



**PROPOSED DEVELOPMENT OF A HOTEL AT THE
CONFLUENCE OF THE TIMFENHENI AND CROCODILE
RIVERS WITHIN THE KRUGER NATIONAL PARK**

DEA REFERENCE: 12/12/20/610/69

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS:

DRAFT SCOPING REPORT

FOR SUBMISSION TO:

**ALL REGISTERED INTERESTED AND AFFECTED PARTIES FOR
REVIEW AND COMMENT**

BY:

V&L LANDSCAPE ARCHITECTS



MARCH 2012

FOREWORD

V&L Landscape Architects would like to thank all Interested and Affected Parties (I&AP's) for their continued participation and input into this Environmental Impact Assessment (EIA) process. The function of an EIA process is to ensure that all components of the receiving Environment of a proposed development are represented in the environmental decision making process. The comments received from I&AP's to date have proven invaluable to this process and we do appreciate your time and effort.

It should however be acknowledged that the aim of this process is to identify and assess the actual Environmental Impact of the proposed hotel development in the Malelane area of the Kruger National Park. This process must be separated from the decision making process and feasibility assessment undertaken by SANParks which lead to the final decision to develop the hotel in the Kruger National Park.

Many comments which have been received from I&AP's relate mainly to the decision made by SANParks to develop the hotel in the Malelane area of the Kruger National Park. As Independent Environmental Assessment Practitioners, V&L are mandated to assess the impact of the proposed hotel on the receiving environment only and not the decision making process previously undertaken by SANParks. Therefore, we are unable to respond to comments relating to the feasibility study or decision made by SANParks. We will however endeavour to forward all comments relating to the decision making process to SANParks for their response.

V&L invite all I&AP's to review this draft scoping report and we urge you to provide us with your comments. Comments can either be e-mailed to us at dereck@vrl.co.za or faxed to (012) 346 1291. There is also a comments register attached to all hard copies of the scoping report which has been made available for Public Review, please feel free to place your comments on these registers as well.

You can also contact us directly at (012) 346 1289 for further information or clarity. We look forward to your inputs and comments.

Our warmest regards

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ENVIRONMENTAL ASSESSMENT PRACTITIONER

V&L Landscape Architects have been appointed by the proponent, Malelane Safari Resort Investments (Pty) Ltd, as independent Environmental Consultants to compile the Environmental Impact Assessment for the proposed Radisson Blu Safari Resort, Kruger Park, in the Malelane Area of the Kruger National Park.

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PROJECT TEAM

The compilation of this Scoping Report was reliant on the input of a multi-disciplinary team including specialists from the fields of tourism planning, environmental planning, engineering, ecology, botany, heritage assessments and waste management.

These specialists included the following:

ROLE	SPECIALIST	ORGANISATION
Lead Environmental Assessment Practitioner	Dereck Milburn	V&L Landscape Architects
Environmental Assessment Practitioner, Visual Exposure Specialist and Tourism Specialist.	Peter Velcich	V&L Landscape Architects
Ecological Assessment	Warren McClelland	Ecorex Consulting Ecologists
Geotechnical Assessment	Carel Haupt	WSM Leshika Consulting
Hydrogeological Assessment	Carel Haupt	WSM Leshika Consulting
Visual Impact Assessment	Mader van den Berg	I-Scape Landscape Architects
Heritage Impact Assessment	Jan van Schalkwyk	Independant Consultant
Services Report	Various	WSP Engineering
Wet Services Report	Lesley Padayachee	WSP Engineering
Architectural Renderings	Garth Dyer	Architectural Graphics
Architectural layouts and designs	Llewellyn Cronje	Cronje Associated Architects
Electronic Services Report	Carlo Cecchi	WSP Engineering
Waste Management Plan	Kylie Farrel	WSP Environment and Energy

ACRONYMS AND ABBREVIATIONS

CMP	Construction Management Plan
DEA	South African National Department of Environmental Affairs
DWA	South African National Department of Water Affairs
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMP	Environmental Management Plan
I&AP	Interested and Affected Party
ILA	Interdesign Landscape Architects
KNP	Kruger National Park
LED	Local Economic Development
LWWS	Light Weight Walling System
MTPA	Mpumalanga Tourism and Parks Agency
NEMA	National Environmental Management Act, Act No. 107 of 1998
NEMPAA	National Environmental Management: Protected Areas Act, Act No. 57 of 2003
PPP	Public Private Partnership
SAHRA	South African Heritage Resources Agency
SANParks	South African National Parks
V&L	V&L Landscape Architects

GLOSSARY OF TERMS

Alien Vegetation:	Alien vegetation is defined as undesirable plant growth which shall include, but not be limited to all declared category 1 and 2 listed invader species as set out in the Conservation of Agricultural Resources Act (CARA) regulations. Other vegetation deemed to be alien shall be those plant species that show the potential to occupy in number, any area within the defined construction area.
Alien Species:	A plant or animal species introduced from elsewhere: neither endemic nor indigenous.
Alternatives:	<p>In relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to –</p> <ul style="list-style-type: none">(a) The property on which or location where it is proposed to undertake the activity;(b) The type of activity to be undertaken;(c) The design or layout of activity;(d) The technology to be used in the activity; and(e) The operational aspects of the activity.
Applicant:	Any person who applies for an authorization to undertake an activity or to cause such activity to be undertaken as contemplated in the National Environmental Management Act (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2006.
Arable Potential:	Land with soil, slope and climate components where the production of cultivated crops is economical and practical.
Buffer zone:	Is a collar of land that filters out inappropriate influences from surrounding activities as described by Shafer (1999) according to Pfab (2001:11), also known as edge effects, including the effects of invasive plant and animal species, physical damage and soil compaction caused by trampling and harvesting, abiotic habitat alterations and pollution. According to Pfab (2001:11), buffer zones can also provide more landscape needed for ecological processes, such as fire, as pointed out by Shafer (1999).
Construction Activity:	A Construction Activity is any action taken by the Contractor, his subcontractors, suppliers or personnel during the construction process as defined in the South African National Roads Agency Limited and National Roads Act, 1998 (Act No. 107 of 1998).
Critically Endangered:	A taxon is Critically Endangered when it is facing an extremely high risk of extinction in the wild, in the immediate future.
Ecology:	The study of the inter relationships between organisms and their environments.

- Environment:** All physical, chemical and biological factors and conditions that influence an object and/or organism.
- Environmental Impact:** An Impact or Environmental Impact is the degree of change to the environment, whether desirable or undesirable, that will result from the effect of a Construction Activity within the limits that define the construction site. An Impact may be the direct or indirect consequence of a Construction Activity.
- Environmental Impact Assessment:** Assessment of the effects of a development on the environment.
- Environmental Management Plan:** A legally binding working document, which stipulates environmental and socio-economic mitigation measures that must be implemented by several responsible parties throughout the duration of the proposed project.
- Indigenous:** Means a species that occurs, or has historically occurred, naturally in a free state within the borders of South Africa. Species that have been introduced to South Africa as a result of human activity are excluded (South Africa (Republic) National Environmental Management: Biodiversity Act, 2004: Chapter 1).
- Interested and Affected Party:** any person, group of persons or organization interested in or affected by an activity contemplated in an application, or any organ of state that may have jurisdiction over any aspect of the activity.
- Road Reserve:** The road reserve is a corridor of land, defined by co-ordinates and proclamation, within which the road, including access intersections or interchanges, is situated. A road reserve may, or may not, be bounded by a fence.
- Road Width:** For the purposes of the EMP, the Road Width is defined as the area within the Road Reserve i.e. fence line to fence line, but also includes all areas beyond the Road Reserve that are affected by the continuous presence of the road i.e. a reach of a water course.
- Mitigate:** The implementation of practical measures to reduce adverse impacts Public Participation Process: is a process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to, specific matters.
- Record of Decision:** A brief description of the proposed activity, the extent or quantities involved, the surface areas involved, the infra structural requirements and the implementation programme for which the authorization is issued.
- Red data plant species:** Are fauna and flora species that require environmental protection based on the World Conservation. Union (IUCN) categories and criteria.

Soil Compaction:	Mechanically increasing the density of the soil, vehicle passage or any other type of loading. Wet soils compact easier than moist or dry soils.
Species:	Means a kind of animal, plant or other organism that does not normally interbreed with individuals of another kind. The term “species” include any sub-species, cultivar, variety, geographic race, strain, hybrid or geographically separate population (South Africa [Republic] National Environmental Management: Biodiversity Act, 2004: Chapter 1).
The Contractor:	The contractor, as the developers agent on site, is bound by the ROD and EMP conditions through his/her contract with the developer, and is responsible for ensuring that conditions of the EMP and ROD are strictly adhered to at all times. The contractor must comply with all orders (whether verbal or written) given by the ECO, project manager or site agent in terms of the EMP.
The Developer:	Remains ultimately responsible for ensuring that the development is implemented according to the requirements of the EMP and the conditions of the Environmental Decision throughout all phases of the project.
The Environmental Control Officer (ECO):	the ECO is appointed by the developer as an independent monitor of the implementation of the EMP i.e. independent of the developer and contractor.
The Environmental Liaison Officer (ELO):	the Contractor shall submit to the Site Agent a nominated representative of the Contractor as an ELO to assist with day to day monitoring of the construction activities for the contract.
Vegetation:	Is a collective word for plants occurring in an area.
Vulnerable:	A taxon is ‘Vulnerable’ when it is not ‘Critically Endangered’ or ‘Endangered’ but is facing a high risk of extinction in the wild in the medium term future.
Watercourse:	A river or spring; a natural channel in which water flows regularly or intermittently; a wetland, lake or dam into which, or from which, water flows; and any collection of water which the Minister may by notice in the Government Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks” (South Africa [Republic] National Water Act, 1998).

EXECUTIVE SUMMARY

1. STRATEGIC DECISION

The South African National Parks (SANParks), in line with its Strategic Plan for Commercialisation, has granted a concession for a Hotel development in the Malelane area of the Kruger National Park (KNP) following the destruction of the previous Malelane Hotel by a fire. It has been confirmed that the Malelane Hotel will not be re-built in its previous location.

The Malelane Hotel Development was approved by the members of the SANParks Board at a meeting held on 25 March 2009. A Public Private Partnership (PPP) has been entered into between the SANParks and the Private Party, namely the applicant for this project. The Malelane Hotel development is in alignment with the Peripheral Development Zoning recently developed by SANParks.

It is important to note that a strategic decision on the Malelane Hotel Development is in place and that the Environmental Impact Assessment is therefore being conducted on an approved land use proposal in terms of Park Management Plans. Five sites within the KNP have been identified by the SANParks for development of the Hotel as per the Park Management Plan and peripheral development policy.

2. ENVIRONMENTAL ASSESSMENT REQUIREMENTS

Interdesign Landscape Architects (Pty) Ltd (ILA) was originally commissioned by Malelane Safari Resort Investments (Pty.) Ltd (the Applicant), to undertake the appropriate environmental process on behalf of the Private Party for the proposed establishment of a Hotel within the Kruger National Park, in terms of Regulations 27-35 published in Government Notice R385 under Section 24(5) read with Section 44 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended. The development proposal also entails the realignment of Rhenosterkoppies Road which currently traverses the proposed development area. A Park & Ride Facility is also proposed to be established at the Malelane Entrance Gate as part of the Hotel development.

3. LEGISLATIVE BASIS

SANParks is bound by a number of statutes with relevance to environmental and conservation management of Parks, including (without limitation) the National Environmental Management: Protected Areas Act, 2003 (Act No 57 of 2003) (NEMPAA); the National Water Act 36 of 1998; the Water Services Act, 108 of 1997; the National Environmental Management Act, 107 of 1998 (NEMA); the National Environmental Management: Air Quality Act; the Hazardous Substances Act, 15 of 1973; and the National Heritage Resources Act, 25 of 1999. Consent in respect of any developments in a Protected Area are governed by the NEMA and the NEMPAA, and regulations promulgated under these and other acts. Any changes to infrastructure and operations require written approval from SANParks and are subject to the prescribed policies and procedures. This includes the Kruger National Park water use policy. The process of the development of the proposed Hotel in the Malelane area will be undertaken as per SANParks' internal policies and procedures as well requiring consent from the Department of Environmental Affairs (DEA) and the Department of Water Affairs (DWA) and by SANParks.

The DEA has adopted an Integrated Environmental Management (IEM) Procedure to guide planning and implementation of development proposals. According to DEA, the purpose of the IEM procedure is 'to ensure that the possible environmental consequences of development proposals are investigated and understood before decisions are taken, enabling informed decision making and accountability for decisions taken.' The IEM procedure applies to a prescribed set of activities, as well as to any development that might affect a 'designated area or feature' and one of which is 'national, provincial and municipal nature reserves'.

A key component of the IEM procedure is the preparation of an Environmental Impact Assessment (EIA) in respect of the proposed development. The EIA Regulations provide for an obligatory EIA in respect of 'resorts, lodges, hotels, or other tourism and hospitality facilities' in a Protected Area, to be prepared by an independent consultant.

The EIA for the proposed development will be reviewed by DEA and DWA as well as SANParks as it also has a role in the review of the EIA, both as an Interested and Affected Party (I&AP) and as the regulatory authority with jurisdiction over the KNP. All EIA findings and recommendations, including a detailed Environmental Management Plan (EMP) that addresses both the development and the operational phases of the development, will be incorporated in full in the PPP agreement.

4. PROJECT DESCRIPTION

The development proposal comprises the establishment of a 240 bed Safari Resort with a four star rating in the Malelane Region of the Kruger National Park. The main activities to be provided by the safari resort include the following:

- Accommodation in standard, luxury and family suites;
- Game Drives;
- Environmental Education;
- Main lodge with a place of refreshment and pool area;
- Restaurant;
- Conference venue;
- Family centre providing activities for children
- Wellness Centre / Spa;
- Curio shop with locally sourced handicrafts and products;
- Exposure to local culture through planned events (e.g. dancing, choirs, storytelling); and
- Cultural and Heritage education.

The preferred site selected by the applicant for the development is a 'Green Field' site in the far south of the Kruger National Park (KNP). The proposed site is situated at the confluence of the Timfenheni Spruit and the Crocodile River on the southern boundary of the Park. As the custodian of the KNP, SANParks will retain broad oversight responsibility for the land on which the facility is proposed.

5. THE APPROACH

This Scoping Report includes the initial identification of key issues and/or concerns as highlighted by relevant authorities, Interested and/or Affected Parties and professional judgement of the Environmental Assessment Practitioner (EAP) and specialist sub-

consultants. The Scoping allows for the identification of anticipated impacts to be assessed in the EIA phase:

The following specialist investigations were utilized in the Scoping Report:

- Vegetation and Fauna Assessments;
- Geotechnical and Hydrogeological Investigation;
- Heritage Investigation;
- Wet services report;
- Waste Management Plan;
- Storm Water Plan;
- Electrical Articulation Plan;
- Visual Impact Assessment;
- Architectural layouts of each of the development components;
- Architectural site layout of the safari resort and park and ride facility;
- Engineering Services report and layouts containing information on provision of civil and electrical service of the safari resort and park and ride facility as well as the re-alignment of the S114 Road;
- Geological Investigation.

This information was used to identify impacts and to evaluate each of the alternative sites in order to verify the feasibility of the applicant's preferred site.

The preferred site was then evaluates in context of SANParks Zoning Plan.

6. SERVICES AND UTILITIES

Services and utilities of all development components were discussed in detail with design input from engineers. Detailed layouts of all services are provided to ensure relevant impacts of these services could be assessed.

Relevant licenses and legislative requirements associated with services and utilities were identified and discussed.

7. PUBLIC PARTICIPATION

Interested and/or Affected Parties (I&APs) were notified of the proposed project as per the requirements of the Environmental Impact Regulations published in Government Notice R385 in Government Gazette No. 28753 of 21 April 2006, under Section 24(5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

A register of all I&APs has been opened and will be updated and maintained in accordance with Regulation 57 throughout the EIA process. Registered I&APs have been provided the opportunity to comment on the Draft and Amended Scoping Reports, in accordance with Regulation 58.

Comments and concerns are being captured throughout the process. Those that were raised to date are included in the Comments and Response Report.

8. POTENTIAL IMPACTS IDENTIFIED

A number of impacts have been identified in the scoping report which will be addressed in the EIA process. The impacts have been identified for both the Park and Ride Facility and the Safari Resort Development individually.

Operational and Construction Impacts identified to **be associated with the Park and Ride Facility** are as follows:

– Construction Phase

- De-vegetation for parking areas, internal roads, services and welcome centre.
- Loss of smaller faunal species such as invertebrates, reptiles and smaller mammals.
- De-vegetation for the purposes of developing berms and the re-vegetation of the berms once developed.
- Potential poaching of fauna by construction team.
- Impacts on aesthetics of the area and genius loci during construction. This will also specifically relate to tourism and impacts on adjacent developments.
- Noise emanating from construction could have impact on fauna, tourists and surrounding developments.
- Dust generation from construction could impact on fauna, tourists and surrounding developments.
- Removal of vegetation within a protected area.
- Heavy vehicle traffic increase that could have an impact on general traffic in the KNP, impact on roads and potentially increase numbers of road kills.
- Potential impact of traffic congestion at Malelane Access gate.
- Security risk will increase due to large vehicles accessing the park. Poached items could therefore be smuggled out of the park easier than normal.
- Crime may increase as a result of contract workers in the area.
- Stockpile areas for construction material, generation and disposal of building waste and liquids and vehicle maintenance could have a negative impact on ground water, surface water and the environment as a whole.
- Impacts associated with stockpiles and building material on fauna (Poisoning and suffocating).
- Possible damage on sub-surface heritage features which were not identified in scoping or EIA phase.
- Damage and removal of protected floral species which have been identified on site which require permits. The philosophy will however be to avoid all tree removal wherever possible.
- Solid Waste Management Impacts on surrounding environment.
- Additional sewage requirements of construction team may have impacts on the surrounding environment if not managed effectively.
- Excavation requirements for service and utility provision.
- Potential impacts of erosion due to storm water runoff.
- Visual Impacts on surrounding developments such as Pestana Hotel and Leopard Creek Golf Estate.
- Unauthorised fire on site could cause potential impacts.

– **Operational Phase**

- Increased traffic congestion at the Malelane Gate which is already congested at peak seasons.
- Increased area of hard surfaces which will increase quantity and velocity of storm water runoff. This runoff could also include impurities from leaks of vehicles which will have a negative impact on surrounding soils and ground water.
- Loss of habitat for fauna, invertebrate and flora, impact on biodiversity (Cumulative Impact).
- Negative visual impact on surrounding operators and visitors visiting the park.
- Waste generation of facility.
- Additional Sewage Requirements of operational phase.
- Noise impacts associated with operations.
- Light pollution of the facility.
- Impacts associated with 24 hour access relating to security, and impacts on fauna.

– **Cumulative Impacts**

- Waste generation;
- Traffic;
- Water Usage;
- Electricity Consumption; and
- Loss of habitat for fauna and flora (long term impact on biodiversity)

Potential impacts **associated with the proposed safari resort and the relevant road re-alignment** are as follows:

– **Construction Phase**

- De-vegetation for parking areas, internal roads, services and safari resort development components.
- Loss of smaller faunal species such as invertebrates, reptiles and smaller mammals.
- De-vegetation for new road re-alignment.
- Impacts associated with closure of S114 and rehabilitating decommissioned section.
- Potential poaching of fauna by construction team.
- Impacts on aesthetics of the area and genius loci during construction. This will also specifically relate to tourism and impacts on adjacent developments.
- Noise emanating from construction could have impact on fauna, tourists and surrounding developments.
- Dust generation from construction could impact on fauna, tourists and surrounding developments.
- Removal of vegetation within a protected area.
- Heavy vehicle traffic increase that could have an impact on general traffic in the KNP, impact on roads and potentially increase numbers of road kills.
- Security risk will increase due to large vehicles accessing the park. Poached items could therefore be smuggled out of the park easier than normal.
- Crime may increase as a result of contract workers in the area.

- Stockpile areas for construction material, generation and disposal of building waste and liquids and vehicle maintenance could have a negative impact on ground water, surface water and the environment as a whole.
- Impacts associated with stockpiles and building material on fauna (Poisoning and suffocating).
- Possible damage on sub-surface heritage features which were unable not identified in scoping or EIA phase.
- Damage and removal of protected floral species which have been identified on site which require permitting. The philosophy will however be to avoid all tree removal wherever possible.
- Solid Waste Management Impacts on surrounding environment.
- Additional sewage requirements of construction team may have impacts on the surrounding environment if not managed effectively.
- Excavation requirements for service and utility provision.
- Potential impacts of erosion due to storm water runoff.
- Visual Impacts on surrounding developments such as Pestana Hotel and Leopard Creek Golf Estate due to additional traffic volumes.
- Impacts on sensitive Sodic Sites identified by specialist.
- Impacts on red data faunal species and their breeding habits.
- Impacts on *Adenium Swazicum* populations found on site.
- Unauthorised fire on site could cause potential impacts.
- Impact on elephant, hippo, buffalo and other species which move across the S114 to the crocodile river;
- Impacts of placing electricity supply cable under the Crocodile River to minimise visual impact.

– Operational Phase

- Increase of hard surface area i.e. increased stormwater run off, which could impact on Crocodile River and Timfenheni Spruit pollution, erosion & destruction of habitat (cumulative impact);
- Loss of habitat for fauna, invertebrate and flora, impact on biodiversity (Cumulative impact);
- Negative visual impact on character of the park should architecture not be in line with natural surroundings;
- Waste generation (Cumulative impact) could impact on capacity of landfill site;
- Waste generation & management could impact on fauna;
- Potential Impact of RBC treatment plant for sewage management;
- Increased traffic generation during operational phase (Cumulative impact);
- Financial impact on existing concessions within the Park and surrounding tourist accommodation facilities;
- Sustainability of carrying capacity of Safari resort;
- Existing capacity of KNP to accommodate additional tourist numbers;
- The re-routing of the S114 Road could impact on existing Game Drive Routes and other tourist road users;
- Light pollution (i.e. visual impact) could impact on surrounding properties and environment;
- Noise pollution could impact on surrounding properties and environment;

- Possible depletion of natural resources such as water, or contamination of groundwater should the development not be managed properly (Cumulative impact);
- Additional burden on electrical service provider
- Disturbance of nocturnal fauna through night driving;
- Roadkill due to night driving (staff);
- Impact on elephant, hippo, buffalo and other species which move across the S114 to the crocodile river;
- Safety measures implemented to protect guests could pose a danger to fauna and impact on migration routes.

– **Cumulative Impacts**

- Waste generation;
- Traffic;
- Water Usage;
- Electricity Consumption; and
- Loss of habitat for fauna and flora (long term impact on biodiversity)

Potential **beneficial impacts** associated with the entire development have been identified as follows:

– **Construction Phase**

- Creation of employment opportunities and skills development for local communities;
- Increased income generation for local entrepreneurs and service providers providing services/supplies to the construction process;
- In-direct benefit will include the increased standard of living for many families in the surrounding communities; and
- Payment of funds to contribute to the management of the Park.

– **Operational Phase**

- Rehabilitation of disturbed areas;
- Skills development and long term job opportunities;
- Community and local socio-economic upliftment;
- Generation of funds to contribute to the management of the Park;
- Environmental Interpretation, education and awareness opportunities to educate visitors to the KNP and the local community about the importance of conservation;
- Increased income generation for local entrepreneurs and service providers providing services/supplies to the operations process;
- Economic multiplier effect of tourism on businesses in the local and regional economy; and
- Creation of a destination that appeals to the tastes and preferences of a new or broader tourist market and exposes them to nature and heritage.

9. WAY FORWARD

The Draft Scoping Report has been made available for 40 days to key stakeholders and all registered Interested and/or Affected Parties (I&APs) for review.

Comments received from I&AP's on both the Draft Scoping and Amended Draft Scoping Report submitted by ILA, along with the comments received by V&L, to date have been included in the Comments and Response Report which forms part of this Draft Scoping Report for Public Review. Should the DEA accept the Scoping Report, V&L shall proceed with preparing the Environmental Impact Assessment Report.

The Environmental Impact Report shall contain all finalised specialist reports as well as extensive analysis of:

- Assessment of alternatives to the proposed development;
- Assessment of issues raised during the Scoping Phase;
- Assessment of identified impacts and determining of significance of impacts;
- Mitigation of environmental issues.
- The report shall also include an Environmental Impact Statement and a Draft Environmental Management Plan, as well as any other information that may have been requested by the authority following submission of the Scoping Report.

This report will once again be made available for review and comment by the stakeholders as mentioned previously in this section.

The comments received during this period will be included in the final EIA Report for submission to DEA and for issuing of a decision by the afore-mentioned authority.

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CHAPTER 1 - INTRODUCTION

1.1 BACKGROUND

V&L Landscape Architects (V&L) have been appointed to undertake an Environmental Impact Assessment for a proposed Hotel/Safari Resort facility in the Malelane Area of the Kruger National Park.

V&L Landscape Architects are the second Environmental Impact Assessment Practitioners to be appointed by the applicant to undertake this process. Interdesign Landscape Architects (ILA) were first appointed to undertake the EIA process and completed the project registration phase, the Public Advertisement Phase and completed an initial Draft of the Scoping Report which was submitted to the Department of Environmental Affairs.

The Department of Environmental Affairs rejected the Scoping Report submitted by ILA and provided a number of comments on the report and identified gaps in requirements not addressed by the report. The applicant then decided to appoint V&L to undertake the amendment of the Scoping Report and the remainder of the EIA process for the proposed development.

This document is the amended Scoping Report which addresses all previous technical gaps and information requirements as determined by the DEA.

1.2 PURPOSE OF DOCUMENT

The proposed development is listed in terms of the Environmental Impact Assessment Regulations of 2006 (Government Notice R385, R386 and R387) under Chapter 5 of the National Environmental Management Act, Act 107 of 1998 and therefore requires an Environmental Impact Assessment (EIA) to be undertaken and submitted to the Competent Authority – in this case DEA - for a decision. Broadly speaking, the EIA consists of two phases, namely the Scoping Phase and the Environmental Impact Reporting Phase. This document is referred to as the Scoping Report because it deals with the Scoping Phase.

The purpose of this document is to identify the initial key issues or concerns as highlighted by the relevant authorities, Interested and/or Affected Parties (I&AP's) and professional judgement of the Environmental Assessment Practitioner. Scoping allows for the identification of the anticipated impacts, particularly those, which require specialist investigations.

The document further communicates the process and the project to all stakeholders and compliance organisations in an easily understandable manner. This document also provides all I&AP's with a detailed project description which will provide them with a better understanding of what the proposed outcomes of the project are.

The purpose of the Environmental Impact Reporting Phase is to address the issues, potential impacts and feasible alternatives which were identified during the Scoping Phase. This phase will be documented in a separate Environmental Impact Report (EIR) which will further contain a Draft Environmental Management Plan.

It is important to note that a strategic decision on the Malelane Hotel Development is in place and that the Environmental Impact Assessment is being conducted on an approved land use proposal in terms of Park Management Plans in terms of a previous tender which was awarded to the applicant.

This process is not being conducted to assess the feasibility of the decision made by SANParks to implement the concept of hotels in the Kruger National Park (KNP) and other Parks. This process is being conducted to identify and assess the potential Environmental Impacts of the proposed hotel/safari resort in the Malelane Area of the KNP.

1.3 THE APPLICANT

The applicant is Malelane Safari Resort Investment (Pty) Ltd.

Malelane Safari Resort Investment (Pty) Ltd was the preferred bidder in the SANParks Tender process for the PPP opportunity. They have since been appointed by SANParks as the developer of the proposed hotel development.

Malelane Safari Resort Investment (Pty) Ltd is a predominantly South African owned consortium and includes a minimum 20% holding by a Community Trust and Black Economic Empowerment (“BEE”) on a 30-year concession agreement, with 6% of turnover going to SANParks.

The specific details of the applicant are as follows:

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1.4 STRATEGIC DECISION MADE BY SANPARKS

1.4.1 SANParks Commercialisation Strategy, 2000

In September 1998, the Department of Environmental Affairs and Tourism (DEAT), articulated the need for SANParks to prepare for a lesser dependence on state funding, which would increasingly be aimed at funding the essential conservation requirements.

This formed the basis of the Commercialisation Strategy adopted by SANParks in 2000 with its foundation in the economic theory which defines the State’s responsibility as one of performing a regulatory function and intervening in the market-place only where there is market failure. The objective was to reduce the dependence on state funding and improve existing operational efficiencies. This does not imply that SANParks has to be independent of the State but rather that the collective funding sources (i.e. state funding, private donations, NGO and international donations, SANParks’ tourism activities and commercialisation) must be able to “sustain” the total business of SANParks. Sustainable tourism development

depends on a partnership and balance between the social, technological, economical, the environment and political values and benefits. Hence, should one source of funding be threatened, SANParks must be able to absorb such withdrawal without compromising its sustainability.

The implementation of the Commercialisation Strategy 2000, resulted in the awarding of 11 (eleven) concession sites to private operators, seven of which are in Kruger National Park, two in Addo Elephant National Park, and two in Table Mountain National Park.

In addition to the concessions, the Commercialisation Strategy 2000 also resulted in the awarding of 21 shops and 17 restaurants across all national parks to private operators. Facilities were upgraded by the operators and SANParks receives a Public Private Partnership (PPP) Fee from these operators.

1.4.2 SANParks Commercialisation Strategy, 2006

Following the implementation of the Commercialisation Strategy 2000, there have been significant developments in SANParks' approach to PPP initiatives. SANParks accordingly developed the Strategic Plan for Commercialisation 2006 to accommodate and benefit from:

- The experience and specialist skills acquired;
- The lessons learnt from implementation and management of PPPs;
- Legislative requirements; and
- The extended scope of projects identified to enable SANParks to improve its infrastructure towards 2010 and beyond, generate revenues, promote BEE and create employment.

The objective of the strategy is to ensure that SANParks has the fundamentals, including capacity in place for managing existing, and for entering into new PPPs successfully. In addition, SANParks has a responsibility towards creating tourism infrastructure on a longer term as compared to a tourism organisation run by a private company. Such infrastructure will enable South Africa to compete with global tourism destinations like Brazil, Thailand etc. Commercialisation through Public Private Partnerships provides SANParks the opportunity to achieve this goal.

High-level commercialisation objectives for SANParks include any or all of the following:

- Revenue Generation;
- Loss minimisation or savings on existing operations;
- Optimal use of under-performing assets;
- Job creation;
- Broad based Black Economic Empowerment;
- Infrastructure upgrades;
- Upgrade/development of historical and/or cultural sites;
- Tourism promotion; and
- Further biodiversity protection and conservation.

1.4.3 The intention of the PPP agreement

It is intended that by SANParks entering into a PPP with Malelane Safari Resort Investment (Pty) Ltd, SANParks may be able to generate additional revenue through PPP fees paid to SANParks by the Private Party, while enabling SANParks to focus on its core activity of

conservation. It is intended that the project will be developed by the Malelane Safari Resort Investment (Pty) Ltd in compliance with strict environmental standards maintained by SANParks. In keeping with SANParks' objectives, particular attention will be paid to the implementation of broad-based Black Economic Empowerment ("BEE"), particularly those from local communities adjacent to the Parks.

1.4.4 Value for Money Objectives

The value-for-money objectives for the project are aligned with SANParks' strategic objectives included in the Strategic Plan for Commercialisation. Setting these objectives at the inception phase of the project were vital as they provided the benchmarks for the feasibility and procurement phases. During the management of the PPP agreement, they are used to measure the success of the project. The value for money objectives include the following:

- Revenue generation for SANParks;
- BEE, job creation and community development;
- Tourism promotion;
- Optimisation of prime state land; and
- Biodiversity protection and conservation.

1.4.5 Project Description/Labelling

Due to the Malelane Hotel Development being the first PPP hotel development within the boundaries of a National Park and the ecological sensitivities surrounding such, SANParks debated the labelling of the project. Initially it was proposed that the project is labelled as a Safari Lodge opposed to a Hotel.

However, subsequently it was felt a Safari Lodge could be viewed to be similar to the concessions lodges, whilst it does not have any exclusivity in terms of traversing or bush activities. Secondly, it could be viewed by the critics as a scope creep on the initial concession programme and thirdly it could be viewed as unfair competition by other especially neighbouring concession holders.

Another option was to use the term Hotel but with an appropriate prefix i.e. Ecohotel; Wilderness Hotel; Safari Hotel.

However, SANParks finally determined that the Malelane Safari Resort Investment (Pty) Ltd will be requested to suggest an appropriate name for the hotel but SANParks will reserve the final right of approval.

Malelane Safari Resort Investment (Pty) Ltd has named the hotel development as follows:

'Radisson Blu Safari Resort, Kruger Park'

1.5 THE DEVELOPMENT OPPORTUNITY

After the Malelane Sun burnt down on 22 May 2007, SANParks saw this an opportunity to provide a similar product but across the Crocodile River inside the Kruger National Park for the following reasons as determined by SANParks:

- **Location:** The facility is to be built within the KNP and this could be done according to the best environmental practice, as currently applies to private operators within national parks;
- **Existing Facilities:** Guests would still essentially use the same or similar facilities in the vicinity, namely the golf facilities in the area as well as the Park for leisure, as they did at Malelane Sun;
- **New markets:** The R240m to be spent on the Safari Resort at Malelane will attract more of the growing black middle class. The annual spending power of SA's 3-million or so black middle-class citizens (up from 2-million in 2005) was estimated at R237bn last year, down from an estimated high of R250bn in 2008. The black middle class had a combined spending power of 34% of all consumers — SA's 34-million adults. Attracting more middle-class blacks was one of SANParks' three focus areas for the park. The others were continuing to serve the park's traditionally largely white domestic market — which was more attracted to self-catering accommodation — and the international market. About 30% (of domestic market) of the park's visitors are black, although less than 10% of overnight domestic visitor are black. Market research showed the majority of SA's black middle class wanted full-service resort-type accommodation;
- **Development Capacity:** The International Union for Conservation of Nature (IUCN) guideline for infrastructure development in a Protected Area was 10% of the total area, and the park has so far developed 6285ha (0,3%) including roads and staff accommodation. SANParks has no intention to develop the park even near to the 10% threshold;
- **Diversification of product:** Currently, visitors can either book the self catering, basic and affordable accommodation or the ultra luxurious private lodge accommodation. The Kruger Park does not cater for the middle ground, for which there is a growing demand. More and more holiday makers would like to be comfortable and catered for and it is intended that this safari resort will provide just that. SANParks has spent R1,9bn for park infrastructure over the past five years, but has not yet catered for visitors who wanted hotel-style accommodation. The park has an occupancy rate which, although seasonal, ran at an average of 79,4% in 2009-10. This was much higher than the national average of 50% to 60%.
- **Job creation & Stimulation of local economy:** Local businesses will have the opportunity to supply produce and services to this Safari Resort. The development will also increase SANParks' total employment to 11000. According to SANParks estimates, this Safari Resort will provide around 230 additional jobs to two very poor neighbouring communities. This excludes the workforce needed for the construction which will provide around 100 temporary jobs.
- **International Expectations:** International visitors are accustomed to resort-style accommodation in national parks around the world, and expect the same when visiting the Kruger National Park.
- **Increased revenue** will aid conservation.

