u>		
<ul style="list-style-type: none"> <li>➤ Maintain the general appearance of the development as a whole.</li> <li>➤ Monitor rehabilitated areas, and implement remedial action as and when required.</li> </ul>		
<b>Cumulative impacts:</b>		
The proposed development will contribute to built-up environments within an otherwise natural area.		
<b>Residual impacts:</b>		
N/A		

## **8 IMPACT STATEMENT**

Based on the results and findings of the Visual Impact Assessment undertaken for the proposed establishment of a nature estate for both residential and commercial purposes, it is acknowledged that the receiving environment will be visually transformed to a certain degree. This is particularly due to the fact that the Kruger National Park forms the northern and eastern boundaries of the site, which provides for a natural, undisturbed landscape.

All impacts above are determined to have a post mitigation significance of moderate or low. In addition, none are considered to be fatal flaws from a visual perspective. This is based on the low density of visual receptors within the study area and the possibility of mitigating the visual impacts expected.

## **9 CONCLUSION AND RECOMMENDATIONS**

The construction and operation of the proposed establishment of a nature estate for both residential and commercial purposes will have a visual impact on the scenic resources of the study area especially on the KNP and visitors to Shishangeni Lodge.

However, mitigation of some of the visual impact is possible and will go far in reducing the magnitude of visual impacts discussed by softening the appearance of the development within its context. The recommendations made below should be followed and the mitigation implemented on an ongoing basis:

- No development should take place in the northern portion of the site where the Crocodile River bends. This should be left as a natural pocket as it is directly opposite Shishangeni Lodge
- Natural berms should be utilize to screen the proposed development from Shishangeni Lodge
- Buildings located along the river front should be kept to single storey with flat roofs
- Architectural guidelines must be strictly enforced (see attached).

Considering all factors, it is concluded that the development is appropriate within its context from a visual perspective, and that the anticipated visual impacts are neither unacceptable in nature nor excessive in magnitude. Potential visual impacts are therefore not considered to be a fatal flaw for this development.

Based on the above, it is the recommendation of the author that the proposed establishment of a nature estate for both residential and commercial purposes be supported from a visual perspective, subject to the implementation of the required and recommended optimisation and mitigation measures.

## 10 REFERENCES/DATA SOURCES

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## APPENDIX 1: ARCHITECTURAL GUIDELINES