SANParks has determined provisionally that the safari resort can accommodate a maximum of 240 guest beds and onsite essential staff. The opportunity exists, therefore, for a larger safari resort facility, as most staff and support infrastructure could easily be accommodated off site, outside the KNP boundary, and transported to the safari resort on a daily basis.

SANParks has determined that the safari resort will be operated from the Malelane Entrance Gate proposed “Park and Ride” facility. This will allow all guests to the safari resort to store their private vehicles or busses at the Malelane Entrance Gate facilities and be transported in open game viewing vehicles or small closed coaches 24 hours per day, 7 days per week to and from the safari resort.

Malelane Safari Resort Investment (Pty) Ltd will be responsible for the development, management and maintenance of both the Safari Resort and the Park and Ride Facility. Activities from the safari resort will include both day and night drives in open, 4X4 vehicles on existing tourist roads accompanied by a SANParks qualified guide. Accompanied walks with SANParks qualified guides are also possible in some areas, provided the Private Party obtains approval from SANParks.

1.6 ENVIRONMENTAL IMPACT ASSESSMENT REQUIREMENTS

The EIA process for the proposed development is being undertaken in terms of the National Environmental Management Act (Act no. 107 of 1998). The act provides for co-operative, environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote cooperative governance and procedures for co-ordinating environmental functions exercised by organs of state; and to provide for matters connected therewith.

The EIA process is conducted in terms of Section 24 (5) of the Act. Section 24 states ‘(1) In order to give effect to the general objectives of integrated environmental management laid down in this Chapter. The potential impact on—

- (a) the environment;
- (b) socio-economic conditions; and
- (c) the cultural heritage,

of activities that require authorisation or permission by law and which may significantly affect the environment, must be considered, investigated and assessed prior to their implementation and reported on to the organ of state charged by law with authorizing, permitting, or otherwise allowing the implementation of an activity.’

The Environmental Impact Assessment process is regulated by the Environmental Impact Assessment Regulations of 2006 Government Notice No’s R385, 386 and 387 of 2006) which is promulgated in terms of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998).

The proposed development involves so-called ‘listed activities’. These activities could impact significantly on the environment and therefore require Environmental Authorisation from the Competent Authority which is the National Department of Environmental Affairs.

The following activities are listed in terms of the Notice R386 of 2006 and would trigger the Basic Assessment Process:

- **Government Notice R 386 Item (1) (a):** The generation of electricity where the electricity output is more than 10 megawatts but less than 20 megawatts.
- **Government Notice R 386 Item (1) (d):** The construction of facilities or infrastructure, including associated structures or infrastructure, for resorts, lodges, hotels or other tourism and hospitality facilities in a protected area contemplated in the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)
- **Government Notice R 386 Item (1) (k):** The bulk transportation of sewerage and water including stormwater in pipelines with (i) an internal diameter of 0,36 metres or more.
- **Government Notice R 386 Item (1) (m):** Any purpose in the one in ten year floodline of a river or stream or within 32 metres from the bank of a river or stream where the floodline is unknown, excluding purposes associated with existing residential use, but including
 - i. canals;
 - ii. channels;
 - iii. bridges;
 - iv. dams; and
 - v. weirs.
- **Government Notice R 386 Item (1) (n):** The off-stream storage of water, including dams and reservoirs, with a capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of the activity listed in item 6 of Government Notice No R387 of 2006.
- **Government Notice R 386 Item (12):** The transformation or removal of indigenous vegetation of 3 hectares or more or of any size where the transformation or removal would occur within a critically endangered ecosystem listed in terms of Section 52 of the National Environmental Management Biodiversity Act, 2004 (Act No 10 of 2004).
- **Government Notice R 386 Item (13):** The abstraction of groundwater at a volume where any general authorization issued in terms of the National Water Act, 1998 (Act No 36 of 1998) will be exceeded.
- **Government Notice R 386 Item (15):** The construction of a road that is wider than 4 metres and that has a road reserve wider than 6 metres, excluding roads that fall within the ambit of another listed activity or which are access roads of less than 30 metres long.

The following activities are listed in terms of the Notice R387 of 2006 and would trigger the Scoping and EIA Process:

- **Government Notice R 387 Item (2):** Any development activity, including associated structures and infrastructure, where the total area of the developed area is, or is intended to be 20 hectares or more.

As the proposed development includes activities listed in terms of both the Basic Assessment and Scoping and EIA Processes, the application is required to follow the more comprehensive Scoping and EIA Process.

In terms of the National Environmental Management: Waste Act, 2008 (Act No 59 of 2008) the Applicant is also applying to DEA for authorisation of an activity for which a waste management license is required in accordance with Section 20(b) of the National Environmental Management Waste Act, 2008 (Act No 59 of 2008). **As per GNR 718 of 3 July 2009 Category (B) Item (7) 'The treatment of effluent, wastewater or sewage with an annual throughput capacity of 15 000 cubic metres or more'.**

1.7 LEGAL FRAMEWORK

Other relevant legislation and guidelines which will be taken into consideration during the planning process includes the following:

1.7.1 National Environmental Management: Protected Areas Act (Act No. 57 of 2003)

The Act provides for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes; for the establishment of a national register of all national, provincial and local protected areas; for the management of those areas in accordance with national norms and standards; for intergovernmental co-operation and public consultation in matters concerning protected areas, and for matters in connection therewith.

1.7.2 National Water Act, 1998 (Act No. 36 of 1998)

The National Water Act, 1998 (Act No. 36 of 1998) aims to provide management of the national water resources to achieve sustainable use of water for the benefit of all water users. This requires that the quality of water resources is protected as well as integrated management of water resources with the delegation of powers to institutions at the regional or catchment level. The purpose of the Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in responsible ways.

The Act aims to regulate the use of water and activities, which may impact on water resources through the categorisation of 'listed water uses' encompassing water extraction, flow attenuation within catchments as well as the potential contamination of water resources, where DWAF is the administering body in this regard.

The National Water Act, 1998 (Act 36 of 1998) defines a wetland as "land which is transitional between terrestrials and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil." The development area is situated adjacent to the Crocodile Area and relevant tributaries.

Furthermore the National Water Act, 1998 (Act 36 of 1998) defines a watercourse as 'a river or spring' amongst others.

The development area is situated adjacent to the Crocodile River.

The development's impact on these waterbodies will be investigated in depth during the Environmental Impact Assessment Phase. Section 144 of the National Water Act, 1998 (Act 36 of 1998) states that "no person may establish a township unless the layout plan shows, in a form acceptable to the local authority concerned, lines indicating the maximum level likely

to be reached by floodwater on average once in 100 years.” The 1:100 year floodline will be addressed by the consulting engineer.

The applicant will appoint the relevant consultant to obtain the above-mentioned licences from the Department of Water Affairs, once the necessity therefore has been established.

1.7.3 Water Services Act, 1997 (108 of 1997)

The Act legislates the necessity to provide for the rights of access to basic water supply and basic sanitation; to provide for the setting of national standards and of norms and standards for tariffs; to provide for water services development plans; to provide a regulatory framework for water services institutions and water services intermediaries; to provide for the establishment and disestablishment of water boards and water services committees and their powers and duties; to provide for the monitoring of water services and intervention by the Minister or by the relevant Province; to provide for financial assistance to water services institutions; to provide for certain general powers of the Minister; to provide for the gathering of information in a national information system and the distribution of that information; to repeal certain laws; and to provide for matters connected therewith.

The Crocodile River Major Irrigation Board has registered as an affected stakeholder in the EIA Process.

1.7.4 National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)

The purpose of the Biodiversity Act is to provide for the management and conservation of South Africa’s biodiversity within the framework of the NEMA and the protection of species and ecosystems that warrant national protection. As part of its implementation strategy, the National Spatial Biodiversity Assessment was developed.

1.7.5 National Spatial Biodiversity Assessment

The National Spatial Biodiversity Assessment (NSBA) classifies areas as worthy of protection based on its biophysical characteristics, which are ranked according to priority levels.

1.7.6 National Heritage Resources Act, 1999 (Act No. 25 of 1999)

The National Heritage Resources Act legislates the necessity for cultural and heritage impact assessment in areas earmarked for development, which exceed 0.5 hectares (ha) and where linear developments (including pipelines) exceed 300 metres in length. The Act makes provision for the potential destruction to existing sites, pending the archaeologist’s recommendations through permitting procedures. Permits are administered by the South African Heritage Resources Agency (SAHRA).

1.7.7 Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)

The Act provides for control over the utilisation of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.

1.7.8 National Veld and Forest Fire Act, 1998 (Act No. 101 of 1998)

The purpose of this Act is to prevent and combat veld, forest and mountain fires throughout the Republic. The Act provides for a variety of institutions, methods and practices for achieving this purpose. National Veld and Forest Fire Act, 101 of 1998.

1.7.9 National Forests Act, 1998 (Act No. 84 of 1998)

This Act provides for the management, utilisation and protection of forests through the enforcement of permitting requirements associated with the removal of protected tree species, as indicated in a list of protected trees (first promulgated in 1976 and updated since). Permits are administered by the DAFF.

1.7.10 National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)

The Waste Act reforms the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development; to provide for institutional arrangements and planning matters; to provide for national norms and standards for regulating the management of waste by all spheres of government; to provide for specific waste management measures; to provide for the licensing and control of waste management activities; to provide for the remediation of contaminated land; to provide for the national waste information system; to provide for compliance and enforcement; and to provide for matters connected therewith.

Activities in respect of which a waste management license is required in accordance with section 20(b) of the Waste Act that might be required for the proposed development include the following:

‘Category B (7) The treatment of effluent, wastewater or sewage with an annual throughput capacity of 15 000 cubic metres or more.’

And

‘Category B (11): The Construction of facilities for activities listed in Category B of this schedule (not in isolation to associated activity)

The above activities are listed as a Category B activity and any person who wishes to commence, undertake or conduct an activity listed under this Category, must conduct an Environmental Impact assessment process, as stipulated in the Environmental Impact Assessment Regulations made under section 24(5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as part of a waste management license application.

A specialist consultant has been appointed to undertake the required license application. The license has been submitted to the DEA on the 15th July 2011. The reference number is 12/9/11/L661/6.

1.7.11 Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)

The purpose of this Act is to provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety; and to provide for matters connected therewith.

1.7.12 National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)

To reform the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development; to provide for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures; and for matters incidental thereto.

1.7.13 Hazardous Substances Act, 1973(Act No. 15 of 1973)

To provide for the control of substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances, and for the control of certain electronic products; to provide for the division of such substances or products into groups in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances and products; and to provide for matters connected therewith.

1.7.14 Coordinated Policy Framework Governing Park Management Plans, 2006 [SANParks Management Plan Policy Framework]

The National Environmental Management: Protected Areas Act (No 57 of 2003) requires that all South African Parks produce management plans for all National Parks in consultation with stakeholders. The document constitutes a policy framework intended to give guidelines to the management of all national parks managed by South African National Parks. A policy framework is a requirement of the National Environmental Management: Protected Areas Act No. 57 of 2003 (NEMPAA). The policy framework encompasses the institutional, ecological, economic and social environment for park management and includes:

- an introduction to the management plan requirements of the NEMPAA what it means for stakeholders, and the provisions SANParks has made to comply with the Act;
- SANParks as an organisation, its business architecture and performance management system ;
- 3 Corporate policy guiding principles focusing on proactive management.

1.8 REGIONAL PLANNING POLICIES

1.8.1 Ehlanzeni Spatial Development Framework

Ehlanzeni is strategically well positioned within an international, regional and Southern African context. Existing spatial development initiatives of a regional and local importance include the Maputo Development Corridor Spatial Initiative, the Tourism and Biodiversity

corridor and the Limpopo Transfrontier Park. The Tourism and Biodiversity Corridor includes the parts of south eastern Mpumalanga, northern Swaziland and southern Mozambique and is closely associated with the Maputo Corridor Spatial initiative. It adds a further dimension to the Maputo corridor in the sense that it promotes the utilisation of the undeveloped tourism development potential in rural areas that house the poor communities. These initiatives span over international boundaries and are managed by international agreements. Although some of these initiatives are still in a very early stage of implementation it paves the way for regional as well as local development strategies and should be thoroughly taken into account in all levels of integrated development planning. Accessibility within the district and region needs to be enhanced to enable the optimal application of private and public investments. The regional and international accessibility of Ehlanzeni provides it with the necessary thrust to become an active role player in the SADEC and global economy. The challenge with regard to local spatial planning lies in the utilization and provision of social and engineering infrastructure in a manner, which will support the above initiatives and enhance the comparative advantages of Ehlanzeni within the region.

Based on the social, economic and developmental needs of the province, the Mpumalanga Province (under the Mpumalanga Provincial Growth and Development Strategy (MPGDS) has identified some priority areas of intervention e.g. Development infrastructure; Economic development etc. Ehlanzeni DM aligned the district legislated role/function with provincial and regional initiatives.

1.8.2 Ehlanzeni Integrated Development Plan

One of the objectives of the Ehlanzeni district municipality is to develop and implement tourism as a strategy for Growth and development. This will be done through:

- Reviewing and analyzing the current institutional arrangements.
- Investigating and proposing marketing and branding strategies.
- Identify tourism development infrastructure to promote tourism

For sustainable development, the municipality's objective is to implement district-wide environmental management activities by complying with the National Environmental Management Act and associated Regulations. The current IDPs of the four local municipalities reveal that the municipalities have interest in tourism development, but limited capacities and resources to promote tourism on their own in their areas of jurisdiction. In the 2003 Tourism In depth Study, the following two main priority issues were identified:

- Underperformance of the tourism sector in the district.
- Historically disadvantaged communities not represented, involved or benefiting from the district's tourism industry.

The objectives that resulted from these priority areas are thus to:

- To grow tourism in Ehlanzeni in the next five years by increasing the number of tourists visiting the District from 900 000 to 1.8 million; thereby creating new employment opportunities in the tourism industry.
- To raise the living standards of historically disadvantaged communities through the economic benefits of tourism by developing tourism within historically disadvantaged communities, ensuring that the impact of tourism development

reaches the historically disadvantaged communities and ensuring integration with Local Economic Development when implementing tourism development projects.

Other objectives which have been formulated as listed below:

- To create a vibrant institutional arrangement that is responsive and informed of dynamics of District/Local municipalities.
- To create a uniform brand/identity for the district that will be used to market it as a preferred tourism destination.
- To develop tourism infrastructure that will promote tourism growth and development in the District.
- To provide information to aspiring tourism entrepreneurs
- Create opportunities for small entrepreneurs
- Streamline sources of tourism start-up capital by providing one stop service
- To form economic linkage with service sector.
- Encourage other sectors of the economy and generate new innovative employment opportunities.
- To increase awareness on the potential benefits and impacts of tourism.
- To create awareness on sustainable tourism development.
- To assist emerging entrepreneurs in establishing, consolidating and improving businesses.

1.8.3 Localised planning policies

- Kruger National Park Management Plan, 2006
- SANParks Concession Manual and Best Practice Manual
- SANParks Roads Manual
- SANParks Zoning specifically relating to the Peripheral Development Zoning
- Kruger National Park Tourism Management Plan (2007-2011)
- Marula Strategic Environmental Assessment.

1.9 THE EIA PROCESS

As per the below process diagram, the EIA process is currently in the Scoping Phase where the Environmental Assessment Practitioner is required to provide a detailed description of the project, identify and briefly evaluate alternatives and identify potential impacts. The overall approach will be to allow for transparent communication with Interested and Affected Parties at all times throughout the duration of the process.

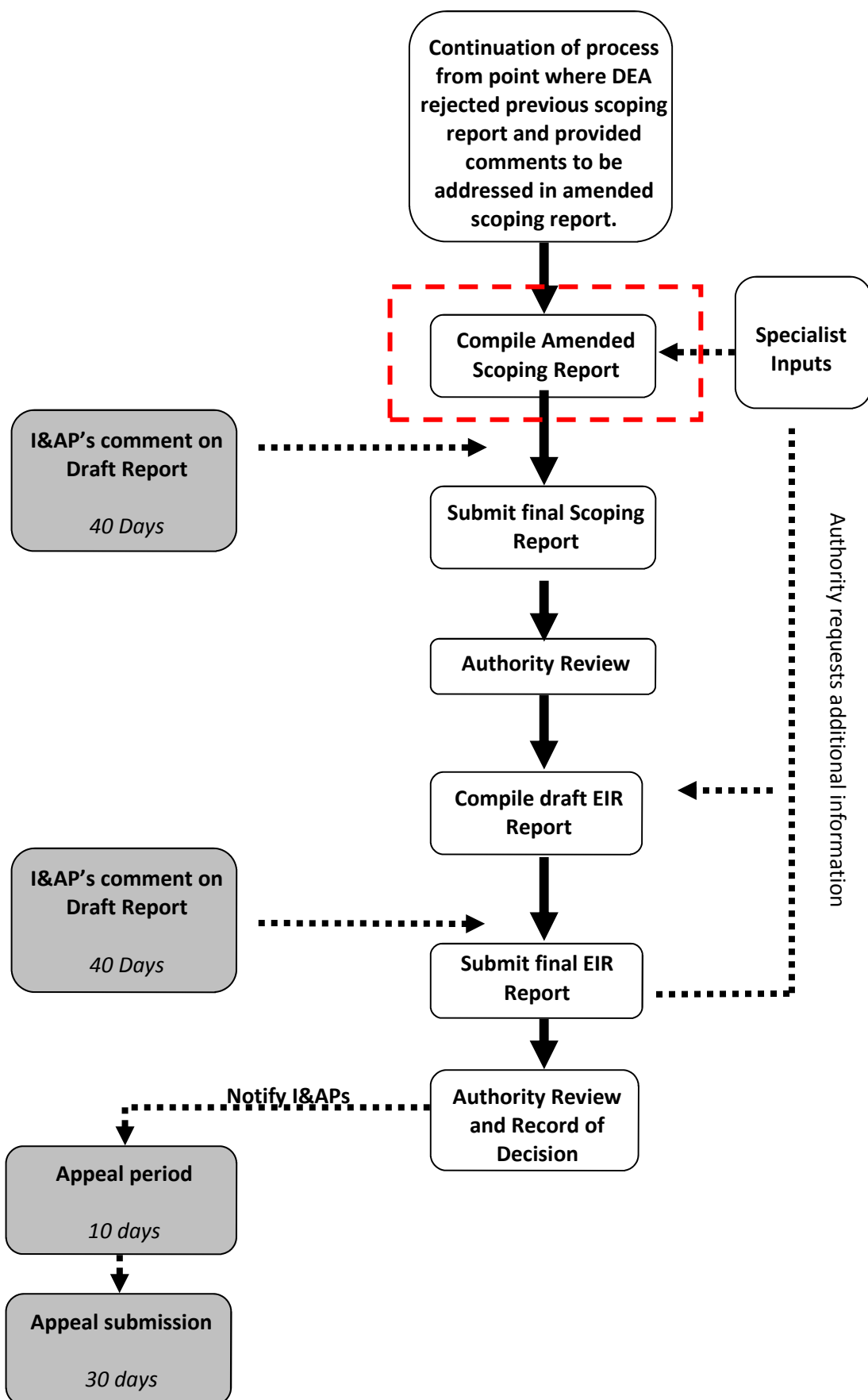
The Draft Scoping Report and Plan of Study has been made available for Public Review for a period of 40 days. The comments and inputs received will be considered in amending the Scoping report before it is submitted to the Department of Environmental Affairs for their consideration. Once the scoping report and Plan of Study have been approved by the DEA, the Scoping Phase of the process will be undertaken.

The scoping phase will include the relevant specialist studies required by the DEA and the actual Environmental Impact Assessment of the preferred alternative and all other alternatives identified in this Scoping Report. The no-go alternative will also be included in the assessment.

The Draft Environmental Impact Report will then be made available for Public Review for a period of 40 days for comment by I&AP's. As done in the scoping phase, the Environmental Impact Report will be amended according to relevant comments received by I&AP's where required. The final Environmental Impact Report will then be submitted to the Department of Environmental Affairs who will then make a decision on the project.

I&AP's will then be notified of the decision by V&L and all I&AP's will have an opportunity to appeal the decision. All appeals will be directed to the DEA for their response.

Process Diagram



CHAPTER 2 - PROJECT DESCRIPTION

2.1 PROJECT OVERVIEW

Application for environmental authorisation from DEA is being made for the establishment of a 240 bed Safari Resort with a four star rating within the southern region of the KNP.

Product and service offering of the proposed safari resort development is to include the following:

- Accommodation in executive suites, standard rooms or family suites;
- Park and Ride Facility at the Malelane Gate;
- Game Drives;
- Environmental Education;
- Main lodge with a place of refreshment and pool area;
- Restaurant;
- Conference venue;
- Wellness Centre / Spa;
- Curio shop with locally sourced handicrafts and products;
- Exposure to local culture through planned events (e.g. dancing, choirs, storytelling); and Cultural and Heritage education.

SANParks has established a bed limit for the development, which has been determined to accommodate a maximum of 240 people, including both guests and resident staff. It is the intention to provide 238 beds for tourism guests and 2 beds for on-site staff. The rest of the staff are to be accommodated off-site, outside the KNP boundary and transported to the site on a daily basis.

SANParks has determined that the safari resort must be operated from the proposed Malelane Entrance Gate 'Park & Ride' facility. This will allow all guests visiting the safari resort to park their private vehicles or busses at the Malelane Entrance Gate Facilities and be transported in open game viewing vehicles 24 hours per day, 7 days per week to and from the safari resort. Activities from the safari resort are proposed to include both day & night drives in open 4x4 vehicles on existing tourist roads accompanied by a qualified guide. Accompanied walks with suitably qualified guides are also possible in some areas. The Hotel Operator is to obtain approval from SANParks for the trails to be walked.

2.2 DESCRIPTION OF PROPOSED OPERATOR

The proposed operator of the safari resort is The Carlson Rezidor Hotel Group.

Carlson Hotels and Rezidor Hotel Group merged in early 2012 to form one of the world's largest and most dynamic hotel groups. The portfolio of the Group includes more than 1,319 hotels in operation and under development, a global footprint spanning 80 countries, a powerful set of global brands: Radisson Blu, Radisson®, Country Inns & Suites By CarlsonSM, Park Inn by Radisson, Hotel Missoni and Park Plaza®. In most of the Group's hotels, guests can benefit from the loyalty program Club Carlson, one of the most rewarding loyalty programs in the world. The Group



and its brands employ more than 80,000 people. The Group is headquartered in Minneapolis, Minnesota, and Brussels, Belgium.



Radisson Blu Hotels & Resorts, the leading brand of the Group, are first class, full service hotels combining a stylish and contemporary approach to design with a culture of innovative thinking, developed to meet the very specific needs of the guests. The Group currently operates more than 260 Radisson Blu Hotels & Resorts across Europe, the Middle East and Africa.

2.3 DEVELOPMENT COMPONENTS

The components of the proposed safari resort development include the following:

2.3.1 Main Lodge

The main lodge is the central facility of the safari resort. All operational functions are located in the main lodge and the functional flow of the safari resort is anchored from here. The main lodge consists of the following:

- Reception Area (96 m²)
- Business Centre
- Administration Area (80 m²)
- Ablution Facilities (67 m²)
- Bar Area (134 m²)
- Boma (487 m²)
- Dining Room (249 m²)
- Family Centre-Store
- Kitchen (265 m²)
- Lounge Area (228 m²)
- Porte Cochere (323 m²)
- Parking area for mini busses and golf carts
- Feature swimming pool
- Sundowners deck
- Riverside walkway with viewpoints

The approximate total area of the main lodge is 462 097 m². Please see Appendix 3 for detailed layouts. Please note that these are draft layouts and are subject to change due to environmental parameters. The below graphic is a 3 dimensional elevation model of the main lodge.



2.3.2 Conference Centre

The conference centre will be located adjacent to the Boma of the main lodge. The conference centre will accommodate small and medium sized conference groups and includes the following facilities:

- Conference Rooms: 3 rooms which are inter-linked to provide a large facility for larger conference groups. (Total area 269 m²)
- Conference Back of House (85 m²)
- Conference Pre-Assembly Area (166 m²)
- Conference Reception (62 m²)
- Conference Ablution Facilities (74 m²)
- Porte Cochere (87 m²)

The approximate total area of the conference centre is 850 m². Please see Appendix 3 for detailed layouts. Please note that these are draft layouts and are subject to change due to environmental parameters. The below graphic is a 3 dimensional elevation model of conference centre.



2.3.3 Wellness Centre

The Wellness Centre of the proposed safari resort will address the needs of modern day hotel visitors in terms of wellness and associated products. This centre will include the following facilities:

- Change rooms (19 m²)
- Clinic (24 m²)
- Clinic Store (19 m²)
- Covered Deck (142 m²)
- Female Change room (5 m²)
- Gym (24 m²)
- Janitor's Store (7 m²)
- Male Change room (5 m²)
- Shower (4 m²)
- Treatment Room (22 m²)
- Treatment Showers (5 m²)

The approximate total area of the Wellness Centre is 287 m². Please see Appendix 3 for detailed layouts. Please note that these are draft layouts and are subject to change due to environmental parameters. The below graphic is a 3 dimensional elevation model of Wellness Centre.



2.3.4 Family Centre

The Family Centre is designed to provide entertainment activities for families and especially children. The family centre will be focussed on environmental education and natural aspects of the Kruger National Park. A children's ranger programme with related indoor and outdoor activities will be implemented. The centre includes the following facilities:

- Covered Veranda
- Childrens Play Equipment
- Retail centre
- Retail Store
- Facility Store
- Play Hall
- Office
- Reception
- Indoor Cinema
- Ablution Facilities
- Baby Changing Facilities
- Covered Toddlers Pool
- Amphitheatre
- Free-flow Swimming Pool with rock feature

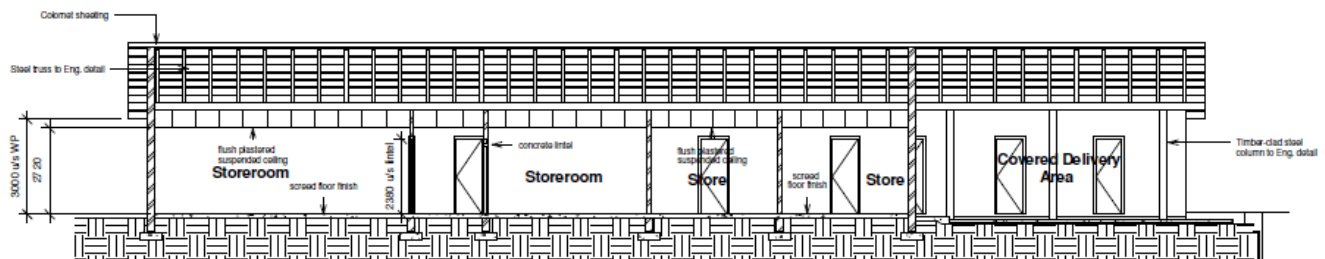
2.3.5 Service Centre

The Service Centre is the 'engine room' of the facility where all operations and service activities are located. This facility includes the following:

- Covered delivery area and outside service yard
- Numerous stores (approximately 13 stores for a wide range of purposes)
- Staff Kitchen and Staff Canteen
- Golf cart parking and repair facility (30 Golf cart parking bays)
- 5 Offices
- Male and Female Ablution Facilities
- Solid waste facility with recycling depot
- Wastewater treatment plant
- Generator room
- Laundry
- Council Switch room and Consumer switch room (Electricity)
- Parking area (40 bays)

- 350,000 Litre Reservoir/Water Storage Facility
- Manager's House (Accommodation for manager)

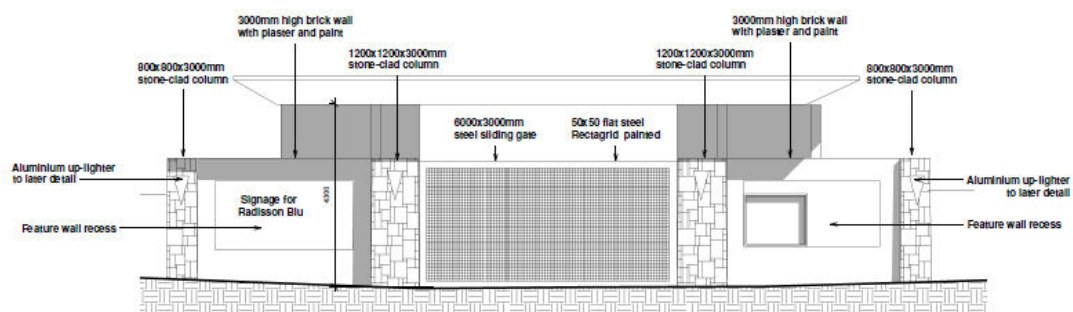
Please see Appendix 3 for detailed layouts. Please note that these are draft layouts and are subject to change due to environmental parameters. The below graphic is a section of the Service Centre.



2.3.6 Main Entrance Gate

The main entrance gate will be the first point of contact for visitors entering the safari resort itself after being driven from the Park and Ride Facility. The gate has been designed to provide a sense of arrival for guests and to ensure that access is controlled accordingly.

Please see Appendix 3 for detailed layouts. Please note that these are draft layouts and are subject to change due to environmental parameters. The below graphic is a 3 dimensional elevation model of the Main Entrance Gate.



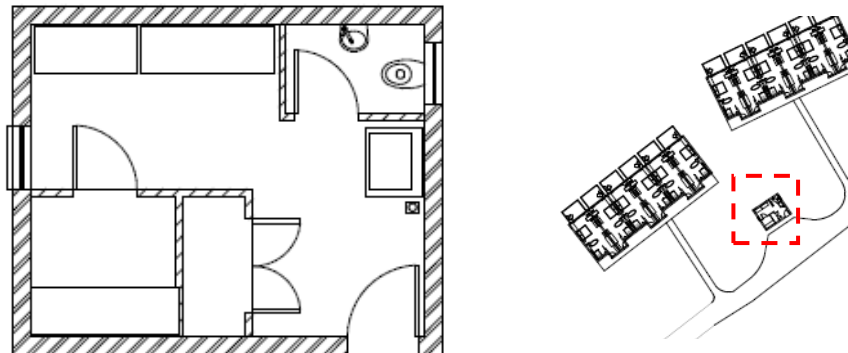
2.3.7 Housekeeping Rooms

Six housekeeping service rooms will be strategically positioned between accommodation units. The purpose of these rooms will be to enable the housekeeping teams to provide more efficient service from facilities which are located close the accommodation units. These will only be day facilities and will not provide accommodation for housekeeping teams.

These rooms will include the following:

- Storage for housekeeping products and equipment
- Ablution facilities
- Electrical circuit boards for units
- Storage for maintenance equipment

Please see Appendix 3 for detailed layouts. Please note that these are draft layouts and are subject to change due to environmental parameters. The below graphic is a layout of the facility, including the location between the accommodation units.

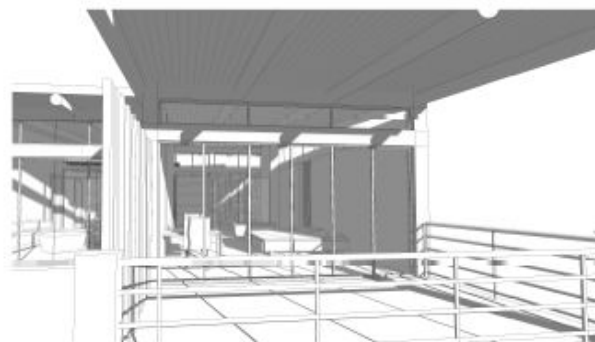


2.3.8 Family Units

Accommodation for families or groups of four people will be provided in the form of 4 family suites. These rooms are larger than the standard rooms and include the following:

- 2 Double en-suite bedrooms with amenities
- Inside lounge area
- Patio with patio furniture
- Each room will have a viewing deck

Please see Appendix 3 for detailed layouts. Please note that these are draft layouts and are subject to change due to environmental parameters. The below graphic is a 3 dimensional elevation model of a family room.

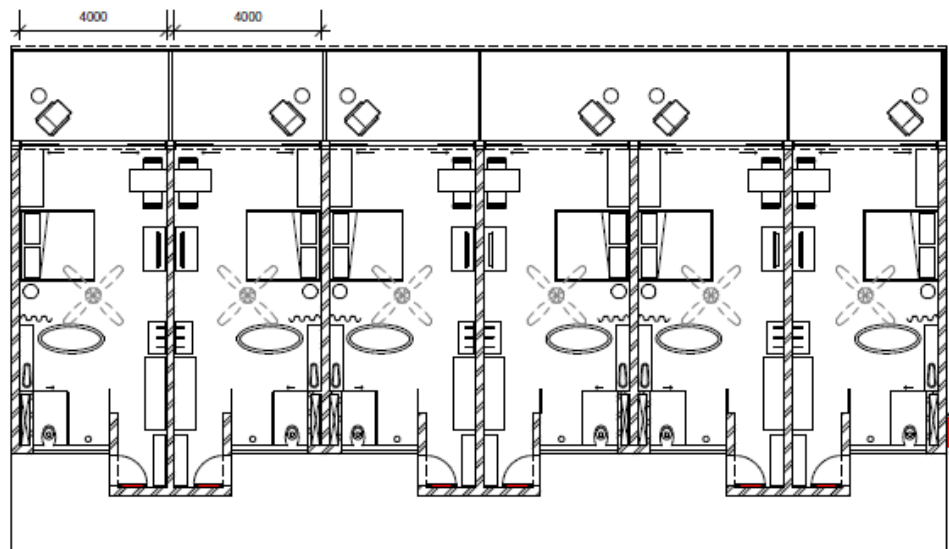


2.3.9 Standard Rooms

Accommodation for couples or single guest will be provided in the form of 111 En-suite rooms. Several of these rooms will have interleading doors to facilitate family rooms. These rooms include the following:

- 1 En-suite bedroom with amenities
- Viewing deck/patio

Please see Appendix 3 for detailed layouts. Please note that these are draft layouts and are subject to change due to environmental parameters. The below graphic is a layout.

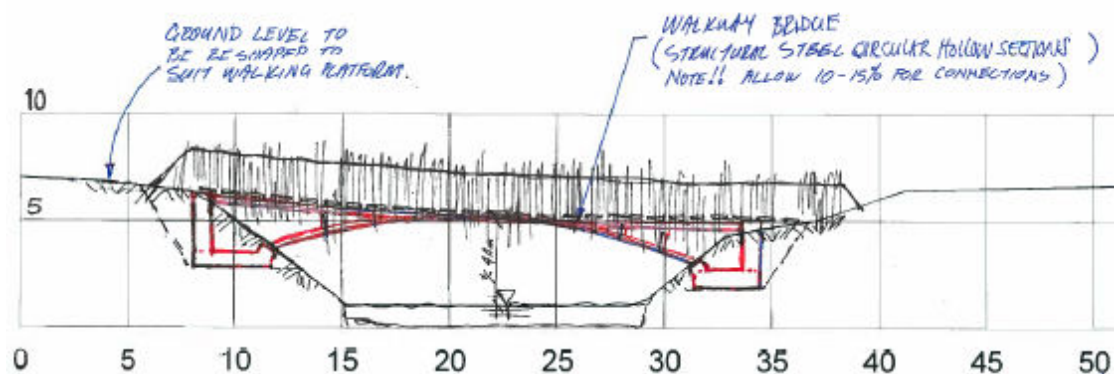


2.3.10 Suspension Bridge and River Meander

A walkway will be constructed from the main lodge along the Crocodile River to viewing decks for guests to experience the outdoors in the Kruger National Park.

The river meander will cross Timfenheni Spruit by means of a suspension bridge. This will be a low impact pedestrian bridge only.

The below graphic provides a basic concept of the suspension bridge.



2.3.11 Roads and Pathways

Internal Roads and Walkways will be developed in a manner which ensures minimal impact and takes the sensitivities of the associated site into consideration. Pathways will be concrete and will be 1.2 m wide. Roads for different purposes within the development have been custom designed and selected.

These are further discussed in Chapter 5 of this scoping report.

2.3.12 Landscaping

Landscaping in general will be kept to a minimum to ensure the site is left as natural as possible. Only certain key features will include landscaped elements, and only indigenous and endemic flora will be used as supplied by the Skukuza nursery.

2.3.13 Park and Ride Facility

Guests will not be allowed to drive to the safari resort with their own vehicles. Guests will instead be requested to leave their vehicles at the Park and Ride facility to be located at the Malelane Gate. Guests will gather at the Welcome Centre and be shuttled by open game drive vehicles or closed mini-coaches to and from the Park and Ride Facility.

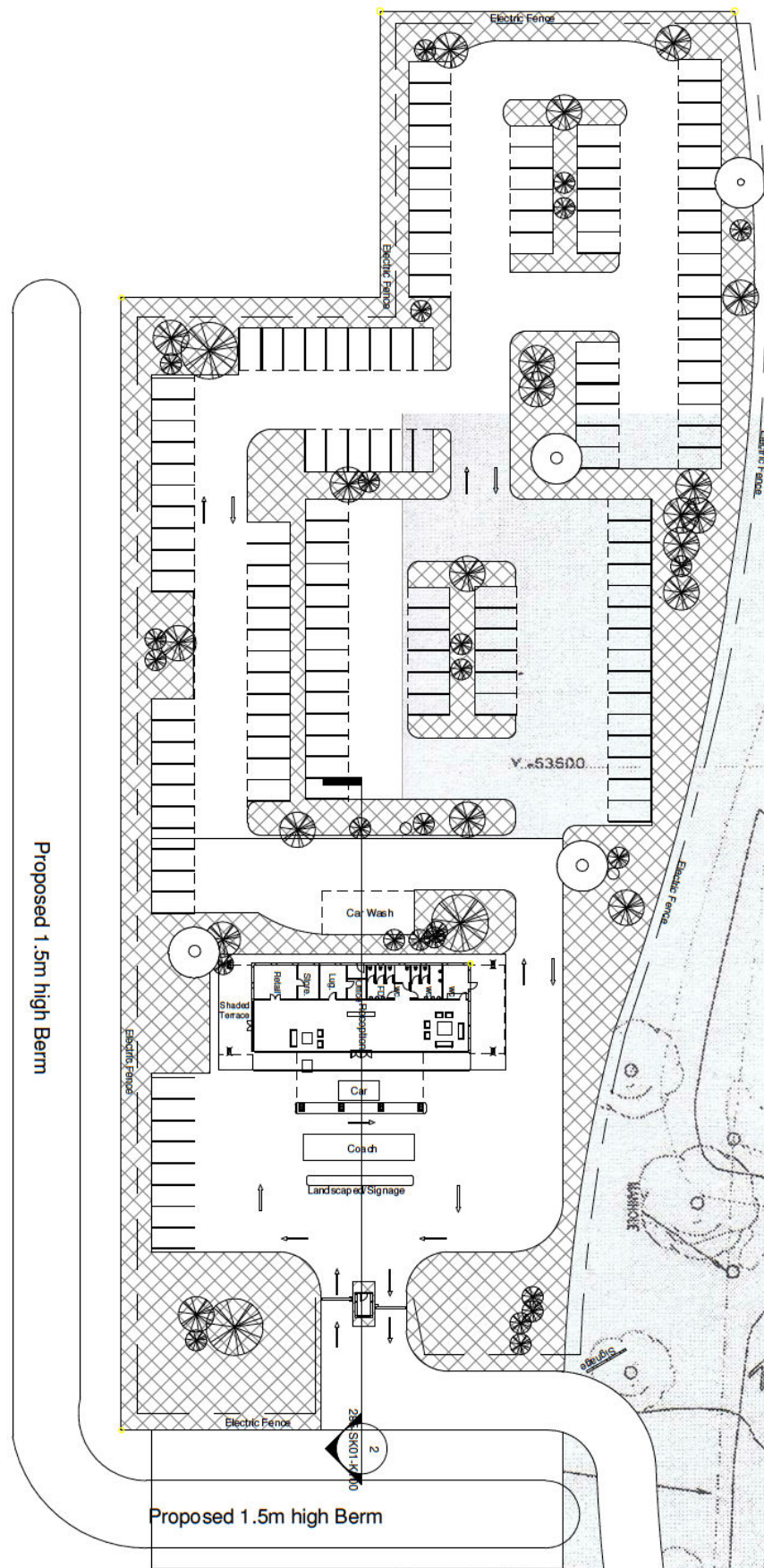
In addition to catering for the safari resort guests, the Park and Ride Facility is a requirement from SANParks as part of their visitor management strategy to cater for KNP's regular public tourists and their 'Park and Ride' programme during peak visitor periods.

The Park and Ride facility will include the following facilities:

- Reception Area;
- Luggage Store;
- Office;
- Waiting Area/Lounge;
- Shaded Terrace;
- Car Wash;
- Berms to minimise visual impact of the Park and Ride Facility;
- Parking bays for approximately 145 Vehicles
- 105 for safari resort guests and staff, and 40 for KNP public visitors;
- Access for buses and larger passenger vehicles; and
- Drop off zone.

Please see the below layout for further detail.

Park and Ride Facility



2.4 GRAPHICAL DESCRIPTION OF PROPOSED DEVELOPMENT

Entrance of proposed Safari Resort



Front View of Proposed Safari Resort



Safari Resort Lounge



Entrance to Accommodation Unit



Front view of Accommodation Unit



Suite View



2.5 OPERATIONAL ACTIVITIES

Operational activities of the safari resort include the following:

– 24 Hour Reception Service and Shuttle to and from the Park and Ride Facility

A 24 hour reception service will be provided at the Park and Ride Facility on the western side of the Malelane Entrance Gate. Guests will be allowed to arrive and leave at any time of the day and may be checked in or out of the safari resort. A shuttle service in the form of open game drive vehicles or closed mini-coaches will shuttle guests to and from the Safari Resort and Park and Ride Facility.

Shuttles can also potentially be provided between relevant airports and the safari resort, this could include internal airports within the boundary of the KNP and external airports in the area. Tours and transfers may also be provided to tourist sites outside of the KNP.

– Game Drives and Guided Walks

Game drives and guided walks will be provided by the safari resort and no self-drive game viewing activities will be allowed. Fully qualified SANParks field guides will lead game viewing activities and the safari resort will therefore not employ any of its own guides. Special interest activities will also be provided.

The safari resort will not have an exclusive use game viewing area/concession to take guests on activities. Public park roads will be utilised for this purpose. The safari resort will be limited to a certain number of game drives/guided walks per day. The number of game drive vehicles to be allowed per day will be determined during the Environmental Impact Assessment phase.

– Hospitality Services

Hospitality services to be provided by the safari resort will be to the standard associated with a luxury safari resort. These services will include the following:

- Serviced Accommodation;
- Restaurant Services and Bar Facility;
- Wellness Centre and Associated Services;
- Reception area and lounge;
- First Aid Facility;
- Disabled assistance;
- Laundry services;
- Conferencing, meetings and event services;
- Cultural and environmental education and entertainment;
- Room service;
- Housekeeping services; and
- Business facility services.

– Programmes provided by Family Centre

Due to the safari resort being a family destination as well as a business destination, a family centre will provide tailor-made activities for children to participate in along

with the necessary equipment and facilities. The family centre will also provide scheduled programmes for children and other nature-based activities. The family centre will include an indoor and outdoor area to cater for all weather conditions. Environmental Education Activities will also be provided to educate children on topics such as the ecosystems and history of the Kruger National Park, animal behaviour, and conservation practices.

– **Management Services**

Management Services will also be included in day-to-day operations. Management services will include waste management activities and recycling functions, deliveries of supplies, water management, electrical management, maintenance management and security in an around the safari resort area. Security will be for the purposes of keeping visitors safe in a big 5 area. A low electrified fence will surround the periphery of both the safari resort and the park and ride facility. Due to the safari resort being on the periphery of the park, security issues relating to criminal activities will also be managed appropriately.

– **Environmental Management**

Environmental Management will be undertaken on an ongoing basis according to the Environmental Management Plan for the Safari Resort. The Environmental Management Plan will take into consideration all sensitivities and mitigatory measures identified during the Environmental Impact Assessment Process.

An Environmental Control Officer will be appointed to conduct compliance assessments in terms of the National Environmental Management Act and the SANParks Concessions manual for the Kruger National Park.

– **Environmental Interpretation**

Environmental Interpretation will be provided at the safari resort in the form of tree identification, booklets describing the surrounding ecosystems, signage around the safari resort to ensure guests find their way around easily and general environmental information.

– **Golf Cart Shuttle Services**

In the proposed layout, the accommodation units are located a fair distance from the main lodge. Golf Carts will be utilised to shuttle guests from their accommodation units to the main lodge and back. There will also be a maintenance facility for the golf carts in the service area. This will also provide protection from dangers associated with unfenced accommodation facilities in a big 5 area.

2.6 SERVICES AND UTILITIES

See Chapter 5 for detailed description of services and utilities.

In order to effectively develop the safari resort the following bulk services will be provided:

- Eskom power will be supplied from a sub-station located on the southern bank of the Crocodile River, in the Leopard Creek Estate. A generator will also be developed on site to supplement power supply and will serve as a back-up power supply at times when ESKOM power is not available.
- Water will be sourced from boreholes on the site and purified by a purification plant. Water will be stored in a 350,000 L water storage tank.
- The existing S114 will be utilised to access the region of the safari resort and an access road of approximately 250m will be developed to access the safari resort site itself. The S114 will be re-routed to the North of the Site to join at the existing S121 intersection.
- Sewage will be treated on-site by a Bio-filter Rotating Biological Contactor Package Plant.
- The rainwater system shall be a conventional gravity system, relying on cast-iron full-bore outlets and rain water down pipes (where necessary). This system shall discharge into the non-potable cold water storage tanks or to the retention pond.

Refer to Chapter 5 for detailed internal services description for Safari Resort and Park and Ride Facility.

2.7 CONSTRUCTION AND OPERATIONAL PHASING

Malelane Safari Resort Investment (Pty) Ltd will be responsible for the construction of the all components of the safari resort and associated park and ride facility. This includes all services and infrastructure, accommodation and utilities.

Ultimately, the initiation of the construction phase of the project is dependent on the timing of the Decision to made by the Department of Environmental Affairs. Assuming all processes follow due process, a decision could be issued by September 2012, giving due regard to review periods and submission requirements.

Malelane Safari Resort Investments (Pty) Ltd will be obliged to begin construction of the safari resort within a specified period, and will be required to choose from a pre-approved panel of contractors. These contractors will in turn be contractually bound to adhere to an environmental management plan for the safari resort.

2.8 CONSTRUCTION WORKFORCE

2.8.1 Construction Camp:

The scale of the development and the expected duration of construction require that a construction camp be demarcated prior to the commencement of works, and maintained throughout the construction period. This construction camp will be primarily a materials lay down area, and will need to be securely fenced.

The locations of the construction camp will have to as a rule; be located in disturbed areas, well away from any drainage line or pristine/sensitive vegetation area.

2.8.2 Accommodation:

No accommodation for construction workers will be available on-site, as local labour from the region can commute to the Malelane Gate where they will be transported to the site by the contractors. In this situation, only potable water, basic wash facilities, and site toilets will be required within the construction camp.

2.8.3 Skills Development:

As far as possible, workers will be sourced from the local communities surrounding the Kruger National Park to ensure direct benefits are provided by the safari resort as soon as possible. Skills transfer and development will be requisite for contractors to be appointed and local labour will be capacitated.

2.9 OPERATIONAL WORKFORCE

Operation workforce will be managed by the operator. Staff will be sourced from the local community in an around Malelane as far as possible and capacity building will take place. Certain management staff will need to be brought in from outside the region. Only two management staff will be accommodated on-site in the manager's house, all other staff will reside off site and will be shuttled to the safari resort on a daily basis.

Field guides will not be employed by the safari resort and fully qualified SANParks guides will be appointed to undertake guided activities. These include game drives and guided walks. A proposed outsourced joint venture company with the Community to manage the guest activities and services is being considered, but no official decisions have been made in this regard.

CHAPTER 3 - ENVIRONMENTAL SYNOPSIS

3.1 BIOPHYSICAL ENVIRONMENT

3.1.1 Physiography

The terrain is dominated by level plains with limited relief at tributaries of the Crocodile River. The altitude range is 276-300 mamsl. The study area falls within the Thickets of the Sabie and Crocodile Rivers landscape classification of Gertenbach (1983).

3.1.2 Geology and Solis

The geology of the study area is predominantly undifferentiated granite and gneiss of the Nondweni and Onverwacht Groups (Swazian erathem) with scattered dolerite intrusions.

The study area falls within landtypeFb, dominated by Glenrosa and / or Mispah soil forms. Lime is rare or absent in upland soils but generally present in low-lying soils. Soils are either shallow, on hard or weathering rock, or deep red alluvial sandy clays.

3.1.3 Drainage and Geohydrology

The site is situated adjacent to the Crocodile River within the Crocodile River catchment of the KNP. The Crocodile Catchment covers about 10 450 km². The naturalised mean annual runoff is 1 200 million cubic metres per year, with an estimated maximum yield (that is, the maximum amount storable in dams) of 859 million cubic metres per year.

The section of the Crocodile River within Nelspruit is under pressure from intensive agricultural, industrial and urban land uses. For Sugar cane farming water is abstracted from the River for irrigation and to purify for domestic use. In addition to formal agricultural activities, alien plants and aquatic weeds such as water hyacinth have an impact on the riparian and in-stream health respectively.

Should water for the development be extracted from boreholes, a Hydrogeological Evaluation will be required.

3.1.4 Vegetation

The study area is indicated in Mucina & Rutherford (2006) as being situated within two national vegetation types, namely Granite Lowveld and Malelane Mountain Bushveld. However, field data show that the safari resort sites and park-and-ride area are within Granite Lowveld. Only Granite Lowveld is described in more detail below.

This vegetation type covers the lower-lying parts of Limpopo and Mpumalanga Provinces, into Swaziland and marginally into KwaZulu-Natal, much of it being found in the Kruger National Park. Topography is mostly level to undulating plains, with scattered low hills, with an altitudinal range of 250 – 700 masl. The major basement geology of the vegetation type is granite, gneiss and migmatite of the Swazian erathem. This geology weathers into sandy soils in the uplands and clay soils with high sodium content in the lowlands. Vegetation structure varies from tall shrubland with scattered trees to short closed woodland in the

uplands, and dense thicket to open savannah in the bottomlands. A dense herbaceous layer is characteristic.

Dominant trees are *Acacia nigrescens*, *Acacia nilotica*, *Albizia harveyi*, *Combretum apiculatum*, *Combretum imberbe*, *Combretum zeyheri*, *Ficus stuhlmannii*, *Peltophorum africanum*, *Pterocarpus rotundifolius*, *Sclerocarya birrea* subsp. *cafra* and *Terminalia sericea*. The shrub layer is dominated by *Combretum hereroense*, *Dichrostachys cinerea*, *Euclea divinorum* and *Strychnos madagascariense*. The most common grasses are *Brachiaria nigropedata*, *Digitaria eriantha*, *Eragrostis rigidior*, *Melinis repens*, *Panicum maximum* and *Pogonarthria squarrosa*.

Granite Lowveld has a conservation status of Vulnerable, even though over 30% of the vegetation type is conserved in Kruger National Park and adjacent private game reserves. However, more than 20% has already been transformed through cultivation and human settlements (Mucina & Rutherford, 2006).

3.1.5 Threatened and Protected Floral Species

Eleven species that are listed in the latest Red List publication as having conservation concern have been recorded in the quarter-degree grids 2531 AD & BC. Six of these are considered to be threatened, of which three have a status of Critically Endangered, the highest threat status that can be allocated. One of these, *Adenium swazicum*, was confirmed to occur at Site 2 and along the original proposed road realignment route during fieldwork. This species has been assessed as Critically Endangered because of a massive reduction in its global population and further interest in harvesting this species for the medicinal and horticultural trades; it is also protected under NEMBA. Two other Critically Endangered species have been recorded in the 2531 AD & BC (*Siphonochilus aethiopicus* and *Warburgia salutaris*), but neither are likely to occur. Three Vulnerable species have been recorded in the two grids. *Caesalpinia rostrata* occurs in similar habitat to the study area, but it is identifiable throughout the year and was not located during fieldwork; thus, it is unlikely to occur. The other two species (*Haworthialimifolia* and *Prunus africana*) are unlikely to occur because of unsuitable habitat and / or altitude.

The remaining five species have been allocated a conservation status of Declining. One of these was possibly confirmed and two have a Moderate likelihood of occurrence. A *Crinum* species, most likely *Crinum stuhlmannii*, was found at the edge of sodic patches at Site 2. This conspicuous lily in the Amaryllidaceae family flowers from October to November and was thus not in flower during either survey. *Drimys altissima* is a small geophyte that grows in bushveld and thicket, often in the open. Its tall inflorescences are very visible from October to December, but it is difficult to locate when not flowering. *Eulophia speciosa* is an attractive orchid that grows in shade of trees in various bushveld and thicket types. It flowers from October to January and is easy to locate during this time, but difficult to locate when not flowering.

Five tree species that are protected under the National Forest Act (No.30 of 1998) were confirmed to occur within the proposed safari resort sites and park-and-ride area during fieldwork: *Combretum imberbe*, *Sclerocarya birrea* subsp. *cafra*, *Philenoptera violacea*, *Balanites maughamii* and *Breonadasalicina*. Two species confirmed to occur within safari resort site 2 are protected under the Mpumalanga Nature Conservation Act (No.10 of 1998), namely *Aloe spicata* and *Crinum* sp. and an additional species, *Spirostachys africana*, was confirmed at several sites along the proposed road re-alignment. A number of other species

protected under this act potentially occur but were not found during fieldwork. These include other Aloe species, Gladiolus species, Dioscorea species, Ammochariscoranica and various orchid species.

3.1.6 Threatened Ecosystems

The study area is not situated within any threatened terrestrial ecosystem as listed in Notice 1477 of Government Gazette No. 32689 (6 November 2009).

3.1.7 Centres for plant endemism

The study area is not situated within any centre of plant endemism as described by Van Wyk & Smith (2001).

3.1.8 Mammals

While the savanna biome, in which the study area is situated, has high mammal diversity and a high number of Red Data species, the small size of the study area means that very few of these species are likely to be resident. However, many species are likely to move through and forage in the area, and construction activities are likely to have impacts beyond the boundaries of the study area (e.g. noise, dust).

An estimated 23 Red List mammal species potentially occur within the study area, even if only moving through. This includes species with provincial Red Data status that are not considered threatened nationally (e.g. Aardvark, Banded Mongoose). The most threatened species is African Wild Dog, which has a conservation status of Endangered. Five species have a status of Vulnerable, of which two (Black Rhinoceros and Lion) were confirmed in the study area. One Vulnerable species, Pangolin, has moderate chance of occurring, while two others (Cheetah, Juliana's Golden Mole) have a low likelihood of occurring.

The remaining Red List species either have a status of Near Threatened (6 species) or Data Deficient (9 species). These are species that either could soon qualify for threatened status or for which not enough data are available for an assessment of status to be made.

Eleven species occurring in the vicinity of the study area are protected under NEMBA, of which two are in the category Endangered (African Wild Dog, Black Rhinoceros), five in the category Vulnerable (Pangolin, Juliana's Golden Mole, Cheetah, Lion and Leopard) and four in the category Protected (White Rhinoceros, Spotted Hyaena, African Elephant, Honey Badger).

3.1.9 Birds

Data from the second Southern African Bird Atlas Project (SABAP2) which is currently underway, indicate very high species richness for the mapping units (pentads) around the study area. A pentad covers approximately 61km² (8km x 7.6 km) and the average species richness per pentad in the immediate vicinity of the study area is 248 species per pentad. Numerous microhabitats associated with the Crocodile River contribute significantly to these high totals, and the species richness for terrestrial habitats would be much lower. However, because of the close proximity of the Crocodile River to the potential impact footprint, species confined to freshwater habitats have been included in the assessment.

Nineteen Red List bird species have been recorded recently within the two relevant pentads within the study area, with an additional 13 species confirmed from the MTPA threatened species database for the quarter-degree grids 2531 AD and BC. However, suitable habitat is only present for an estimated 23 species within the vicinity of the study areas (The most threatened species is Saddle-billed Stork, which has a conservation status of Endangered; this species has recently been recorded breeding in a large riparian tree several hundred metres downstream of the safari resort site. Eleven Vulnerable species potentially occur, of which eight have been recently recorded from the study area pentad (Bateleur, Martial Eagle, Tawny Eagle, Hooded Vulture, White-backed Vulture, White-headed Vulture, Pel's Fishing Owl and Southern Ground Hornbill) and have a Moderate to High chance of occurring as foraging visitors. Pel's Fishing Owl is represented by a breeding pair that has been resident for 11 years downstream of Site 2; this is the only known pair on the Crocodile River. Two species recorded in adjacent pentads forage over long distances (Lappet-faced and Cape Vultures) and thus also have a Moderate chance of occurring in the study area).

No additional sensitivities were identified on the sites in terms of Avifauna, therefore no further avifaunal specialist studies will be undertaken and the main focus will be placed on the abovementioned species during the EIA phase of the project. Mitigation measures will however be included in the Environmental Management Plan. This will ensure that should additional sensitivities be identified during construction or operational phases of the development, the relevant ecologist will be contacted to provide inputs to ensure minimal impact on such sensitivities.

No additional sensitivities were identified on the sites in terms of Avifauna, therefore no further avifaunal specialist studies will be undertaken and the main focus will be placed on the abovementioned species during the EIA phase of the project. Mitigation measures will however be included in the Environmental Management Plan. This will ensure that should additional sensitivities be identified during construction or operational phases of the development, the relevant ecologist will be contacted to provide inputs to ensure minimal impact on such sensitivities.

Eleven Near Threatened species potentially occur, of which one (Red-billed Oxpecker) was confirmed during fieldwork. Seven others are closely associated with freshwater habitats and are unlikely to occur within the study area but could be impacted by the development through construction and heavy vehicle noise.

Thirteen bird species occurring within the vicinity of the study area are protected under NEMBA, of which seven are in the category Endangered (Cape, Hooded, White-backed and Lappet-faced Vultures, Saddle-billed Stork, Pink-backed Pelican and Pel's Fishing Owl), five in the category Vulnerable (White-headed Vulture, Tawny Eagle, Martial Eagle, Bateleur and Black Stork) and one in the category Protected (Southern Ground Hornbill).

3.1.10 Reptiles and Frogs

Eight threatened reptiles have been recorded from the general vicinity of the study area according to records in the MTPA database, although three of these (Barberton Girdled Lizard, Haacke's Flat Gecko and Wilhelm's Flat Lizard) are closely associated with large rock outcrops and are thus unlikely to occur in the study area. However, reptile conservation status is currently under review and the number could increase significantly. Only two of these species have national Red List status (Southern African Python and Nile Crocodile), both of which are classified as Vulnerable. The remaining three species possibly occurring

have been allocated provincial Red List status of Vulnerable (Intermediate Shieldnose Snake) and Near Threatened (Giant Legless Skink and Turner's Gecko) by the MTPA. These species are thought to have a Low to Moderate chance of occurring.

No threatened frog species are likely to occur. The only potentially occurring species protected under NEMBA are African Bullfrog, Nile Crocodile and Southern African Rock Python.

3.1.11 Invertebrates

A specialist invertebrate study was not undertaken for the area and will be included in the EIA phase. After consultation with the relevant specialist, the following invertebrates will be considered in the EIA phase:

- Trapdoor and baboon (Mygalomorph) spiders. Protected species will be identified and relevant mitigation measures put in place;
- Scorpions;
- Dragonflies and damselflies;
- Ground Beetles;
- Butterflies; and
- Ants.

A specialist has been engaged to provide the most appropriate approach to assessing potential impacts of the hotel on invertebrates.

Invertebrates comprise the majority of all biodiversity on earth (May 1988) and the lack of attention paid to this group in most biodiversity studies is a significant impediment to managing our biodiversity. As signatory to the Convention on Biological Diversity, South Africa has an obligation to conserve biodiversity as a whole and not only the groups that previous conservation efforts have tended to concentrate on. The South African Government has recognised that invertebrates and other poorly known groups have been neglected in past approaches to conservation and is committed to taking appropriate action to conserve such groups (DEAT 1998). Invertebrate studies are therefore playing an ever-increasing role in conservation and environmental management decision-making processes in South Africa.

It is assumed that with the possible exception of certain butterflies and the adult stages of dragonflies and damselflies, wetland and riverine habitats will not be covered; the invertebrate component of such habitats will be expected to be dealt with as a separate study by an aquatic invertebrate specialist. Where appropriate wetland and riverine fringe habitats will be included as part of the terrestrial invertebrate component.

While observations on topography, soil and vegetation types may be made during the course of invertebrate surveys, it is assumed that obtaining detailed data on such aspects will be the responsibility of the client; it is further assumed that any available data on these topics (especially any georeferenced aerial photography, vegetation and soil map shapefiles etc) will be provided to AfriBugs CC, prior to the invertebrate survey being carried out, for planning and reference purposes.

3.2 SOCIO ECONOMIC ENVIRONMENT

The proposed Safari Resort site is situated in the Southern Region of the KNP. The KNP covers an area of almost 2 million hectares. The park receives in excess of 1 million visitors per year. The KNP provides employment opportunities, a market outlet and source of business custom for local communities.

The nearest town outside this boundary is Malelane. Malelane is a small farming town situated adjacent to the N4 National Road near the KNP. Agricultural activities consist mainly of sugarcane, fruit production and game farms.

3.2.1 Existing Camps and Concessions

The KNP offers a variety of tourist accommodation and currently has 12 main rest camps, five bushveld camps, two bush lodges and four satellite camps. There are also 7 luxury lodges that have been granted concessions. Many of the self catering facilities throughout the park are popular but do not meet the expectations of visitors who want a full service safari experience that includes modern conference support facilities. The proposed safari resort will be a full service facility that is proposed on the periphery of the park.

The below table provides details on tourist rest camps in the southern Marula Region Kruger National Park:

KNP CAMPS	NUMBER OF UNITS	NUMBER OF CAMPSITES	NUMBER OF BEDS
Skukuza	239	105	627
Pretoriuskop	134	45	341
Berg-en-dal	94	70	359
Lower Sabie	113	33	281
Crocodile Bridge	28	20	76
Biyamiti	15	-	70
Malelane	5	15	19

The below table provides details on the concessions in the southern Marula Region of the Kruger National Park:

TRADING NAME	MAX BEDS	MAIN LODGE	FLY CAMPS
Shishangeni Private Lodge	80	50 Bed Lodge	2 x 10 Bed Lodge
Lukimbi Safari Lodge	40	32 Bed Lodge	2 x 10 Bed Lodge
Jock Safari Lodge	30	24 Bed Lodge	2 x 10 Bed Lodge
Tinga Private Game Lodge	70	38 Bed Lodge and 18 Bed lodge	To investigate 12 bed fly camp to reduce legends to 18 bed camp.

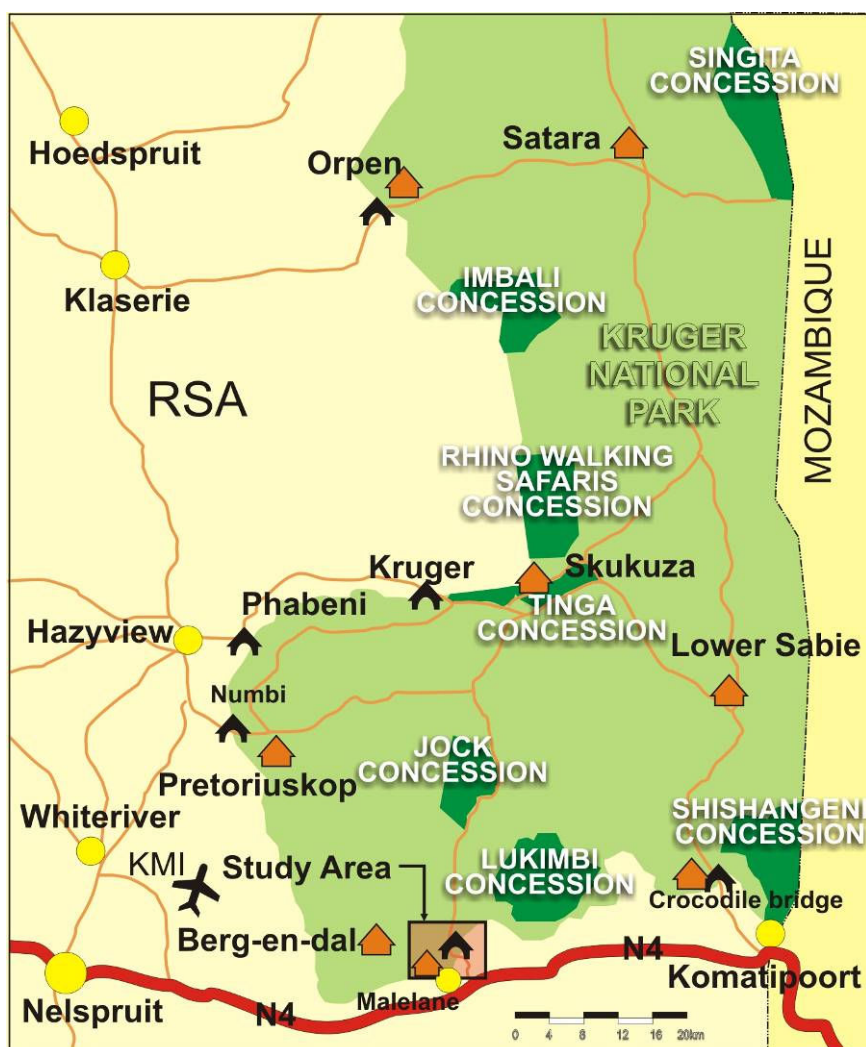
Other external facilities located adjacent to the KNP in the Malelane Area includes:

- Pestana Hotel; and
- Leopard Creek Golf Estate.

The socio-economic impacts of the proposed safari resort will be assessed by a Socio-Economic Impact Assessment during the EIA phase of the project.

The below map depicts the concession in the Kruger National Park:

Concessions in the Kruger National Park



3.2.2 Cultural History

– Stone Age

Occupation of this area took place since Early Stone Age times and it was mostly open sites located close to watercourses that were occupied. However, during the Later Stone Age, people become more settled and occupied sites over long periods of time. A number of rock shelters containing San rock art are known to exist in the region. These usually occur in shelters located on the granite outcrops, e.g. in the Mthethemousha Nature Reserve and K'Shani Nature Reserve. Unfortunately the information on the location of rock art sites in the Kruger National Park is not available, but it is expected that they would occur in a similar setting.

– Iron Age

Iron Age people moved into southern Africa by ca. AD 200, entering the area either by moving down the coastal plains, or by using a more central route. It seems more likely that the first option was what brought people into the study area. From the coast they followed the various rivers inland. One of the earliest dated sites is located near Tzaneen, with others for example at Matola in Mozambique. Some sites dating to this and to a slightly later period were identified at Plaston and, still closer to the study area, on the farms Vergenoeg and The Curlews east of Nelspruit. Meyer (1986) has done an intensive survey of Iron Age sites in the Kruger National Park.

– Early Exploration

In 1725 Jan van de Capelle, in charge of the Dutch fortification and trading post Fort Lijdzaamheid at Delagoa Bay (Maputo), sent an expedition to explore an inland route to the fabled land of Monomotapa. In the 1830s various Voortrekker groups led by Louis Tregard, Karel Tregard, Andries Potgieter and Hans van Rensburg penetrated Mozambique but they did not use the Komatipoort route.

Most of the railways in the Zuid-Afrikaansche Republiek (Transvaal Boer Republic) were constructed and operated by the Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij (Netherlands South African Railway Company, or NZASM), a shareholder company with German and Dutch capital. Founded in Amsterdam in 1887, the NZASM's main objective was the establishment of a railway line between Pretoria and Komatipoort, known together with the Komatipoort-Maputo railway of the Portuguese colony of Mozambique as the Eastern line.

Pienaar (2007) comprehensively documented the history of the Kruger National Park as well as located most known sites of historic significance.

3.2.3 Security

Preventing crime has become a key challenge to government in post-apartheid South Africa. A careful regard of the extent to which environmental design is being utilised to prevent crime is crucial if environmental design changes are to address the real problems.

According to A Manual for Crime Prevention through Planning and Design commissioned by the Department of Safety and Security and in partnership with them, developed by CSIR Building and Construction Technology;

The notion that the physical environment can either increase or reduce opportunities for crime is not new. Internationally, it has been studied extensively over a number of decades.

There is a general consensus that if the environment is planned, designed and managed appropriately, certain types of crimes can be reduced. Crime prevention through environmental design can be defined as the implementation of measures to reduce the causes of, and the opportunities for, criminal events and to address the fear of crime through the application of sound design and management principles to built environments.

SANParks strives to ensure safety and security of visitors, staff and environmental resources. The public at large requires visible assurance of a secure environment and to have certain

guarantees that the resources, especially animals are being protected. As the development is on the periphery the land use will lend itself to a deterrent to criminals for entering the park illegally in the vicinity due to presence of human activity.

The following will need to be considered to ensure the safety of visitors to the safari resort and animals within the park: Suitability of proposed surrounding fences to ensure safety and security of visitors and animals;

- Controlled access from the Malelane Entrance Gate as safari resort guests will have 24/7 access;
- Monitoring of delivery vehicles and staff entrance;
- Monitoring of construction workers and vehicle access during the construction phase.

3.2.4 Noise

Due to the proposed land use and activities intended it is expected that ambient noise levels will increase. During the construction phase, noise will be generated as a result of construction related activities.

Noise impacts associated with both the operational phase and construction phase of the development will be investigated further. The impact of noise generated by the safari resort establishment during its operational phase on properties outside of the KNP boundary is anticipated to be minimal. Noise from the development could however impact more permanently on faunal species. These impacts will be investigated further and mitigation measures relating to both the construction and operation phases will be included in the Environmental Management Plan.

Noise associated with the development of the new Park & Ride facility on adjacent properties will be investigated further once confirmation on the location of the facility is received.

3.2.5 Visual Impact

As per the Environmental Guidelines for Private Parties for the construction and operation of PPP Facilities within the KNP, any development within the Park must take cognisance of the visual impact it may have on surrounding areas and other Park users. As per the KNP Management Plan the area where the site is proposed is within a 'High Intensity Leisure Zone'. These are defined as 'Large camps with fully equipped self contained units. Interpretative centres, restaurant, shops...' No development within the park should be visible from wilderness areas. It must not be visible to the naked eye as well as glares of night lights. The structures must also not be visible from existing Park roads. The visibility of the project to properties outside of the KNP boundary will be investigated as well.

Visual impacts anticipated will be assessed further and mitigation measures proposed during the Environmental Impact Assessment Phase. Mitigation measures will take cognisance of amongst others:

- Building materials;
- Site topography;
- The site's natural screening capability;
- Colour selection;

- Structures; and
- Obtrusive lighting conditions.

Mitigation measures provided must aim to limit visual impacts through ensuring that the development proposal blends in with the natural environment and has minimal impact on faunal activity (lights, migration routes, lay-out of buildings etc).

3.3 LAND CLAIMS

In the initial Request For Proposals which SANParks published for the project, it was stated that there are currently no land claims on the five alternative sites for the development of the proposed hotel. SANParks has requested confirmation of the current status from the Regional Land Claims Commission: Mpumalanga Province.

The project co-ordinator from the Regional Land Claims Commission (RLCC) acknowledged receipt of the request for confirmation on the 13 March 2012. The RLCC is currently verifying that the status remains the same on the relevant sites. The outcome of this verification will be provided to the DEA immediately on receipt thereof. V&L will also ensure that I&AP's are made aware of the outcome in the EIA phase of the project. See appendix 2 for correspondence from the RLCC.

SANParks has confirmed that their position regarding Land Claims is that they are committed to assisting the amicable resolution of all outstanding land claims in the Kruger National Park. All resolutions will be done in accordance with the Cabinet Decision of 2008 on the resolution of Land Claims in the Kruger National Park.

This process is being driven by SANParks and V&L will update all relevant I&AP's with the outcome as soon as one has been obtained.

CHAPTER 4 – DESCRIPTIVE EVALUATION OF PROJECT ALTERNATIVES

4.1 SITE SELECTION UNDERTAKEN BY SANPARKS

When the Malelane Sun burnt down, SANParks saw this as an opportunity to develop inside the boundaries of the park. The objective was to identify various peripheral development options that would allow for the Park & Ride facility at the Malelane Gate. A committee of individuals investigated various options for the development. The criteria used included the following:

- Proximity to existing public access gates;
- Proximity to proposed SANParks Park and Ride Facility;
- Sites must be located in the periphery of the park in terms of the Peripheral Development Strategy;
- Regional Access to ensure national and international markets can be captured;
- Sites must be in alignment with regional development strategies. (Maputo Corridor and Integrated Development Plans)
- Sites must be worthy of a four star tourism experience.
- Sites must be located in a manner which does not conflict with the SANParks commercialisation strategy and value for money objectives.

SANParks identified five possible sites for the Malelane Hotel development. The bidders were provided the opportunity to assess the different sites, the indications of the limitations on developments and activities to be permitted on each of the sites with regards to access, road network, carrying capacity, water, electricity, and telecommunications were provided.

Site 2 was selected as it had several aesthetically attractive features, better ecotourism potential, and would not result in significant visual impacts to properties situated across the Crocodile River or to visitors arriving and departing from the Malelane Entrance Gate. The decision was also based on negotiations with Hotel Groups and the associated feasibility of the site for this specific type of development. In the event that the EIA identifies constraints that cannot be mitigated, one of the alternative sites will be chosen and subsequently subjected to an Environmental Impact Assessment.

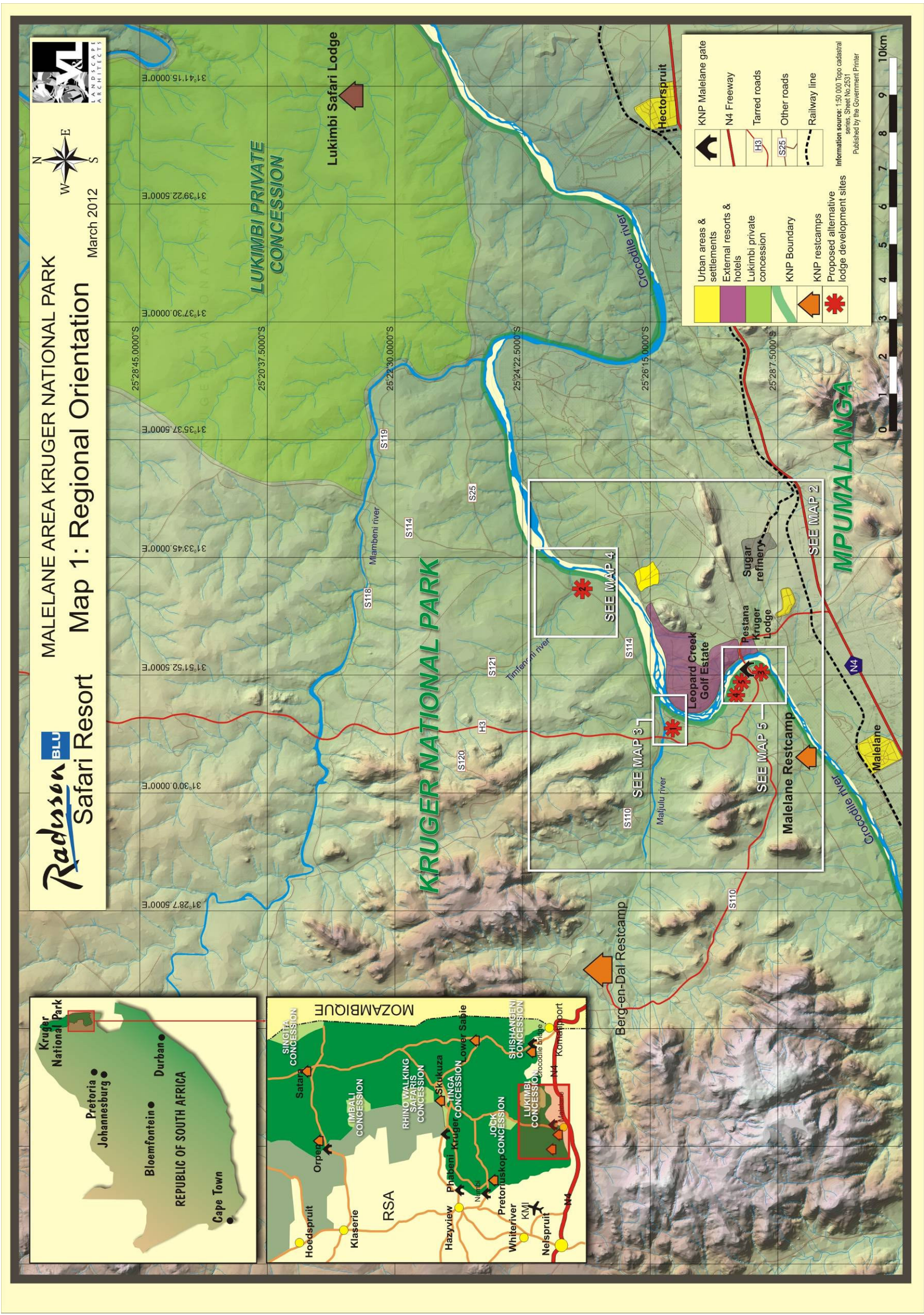
Legislation allows for the development inside of the boundaries of a National Park. Section 24(b) of the Constitution recognizes the interrelationship between the environment and development, the need for protection of the environment AND the need for social and economic development at the same time. NAMPAA Section 20(2) states that a national park is declared to provide educational, recreational and tourism opportunities which are environmentally compatible, as well as to contribute to economic development. Section 50(1) of NEMPAA provides for the management authority of a national park to carry out or allow an activity in the park ...aimed at raising revenue. In terms of Section 50(1) read with Section 55(2), SANParks accordingly has the powers to allow a commercial activity or allow an activity aimed at raising revenue.

See Map 1 and 2 for localities of the alternative sites.

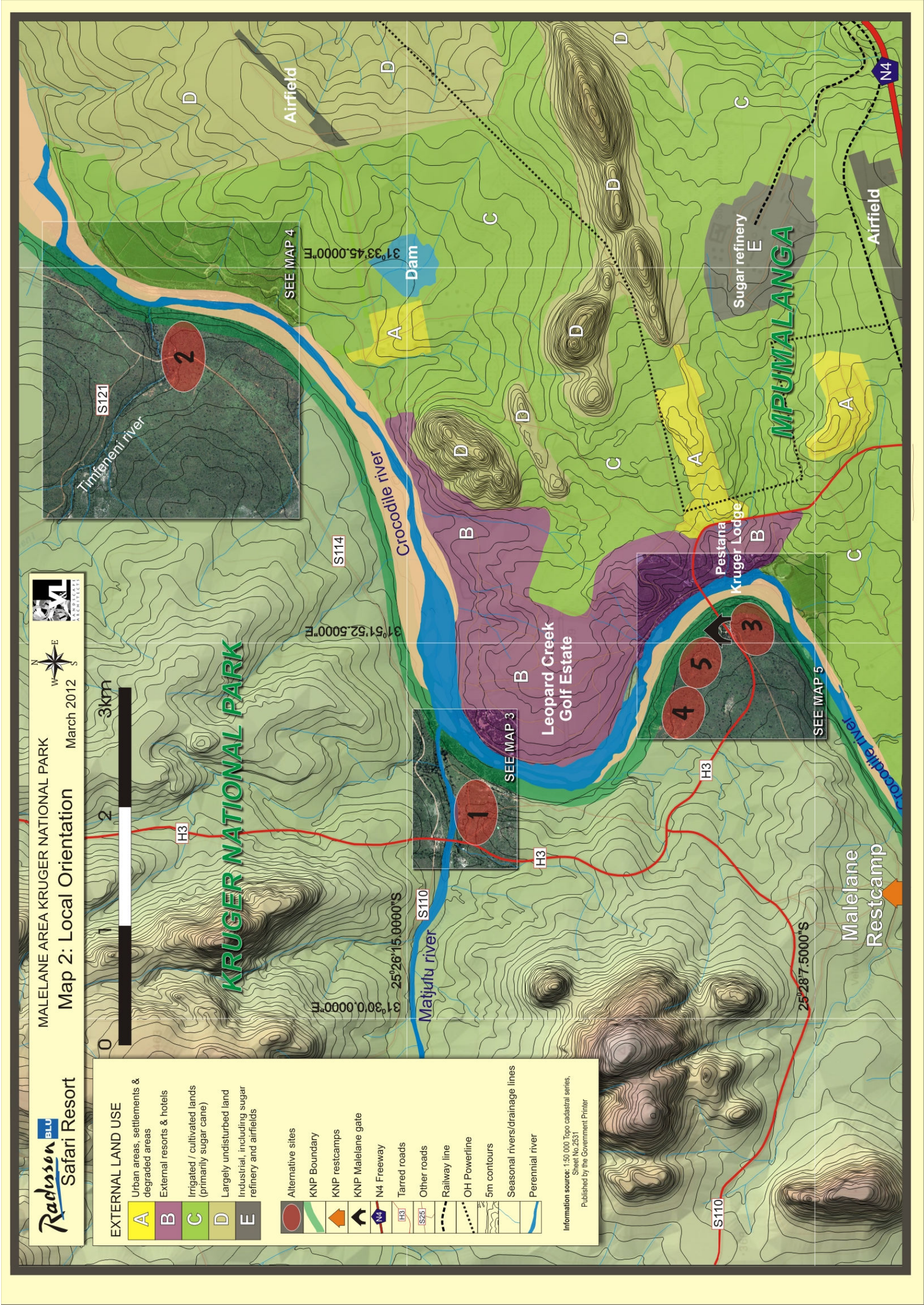
A previous press statement issued by SANParks stated that the development would take place on an old construction site. This press release was based on an initial SANPark's Request for Proposals to potential operators which only considered the old construction site, which is identified as Site 1 in this report. Therefore, no other options were available at that

point. SANParks, in order to comply with relevant environmental legislation decided to re-issue the Request for Proposals which then included the four additional sites as per this report. The applicant then selected Site 2 as the preferred site, thus changing the initial site selection.

Map 1: Regional Orientation



Map 2: Local Orientation and Land Uses



4.2 SITE ALTERNATIVES CONSIDERED

4.2.1 Description of Site 1

This is a rehabilitated area at the confluence of the Matjulu River and Crocodile River on the southern boundary of the Kruger National Park (KNP). This site was previously used as a roads construction camp and was accessed via a gravel management road.

The proposed site is bordered from the north by the scenically attractive Matjulu River that could be used to focus the development of the safari resort. Apart from huge trees on the river-bank, the site offers excellent game viewing, including common sightings of the 'Big 5,' with seasonal water in the Matjulu River and perennial water in the Crocodile River. If the Crocodile River frontage is used sights of infrastructure at Leopard Creek across the river will be visible. The site is located on reasonably flat topography and the soils are deep relatively soft and stable alluvial soil (mainly Oakleaf soil form). The vegetation can be described as riparian woodland with some spectacular large trees that can form focal points in the design.

– Site attributes

As noted above, SANParks has identified Site 1 as a high potential development site within the definition of peripheral development and easy access for 24/7 guest accommodation. The site does lend itself to the development of a 4*star safari resort. The site does however provide a challenge to design the focus areas to be hidden from the visual impacts from two nearby park roads (H3 and S114), as well as from developments outside of the KNP boundaries, and thus in offering guests an attractive and secluded wildlife experience. The visual impacts associated with the Leopard Creek development across the Crocodile River are significant and could pose a major threat to the socio-economic aspects of both developments should the safari resort be developed at this point.

– Existing Infrastructure

This site does not offer any existing infrastructure, with the exception of a few redundant concrete slabs and a management road. The management road could be upgraded as the access road to the new safari resort.

– Existing Roads and Tracks

There is one gravel management road leading to the site from the tar road (H3) and the site is approximately 4km from the Malelane Entrance gate. The proposed site is $\pm 500\text{m}$ from the existing tar road (H3). There is a tourist gravel road (S114) directly north of the proposed site that is visible and that will have to be re-routed if this site is approved as the preferred site.

– Support Infrastructure: Water

There is no potable water on site, but the site is bordered by the perennial Crocodile River, although it may dry up during periods of extreme low rainfall. Water for the development will be sourced from boreholes, however the quantity and quality of underground water is. The bulk water supply lines will be installed underground and will follow the existing roads footprints to limit the environmental impact.

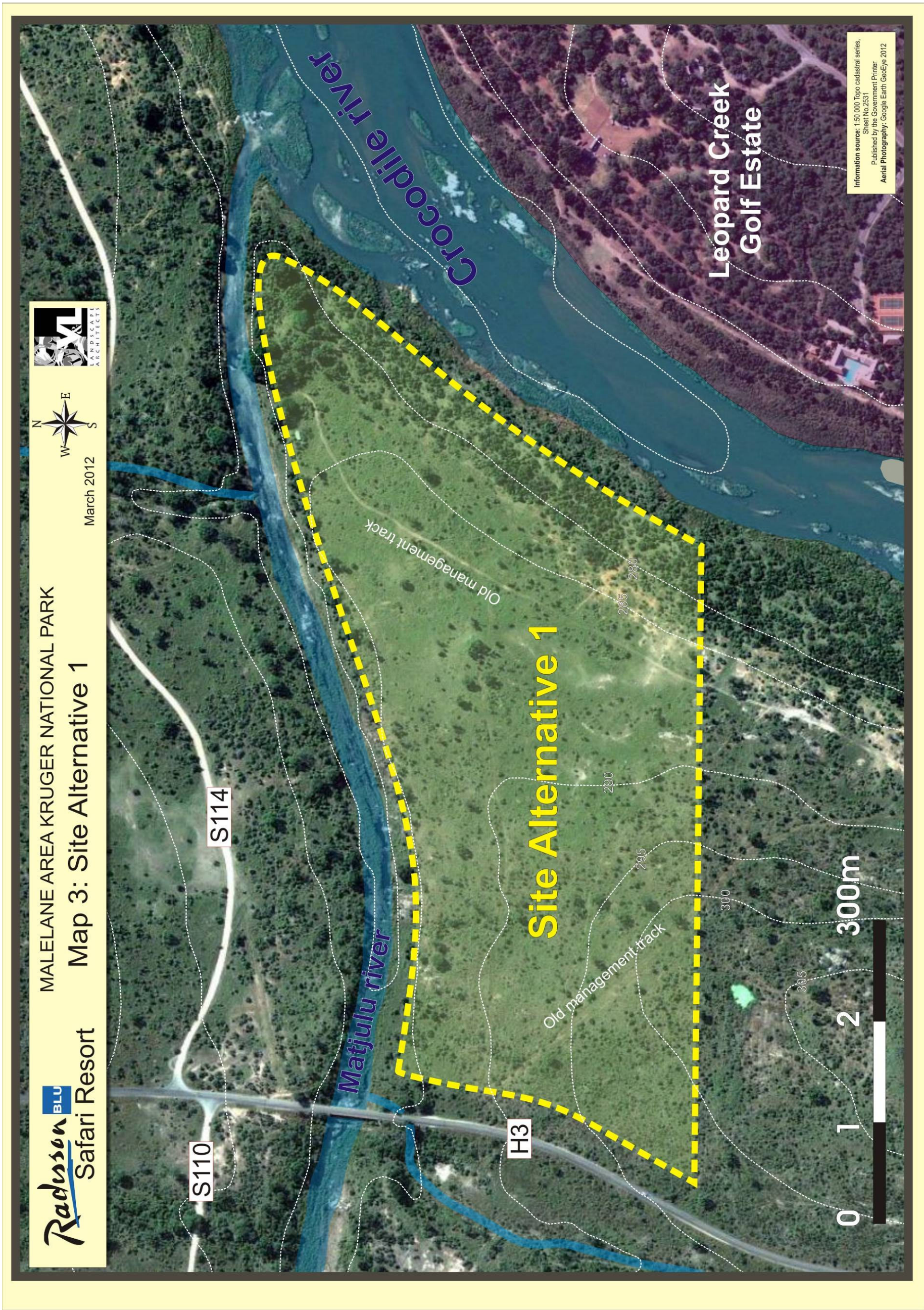
- **Support Infrastructure: Electricity**

There is no electricity available on the site, but ESKOM power is available at the Malelane substation directly across the Malelane Rangers Post on the southern side of the Crocodile River.

- **Support Infrastructure: Communications**

No Telkom phones are available, however, cellular signals are available at the proposed site.

Map 3: Site Alternative 1



4.2.2 Description of Site 2

This is a “green field” site in the south eastern corner of the Kruger National Park (KNP). This proposed site is situated at the confluence of the Timfenheni Spruit and the Crocodile River on the southern boundary of the Park.

The proposed site is bordered from the north by the scenically attractive Timfenheni Spruit that could be used to focus the development of the safari resort. Apart from huge trees on the river-bank, the site offers excellent game viewing, including common sightings of the 'Big 5,' with seasonal water in the Timfenheni Spruit and perennial water in the Crocodile River. The site is located on reasonably flat topography.

- **Site attributes**

SANParks has identified this site as a possible development site within the definition of peripheral development and easy access for 24/7 guest accommodation. The site does lend itself to the development of a 4*star safari resort with the challenge to design the focus areas to be hidden from the visual impacts from developments outside of the KNP boundaries, offering guests an attractive and secluded wildlife experience.

The site is located opposite to a sugar cane plantation on the opposite bank of the Crocodile River. This plantation is a visual impact to the tourism experience of the safari resort and the operations associated with sugar cane farming will have a negative impact on the overall guest experience. Annual burning of the sugar cane plantations opposite site 2 will have a negative impact on the safari resort. This will need to be considered by the Hotel Operator.

- **Existing Infrastructure**

This site does not offer any existing infrastructure.

- **Existing Roads and Tracks**

There are no management or other road leading from the gravel (S114) to the proposed site. The proposed site is ±500m from the existing gravel road (S114). This road will need to be rerouted to prevent visual impact.

- **Support Infrastructure: Water**

There is no potable water on site, but the site is bordered by the perennial Crocodile River, although it may dry up during periods of extreme low rainfall. Water for the development will be sourced from boreholes. The bulk water supply lines will be installed underground and will follow the existing roads and footprints to limit the environmental impact.

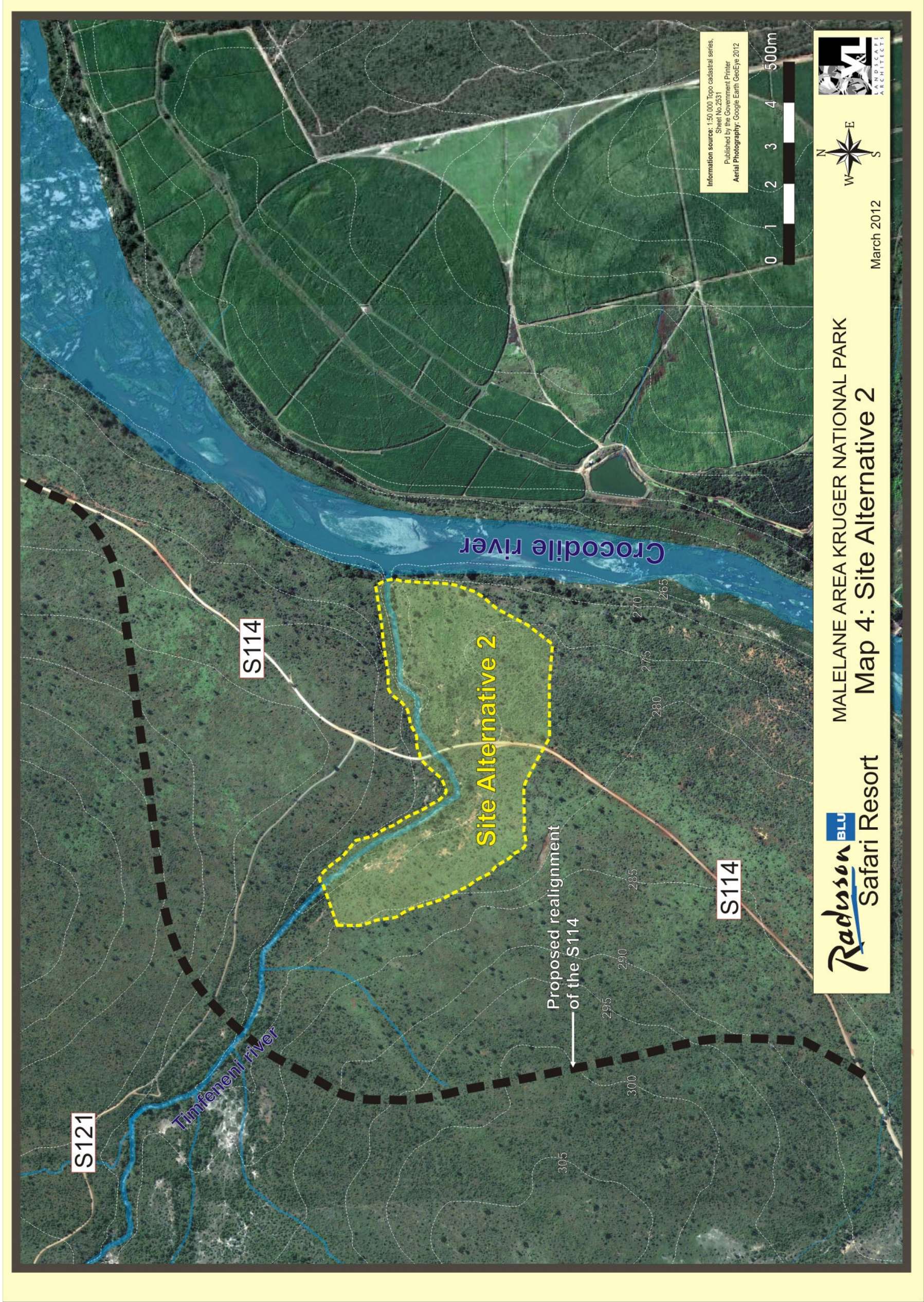
- **Support Infrastructure: Electricity**

No electricity available on the site, but ESKOM power is available at the Malelane substation directly across the Malelane Rangers Post on the southern side of the Crocodile River.

- **Support Infrastructure: Communications**

No Telkom phone lines are available. Cellular signals are however available at the proposed site.

Map 4: Site Alternative 2



4.2.3 Description of Site 3

This is a “Green Fields” area close to the tar road (H3) and just southwest of the existing Malelane Entrance Gate in the southern portion of the Kruger National Park (KNP).

The proposed site is next to the tar road (H3), next to the existing Malelane Entrance Gate and on the banks of the Crocodile River. The site is located on a flat topography and the soils are deep red alluvial sandy clays. The vegetation can be described as Grewia shrubveld with few large trees. No large riparian trees occur.

- **Site attributes**

SANParks has identified this site as a possible development site within the definition of peripheral development and easy access for 24/7 guest accommodation. The site does lend itself to the development of a 4*star safari resort with the challenge to design the focus areas to be hidden from the visual impacts from developments outside of the KNP boundaries. The main negative attribute of this site is associated with the visual impacts of the properties opposite the Crocodile River. The Pestana Hotel is currently located across the Crocodile River from the site and should a safari resort be developed at this point, both Pestana and the proposed safari resort will be negatively impacted on. The Malelane Country Club sports fields and irrigated agricultural lands are also visible across the Crocodile River.

- **Existing Infrastructure**

This site does not offer any existing infrastructure apart from the infrastructure at the Malelane Entrance Gate that will be directly adjacent to this site.

- **Existing Roads and Tracks**

There are no management or other road leading from the tar road (H3) to the proposed site. The proposed site is ±500m from the existing tar road (H3) and next to the Malelane Entrance Gate. All roads to be upgraded or new roads will conform to the road specifications manual for KNP.

- **Supporting Infrastructure: Water**

There is no potable water on site. The closest perennial river is the Crocodile River, although it may dry up during periods of extreme low rainfall.

4.2.4 Description of Site 4

This is a “Green Fields” area close to the tar road (H3) and just northwest of the existing Malelane Entrance Gate in the southern portion of the Kruger National Park (KNP). The site is located on a flat topography and the soils are deep red alluvial sandy clays. The vegetation can be described as Grewia shrubveld with few large trees. No large riparian trees occur.

- **Site attributes**

SANParks has determined that the safari resort will be operated from the Malelane Entrance Gate “park and ride” facility. The site does lend itself to the development of a 4*star safari

resort with the challenge to design the focus areas to be hidden from the visual impacts from developments outside of the KNP boundaries, especially the Leopard Creek Golf Estate. If the safari resort were to be developed at this site, there would be a negative impact on both developments from a visual point of view. This will then have a negative effect on the sense of place and will impact visitor experiences.

- **Existing Infrastructure**

This site does not offer any existing infrastructure apart from the infrastructure at the Malelane Entrance Gate that will be directly adjacent to this site.

- **Existing Roads and Tracks**

There are no management or other road leading from the tar road (H3) to the proposed site. The proposed site is $\pm 500\text{m}$ from the existing tar road (H3) and next to the Malelane Entrance Gate. All roads to be upgraded or new roads will conform to the road specifications manual for KNP.

- **Supporting Infrastructure: Water**

There is no potable water on site. The closest perennial river is the Crocodile River, although it may dry up during periods of extreme low rainfall.

- **Supporting Infrastructure: Electricity**

There is no electricity available on the site, but ESKOM power is available at the Malelane substation directly across the Malelane Rangers Post on the southern side of the Crocodile River.

- **Telecommunications**

No Telkom phones are available; however, cellular signals are available at the proposed site. The signal strength does vary and will have to be tested.

4.2.5 Description of Site 5

The proposed site is next to the tar road (H3), next to the existing Malelane Entrance Gate and on the banks of the Crocodile River. The site is located on a flat topography and the soils are deep red alluvial sandy clays. The vegetation can be described as Grewia shrubveld with few large trees. No large riparian trees occur.

- **Site attributes**

SANParks has identified this site as a possible development site within the definition of peripheral development and easy access for 24/7 guest accommodation. The site does lend itself to the development of a 4*star safari resort with the challenge to design the focus areas to be hidden from the visual impacts from developments outside of the KNP boundaries. Again, as per site 4, developing the safari resort at this point will have a negative impact on the overall sense of place of both the safari resort itself and the Leopard Creek development.

- **Existing Infrastructure**

This site does not offer any existing infrastructure apart from the existing rangers housing as well as the infrastructure at the Malelane Entrance Gate that will be directly adjacent to this site.

- **Existing Roads and Tracks**

There are no management or other roads leading from the tar road (H3) to the proposed site. The proposed site is $\pm 200\text{m}$ from the existing tar road (H3) and next to the Malelane Entrance Gate. All roads to be upgraded or new roads will conform to the road specifications manual for KNP.

- **Supporting Infrastructure: Electricity**

There is electricity available on the site and ESKOM power is also available at the Malelane substation directly across the Malelane Rangers Station. The maximum load required will determine the upgrading of the overhead supply across the Crocodile River to the Malelane distribution point. The bulk electrical supply line from the Malelane distribution point will follow the existing road footprint and will be installed underground.

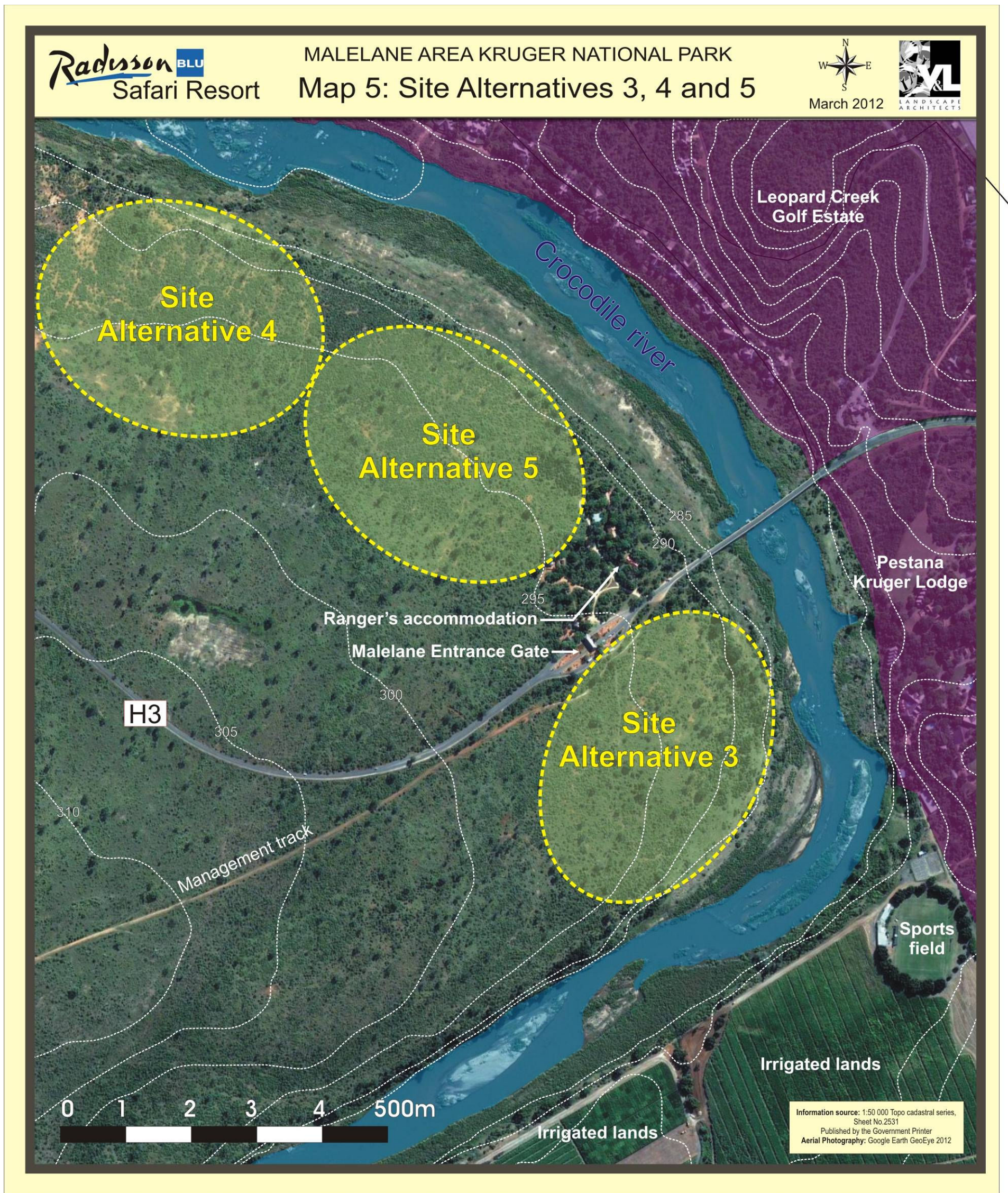
- **Supporting Infrastructure: Water**

There is no potable water on site. The closest perennial river is the Crocodile River, although it may dry up during periods of extreme low rainfall.

- **Telecommunications**

No Telkom phones are available; however, cellular signals are available at the proposed site. The signal strength does vary and will have to be tested.

Map 5: Site Alternatives 3, 4 and 5



4.2.6 Other Alternatives Considered

– Mjejane Site

The Mjejane Game Reserve, a community owned area which is a contractual park located adjacent to the Kruger National Park was considered as a potential alternative. The Mjejane Game Reserve has a vacant site of 100 rooms, which has been approved for development. SANParks did not select this site as one of the five proposed sites for the development of the safari resort as the land is not owned by SANParks.

The rationale for not developing outside of the Park is based on its mandate to raise revenue for the funding of conservation. The SANParks commercialisation strategy adopted in 2000 is aimed at inter alia the generation of income through the provision of tourism facilities. In addition, the safari resort development is aimed at the provision of accommodation for a segment of the tourism market not served by the current facilities in the KNP. The commercialisation methodology adopted by SANParks is internationally cited as an appropriate example of generating funds for protected areas. Should the development be outside of the boundaries of the National Parks, none of these objectives would be achieved.

– Layout alternatives

Alternative layouts will be prepared and investigated based on site sensitivity, floodlines, provision of services, site topography and associated visual impact amongst others. The impacts associated with the lay-outs will be investigated and the preferred lay-out will be included in the EIA Report. This will include the location of the Park & Ride Facility.

– Construction and process alternatives

A number of detail process and construction alternatives will be thoroughly investigated by the consulting engineers in terms of services for the proposed development. Sewage treatment considerations will include systems approved by the Department of Water Affairs, location, quality of effluent, demand and required size, air quality and aesthetics.

The viability of the use of alternative energy sources will be investigated including financial viability of usage. The proposed developments electrical demand can be reduced through the implementations of a number of latest technologies and alternative energy sources including:

- Solar water heaters
- Gas fired water heaters
- Gas cooking requirements
- Gas fired comfort heating
- Evaporative cooling techniques

The use of sustainable building design will be investigated to ensure that structures are created using processes which are environmentally responsible and resource efficient. Designs should contribute to the reduction of waste generation, pollution and environmental degradation. Building designs must ensure the efficient use of energy, water and other resources.

Additional alternatives may be identified as the project detail is refined and receipt of comments on the Draft Scoping Report. This may include operations relating to the Park & Ride Facility.

– **No-go Alternative**

In essence, the no-go alternative would ultimately imply that the state of the environment would be retained as it is presently, with obvious advantages and disadvantages to the natural environment.

The Department of Environmental Affairs stresses that the no-go alternative should be considered in cases where the proposed development will have a significant negative impact that cannot be effectively or satisfactorily mitigated against. The no-go alternative means that the current status-quo is maintained.

4.3 EVALUATION OF THE 5 ALTERNATIVE SITES

4.3.1 Evaluation of Site 1

EVALUATION OF SITE 1
Ecological Consideration
<p>Tall trees form a fairly closed canopy woodland along the riparian fringe that is dominated by <i>Diospyros mespiliformis</i>, <i>Trichiliaemetica</i>, <i>Sclerocarya birrea subsp. cafra</i>, <i>Kigelia africana</i> and <i>Ficus sycomorus</i>. Other scattered trees include <i>Philenoptera violacea</i>, <i>Peltophorum africanum</i>, <i>Balanitesmaughamii</i> and <i>Gardenia volkensii</i>. Undergrowth is dominated by woody shrubs, particularly <i>Euclea natalensis</i>, <i>Flueggea virosa</i>, <i>Gymnosporia senegalensis</i>, <i>Grewia monticola</i>, <i>Grewia bicolor</i>, <i>Cordia ovalis</i> and <i>Lippia javanica</i>.</p> <p>No Red Data Floral Species were identified on site by the specialist, although a detailed assessment was not undertaken. Sodic soils are present on the site.</p> <p>The site was given a moderate overall sensitivity rating.</p>
Geotechnical and Geohydrological Considerations
<p>– <u>Regional Geology</u></p> <p>According to the 1:250 000-scale 2530 BARBERTON geological sheet, the investigated area is underlain by Biotite-Trondhjemite Gneiss (Goudplaats-Houtriver Gneiss Suite, Paleoproterozoic Granitoid Intrusion). No potentially soluble rock formations such as dolomite are indicated on/or in close proximity of the site.</p> <p>The formation and typical mineral composition of the rock types is briefly discussed below (Cairncross, 2004 and Keary, 2001). Gneiss is a coarse-grained metamorphic rock that is characteristically banded or layered and forms by regional high-grade metamorphism of granite. Large crystals in gneiss are composed of quartz, alkali feldspar, mica, amphiboles, or, rarely, pyroxenes. Some gneisses (migmatites) that have undergone intensive metamorphism and deformation take on the appearance of swirled toothpaste.</p> <p>– <u>Structural Geology</u></p> <p>From the 1:250 000-scale geological sheet it can be seen that a large linear feature, trending north-south, runs approximately 800 metres to the west of the site. This feature was identified from the aeromagnetic data and most likely represents a fault or hypabyssal intrusion.</p> <p>A number of diabase dykes, trending northwest-southeast, were also identified approximately three to four kilometres to the southwest of the site.</p> <p>– <u>Site Geology</u></p> <p>Gneissic outcrops were identified in the area immediately surrounding the site. The site itself however appears to be covered by surficial deposits of unknown depth.</p> <p>– <u>Hydrology</u></p>

The main aquifers thought to exist include fractured and weathered rocks and the alluvium along the Crocodile River although the alluvium does not appear to be extensive (river channel is mainly rock outcrop). Suitable targets for abstraction boreholes would be the alluvium along the Crocodile River, the linear feature 800m west of the site and along the diabase dykes.

Low to moderate borehole yields (up to 1l/s) can be expected. Water quality is expected to be potable.

– Geotechnical Constraints

Based on the available geological and site information, a number of potential geotechnical constraints have been identified that might occur. This is based on the general geotechnical constraints pertaining to urban development as proposed by Partridge, Wood and Brink (1993).

These include:

- Collapsible soils;
- Shallow seepage and/or perched water table;
- Compressible soils;
- Excavation difficulty;
- Soil with an intermediate to high erodability/dispersivity;
- Areas subject to flooding.

Access

The existing gravel management road (±500m) could be upgraded to a class C all-weather road to provide access to the proposed site. Guest access to the site will be via the “park and ride” facility at the Malelane Entrance Gate, where guests will leave their vehicles from where they will be transported in open game viewing vehicles to the safari resort. All roads to be upgraded or new roads planned to be developed are required to conform to the road specifications manual for KNP.

Visual Impact

Visually, site 1 has a broad area of exposure. The greatest impact will be on Leopard Creek Golf Estate. The safari resort development will be visible from most areas in the estate. Developing a safari resort on this site will have a visual impact on park visitors driving on the S110 along the Matjulu River, the H3 and the S114 along the Crocodile River.

Having said this, should the safari resort be positioned at this point, Leopard Creek will also have a negative impact on the sense of place of the safari resort as some of the facilities/units of Leopard Creek are directly opposite the Crocodile River from site 1.

See Map 6 for Visual Exposure of Site 1.

Socio-Economic Impact

Due to the visual impact associated with developing a safari resort at Site 1, socio economic

impacts can be expected. The Leopard Creek development which is located opposite the river from site 1 could potentially lose great asset value in their product due to the safari resort being in their line of site.

A large part of the marketing and attraction of Leopard Creek is the fact that there are uninterrupted views into the Kruger National Park along the Crocodile River. This could have a long term effect on their income generation models, especially since the venue hosts well known international golfing events.

The broader socio-economic impact issues will be address in the Socio-Economic Impact Assessment.

Infrastructure

A small area of this site was used as a construction camp previously for road construction projects in the Malelane area. There is a previously impacted area with concrete structures on site. There is a management road which currently accesses the site. There is no electrical, water or sewage infrastructure on site.

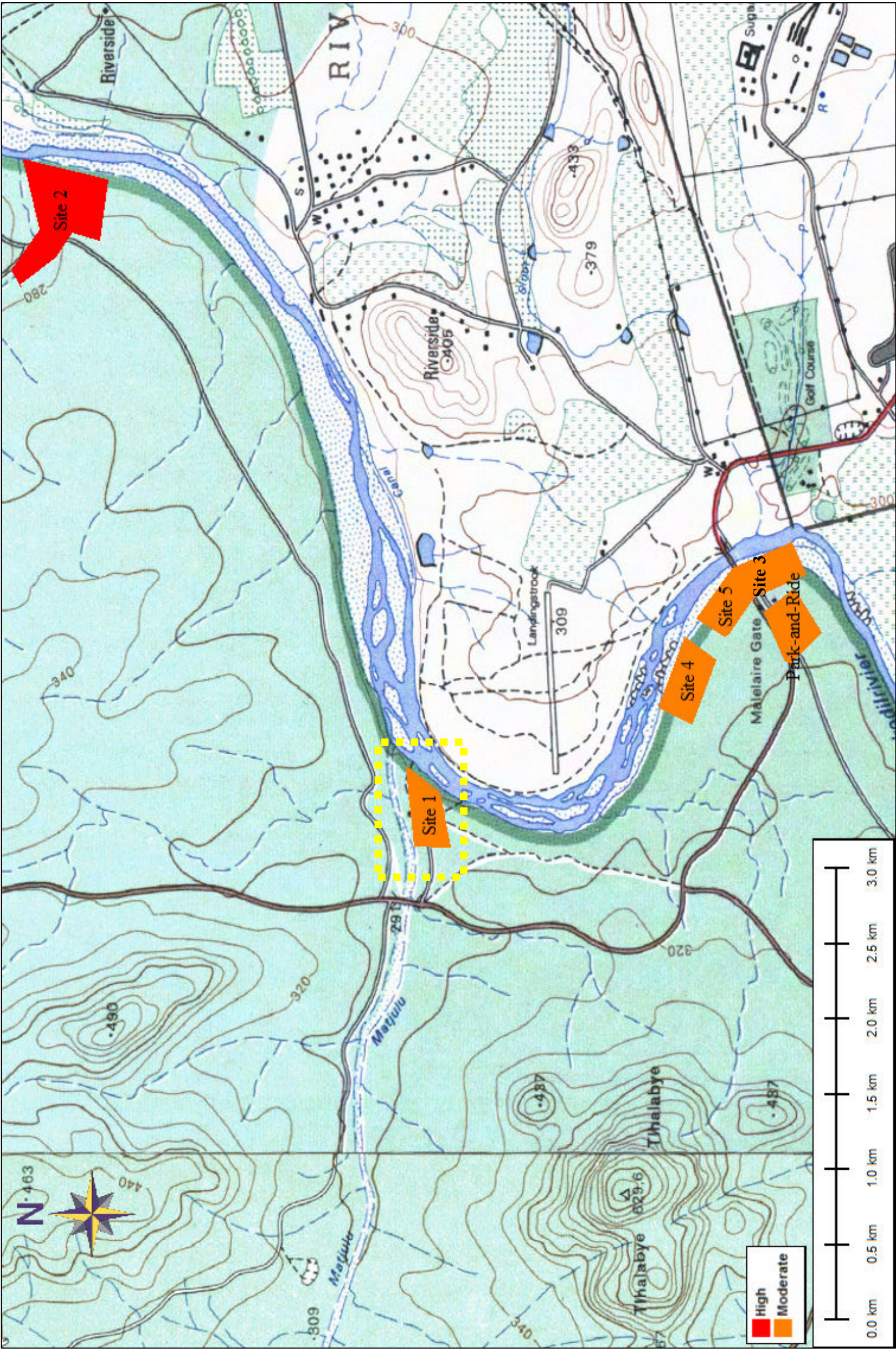
Sense of Place (Specifically relating to tourism)

The site is located in a very attractive environment from a tourism point of view, except for the visual intrusion of Leopard Creek Golf Estate. There seems to be a large amount of animal movement through the area and large trees on the site allow for an established bushveld atmosphere.

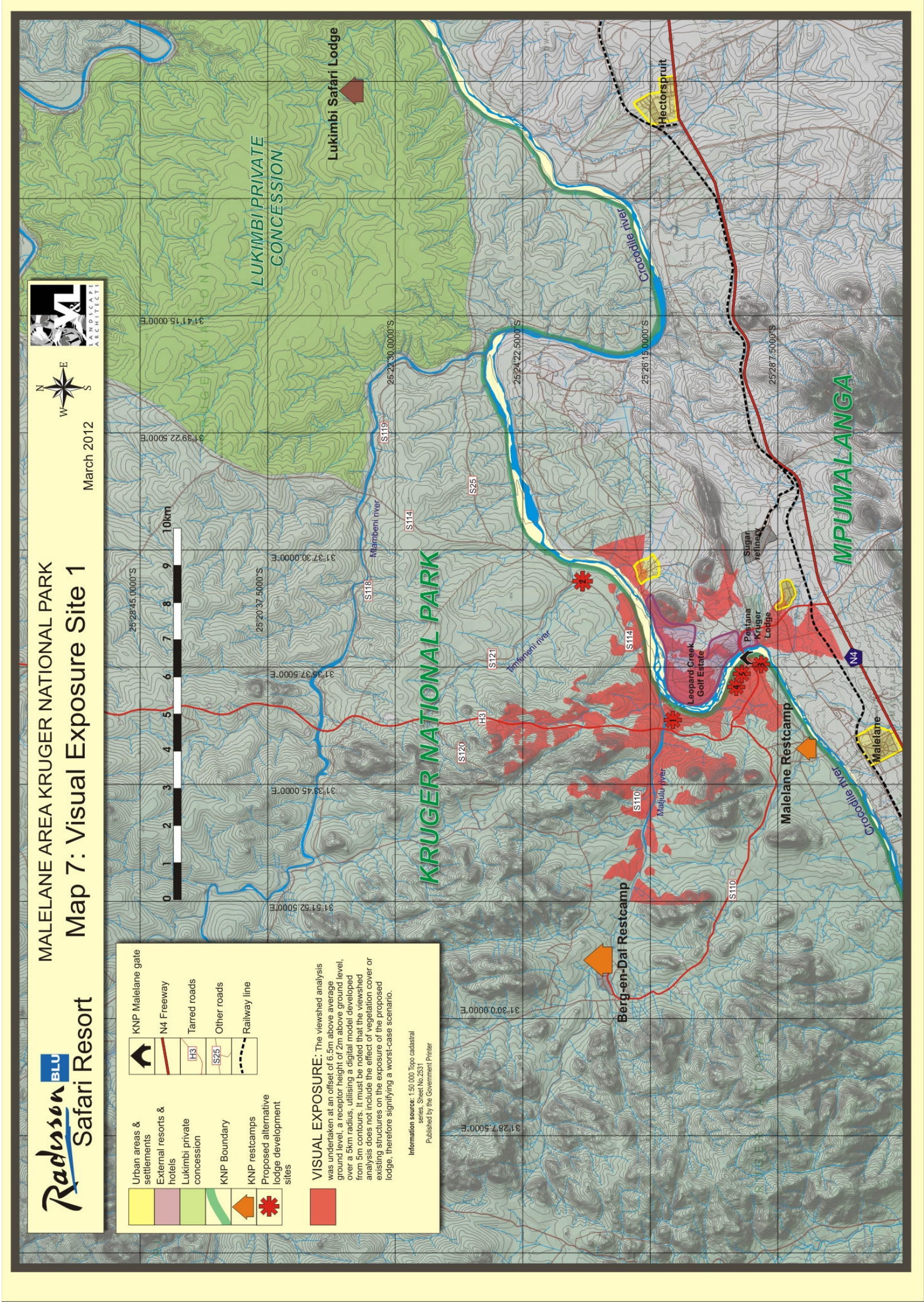
The site is however located close to the intersection of the H3 and the S114 which will cause certain levels of noise impact due to traffic and visual impact. All operational traffic will enter and exit the H3 road.



Map 6: Sensitivity map of alternative sites (Specifically relating to site 1)



Map 7: Visual Exposure of Site 1



4.3.2 Evaluation of Site 2

EVALUATION OF SITE 2
Ecological Consideration
<p>Five vegetation communities were identified in the safari resort (Site 2) and park-and-ride areas based on floristic composition and vegetation structure (according to the classification of Edwards, 1983). These are described in detail below:</p>
<p>Grewia-Combretum Closed Shrubland</p> <p>This community is the dominant vegetation in the proposed safari resort area at Site 2 and covers an area of approximately 30.4 ha. Vegetation structure is Low Closed Shrubland with scattered trees and a dense grass sward. Dominant and diagnostic large shrubs are <i>Grewia bicolor</i>, <i>Combretum hereroense</i>, <i>Dichrostachys cinerea</i> subsp. <i>africana</i> and <i>Grewia monticola</i>. Scattered trees are <i>Acacia nigrescens</i>, <i>Acacia tortilis</i> and <i>Sclerocarya birrea</i> subsp. <i>cafra</i>. Dominant grasses are <i>Chloris virgata</i>, <i>Heteropogon contortus</i> and <i>Themeda triandra</i>. Scattered, less frequently encountered shrubs are <i>Ehretia amoena</i>, <i>Grewia villosa</i>, <i>Lippia javanica</i>, <i>Waltheria indica</i>, <i>Maerua parvifolia</i> and <i>Euclea divinorum</i>.</p> <p>Vegetation is quite disturbed through trampling by elephant. Fairly high levels of grazing and browsing pressure were evident during fieldwork, including evidence of large herbivores such as Black and White Rhinos. Several subpopulations of the critically endangered <i>Adenium swazicum</i> were located in this vegetation community. Twelve small colonies totalling 18 plants were found during the initial fieldwork, while an additional nine sites with 10 plants were located on small sodic soil patches along the Timfenheni during January fieldwork. Each plant was buffered by 30 metres, which resulted in a continuous area of 1.5 ha and fragmented areas totalling 0.8 ha that need to be excluded from development. Several individuals of a <i>Crinum</i> species were located at the edges of a few sodic sites in this community. These could not be identified with certainty since the plants were not in flower in February. However, they could possibly be <i>Crinum stuhlmannii</i>, which is of conservation concern, having a status of Declining. Three tree species protected under the National Forests Act (No.30 of 1998) were confirmed: <i>Sclerocarya birrea</i> subsp. <i>cafra</i>, <i>Combretum imberbe</i> and <i>Philenoptera violacea</i>. <i>Grewia-Combretum Closed Shrubland</i> has Medium-High significance for plant species of conservation importance, while the immediate site of the <i>Adenium</i> plants is rated as Very High significance.</p>
<p>Aloe-Euphorbia Closed Woodland</p> <p>This community is very localised and is confined to a small rocky outcrop above the Timfenheni Stream at Site 2 and covers only 0.1 ha. Vegetation structure is Low Closed Woodland with a broken canopy, probably due to skeletal soils only allowing trees to establish in certain places. Plants are noticeably adapted to xerophytic conditions, and the two dominant and diagnostic species are both succulent: <i>Aloe spicata</i> and <i>Euphorbia tirucalli</i>. Several species are confined to this community, namely <i>Terminalia phanerophlebia</i>, <i>Ficus ingens</i>, <i>Aneilema</i> sp., <i>Cissus cactiformis</i>, <i>Ochna natalitia</i> and <i>Combretum collinum</i> subsp. <i>suluense</i>. This high level of fidelity is because of the unique microhabitat created by topography and rockiness. However, the only species with conservation importance located during fieldwork was <i>Aloe spicata</i>, which is protected under the Mpumalanga Nature Conservation Act (No.10 of 1998). This community was assessed as being of Low significance for species of conservation importance, although it forms important habitat for species unlikely to occur elsewhere in the study area.</p>

Aloe-Euphorbia Closed Woodland

This community is confined to the banks of the Crocodile River at Site 2 and the banks of the Matjulu Stream at Site 1. Vegetation structure is Tall Closed Woodland with a dense undergrowth of shrubs and a sparse grass layer. The dominant tree is *Ficus sycomorus*, while other canopy trees are *Diospyros mespiliformis*, *Kigelia africana*, *Trichilia emetica* and *Combretum erythrophyllum*. *Combretum microphyllum* is a common climber into the canopy. The shrub layer is noticeably dominated by *Gymnosporia senegalensis*, with other common shrubs being *Euclea natalensis* subsp. *angustifolia*, *Cordia ovalis* and *Phyllanthus reticulatus*. *Panicum maximum* is the only common grass.

This vegetation community was drastically reduced during the floods of 2000 and is still in fairly early stages of recovery. Heavy browse pressure and trampling of vegetation elephants is particularly evident along the Crocodile River at Site 2 and the community is in a very disturbed ecological state. This woodland is much less disturbed along the Matjulu Stream at Site 1. Only one tree species protected under the National Forests Act (No.30 of 1998) was confirmed to occur, namely *Philenoptera violacea*. So while *Ficus-Gymnosporia* Riparian Woodland has a Low significance for plant species of conservation importance, it does have High functional importance for services such as flood attenuation and bank stabilisation and also forms important habitat for fauna.

Aloe-Euphorbia Closed Woodland

This community is confined to a narrow belt along the banks of the Timfenheni River at Site 2 and covers an area of approximately 2.3 ha. Vegetation structure is Tall Closed Woodland with a dense undergrowth of shrubs and tall grass. The dominant and diagnostic tree is *Garcinia livingstonei*, while other prominent canopy trees are *Diospyros mespiliformis*, *Schotia brachypetala* and *Manilkara mochisia*. *Acacia schweinfurthii* and *Grewia flavescens* are common climbers or scrambling shrubs. Other common shrubs are *Euclea natalensis* subsp. *angustifolia*, *Cordia ovalis* and *Gymnosporia maranguensis*. *Panicum maximum* is an abundant grass along the outer edge of the vegetation community.

Garcinia-Diospyros Riparian Woodland is in a far less disturbed state than *Ficus-Gymnosporia* Riparian Woodland, although trampling of vegetation by elephants and other large herbivores is evident. Two tree species protected under the National Forests Act (No.30 of 1998) were confirmed to occur, namely *Philenoptera violacea* and *Breonadia salicina*. Even though this vegetation community has a Low significance for plant species of conservation importance, it does have High functional importance for services such as flood attenuation and bank stabilisation.

Construction activities and noise could be disruptive to the breeding season of species breeding within or adjacent the study area. Of particular concern is the pair of Saddle-billed Storks that have a nest in a tree several hundred metres downstream of the safari resort site. In addition, a pair of Pel's Fishing Owl has been resident more than a kilometer downstream of the site. This pair is less likely to be disturbed than the storks because of increased distance from disturbance and since the nest site is not visible from site 2.

The site was given a high overall sensitivity rating due to the occurrence of red data species and sodic soils.

See map 8 for sensitivity mapping.

Geotechnical and Geohydrological Considerations

– Regional Geology

According to the 1:250 000-scale 2530 BARBERTON geological sheet, the investigated area is underlain by Basaltic and peridotitic komatiite, as well as various mafic and ultramafic schists interlayered with banded iron formation and ferruginous black, white grey chert and acidic to intermediate volcanic rocks (Barberton Supergroup, Onverwacht Group, Tjakastad Subgroup, Komati and Theespruit Formations).

No potentially soluble rock formations such as dolomite are indicated on/or in close proximity of the site.

The formation and typical mineral composition of the rock types is briefly discussed below (Cairncross, 2004 and Keary, 2001).

Komatiite is an ultramafic volcanic rock composed primarily of olivine and pyroxene. It has the morphological features of subaerial and submarine basaltic lava and a distinctive spinifex texture. Characteristic of Archean terrains.

Schists refer to high-grade metamorphic rocks that exhibit a schistose (foliated) structure.

Banded Iron Formation (BIF) is an iron-rich sediment with layers of chert and iron minerals.

– Structural Geology

From the 1:250 000-scale geological sheet it can be seen that a large linear feature, trending north-south, runs approximately 2.2 kilometres to the northeast of the site. This feature was identified from the aeromagnetic data and most likely represents a fault or hypabyssal intrusion.

– Site Geology

Komatiite and schist outcrops were identified in the Timfenheni River. The site itself however appears to be covered by surficial deposits of unknown depth.

– Hydrology

The main aquifers thought to exist include fractured and weathered rocks and the alluvium along the Crocodile River although the alluvium does not appear to be extensive (river channel is mainly rock outcrop). Suitable targets for abstraction boreholes would be the alluvium along the Crocodile River, the north south linear feature 2.2kms northeast of the site and along the diabase dykes .

Low to moderate borehole yields (up to 1l/s) can be expected on Site 2. Water quality is expected to be potable.

– Geotechnical Constraints

Based on the available geological and site information, a number of potential geotechnical constraints have been identified that might occur. This is based on the general geotechnical

constraints pertaining to urban development as proposed by Partridge, Wood and Brink (1993).

These include:

- Shallow seepage and/or perched water table;
- Active soils;
- Compressible soils;
- Excavation difficulty;
- Soil with an intermediate to high erodability;
- Areas subject to flooding.

Patches of sodic soils are also located on the site.

Access

A new 'class C' all-weather road (± 0.5 km) from the gravel road (S114) will be required to provide access to the proposed site. The turnoff from the S114 – gravel road is approximately 9 km from the Malelane Entrance gate. The S114 will need to be re-routed around the proposed development site to ensure other visitors to the park do not access the Safari Resort Site and to ensure the site is not visible to the public. Guest access to the site will be via the "park and ride" facility at the Malelane Entrance Gate, where guests will leave their vehicles from where they will be transported in open game viewing vehicles to the safari resort. All guests will have to pay requisite Park entry fees.

Site 2 is the furthest site away from Malelane Gate and therefore will require more extensive logistics and travelling distances than the other 4 sites.

Visual Impact

Site 2 is the least exposed site of the 5 proposed sites allocated by SANParks. The site is located adjacent to sugar cane plantations and does not have the limitations of other developments within its viewshed as per the other sites. The site is exposed to a limited number of internal park roads and the site will be viewable from the extremity of Leopard Creek. A detailed visual impact assessment is being undertaken for this site.

See Map 9 for Visual Exposure of Site 2.

Socio-Economic Impact

The only real direct socio-economic impact will be the visual impact caused by additional traffic associated with the safari resort. It is critical to note that the sugar cane plantations on the opposite bank of the river do get burned once a year and this could have an impact on safari resort operations.

Broader economic impacts will be assessed in the Socio Economic Impact Assessment.

Heritage Impact

No heritage resources were identified on site.

Infrastructure

The only infrastructure on the site is the existing S114 which will be used to access the site but a section of the road will need to be re-routed around the site which will have a certain level of negative impacts. Additional to that, no infrastructure is currently located on site 2.

Sense of Place (Specifically relating to tourism)

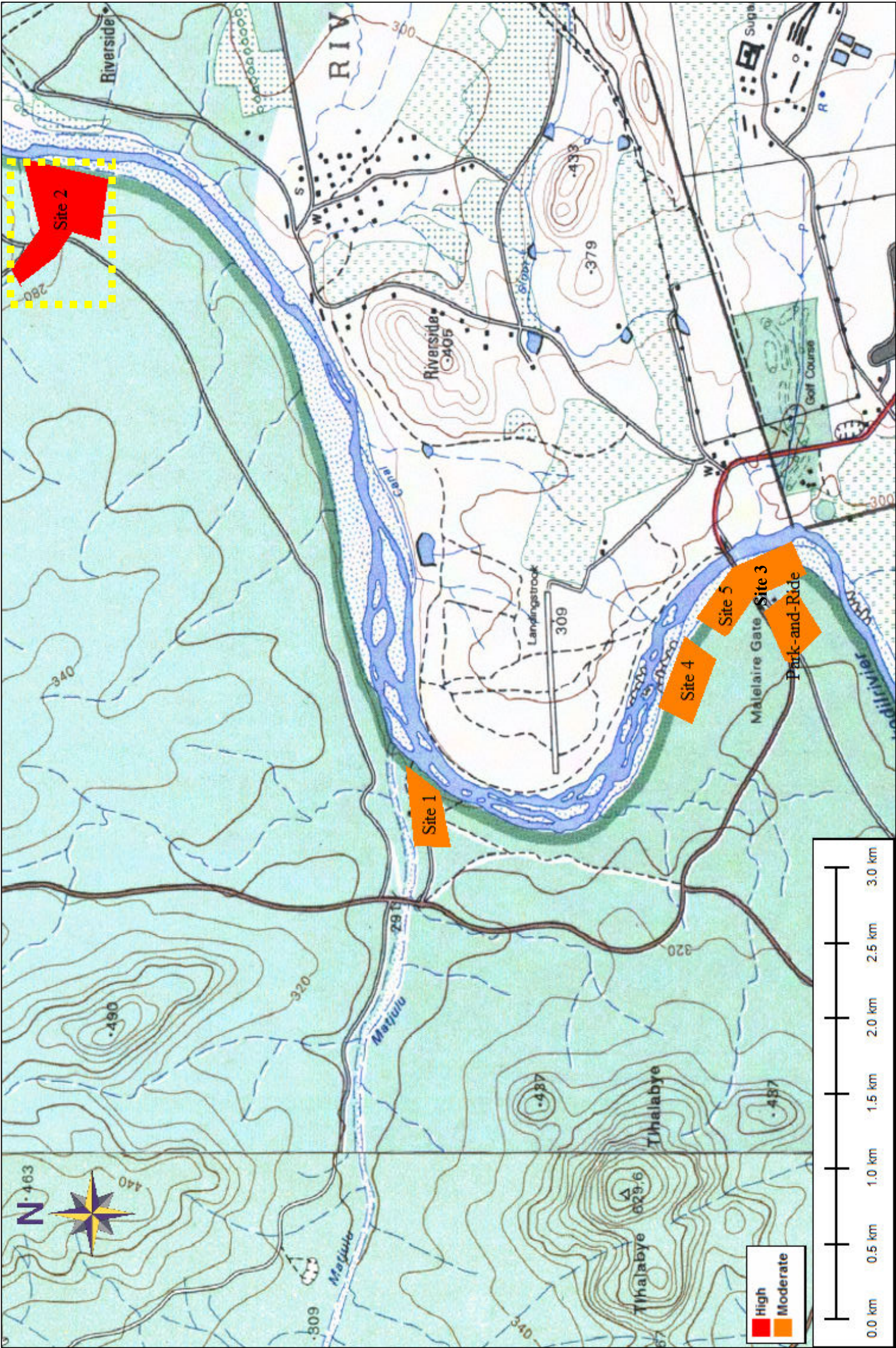
The site is located in a very attractive environment from a tourism point of view, except for the visual intrusion of the sugar cane plantations on the opposite bank of the Crocodile River.

The Timfenheni River provides for a very attractive feature and the established vegetation provides for an ideal tourism facility. This is the most attractive site from a tourism and aesthetic point of view.

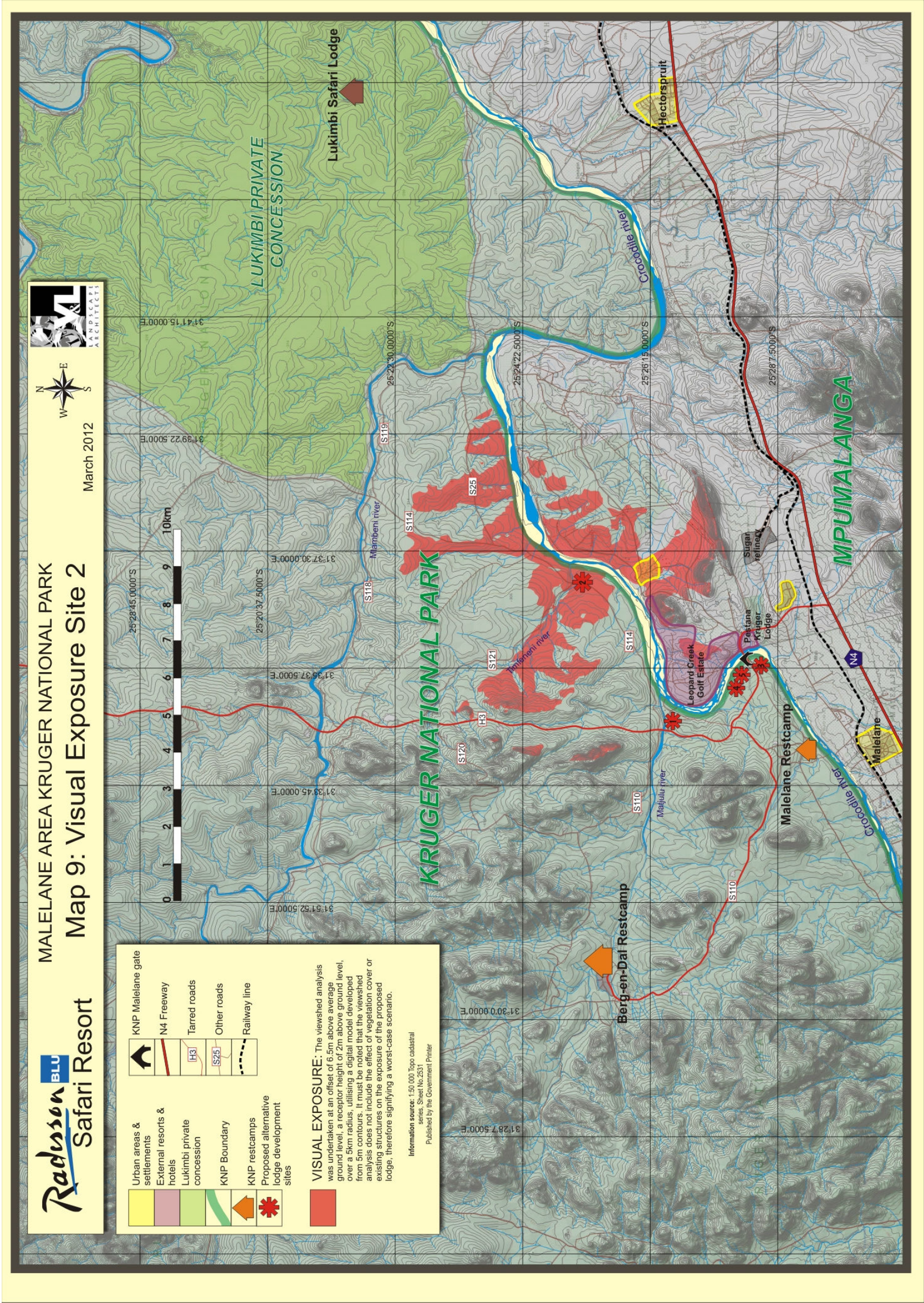
Overall, site 2 is the preferred site of the developer due to the attractiveness of the site being one of the critical success factors of the safari resort. This is further discussed in section 3.4.



Map 8: Sensitivity map of alternative sites (Specifically relating to site 2)



Map 9: Visual Exposure Map of Site 2



4.3.3 Evaluation of Site 3

EVALUATION OF SITE 3
Ecological Consideration
<p>This is located immediately south of Malelane Gate along the banks of the Crocodile River. Tall riparian woodland is dominated by <i>Diospyros mespiliformis</i>, <i>Sclerocarya birrea</i> subsp. <i>cafra</i>, <i>Acacia nigrescens</i>, <i>Balanites maughamii</i> and <i>Philenoptera violacea</i>. The understory comprises mostly woody shrubs, particularly <i>Euclea natalensis</i>, <i>Combretum hereroense</i>, <i>Grewia hexamita</i>, <i>Flueggeavirosa</i>, <i>Cordia ovalis</i> and <i>Hibiscus calyphyllus</i>. Herbaceous species include the invasive alien <i>Parthenium hysterophorus</i>, as well as <i>Senna</i> sp., <i>Zinnia peruviana</i> and <i>Sida dregei</i>.</p> <p>No Red Data Floral Species were identified on site by the specialist, although a detailed assessment was not undertaken.</p> <p>The site was given a moderate overall sensitivity rating.</p>
Geotechnical and Geohydrological Considerations
<p>– <u>Regional Geology</u></p> <p>According to the 1:250 000-scale 2530 BARBERTON geological sheet, the investigated area is underlain by Grey to white biotite granite (Nelspruit Suite). No potentially soluble rock formations such as dolomite are indicated on/or in close proximity of the site.</p> <p>The formation and typical mineral composition of the rock types is briefly discussed below (Cairncross, 2004 and Keary, 2001):</p> <p>Granite is a coarse-grained igneous rock that forms from the crystallization of molten magma rich in silica. It is composed mainly of quartz and feldspars, notably the potassium-bearing varieties orthoclase and microcline. Other minerals include mica and hornblende.</p> <p>– <u>Structural Geology</u></p> <p>From the 1:250 000-scale geological sheet it can be seen that a large linear feature, trending north-south, runs approximately 2.2 kilometres to the west of the site. This feature was identified from the aeromagnetic data and most likely represents a fault or hypabyssal intrusion.</p> <p>A number of diabase dykes, trending northwest-southeast, were also identified approximately three to four kilometres to the west of the site.</p> <p>– <u>Site Geology</u></p> <p>Granitic outcrops were identified in the area immediately surrounding the site. The site itself however appears to be covered by surficial deposits of unknown depth.</p>

– Hydrology

The main aquifers thought to exist include fractured and weathered rocks and the alluvium along the Crocodile River although the alluvium does not appear to be extensive (river channel is mainly rock outcrop). Suitable targets for abstraction boreholes would be the alluvium along the Crocodile River, the linear feature 2.2kms west of the site and along the diabase dykes.

Low to moderate borehole yields (up to 1l/s) can be expected. Water quality is expected to be potable.

– Geotechnical Constraints

Based on the available geological and site information, a number of potential geotechnical constraints have been identified that might occur. This is based on the general geotechnical constraints pertaining to urban development as proposed by Partridge, Wood and Brink (1993).

These include:

- Shallow seepage and/or perched water table;
- Compressible soils;
- Excavation difficulty;
- Soil with an intermediate to high erodability/dispersivity;
- Areas subject to flooding.

Access

A new class C all-weather road ($\pm 500\text{m}$) from the tar road (H3) will be required to provide access to the proposed site. The turnoff from the H3 tar road is approximately 100m from the Malelane Entrance gate. Guest access to the site will be via the “park and ride” facility at the Malelane Entrance Gate, where guests will leave their vehicles from where they will be transported in open game viewing vehicles to the safari resort. All guests will have to pay requisite Park entry fees.

Visual Impact

The main visual impact of this site relates to the potential impacts on developments on the opposite banks of the Crocodile River. Pestana Hotel will be impacted on the most as their main views look onto site 3.

Building a safari resort at this position will mean that both the proposed Radisson Blu Safari Resort and Pestana Hotel will be negatively impacted on visually and audibly and this will have a major impact on the experience provided to their guests.

Other visual impacts will be the Malelane Gate and associated infrastructure. Park visitors arriving at the gate will view this safari resort site which detracts from the experience of visiting a protected area.

Site 3 is definitely not suitable from a visual point of view and it will be very difficult to mitigate these impacts. (See map 11 for visual exposure map of site 3)

Socio-Economic Impact

Due to the visual impact associated with developing a safari resort at Site 3, socio economic impacts can be expected. The Pestana Hotel development which is located opposite the river from site 3 could potentially lose great value in their product due to the safari resort being in their line of site.

A large part of the marketing and attraction of Pestana is the fact that there are uninterrupted views into the Kruger National Park along the Crocodile River, except for the Malelane Access Gate. This could have a long term effect on their income generation models.

The broader socio-economic impact issues will be address in the Socio-Economic Impact Assessment.

Infrastructure

There is currently no infrastructure on this site.

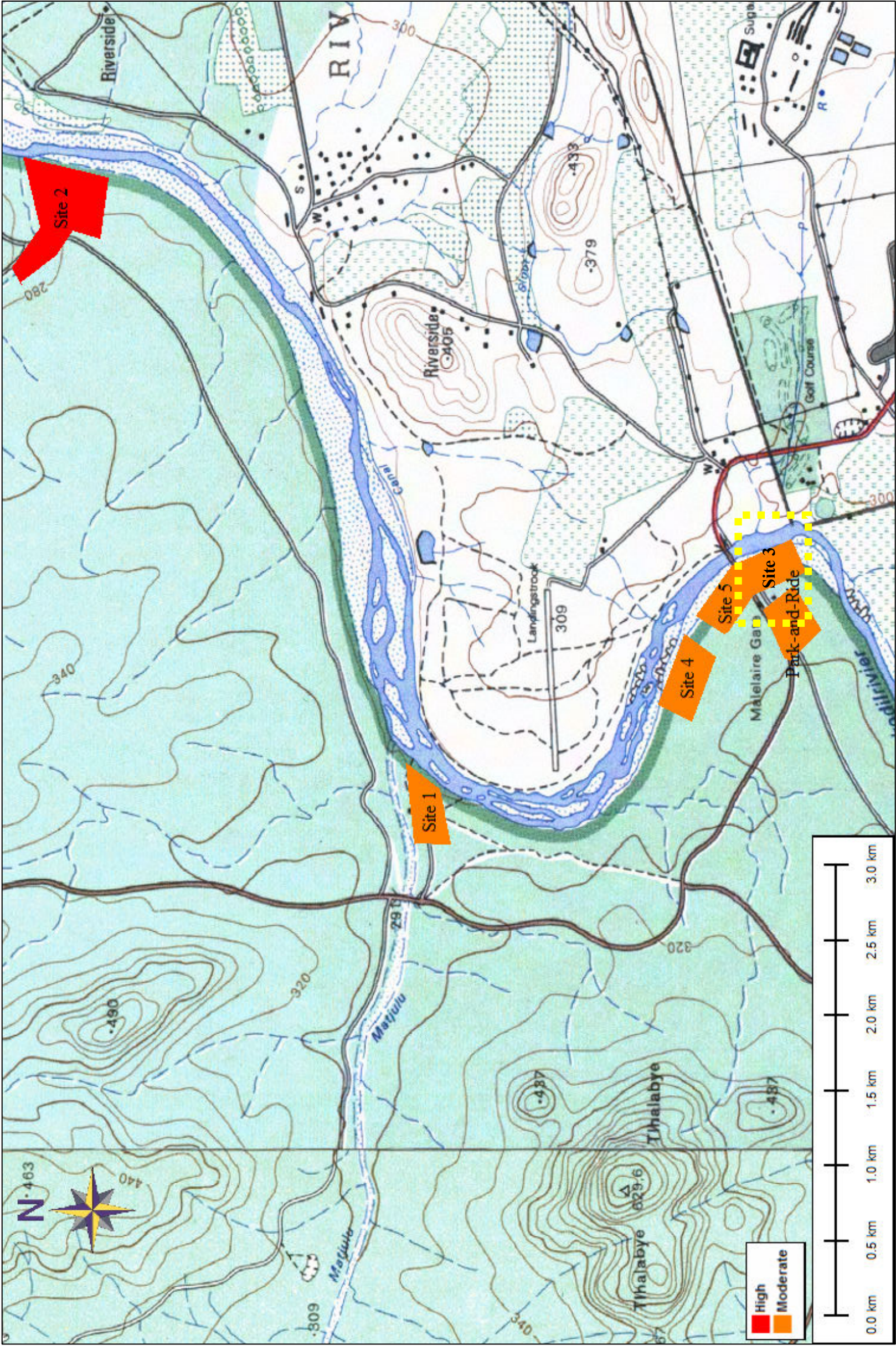
Sense of Place (Specifically relating to tourism)

Site 3 holds the lowest aesthetic value of all 5 sites. This site is not ideal for a tourism product due to the noise of the Malelane Access Gate and the built up environment of the surrounding area. It will place significant congestion and operation logistics pressures on the Malelane Gate and H3 entrance road into the Park, and will impact on the sense of arrival of all Park visitors.

The vegetation is highly impacted on and there are not many large trees which can be used as screening or as features in the development. In general this site has a very low tourism value. This must be considered due to the fact that this is tourism focussed development.



Map 10: Sensitivity map of alternative sites (Specifically relating to site 3)



4.3.4 Evaluation of Site 4 and 5

EVALUATION OF SITE 4 AND 5
<p>Ecological Consideration</p> <p>Site 4 is about 700 metres northwest of Malelane Gate along the banks of the Crocodile River. Vegetation has been very disturbed through browsing by large mammals, particularly elephant. Riparian trees are <i>Acacia nigrescens</i>, <i>Sclerocarya birrea</i> subsp. <i>cafra</i>, <i>Acacia robusta</i> subsp. <i>clavigera</i> and <i>Combretum imberbe</i>, while <i>Grewia bicolor</i> and <i>Combretum hereroense</i> are common undergrowth species.</p> <p>Site 5 is located immediately northwest of Malelane Gate along the banks of the Crocodile River. Vegetation has been very disturbed through browsing by large mammals, particularly elephant. Scattered large trees on the terrace are <i>Sclerocarya birrea</i> subsp. <i>cafra</i>, <i>Diospyros mespiliformis</i>, <i>Philenoptera violacea</i> and <i>Euphorbia ingens</i>. Undergrowth is dominated by <i>Dichrostachys cinerea</i> subsp. <i>africana</i>, <i>Grewia bicolor</i> and <i>Combretum hereroense</i>.</p> <p>No Red Data Floral Species were identified on either of the sites by the specialist, although a detailed assessment was not undertaken.</p> <p>Both sites were given a moderate overall sensitivity rating.</p>
<p>Geotechnical and Geohydrological Considerations</p> <ul style="list-style-type: none">– <u>Regional Geology</u> <p>According to the 1:250 000-scale 2530 BARBERTON geological sheet, the investigated area is underlain by Grey to white biotite granite (Nelspruit Suite). No potentially soluble rock formations such as dolomite are indicated on/or in close proximity of the sites.</p> <p>The formation and typical mineral composition of the rock types is briefly discussed below (Cairncross, 2004 and Keary, 2001). Granite is a coarse-grained igneous rock that forms from the crystallization of molten magma rich in silica. It is composed mainly of quartz and feldspars, notably the potassium-bearing varieties orthoclase and microcline. Other minerals include mica and hornblende.</p> <ul style="list-style-type: none">– <u>Structural Geology</u> <p>From the 1:250 000-scale geological sheet it can be seen that a large linear feature, trending north-south, runs approximately 2.2 kilometres to the west of the sites. This feature was identified from the aeromagnetic data and most likely represents a fault or hypabyssal intrusion.</p> <p>A number of diabase dykes, trending northwest-southeast, were also identified approximately three to four kilometres to the west of the sites.</p> <ul style="list-style-type: none">– <u>Site Geology</u> <p>Granitic outcrops were identified in the area immediately surrounding the sites. The sites however appear to be covered by surficial deposits of unknown depth.</p>

– Hydrology

The main aquifers thought to exist include fractured and weathered rocks and the alluvium along the Crocodile River although the alluvium does not appear to be extensive (river channel is mainly rock outcrop). Suitable targets for abstraction boreholes would be the alluvium along the Crocodile River, the linear feature 2.2kms west of the site and along the diabase dykes.

Low to moderate borehole yields (up to 1l/s) can be expected. Water quality is expected to be potable.

– Geotechnical Constraints

Based on the available geological and site information, a number of potential geotechnical constraints have been identified that might occur. This is based on the general geotechnical constraints pertaining to urban development as proposed by Partridge, Wood and Brink (1993).

These include:

- Collapsible soils;
- Shallow seepage and/or perched water table;
- Compressible soils;
- Excavation difficulty;
- Soil with an intermediate to high erodability/dispersivity;
- Areas subject to flooding.

Access

A new class C all-weather road ($\pm 200\text{m}$) from the tar road (H3) at the Malelane Entrance Gate will be required to provide access to the proposed sites. Guest access to the site will be via the “park and ride” facility at the Malelane Entrance Gate, where guests will leave their vehicles from where they will be transported in open game viewing vehicles to the safari resort.

Visual Impact

Visually, sites 4 and 5 have a broad area of exposure. The greatest impact will be on Leopard Creek Golf Estate and Pestana Hotel. The safari resort development will be visible from a large portion of the golf estate. Developing a safari resort on this site will have a visual impact on park visitors driving on the S110 towards Berg-en-Dal Restcamp and the H3.

Having said this, should the safari resort be positioned at this point, Leopard Creek and Pestana will also have a negative impact on the sense of place of the safari resort as many of the facilities/units of Leopard Creek are directly opposite the Crocodile River from site 4 and 5. There are very few large trees which can be used to screen the development and to make the development merge with the surrounding environment, aesthetically will be difficult.

Site 4 and site 5 is definitely not suitable from a visual point of view and it will be very difficult to mitigate these impacts. (See map 13 for visual exposure map of site 4 and 5)

Socio-Economic Impact

Due to the visual impact associated with developing a safari resort at Site 4, socio economic impacts can be expected. The Leopard Creek and Pestana Hotel developments which are located opposite the river from site 4 and 5 could potentially lose great value in their product due to the safari resort being in their line of site.

A large part of the marketing and attraction of Leopard Creek and Pestana is the fact that there are uninterrupted views into the Kruger National Park along the Crocodile River. This could have a long term effect on their income generation models, especially since the venue hosts well known international golfing events.

The broader socio-economic impact issues will be address in the Socio-Economic Impact Assessment.

Infrastructure

Site 4. This site does not offer any existing infrastructure apart from the infrastructure at the Malelane Entrance Gate that will be directly adjacent to this site.

Site 5. There is electricity available on the site and ESKOM power is also available at the Malelane substation directly across the Malelane Rangers Station.

Sense of Place (Specifically relating to tourism)

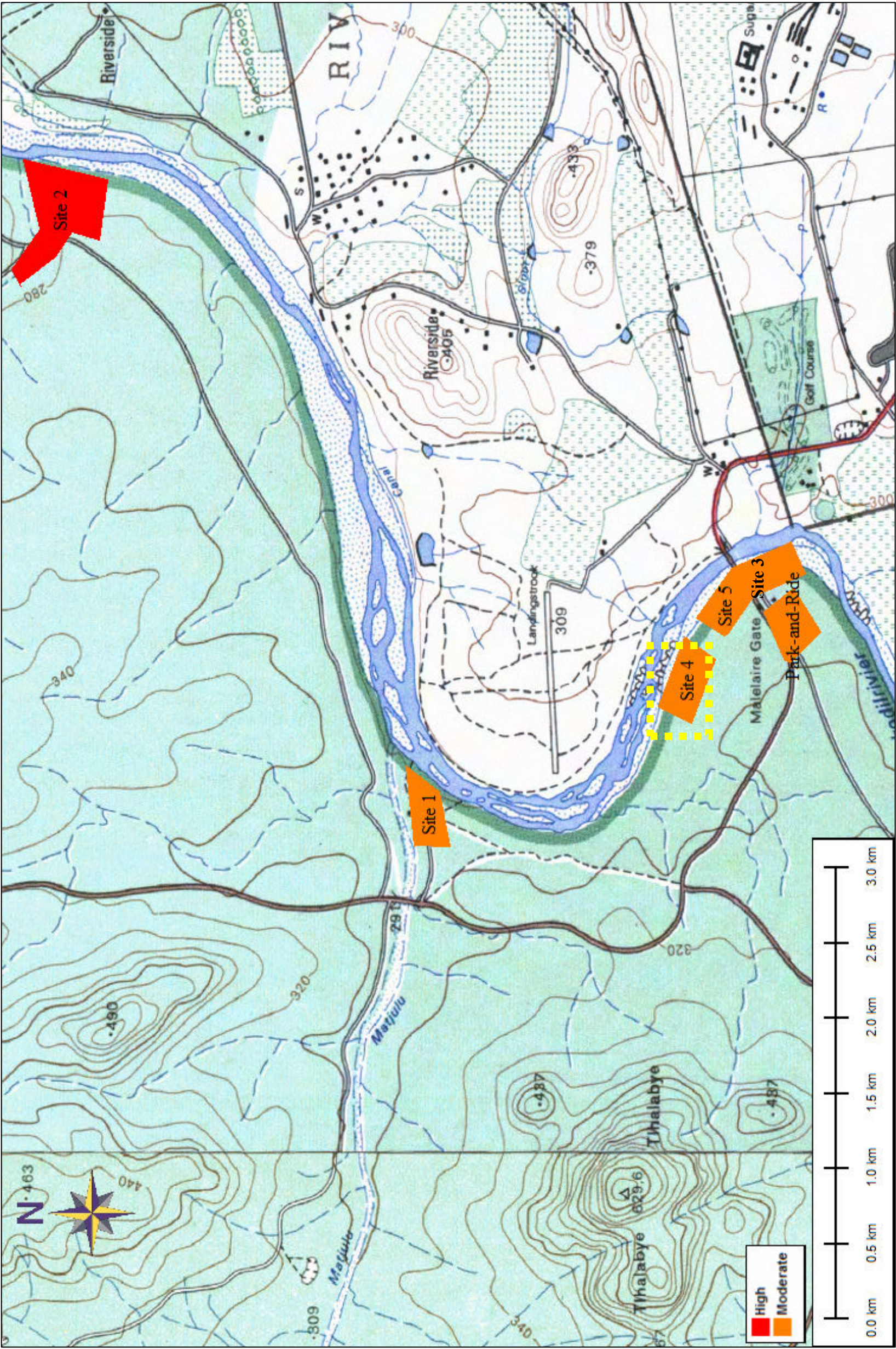
Site 4 and 5 hold very low aesthetic value due to various built features in the surrounding environment.

The vegetation is highly impacted on and there are not many large trees which can be used as screening or as features in the development. In general this site has a very low tourism value. This must be considered due to the fact that this is tourism focused development.

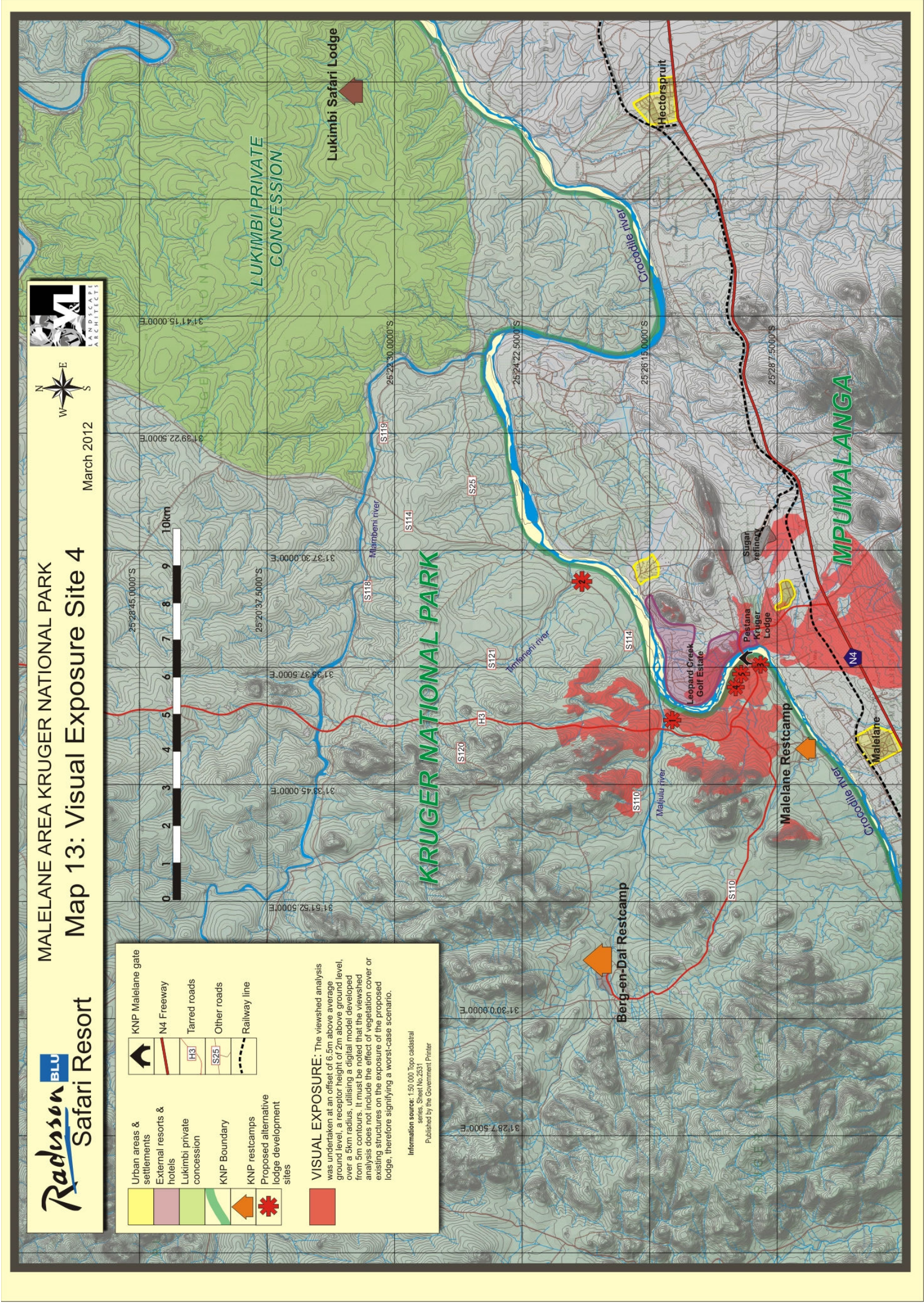
Logistically however, these sites will be very suitable for day-to-day operations, other than the significant daily congestion and logistics pressures on the Malelane Gate and H3 entrance road into the Park, and sense of arrival of public visitors.



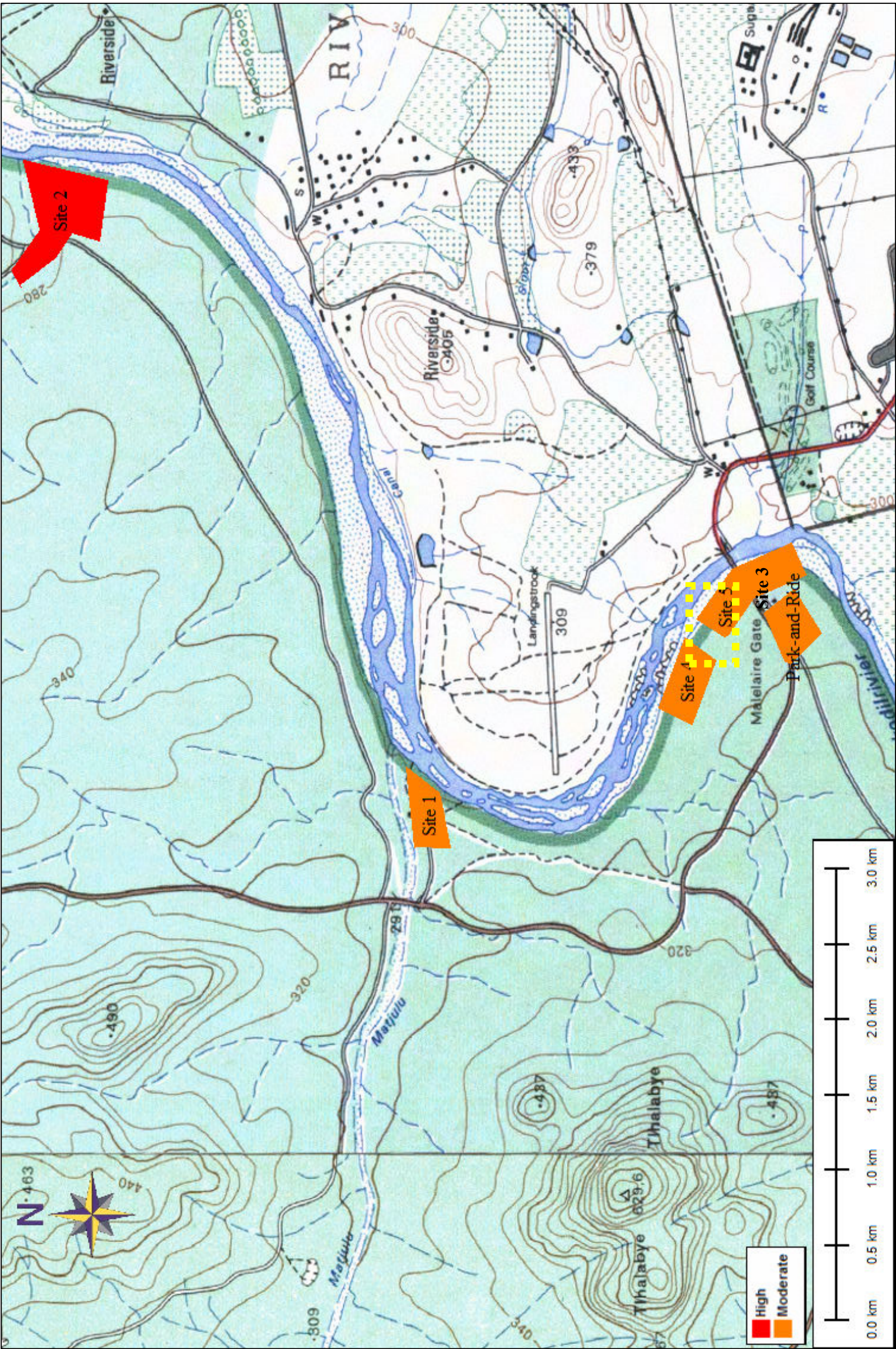
Map 12: Sensitivity map of alternative sites (Specifically relating to site 4)



Map 13: Visual Exposure Map of Site 4



Map 14: Sensitivity map of alternative sites (Specifically relating to site 5)



4.4 PREFERRED SITE ALTERNATIVE FOR THE SAFARI RESORT

4.4.1 Selection Statement

Malalena Safari Resort Investment (Pty) Ltd has selected Site 2 as their preferred site to develop the proposed safari resort development. In terms of the SANParks Request for Proposals, the developers could select any of the five sites as their preferred site and this site would then need to be subjected to a full EIA process along with the alternative sites and options.

Site 2 has been selected based on the following:

- **Tourism Value and Sense of Place:** The Safari Resort is a development focussed on tourism. A tourism development of this nature requires a site which has high tourism value to ensure a high value tourism experience can be provided to guests. This is a critical success factor in the business planning and modelling of the proposed safari resort development. Site 2 was the only site that really addressed this need completely. The purpose of visiting the Kruger is to enjoy the natural features it has to offer and the other sites are impacted on by adjacent development.

The other four sites were visually impacted on by developments on the opposite bank of the Crocodile River. The vegetation of site 3, 4 and 5 was not well enough established to provide for a valuable wildlife experience where the facility can be 'hidden' in the surrounding environment to the standard which the developer has set for the development. The Timfenhene River provides a good opportunity as a feature of the site and the area allows for the development to be hidden which minimises impact on park visitors driving on park roads.

The tourism value of the five sites were considered as a key success factor in selecting the preferred location of the Safari Resort development. Although the distance from the Malelane Access Gate does mean that safari resort logistics associated with accessing this site will have a larger impact than the four alternative sites. These impacts will be assessed in the EIA phase and proposed mitigation measures provided and included in the Environmental Management Plan. On the converse, this site offers three road route alternatives for game drives departing from and arriving at the site, diverting pressure off the busier H3 tar road. The other four sites, and particularly sites 3, 4 and 5, will place significant traffic congestion pressures on the Malelane Gate and H3 tar road, as all vehicles will arrive and depart from this point.

- **Geotechnical Considerations:** The geotechnical conditions of site 2 allow for a development of this nature. Foundations will need to be designed to address the following geotechnical constraints of the site:
 - Shallow seepage and/or perched water table;
 - Active soils;
 - Compressible soils;
 - Excavation difficulty;
 - Soil with an intermediate to high erodability;
 - Areas subject to flooding.

- **Hydrological Considerations/Water Supply:** Low to moderate borehole yields are expected and each borehole could yield at least 25 m³/ day. A few production boreholes located on different features would therefore be required to meet the full water demand. This is the same for all five sites.
- **Access:** The site area is accessible by the gravel road S114. A new ‘class C’ all-weather road (±0.5km) from the gravel road (S114) will be required to provide access to the proposed site. The turnoff from the S114 – gravel road is approximately 9 km from the Malelane Entrance gate. The S114 will need to be re-routed around the proposed development site to ensure other visitors to the park do not access or have sight of the Safari Resort Site. Guest access to the site will be via the “park and ride” facility at the Malelane Entrance Gate, where guests will leave their vehicles from where they will be transported in open game viewing vehicles or mini-coaches to and from the safari resort. All guests will have to pay requisite Park entry fees.
- **Visual Impact and Socio-Economic Impact:** Site 2 is the most appropriate site in terms of visual impact. This includes visual impacts of the safari resort on surrounding developments and visitors to the park and it includes other developments having a visual impact on the guest experience provided by the safari resort.

The visual exposure, based on a Digital Terrain Model developed from 5m contours, covering a radius of 5km from the proposed site and using a structure height of 6.5m above ground level (agl), and a viewer height of 2m agl realises the following percentage exposure for each site:

Site 1: 29.5%
Site 2: 27.6%
 Site 3: 32.8%
 Site 4: 31.6%
 Site 5: 31.0%

A detailed Visual Impact Assessment will be undertaken in the EIA phase.

This in turn minimises Socio-Economic Impacts on other developments including Leopard Creek and Pestana.

- **Impact on Heritage Features:** No heritage features were identified on site 2 by the specialist. The EMP will however address issues associated with potentially discovering heritage features during the construction phase.
- **Infrastructure Requirements:** Power is available for the development and will be sourced from Eskom’s Syringa Network. Engineers have designed the reticulation of this and power supply is possible. Engineers have drafted preliminary designs which depict that all required services can be provided on site. The Geotechnical Assessment confirmed this. It should be noted that these are draft designs and they will be finalised when all ecological sensitivities are identified and the infrastructure can be planned to minimise impact.

Ecological Sensitivities: All five safari resort sites were visited during fieldwork. Detailed fieldwork took place at Site 2, the developer's preferred site, while the other sites were merely screened for species of conservation concern. An assessment was undertaken in September 2010 and then again in January 2011 to ensure that all declining species could be effectively considered and also to ensure that fieldwork was undertaken at the right time of the year. Site 2 is significantly more sensitive than any of the other sites because of the presence of critically endangered flora and sensitive sodic soil patches. Sites 3 and 5, positioned on either side of the Malelane Entrance Gate, are the least sensitive sites.

The specialist has not however ruled out this site for development in the ecological specialist study and the following key issues have been identified for the site (Refer to appendix 4 for specialist ecological assessment):

- **Disturbance of *Adenium swazicum* subpopulation:** This would be in conflict with Section 50 of the National Environmental Management: Protected Areas Act (No. 57 of 2003), as amended in NEMPA Act No. 31 of 2004, which states that "An activity allowed in terms of subsection (1) (a) or (b) may not negatively affect the survival of any species in or significantly disrupt the integrity of the ecological systems of the park, nature reserve or world heritage site."

The guidelines for EIA recommendations for critically endangered plants are that no further habitat loss should be permitted (Raimondo et al., 2009). Removal of individuals of a threatened plant species for ex situ conservation is not considered an acceptable conservation measure by the South African National Biodiversity Institute and should not be recommended in biodiversity specialist studies as a mitigation measure (Raimondo et al., 2009).

- **Location of Site within a Protected Area**

If the construction of the safari resort results in loss of any species or disruption of integrity of ecological systems, then the activity will be in conflict with Section 50 of the National Environmental Management: Protected Areas Act (No. 57 of 2003), as amended in NEMPA Act No. 31 of 2004. This is applicable to all five sites.

- **Location of Accommodation Units within Riparian Zone**

Any destruction of riparian vegetation could impact on the functional integrity of the riparian belt, including functions such as riverbank stabilization and flood attenuation. This is applicable to all 5 sites.

- **Disturbance of Breeding Seasons of Red List species during Construction**

Construction activities and noise could be disruptive to the breeding season of species breeding within or adjacent the study area. Of particular concern is the pair of Saddle-billed Storks that have a nest in a tree several hundred metres downstream of the safari resort site. In addition, a pair of Pel's Fishing Owl has been resident more than a kilometer downstream of the

site. This pair is less likely to be disturbed than the storks because of increased distance from disturbance and since the nest site is not visible from site 2.

Other Potential Impacts are:

- Destruction of Vegetation within a Threatened Vegetation Type;
- Potential Poaching by Construction Team; and
- Loss of nocturnal fauna through road kills (night driving by staff).

Malelane Safari Resort Investment (Pty) Ltd is fully aware of the sensitivities associated with the site and are confident that they have the design, development and operational philosophy to effectively develop the facility within the parameters associated with the above mentioned site sensitivities. The professional design team support this philosophy and all specialist reports will take these aspects into consideration. For further information on the construction and development philosophy, please refer to Chapter 7.

After reviewing the sensitivities associated with the site and the site development parameters, the developer's decision to select site 2 as the preferred site remains relevant. All required mitigation measures will be included in the Environmental Management Plan for the site and this will be strictly monitored for compliance. This is understood and acknowledged by the developer and operator of the proposed development should the DEA approved this site.

For a detailed description of the methodology used to determine the sensitivity values of the site, refer to section 4.3 in the ecological assessment. All current draft layouts and designs will be re-evaluated based on the above mentioned sensitivities in consultation with the relevant specialist.

The below Graphic depicts the Site Specific Environmental Sensitivities associated with Site 2.

Site Sensitivity

* Orange Areas include sodic patches and addenium colonies. Blue layout is the latest layout which takes sensitivities into consideration.



4.4.2 Site images

Timfenhene River



View of Crocodile River from proposed Sundowner deck position



Riverine Vegetation of the Timfenhene



Vegetation around proposed accommodation unit locations



Existing S 114 road section to be decommissioned

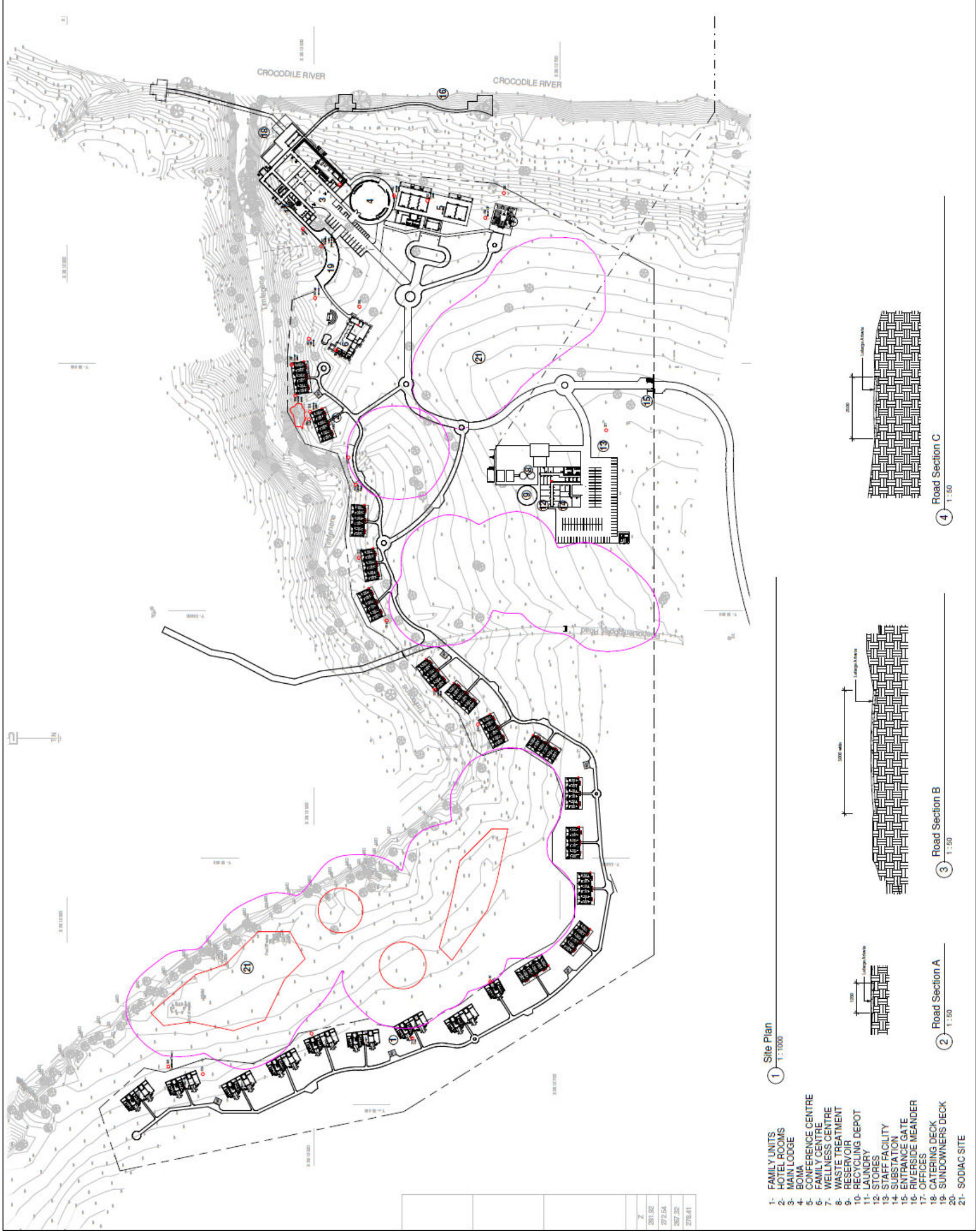


Surrounding vegetation of service area



4.4.3 Draft layout

Note: This layout is a draft layout for the purposes of the scoping. Please note that the layout is subject to change based on final site sensitivities as determined in EIA phase. Sodic Sites associated with adenium species have been included (including their associated 30m buffer). The layout has strategically been set out to respect these 30m buffer zones and to mitigate against any possible impact on the sodic sites. The developer's intent is to maintain the ecological integrity of the sodic sites and to preserve them in their natural state, and strict measures will be taken to ensure this.



4.4.4 Road Re-alignment

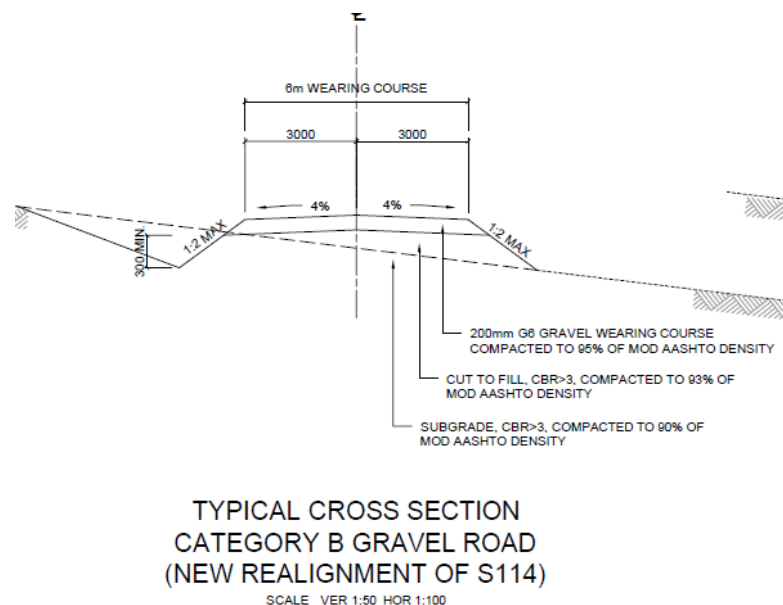
Currently, the S114 gravel road traverses the site and links the H3 with the S121 intersection. In order to develop a safari resort on this site, the S114 will need to be re-routed around the proposed development site. A route has been determined for this re-alignment based on environmental sensitivities.

Therefore two alternative routes for the road re-alignment have been considered.

The original proposed road realignment that was walked by the specialist in February 2011 is described below. This route has subsequently been changed in order to limit the length of the realignment and to avoid numerous sensitive sodic patches and Adenium colonies. While this new route has not been walked by the specialist, the specialist has confirmed that much of the vegetation appears to be similar on a high-resolution satellite image and no sodic sites are visible. The specialist will however be consulted when the route alignment is implemented to ensure all highly sensitivity areas are avoided.

The original route traversed patches of open *Acacia nigrescens* – *Sclerocarya birrea* Savannah and *Combretum hereroense* – *Themeda triandra* Woodland on plains, while crossing *Combretum apiculatum* Closed Woodland on low, rolling hills. Heavy clays and sodic patches have a characteristic dense low Shrubland that is dominated by *Euclea divinorum*, while non-perennial streams are characterised by *Spirostachys africanus*.

The below graphic provides a cross section of the alignment design:



The Geotechnical Assessment has confirmed that geotechnical constraints similar to those as outlined for the Site 2 might be expected along the length of the proposed route as it extends over similar geological settings. Therefore there should not be any geotechnical constraints associated with the development of the road.

Please see the below layout of the preferred road alignment along with other road requirements of the proposed development.

NEW CONCRETE DRIFT CROSSING RIVER BED


Road S114 Realignment approx. 3.7km

Upgrade Existing Road S114 approx. 3.547km

Upgrade Existing Road as Resort Access approx. 1.260km

New Link Road to Resort approx. 0.430km

GO

							
<p>CLIENT:</p> <p>MALELANE SAFARI RESORT INVESTMENTS</p>				<p>PROJECT:</p> <p>RADISSON BLU SAFARI RESORT, KRUGER PARK</p>			
<p>401 Pinacade Building 1 Parkin Street Nelspruit, 1200</p>				<p>P O Box 8928 Sonopark 1206</p>			
<p>Tel (013) 752-2457, Fax (013) 752-2189</p>				<p>© WSP Group plc</p>			

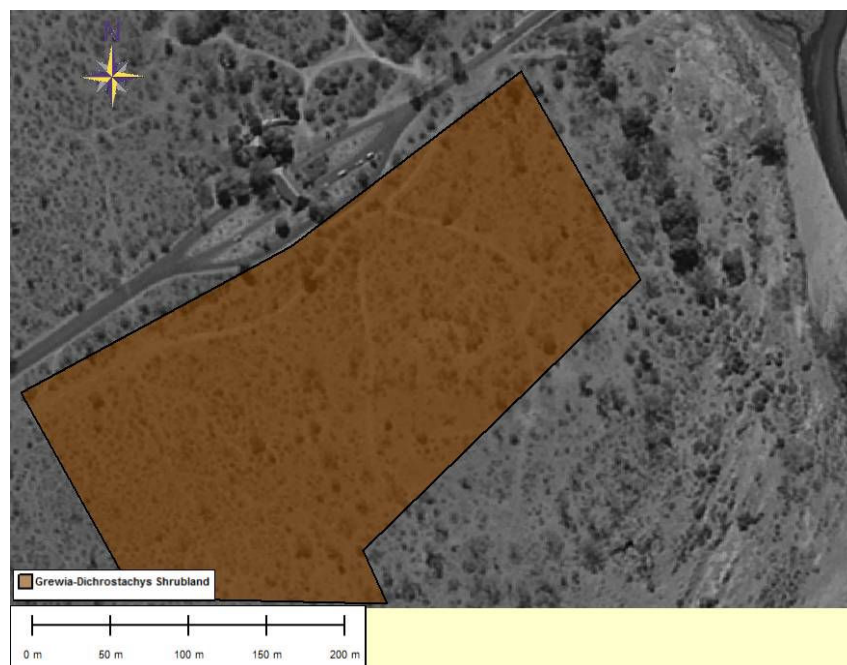
4.4.5 Park and Ride Facility

In terms of the Request for Proposals provided by SANParks, the developer was mandated to develop a Park and Ride Facility at the Malelane Gate of the Kruger National Park. The Park and Ride facility will service both the guests of the safari resort and day visitors to the Kruger National Park. This forms part of SANParks' strategy to minimise traffic volumes in the southern portion of the Kruger National Park.

Due to the fact that the position of the Park and Ride facility was provided to the developer by SANParks, location alternatives were not assessed. Two layout alternatives were however reviewed.

The ecological assessment identified the main vegetation community associated with the Park-and-Ride site as being *Grewia-Dichrostachys* Closed Shrubland. Vegetation structure is Low Closed Shrubland with scattered tall trees and a dense grass sward. The dominant and diagnostic large shrubs are *Dichrostachys cinerea* subsp. *africana* and *Grewia bicolor*. Other common shrubs are *Cordia ovalis*, *Grewia monticola*, *Euclea natalensis* subsp. *angustifolia* and *Gymnosporia glaucophylla*. Common grasses are *Heteropogon contortus*, *Aristida congesta* var. *congesta*, *Eragrostis rigidior* and *Panicum maximum*. The dominant scattered trees are *Sclerocarya birrea* subsp. *cafra* and *Acacia nigrescens*.

Vegetation is quite disturbed through trampling by elephant and high grazing and browsing pressure and small amounts of surface erosion are evident. No species of conservation concern were recorded, while three tree species protected under the National Forests Act (No.30 of 1998) were confirmed: *Sclerocarya birrea* subsp. *cafra*, *Combretum imberbe* and *Philenoptera violacea*. *Grewia-Dichrostachys* Closed Shrubland has a Low-Medium significance for plant species of conservation importance. The below graphic describes the extent of this plant community on site.



The Park and Ride facility will have a Visual Impact on Pestana Hotel which is located on the opposite bank of the Crocodile River. For this reason, vegetated berms have been proposed to flank the facility to minimise this impact. See the below layouts for further detailed information.

Proposed layout and preferred alternative adjacent to Malelane Entrance Gate



Location of Park and Ride Facility at the same location and original alternative considered



4.5 THE PREFERRED SITE IN CONTEXT OF SANPARKS ZONING

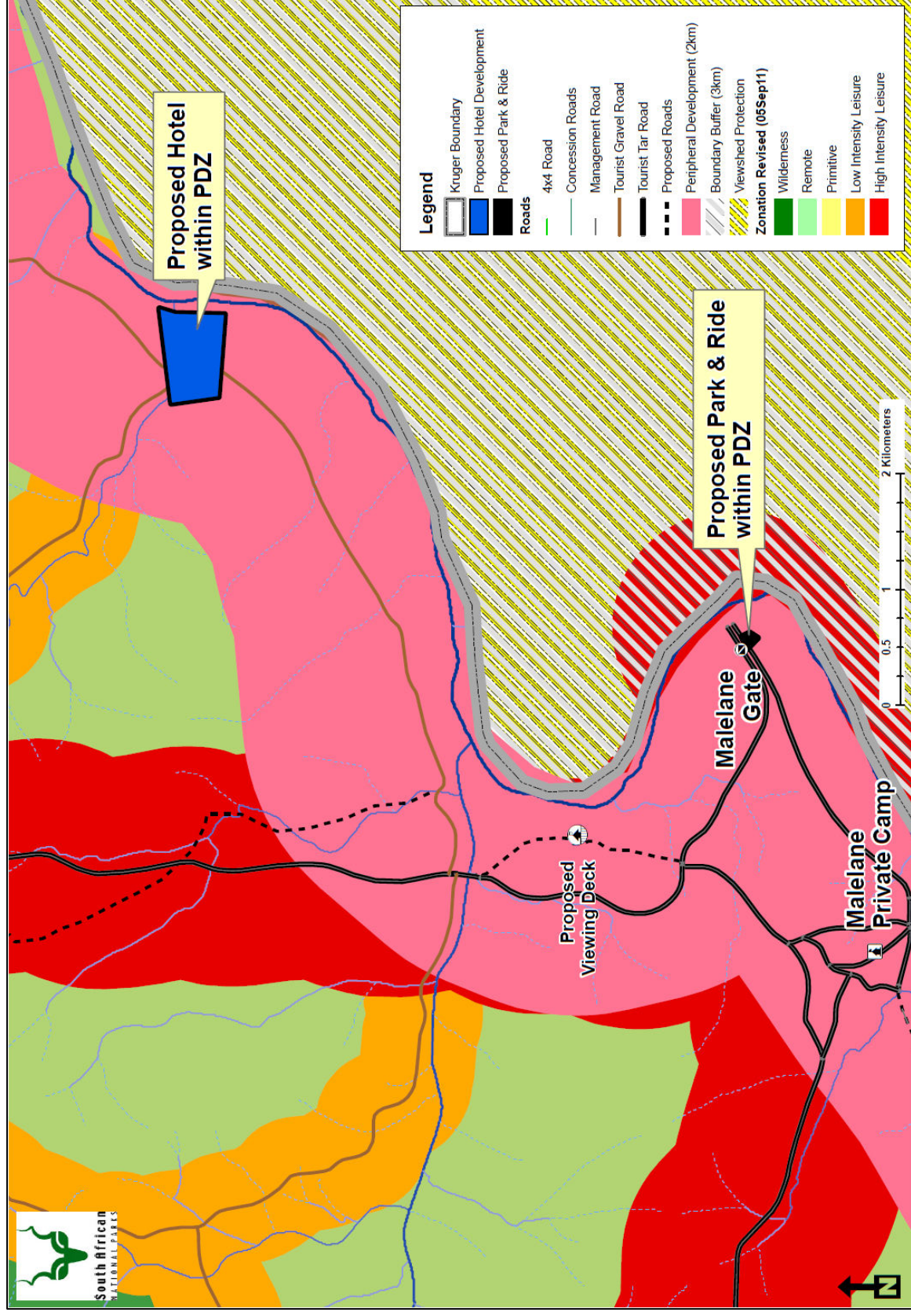
The preferred site is located in the Peripheral Development Zone of the Park. This zonation was provided to V&L in December 2011 to be utilised as the latest zonation plan for the Kruger National Park. According to the Zoning included in the current Management Plan for the Kruger National Park, the site was initially zoned as primitive in the beginning stages of the EIA process for the proposed safari resort. SANParks have however informed V&L that the PDZ zone should now be utilised as this is the latest proposed zoning for the park which still needs to be approved by the Minister of Environmental Affairs. V&L confirmed with the DEA that this zonation may be used on condition that it will be approved by the minister before the development of the safari resort may proceed.

According to SANParks, during the process of revising the Zonation Plan, it was realized that more view shed and noise shed protection should be given to the wilderness zones in order to preserve the 'wilderness' experience. In order to give better protection to the wilderness zones an internal buffer was created i.e. the Peripheral Development Zone (PDZ) of 2km along the Park boundary in which limited development can take place.

This zone should facilitate any future tourism development activities away from sensitive wilderness areas and associated buffers. Along with this, the wilderness zones were pushed further back away from the boundary, particularly in the south-west of the park, where the wilderness qualities are compromised by external peripheral human activities. 'The PDZ offers opportunities for development that does not impact the adjacent zones, these include Park Access Gates with a development limit of 250 m into the core and activities and accommodation facilities not exceeding 250 beds'. A viewshed analysis showed that external human activities are visible for 2km into the core of the park and therefore informed the 2km internal buffer zone (the PDZ) in which limited development can take place i.e. the Malelane Safari Resort. See the below map illustrating the location of the proposed safari resort development within the PDZ.

According to SANParks the zoning plan will be submitted to the Minister of Environmental Affairs for approval. This will be done as an amendment to the approved Park Management Plan in terms of section 40 (2) of the National Environmental Management: Protected Areas Act, 2003 (Act no. 57 of 2003). It should be noted that this process and its associated Public Participation Requirements is separate to this EIA process for the proposed safari resort development. V&L, as an Independent Environmental Assessment practitioner, were provided with the zoning to include into our report and we are mandated to use the most up to date information.

Map 17: Site 2 in context of SANParks PDZ Zonation (Map provided by SANParks)



CHAPTER 5 – DETAILED DESCRIPTION OF SERVICES AND UTILITIES

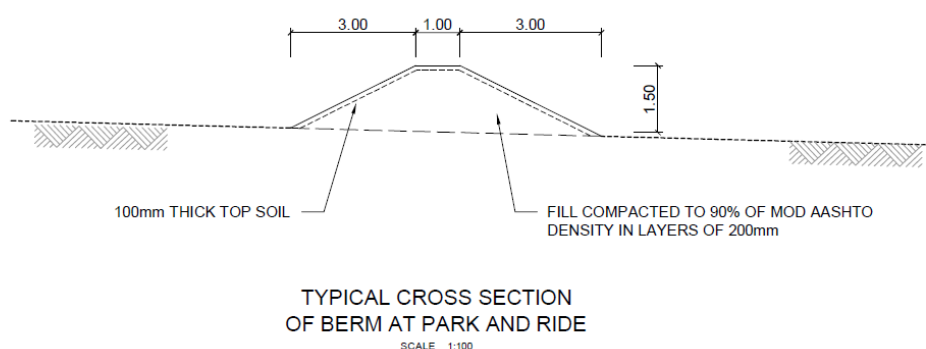
5.1 PARK AND RIDE FACILITY

The Park and Ride Facility will provide for a safe parking environment and welcoming centre for guests visiting the safari resort. Guests will be required to park their vehicles at the Park and Ride Facility and a shuttle service in the form of open game drive vehicles and, of necessary, closed mini-coaches, will transport guests to and from the safari resort.

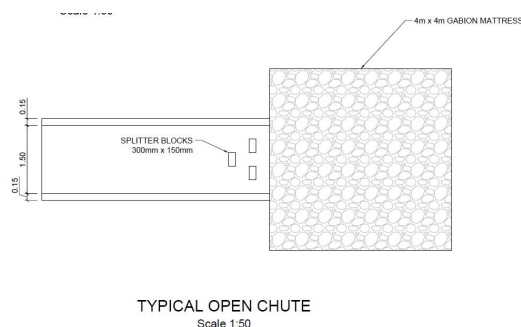
The park and ride facility will require the following services and utilities:

- Eskom power will be supplied from the security room at the Malelane Gate;
- Water will be supplied from the current system at Malelane Gate;
- Sewage will be linked to the current system at Malelane Gate; and
- Berms and Stormwater Management.

There will be two 1.5 m high berms, the one being 85m long and the other 120m long. The purpose of these burms will be to minimise visual impact on external receptors like Leopard Creek and Pestana Hotel. The below graphic provides a description of one of the proposed berms. Vegetation will be planted over the berm to ensure the area looks as natural as possible.



Due to the hardened surface of the parking area, chutes will be used to manage storm water runoff to minimise erosion impacts. Chutes will include splitter blocks and will channel water into a 4m x 4m Gabion Mattress to minimise erosion impacts. Chutes will be located in strategic positions throughout the parking area. Berms will also be designed in a manner which allows for an outlet for stormwater. The below graphic describes a typical chute.



5.2 POWER SUPPLY

The primary power supply for the safari resort will be ESKOM power with a generator system as a backup and supplementary system. The electrical articulation for the safari resort is proposed as follows:

- An 11kv overhead line will be linked to pole LCS 40 on the Syringa network on the southern side of the Crocodile River;
- Upon reaching the Crocodile River, the line will be installed under the river until it reaches the northern bank. This will eliminate the visual impact of the power cable within the KNP;
- The line will be buried 1000mm (1m) below ground level from the river bank to the Council Switch located in the service centre of the safari resort. This cable will be a 120 mm², 11KV XLPE Cable;
- This line feeds to the council room which contains the council switch for management purposes. A consumer room will be located adjacent to the council room which contains the consumer switch which will be used by the safari resort management for management and maintenance purposes;
- Power is then fed to the various distribution boards within the facility; and
- A 750 KVA generator will be installed to supplement the same system and act as a back-up power supply when Eskom power is unavailable.

5.3 WATER SUPPLY AND STORAGE

The following water piped services shall be designed and installed to service the Radisson Blu Safari Resort:

- Domestic water system, (hot and cold water internally)
- Domestic water reticulation (externally)
- Alternative heating solution using airconditioner to heat water. No geysers will be provided in rooms.
- Grey water drainage system
- Sanitary drainage system (internally).
- Sanitary drainage system (externally – designed by the Nelspruit Branch of WSP civils).
- Potable Water storage facilities and pressure boosting plant and equipment.

The plumbing and drainage system is the subject of a rational design by a professional engineer employed by the employer. The rational design is based on the engineering criteria of SANS 10400 P, T, W, SANS 10252-1 AND SANS 10252-2 and SANS 10254 and other relevant institutional requirements.

The above mentioned services shall be designed on a rational basis to render the most appropriate, cost effective and fit for purpose systems. One of the main objectives of the rational design is to contribute towards sustainable development by means of utilising rainwater and grey water on site to minimise the use of municipal water.

Pressure boosting pumps will provide and guarantee the necessary pressure to operate the water reticulation and irrigation system. The domestic potable water fixtures will feed from the 350,000 L water storage tank and will be used for human consumption purposes.

The selection of materials and plant shall be appropriate to suit the level of comfort required by the owner and shall be of a suitable quality to last for a design life span of between 20 and 25 years without major refurbishment during this period.

The proposed materials of pipes fittings and plant shall be of a high quality, durable and require low maintenance.

5.3.1 Energy and Environmental Strategy

The Wet services design approach is to design and construct buildings that feature many sustainable systems. With this in mind the design of the building for the Wet Services scope of works has taking into account energy efficient system and to minimise greenhouse gas emissions.

With regards to the Wet Services installation the following has been taken into account that will contribute to the sustainability of the building and energy efficiency of the building:

- Dual flush WC mechanisms
- Automatic Pulse Meters for water management and leak detection.
- Low flow electronic taps and water using fixtures.
- Water heating mechanism linked to air conditioner, no geysers will be provided in rooms.
- Waterless urinals.

5.3.2 Domestic Cold Water System

The domestic water system is designed on the basis that there is no water supply from the Municipality. It is also designed in accordance with the basic principles of SANS 10252-1.

– Supply and Storage

The primary supply of water shall be via boreholes. The water will pass through a water purification system prior to storage into the water storage tank. Storage tanks shall be provided to ensure a stable water supply.

The total extraction requirements for Construction and Operational Phases are estimated to be 150l per person per day, which amounts to approximately 36m³ per day. Total water extraction during the Operational Phase from boreholes within the Park will be limited to the KNP water policy requirements for concessionaires.

– Pressure

Pressure shall be maintained by means of 3 boosting pumps. The system pressure shall not exceed 600kPa (unless otherwise noted) and the pressure at the furthest point shall be not less than 300 kPa. This pressure shall be made available to the Domestic Hot Water System.

The pipes shall be designed in accordance with SANS 10252 and the manufacturer's technical information. Pipes will also be sized to suite the operational requirements of the chosen brassware and sanitary ware fixtures. No flow velocity shall exceed 1.5m/s inside buildings. The

contractor shall strictly adhere to the diameters indicated on plan to achieve the desired flow rates.

– Non-Potable Cold Water System

A non-potable cold water system shall provide water for the irrigation system. The water will be made available from the blackwater treatment plant.

5.3.3 Domestic Hot Water System

The proposed system is a conventional domestic solar geyser installation.

This system will comprise locally installed geysers that will generate hot water. Geysers will be installed either vertically or horizontally, with all the required components as per SANS 10254.

– Proposed operation of Hot Water System

The primary source of energy shall be solar panels with an approved solar system and the secondary or back-up system will be electricity from the town supply grid. The geyser shall generate hot water at a temperature of 55° C.

All piping shall be lagged to prevent heat loss, as per the pipe material section further in this document. The system shall be complete with all electrical controls.

– Flow Rate to Fixtures

The pipes shall be designed in accordance with SANS 10252 and the manufacturer's technical information. Pipes will also be sized to suite the operational requirements of the chosen brassware and sanitary ware fixtures.

No flow velocity shall exceed 1.5m/s inside buildings. The contractor shall strictly adhere to the diameters indicated on plan to achieve the desired flow rates.

5.3.4 Sanitary Drainage System

The drainage system shall be a 1-pipe system with 110mm common stacks for soil and waste water. The various types of fittings such as WCs, WHBs, Baths and Sinks, etc, shall all discharge into the 110mm diameter horizontal branch pipes by means of 110mm diameter branch pipes with "floor drains " and in some cases, "stub stacks" and in some cases smaller diameter pipes all as shown on the drawings and details.

Floor outlets shall be installed in all bathrooms, toilets, kitchens, plant rooms, garbage disposal areas, water features, flower boxes and landscaped areas, etc, as shown on the drawings.

The contractor shall be responsible for the "construction engineering" of the works and for the secondary co-ordination on site. The piping, where possible and appropriate, shall be recessed in the walls.

5.3.5 Storm Water Management System

The rainwater system shall be a conventional gravity system, relying on cast-iron full-bore outlets and rain water down pipes (where necessary). The contractor shall also adhere to the manufacturer's installation requirements. This system shall discharge into the non-potable cold water storage tanks or to the retention pond.

A suitable overflow pipe shall be provided for the storage tanks that connect to the bulk storm water pipe.

5.3.6 Fire-water Reticulation System

The fire water system is designed in accordance with SANS 10252 and SABS 0400.

The reticulation shall be designed and installed to ensure the following:

- 1200/min @ 300 kPa for hydrants
- 30l/min @ 300 kPa for hose reels

5.3.7 Storage Tank

Where possible, the 350 000l storage storage tank shall be installed in such a manner that it could be dismantled and repaired if necessary without disturbing the operation of the system.

Where possible, the pipe arrangements of the tank shall be installed in such a manner to allow the above mentioned maintenance to take place without disturbing or disrupting the normal operation of the system.

The tank shall be complete with concrete plinths, inspection manholes, air, electronic water level indicator connected to the BMS and water level control valve. The storage tank shall also have a scour valve, overflow pipe, inlet and outlet connections and be complete in all respects as per SANS 10252-1.

5.4 WASTE MANAGEMENT AND DISPOSAL

5.4.1 Waste Management Plan

As part of the duty of care requirements of both the National Environmental Management Act (NEMA) (No. 62 of 2008) and the Kruger National Park (KNP) Operations Manual for Concessionaires, the Radisson Blu Safari Resort is obligated to develop a waste management strategy and implement appropriate solutions for the cradle to grave management of the waste streams that are generated during the construction, operational and decommissioning phases of the Safari Resort. The NEMA and KNP Management Plan further recommend the identification of opportunities to reduce the creation and disposal of the waste generated at the resort.

A comprehensive Waste Management Plan has been developed for the Safari Resort. This Waste Management Plan (WMP) is therefore a key management tool that will contribute towards achieving sustainable waste management throughout the operation of the safari resort. The WMP focuses primarily on the operational aspects of the resort, however as required by the legislation, the construction and decommissioning phases are also addressed.

The objectives of the Waste Management Plan include the following:

- Formalise waste handling, transfer and disposal activities associated with waste from the resort;
- To prevent inappropriate management of waste and associated risk of pollution of the environment;
- To facilitate waste minimisation entailing avoidance, reduction, reuse, recycling or treatment before disposal;
- To streamline waste segregation, storage, and disposal and promote resource recovery from waste;
- To contain, control and dispose of waste in accordance with the required waste management practices (e.g. waste segregation);
- To define responsibility for waste management at the various levels of operation associated with resort;
- To provide a framework for the selection of waste management service providers in line with cradle to grave principles.
- To provide actions and guidelines to ensure that waste management is undertaken in line with:
 - KNP Operations Manual for Concessionaires;
 - SANParks Environmental Guidelines for Private Parties for the Construction and Operation of PPP Facilities; and
 - Existing South African waste management legislation.

5.4.2 Off-Site Landfill Disposal

Even though the WMP recommends efficient drivers in order to reduce and recover maximum value the amount of waste materials produced, a portion of the waste generated at the Safari Resort will still require to be disposed at a permitted landfill. The closest landfill to the Malelane entrance gate is the TSB Sugar (TSB) operated landfill which is in the process of being permitted. This facility currently receives solid waste, commercial / non-hazardous industrial wastes, and construction waste generated in the Nkomazi Municipality. It must be noted that the TSB site is approaching its end of life due to dwindling available airspace. Upon communications with the Nkomazi municipality (on the 06 June 2011), it was established that the Steenbog landfill within the Malelane area is currently under construction and is expected to be commissioned in 2012. It is suggested that the safari resort obtains consent / confirmation from TSB to dispose their waste at the TSB facility; this is considered to be the most economical option until all the available permitted airspace at the TSB facility has been filled, thereafter the newly commissioned Steenbog landfill site should be considered as a longer term disposal option. The following waste disposal principles should be adhered to:

- The legal requirements of cradle-to-grave principles (duty of care obligations) should be adopted and enforced by the resort – this means ensuring that only reputable waste transport companies and permitted waste disposal facilities are used.
- Recordkeeping of the waste types and quantities must be as accurate as possible, as it is important for planning and reporting purposes. It is suggested that landfill waybills must be obtained and appropriately filled by the resorts management.

5.4.3 Kitchen and Landscaping Waste

Good management practises suggests that the solid wastes from the kitchen and landscaping activities, be macerated and the options of in-situ composting (recycling) should be investigated.

Not all kitchen wastes are permitted to be used for the purpose of composting, it must be noted that meats, dairy products, eggs and cooking oils cannot be composted. It is suggested that in order to effectively manage the organic waste stream, that the safari resort operator develop and implement a comprehensive system for organic waste separation, recycling, and composting in consultation with Organic Waste Management Guidelines included in the Waste Management Plan.

5.4.4 General Waste

The KNP Operations Manual for concessionaries requires that all solid wastes need to be stored safely before removed off site to accredited waste processing sites. Based on this, it is suggested that the inorganic waste should be segregated (into recyclable / non-recyclable components) onsite and transported to an approved re-cycling depot or to an approved landfill site outside the KNP. In order to effectively manage the general waste streams generated at the Safari Resort, it is suggested that the hotel operator should apply waste management techniques that aim to avoid and reduce the volume of waste generated at the resort including the following:

- The resort should adopt waste reduction procurement philosophy, also known as "Greener purchasing", "Precycling", or "eco/green procurement". This outlook involves integrating environmental considerations into purchasing policies, programs and actions.
- The resort should separate viable recyclable components from the general waste stream prior to disposal. The types of waste separation practices that should be considered should be based on the availability of an end-user or purpose. These options would typically be explored in conjunction with a private waste management contractor. Recyclables that are typically recovered from general waste include metals, plastics, glass, and paper / cardboard.
- In order to facilitate recycling it will be necessary to employ waste segregation practices; using different skips / receptacles where possible. Waste storage receptacles must be covered or lidded to prevent scavenging by wild animals and vermin, and to prevent waste from being windblown into the adjacent sensitive areas; furthermore these skips / receptacles should be emptied on a weekly basis to prevent the formation of odour.

5.4.5 Hazardous Waste

Considering the sensitivity of the KNP, the hazardous waste generated at the resort will require stringent control and management to prevent harm or damage and hence liabilities to this end a guideline has been included in the Waste Management Plan, in consultation with these guidelines, the following should be adhered to:

- As a minimum requirement, hazardous waste must be separated at source from the general waste stream. This will ensure that non-confirming waste does not enter the landfill site, as well as preventing cross contamination and potential risks to personnel and the environment.
- In addition to the hazardous wastes identified in this WMP, the resort will be responsible for the identification of potential additional hazardous wastes associated with new practices, and the implantation of systems for their safe disposal.

- The generation of hazardous waste should be avoided wherever possible. This would typically be implemented through procurement processes e.g. purchasing of less toxic / environmentally friendly products for use at the resort.
- Unavoidable hazardous waste is to be handled, stored and disposed of / recovered in a manner that does not result in environmental pollution or health and safety hazards to personnel.
- Only suitably qualified waste service providers should be used for the management of hazardous waste. This entails ensuring that all transportation and disposal / recovery permits and licenses are held by the service provider.
- All hazardous waste transported from the resort must be reconciled with safe disposal certificates to be issued by the waste management service provider. These should be kept on file for inspection by the environmental authorities if required.
- The disposal of hazardous waste is required to comply with all relevant Regulations, Norms and Standards pertaining to waste classification in order to ensure disposal at the correct landfill class.

5.5 SEWAGE TREATMENT AND MANAGEMENT

For preliminary selection, a Bio-filter Rotating Biological Contactor Package Plant has been proposed as the preferred sewage treatment plant for the proposed safari resort. The requirements established for the sewage treatment plant for the safari resort include reliability and simple to operate and maintain, while producing a high quality effluent. The Bio-Filter rotary disc unit fulfils these pre-requisites and has a great ability for treating the domestic waste from the proposed safari resort.

5.5.1 Bio-filter Purification Plant Principles

The Bio-Filter Rotating Biological Contactor (RBC) plant lay-out for the treatment of wastewater comprises of the following elements:

- Primary treatment, usually by means of a septic tank or primary settlement tank.
- Biological treatment of primary effluent by means of the Bio-Filter rotating disc units.
- Humus removal by means of a secondary settlement tank.
- Disinfection of final effluent by means of a chlorine contact tank.
- Phosphate removal where required.

5.5.2 Operation of the Bio Filter RBC Unit

The rotating disc process may be considered a high rate biological stage of a conventional sewage treatment plant (would replace the trickling filter). The disc unit is normally preceded and followed by sedimentation and clarification tanks of a design appropriate to the size of the plant.

In the Bio-Filter design, the biological stage takes the form of a series of closely spaced parallel flat self cleaning discs manufactured from high density polyurethane which are mounted on a shaft at closely spaced intervals to form a unit rotor construction.

The rotor assembly is then submerged almost to shaft level in a trough through which the effluent is passed. The shaft is slowly rotated at approximately 4 r.p.m. in the direction of the effluent flow from the inlet to the outlet of the rotor. In the bottom half of the rotational cycle the bacteria on the discs absorb the “food” in the wastewater and during the top half of the cycle the bacteria on the discs absorb oxygen from the air, thereby sustaining the metabolic action of the biological process.

Biological growth similar to that found in percolating filters, grows on the surface of the discs. A living aerobic freely circulating bio-mass is also found in the plant trough and this also contributes to the biological treatment of the wastewater. The turbulence created in the flow through the plant by the rotors, keeps the bio-mass within the trough liquid in constant motion, and is eventually carried out with the treated effluent for subsequent settling in the humus tank.

Bio-degradable organic are therefore treated by both the intermittently submerged part of the bio-mass grown on the discs as well as the bio-mass present in the plant troughs. Depending on the loading of the plant, these wastes are either transformed into harmless substances, oxidized, or merely absorbed by the plant.

Owing to the rotating action, contact between the waste and the microbial film is not limited to a single pass between adjacent surfaces; instead, wastes re-circulate rapidly many times over several quadrants of the discs before leaving the system. The sheared turbulence at the solid liquid interfaces is even better than that obtained by re-circulating high rate filtration or in the activated sludge process.

The oxygen required for oxidation within the plant is absorbed into the wet upper surface of the bio-mass growing on the discs during its passage through the air above the wastewater. Full oxygen absorption into the bio-mass is immediately achieved owing to the very large surface area of the bio-mass growing on the discs as well as the full partial pressure of oxygen within the open atmosphere over the plant.

The bio-mass's increasing concentration of oxygen allows it to penetrate quickly to the deepest parts of the bio-mass, primarily by diffusion. The submersion of the rotating oxygen-saturated bio-mass which immediately follows causes part of the absorbed oxygen to be re-absorbed away from the bio-mass growing on the disc, into the free bio-mass in the trough. Therefore the introduction of oxygen into the plant process takes place not by the direct absorption of air into the waste water, but almost exclusively by the absorption of oxygen into the waste water via the wet surface of the bio-mass growing on the discs.

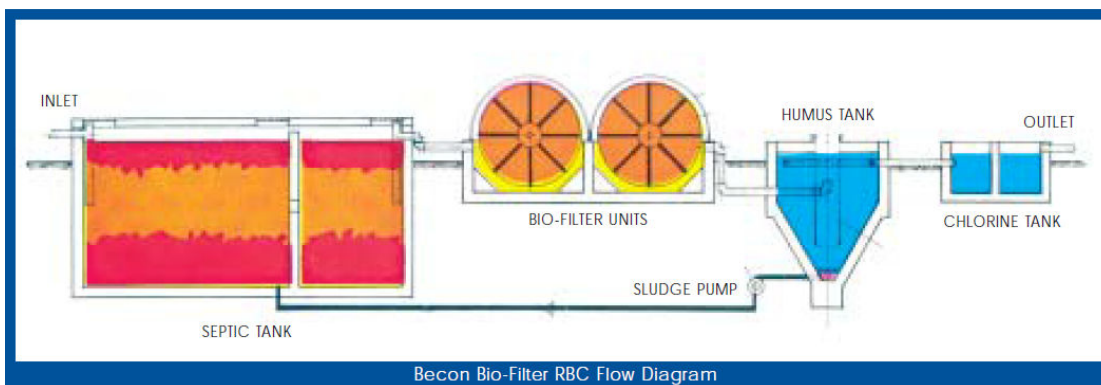
This absorption takes place in such quantities that despite the uptake of oxygen by both the disc bio-mass and that present in the troughs, over 4mg/l of oxygen is to be found in the wastewater leaving the disc stage.

A high concentration of active micro-organisms forms on the surface of the disc, producing a low food to micro-organism (F/M) ratio of 0,02-0,05 compared to the ratio of 0,3 achieved with the conventional activated sludge process. This low ratio enables the system to absorb shock loads. As the micro-organisms are attached to the discs, cell loss during periods of light loading is eliminated without the problem of blocking, provided the discs are spaced far enough apart. Also during periods of high flow or under flash flood conditions the bio-mass cannot be washed out of the system as the micro-organisms are stuck to the disc filters.

Since the waste substances present in the plant are being constantly converted into harmless substances, the bio-mass both on the discs and in the troughs is being constantly added to, and the excess on the disc surfaces is removed on submersion into the waste water in the troughs and is carried out from the disc treatment stage by the flow of the waste water through the plant.

A sludge is therefore, produced which is removed from the treated water by sedimentation in clarifier which follows the disc treatment stage.

Disinfection by conventional methods is finally undertaken for effluent to comply with the standards as laid down in the Water Act in all respects.



5.5.3 Advantages of the Bio Filter RBC Treatment Plant

The advantages of the Bio-Filter RBC Treatment plant include the following aspects:

- Small Bio-Filter plants usually require no bar screens or detritus removal. This is a great advantage, as a full time attendant is usually required to rake the bar screens, and in addition, this causes odours and attract flies.
- The plant is not affected by shock loads, as bacteria grown on the rotary disc units, cannot be washed out of the system by shock loads or flash floods, as opposed to activated sludge plants or extended aeration plants, where bacteria are suspended in the actual liquid and can therefore be washed out of the system, causing total system failure.
- The effect of sudden shock loadings on rotating disc plants has been extensively researched. Shock loadings of 400% of a plant's design capacity over a period of 3 hours have resulted in a threefold increase in the reduction performance of the plant. This is evidence that the bio-mass of a rotating disc plant can absorb additional wastes from shock loadings over considerable periods of time and still achieve the design performance.
- Rotating disc plants are not affected in their operation when the influent falls to very low rates, or over periods or weeks or months when only part of the designed capacity is handled by the plant.

- When the normal load is re-applied, full capacity will be achieved almost immediately. Rotating disc plants are therefore, particularly suited for treating the wastewaters where the population is liable to fluctuate considerably.
- The Bio-Filter system operates satisfactory off septic tank effluent and can therefore be connected directly to existing septic tank systems.
- The Bio-Filter system needs desludging every 8-12 months and not daily as required with activated sludge plants. It is normal procedure that desludging is undertaken by the local authority and sludge carted away by vacuum tanker. Continuous sludge odours are therefore eliminated with this system.
- The Bio-Filter plant usually comprises of a number of disc rotors which are individually powered by separate drives. In the unlikely event of one drive becoming defective, the balance of the rotors will continue to operate thereby ensuring that the plant remains operational at all times.
- Bio-Filter rotors rotate at approximately 4 r.p.m. and extremely low power consumption is experienced in these plants. They are therefore most economical to operate.
- Due to the simplicity of the Bio-Filter plant, and due to the fact that the plant is self-compensating to flow variations, no full time attendant is required for this plant, thus running costs are therefore further reduced.
- As the plant operates at very low speed, the plant is noise free, and therefore creates no noise pollution.
- The proposed Bio-Filter plants accommodate standard RBC units, and are therefore modular. This means that additional units can be added to the plants at a later stage if required to extend the plants.

5.5.4 Design Flow

The following table describes the design flow of the facility:

Resident guests: 240 persons@230l per day	55 200 l/day
Employees: 150 persons @ 60l/day	9 000 l/day
Occassional Guests: 0 person@60l/day	0l/day
TOTAL	64 200 l/day
DESIGN AVERAGE DRY WEATHER FLOW	70 000 l/day

5.6 WASTE MANAGEMENT AND WATER USE LICENSING

A Waste Management License application was submitted and received by the DEA on the 15th July 2011. The reference number is 12/9/11/L661/6. The below table describes the activity applied for and why in terms of the National Environmental Management Waste Act 2008 (Act No. 59 Of 2008. The actual application form has been attached as an appendix (See appendix 6).

NO. & DATE OF RELEVANT NOTICE	ACTIVITY NUMBERS (AS LISTED IN WASTE MANAGEMENT ACTIVITY LIST)	DESCRIBE EACH LISTED ACTIVITY
GN. R 718	Category B (7): The treatment of effluent, wastewater or sewage with an annual throughput capacity of 15 000 cubic metres or more.	The wastewater treatment facility will have an annual capacity of 25 550m ³ which exceeds the regulated threshold of 15 000 m ³ .
	Category B (11): The Construction of facilities for activities listed in Category B of this schedule (not in isolation to associated activity)	

Specialists have been appointed to undertake the necessary Water Use License Application process in terms of the National Water Act, 1998 (Act No. 36 of 1998). The details of the specific license numbers and details being applied for will be provided in the EIA phase when designs and layouts have been finalised.

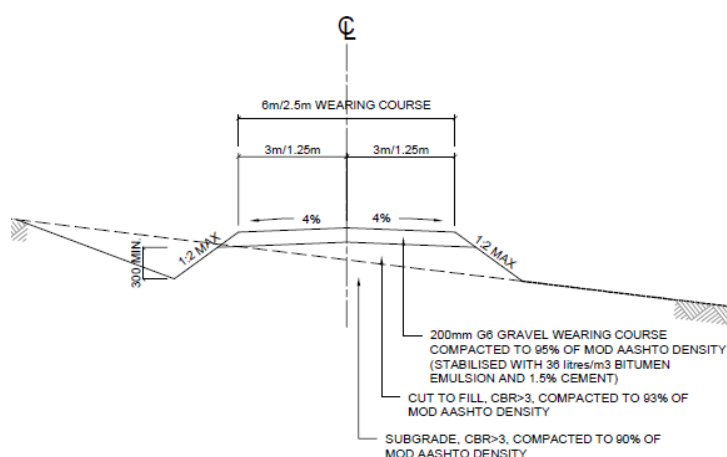
5.7 ROADS AND TRANSPORT

The safari resort development will require a variety of different road types and sizes to function effectively. These roads will be developed in compliance with SANParks KNP Road Manual and concessions manual.

Two new roads will be developed including:

- Re-routing of the S114 around the safari resort site; and
- An access road to the service and drop off area of the safari resort site.

The below graphic describes the road design of internal gravel roads



TYPICAL CROSS SECTION
6m WIDE INTERNAL GRAVEL ROADS,

Detailed engineering designs and layouts have been provided for each road type in Appendix 4.

5.8 SECURITY SYSTEMS

5.8.1 Access Control

Standard Rooms and Family Units: WSP propose implementing an access card safari resort room control system (e.g. Vingcard / Onity) that shall facilitate the ease of check in and shall integrate with the safari resort PMS (Property Management System) that shall be utilised for safari resort room check in and reservations. The room locks shall have the functionality to be interrogated and provide reports of access activity to the particular room. These locks shall be battery operated and therefore standalone. The room access control system shall not be centrally controlled.

Staff areas, BOH, etc.: The above mentioned safari resort room access card system shall be expanded to cater for Staff operations (i.e. security sensitive areas such as Server rooms, BOH, staff parking and staff authorised access areas). The above “room” access control system cannot however be centrally controlled as the individual locks are all stand alone and not networked.

Should the requirement of the operator be for centrally controlled access control, there is the possibility of implementing a separate centrally controlled and monitored RFID tag access control system to the staff areas and safari resort rooms. Due to the networked nature of such an access control system, real time information shall be obtained from the system (database transactions) and reports can be generated from a central database to study certain access patterns and control group, or people access rights.

Vehicle control booms at the entrance and exit to the site, where predetermined lanes shall allow certain access rights via the use selected access control system.

Specialist perimeter fencing (including electrical and electronic types) shall be investigated and confirmed during detailed design stage, due to the specialist requirements of African animal focussed lodge style resorts as well as the Kruger National Park security and animal protection requirements.

5.8.2 Security Monitoring

The developer proposes implementing either an IP CCTV and NVR (Network Video Recorder) surveillance system or Digital legacy DVR System (to be determined at detailed design stage) to monitor the following areas:

- All Entrance and exit gates;
- Critical security areas (e.g. Server and plant rooms);
- General public areas such as BOH, Fencing, Parking
- Public safety areas
- Reception areas etc.

A 24hr monitored security control room will be implented and sufficient recording capacity will be allowed for 30 days recorded events at 4CIF resolution quality, with standard features such as motion detection and people counting as part of the software configuration.

5.9 COMMUNICATION SYSTEMS

5.9.1 Minimum recommended connectivity requirements

Assumptions for the minimum recommended connectivity requirements for the safari resort have been made, namely the following:

- **Telephony:**
 - 1 x ISDN30 (PRI) (30 lines)
 - 8 x Analogue lines (fall-back + elevator alarms etc)
- **Data / Internet lines:**
 - 2 x 2Mb/s International Private Leased circuit (IPLC) line with QoS (quality of Service management)
 - 2 x ADSL (2 Mb/s up/down) for redundancy and extra 3rd party service requirements.

Exact line speeds and types available shall be determined with the Telecommunications Service provider of the region and finalised during the detailed design phase.

IT convergence (voice, data and video) is becoming the standard 4th utility (just like water, electricity and gas) requirement for buildings, and as such needs to be considered as an integral part of the building infrastructure, such that modular IP based services can be provided at present or as and when required in the future.

5.9.2 WIFI

Wi-Fi access shall be provided to all public areas and villas. Until operator input is received, WSP shall provision the Wi-Fi system and associated components, however should the need arise, these components may be outsourced to specialist service providers.

5.10 BUILDING MANAGEMENT SYSTEM

A Building Management Interface System (BMS) shall allow for control and monitoring of the buildings' engineering services, HVAC systems, public lights, etc, via a digital computer interface.

The system shall have the capability to integrate with the lighting and security systems (access control and CCTV), water and fire systems if required. Level of integration requirements are to be confirmed by the operator. Until further clarification is provided by the operator / developer, the capacity provisions needed and requirements for such systems to be integrated at this conceptual design phase need to be considered.

All water, gas and power meters (provided by others) shall be intelligent and have network interface connections as a standard. Gas detection shall also be interfaced in strategic areas and signal provided to the BMS should a gas leak occur.

CHAPTER 6 – CONSTRUCTION TECHNIQUES AND MATERIALS

6.1 QUALIFICATION

The Radisson Blu Safari Resort, Kruger Park will be adopting an environmentally friendly design philosophy for the development. It is important to note that the final ‘green’ design philosophy can only be fully measured and committed to once all the designs have been finalized and approved by the relevant professionals and the DEA. Hence, it may be subject to change. Nonetheless, this section outlines the intention and records the design philosophy as it currently stands.

Meaningful steps are being taken to minimize, where feasible, all possible impacts on the development site and surrounding region. The entire professional team is dedicated to green design principles and is mindful of environmental sensitivity in its design approach, as well as its building construction and operational application.

The items discussed below are by no means exhaustive, and more items may well appear as the project progresses to the detailed design development.

6.2 DESIGN STATEMENT

The design approach follows the idea of minimal visual, ecological and environmental impact wherever viable.

The objective is to create structures that merge with the natural bush to allow the occupants to feel part of the surrounding environment. The bush is to dominate and the buildings are to be subtle and not make an architectural statement, but rather to blend in form and colour. The structures are to tread lightly on the soil, and the footprint is minimized by separating structures and allowing the bush to infiltrate and exist side by side with the structures.

6.3 FORM

Buildings are simple in form and deliberately separated to lessen any impact on the environment. The design is like “fingers in the bush”. Elevated platforms and walkways between buildings connect without overpowering. Exposure to the elements heightens the bush experience when walking from building to building.

Main gathering areas mimic the bush in that the roofs can be likened to tree canopies providing shelter and shade while allowing cool breezes to circulate in the open well ventilated areas below. Stylized structural “trees” are the support columns to the canopy roofs.

The buildings “hug” the contours and follow the natural contour and course of the Timfenheni Tributary and Crocodile River confluence. Low pitch grey steel sheeted roofing and single storey structures create a low visual impact on the environment.

6.4 MATERIALS

Colours, materials and textures are chosen to blend and match the natural colours and bush of the region. Timber and glass and stone and plastered brickwork, with earthy colours, are sympathetic to nature.

Natural branches form feature elements of the form. Road surfaces are natural gravel, or sand coloured composite materials, to further blend. The building is to respond to the beauty of the surrounds, and to interact and co-exist.

6.5 LIGHT-WEIGHT WALLING SYSTEM

The Radisson Blu Safari Resort, Kruger Park will, in all probability, be adopting an environmentally friendly building material and methodology for the internal walling of most of the development. It is important to state that 'green design' is a holistic approach driven by environmental impact, and this light-weight walling system (LWWS) is only one of the several means being adopted to reduce this impact. The final green design philosophy can only be fully measured and committed to once all the designs have been finalized and approved by the relevant professionals and the DEA.

The LWWS will have a significant cumulative down-the-line influence on the materials, systems and building methodology that will be applied to the rest of the development. The result will be a tremendous overall environmental benefit, both during the construction process and over the long-term operational quality of the product. This will make it possible to achieve the first green-star rated safari resort in the country.

Contractors have proposed the use of a unique system that has been specially developed, tested and applied in conjunction with the manufacturer, a world-renowned leader in construction market offering innovative solutions to the challenges of growth, energy and the environment. The names of these companies will be provided once final designs and specifications on the project have been finalized. The system has been used successfully by the contractors on two previous high profile developments in South Africa, one of which obtained a 4 star green rating based on Australian grading system. It is therefore not experimental, and will be used in preference to the conventional brick-and mortar building method. The product offers a 10 year guarantee.

The LWWS will be utilized in all the accommodation room blocks for the internal walling, the patio-facing wall, the floor structure, and the ceilings. It will also be used in all "back of house" service areas, and will be considered for the wet areas (bathrooms and kitchens) as well. The external walling is proposed to be conventional brick and plaster.

6.5.1 Development Footprint Reduction

The structural engineer still needs to finalise the designs. It is however possible that due to the lightweight steel structure, a pipe pile method can be used for the foundations and structure. This will allow all buildings to be built on stilts and elevated on suspended slabs above ground level. Therefore no platforms will need to be constructed, no earth fill will be required beneath the floors, and little or no foundation brickwork will be required. In addition, floor thicknesses can be reduced from 125mm to 100mm.

This reduces excavations, concrete quantities, use of quarries, and thus greatly limits the impact on the terrain. The holes for the columns and stilts can be made with mobile equipment, which will greatly reduce ecological damage by machinery.

Building area reduced - Due to the wall dimension (thickness) being thinner, 120mm will be saved on each internal wall and 75mm on all external walls, this equates to several square

metres per unit. This will reduce the building materials used for items such as; floor construction, roof construction, roof covering, insulation, external wall area.

Reduced structural steel elements – the LWWS is structurally self-supportive and no structural steel columns are necessary to support the roof, except maybe on the Main Lodge which has greater roof spans.

Services – The installation of several services can be accommodated in the wall system, therefore reducing the need for service ducts, and consequently reducing the wall areas. All service pipes can be made up in a jig. Services could go straight into the ground, or placed beneath the suspended floors (where possible) to improve access for maintenance and repair.

6.5.2 Carbon Footprint

The entire product is made locally in South Africa and an extensive network of logistical warehouses exists throughout the country. Transport costs and logistics will be hugely reduced, as transporting this system versus brick and mortar, requires 88% fewer truck loads. This will greatly reduce traffic and congestion on the Park roads and danger to wildlife.

Instead of paint and plaster, the system uses a monocouche render made locally. These renders achieved an A+ Green Guide Rating as defined in the BRE Global 2008 Green Guide to Specification.

The paint specifications will therefore be greatly reduced. The sandstone cladding and timber will also be sourced locally in the Malelane area. The contractors have identified 2 sub-contractors that are approved to install the LWWS. The subcontracting teams only require certain key personnel who will then train up local labourers in the area to undertake the work.

6.5.3 Waste Factor

The waste factor using the LWWS will be minimal relative to conventional building practices, as materials are pre-designed in the factory and delivered exactly to size. In addition, much of the system is recyclable. The less brick and plaster used, the less waste. Ultimately the waste factor will be influenced by the final design.

CHAPTER 7 – PUBLIC PARTICIPATION AND DEA DECISION PROCESS

7.1 PROCESS FOLLOWED TO DATE

The initial public participation process was undertaken by Interdesign Landscape Architects commenced on 15 July 2010 and included the following:

- A legal notice placed in the Corridor Gazette and the Mpumalanga News (Appendix 7 D);
- Site notices erected at the KNP Malelane and Skukuza Entrance Gates as well as at a local shopping centre in Malelane and at the Malelane Library (Refer to the below photos); and
- Key stakeholders and/or I&AP's were directly notified (Refer to Appendix 7 B for Background Information Document)
- 4 Focus Group Workshops were held in 2011 (Refer to Appendix 7 G-J for details)

V&L were then appointed to continue with the EIA process and the following Public Participation Actions were implemented:

- All registered I&AP's were made aware of the change in Environmental Assessment Practitioners on the 6th October 2011;
- A progress letter was sent to registered I&AP's on the 7th of December 2012;
- Registered Interested and Affected Parties were notified of the availability of the Draft Scoping Report for their comment on the 20 March 2012;
- The Draft Scoping Report has been made available for public comment from the 29 March to the 11 May 2012.

7.2 NEWSPAPER ADVERTISEMENTS

An advertisement, notifying the public of the EIA and inviting I&AP's to participate in the process by registering their comments with ILA (full contact details provided), was placed in the Corridor Gazette and the Mpumalanga News.

A notice was also placed in the Sunday Times Newspaper which appeared on 19 December 2010.

The DEA previously stated that the Newspaper Adverts had been incorrectly placed by ILA and that these needed to be amended. After a meeting between the DEA and V&L Landscape Architects along with written follow up correspondence, the DEA confirmed that the adverts did not need to be re-advertised in terms of NEMA. Written confirmation was obtained in this regard. (See Appendix 2 G).

V&L were however required to clarify all relevant listed activities in the notification to I&AP's stating that the amended scoping report is available for public review.

The DEA did however state that a formal request for exemption in terms of the National Waste Act, 2008 is required by DEA. Previous news paper adverts did not include the relevant listed activities in terms of the National Waste Act, 2008 which are to be triggered by the proposed development.

An exemption request has been submitted to the DEA by the waste management specialists. The outcome of this will determine whether or not the adverts will be republished or not. See appendix 2 H for the request for exemption.

7.3 SITE NOTICE

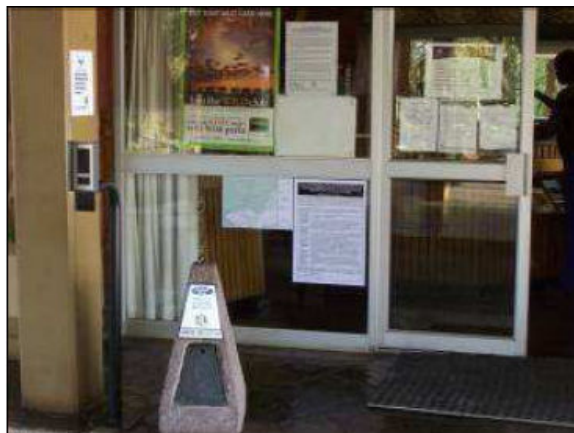
In order to notify the surrounding communities, adjacent landowners and other key stakeholders of the proposed development, as well as inviting them to participate in the EIA process by registering their comments with ILA (full contact details provided), site notices were erected at visible locations on 15 July 2010. These notices were strategically placed at the following positions:

- Notices were erected at the Malelane and Skukuza KNP Entrance Gates;
- A Notice was erected at the Malelane Public Library; and at a local Shopping Centre in Malelane; and
- A Notice was published on the SANParks website
- Further notice boards were erected at all the Kruger National Park Gates and Main camps during the December holiday period (boards were erected during the week of 14 December – 18 December 2010 in order to be displayed by the 19 December the day which the legal notice appeared in the Sunday Times).
- This notice indicated an extended comment period on the Amended Draft Scoping Report.
- Another notification confirming the extended comment period on the Amended Draft Scoping Report was also placed on the SANParks website.

Site Notice at Malelane Gate



Site Notice at Paul Kruger Gate (Skukuza)



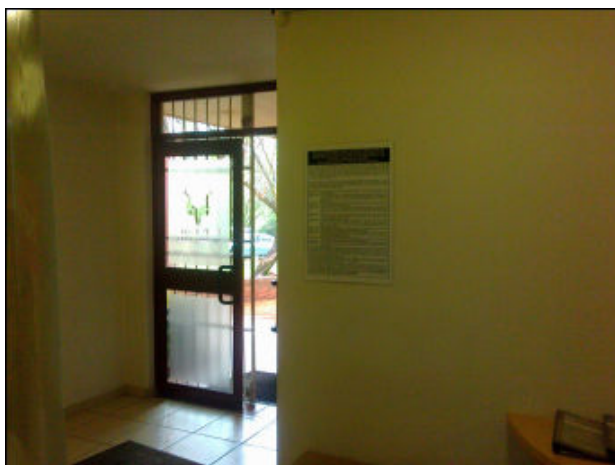
Site Notice at local Malelane Shopping Centre – Malelane Superspar



Site Notice at Malelane Library



Site Notice at Malelane Library



7.4 DIRECT NOTIFICATION OF I&AP'S

The following stakeholders were notified during the initial public participation and provided with this Scoping Report:

- SANParks (various internal sectors);
- Department of Water Affairs (DWA);
- DAFF;
- Department of Rural Development and Land Reform;
- Endangered Wildlife Trust (EWT);
- Game Rangers Association of Africa;
- Wildlife & Environment Society of South Africa (WESSA);
- South African Heritage Resources Agency (SAHRA): Mpumalanga Heritage Authority;
- Nkomazi Local Municipality;
- Crocodile River Major Irrigation Board;
- Adjacent Land owners as per the Database;
- Pretoriuskop Restcamp;
- Lower Sabie Restcamp;
- Crocodile Bridge Restcamp;
- Berg-en-Dal Restcamp;
- Pestana Kruger Lodge; and
- Leopard Creek Estate.

For full details please refer to the database

Key stakeholders received an invitation to participate notification notice and a Background Information Document (BID), including a registration and comment sheet. A minimum of 30 days were granted for comment by all I&AP's.

Refer to Appendix 7 for a copy of the Notification Notice and BID and for a list of identified and contacted I&AP's up to date.

7.5 SCOPING REPORT AVAILABLE FOR PUBLIC REVIEW

7.5.1 Initial Scoping report available for Public Review by ILA

The Draft Scoping Report was made available for public review from 11 November – 10 December 2010. The Report was available for download from ILA's website (www.ilaweb.co.za) and a hard copy was also available at the Malelane Public Library. Refer to Appendix 7 for a copy of the notification notice informing stakeholders of the availability of the report as well as the proof of notification sent to stakeholders & registered I&AP'S.

Relevant state departments were provided with hard copies of the Draft Scoping Report. Copies of the Draft Scoping Report were also distributed to the relevant SANParks officials for comment. All I&AP's were given an opportunity to comment.

7.5.2 Amended Scoping Report submitted to I&AP's and DEA by ILA

Following a meeting held with the DEA on 13 December 2010, an Amended Draft Scoping Report including information pertaining to the SANPark's Strategic Decision was prepared and made available for an extended comment period commencing on the 19 December 2010 – 31 January 2011. A copy of the Amended Draft Scoping Report was available on ILA's website for download from the 14th December 2010. Registered I&AP's were notified of the availability of the Amended Report on the 14th of December (Refer Appendix 10 proof of notification sent. Appendix 10B is the approval received from DEA that the public process could proceed during the holiday period).

The comment period was extended due to the fact that it was scheduled over a December festive season period. The DEA did provide written approval of this period to ILA. ILA captured comments and responses in an official comments and response register for the process.

The draft amended scoping report was amended to ensure all I&AP's were included by ILA and that any additional information requirements were included. The Final Scoping Report and Plan of Study was then submitted to the DEA for their review and approval on the 1st March 2011.

7.6 REJECTION OF PREVIOUS SCOPING REPORT BY DEA

The DEA, after reviewing and evaluating the Final Scoping Report submitted by ILA determined that the report did not meet the minimum requirements of the Environmental Impact Assessment Regulations (EIA Regulations, 2006). The Final Scoping Report was rejected as per regulation (31) (1) (C) of GN R. 385 of the EIA Regulations, 2006. The report was rejected for various technical reasons and lack of detail. The formal rejection notice is included in Appendix 1.

Malelane Safari Resort Investment (Pty) Ltd then appointed V&L Landscape Architects to complete the remainder of the EIA process and to amend the scoping report to address all gaps in information identified by the DEA. This decision was made due to V&L's previous experience in Environmental Planning in Protected Areas.

V&L have amended the Scoping Report and addressed all gaps identified by the DEA as far as possible with the available information. This report has now been made available for I&AP comment for a period of 40 days. All comments received will be logged in a comments and response register. Relevant amendments will be made to the Scoping Report and a final version provided to the DEA for comment.

7.7 COMMENTS RECEIVED AND CONCERNS RAISED

I&AP's registered by completing a registration form and forwarding preliminary comments via e-mail, fax and telephone to ILA. All comments up to date have been captured (Refer Appendix 7 R for hard copies of comments received up to date).

Registered I&AP's, concerns raised, as well as responses to these concerns, are detailed in Comments and Response Report. Comments have been separated into those received during the initial public process, comments received on the Draft Scoping Report and comments received on the Amended Draft Scoping Report provided by ILA. Similar to the previous scoping report provided by ILA, V&L will capture all comments and responses relevant to this phase of the project.

CHAPTER 8 – IDENTIFICATION OF KEY ENVIRONMENTAL IMPACTS

8.1 QUALIFICATION

This section of the report is aimed at providing a description and brief evaluation of issues and impacts associated with the construction and operational phases of the proposed establishment of a safari resort.

A preliminary list of impacts identified to be associated with the proposed safari resort and park and ride facility for the construction and operational phases follows:

8.2 ADVERSE IMPACTS: PARK AND RIDE FACILITY

– Construction Phase

- De-vegetation for parking areas, internal roads, services and welcome centre.
- Loss of smaller faunal species such as invertebrates, reptiles and smaller mammals.
- De-vegetation for the purposes of developing berms and the re-vegetation of the berms once developed.
- Potential poaching of fauna by construction team.
- Impacts on aesthetics of the area and genius loci during construction. This will also specifically relate to tourism and impacts on adjacent developments.
- Noise emanating from construction could have impact on fauna, tourists and surrounding developments.
- Dust generation from construction could impact on fauna, tourists and surrounding developments.
- Removal of vegetation within a protected area.
- Heavy vehicle traffic increase that could have an impact on general traffic in the KNP, impact on roads and potentially increase numbers of road kills.
- Potential impact of traffic congestion at Malelane Access gate.
- Security risk will increase due to large vehicles accessing the park. Poached items could therefore be smuggled out of the park easier than normal.
- Crime may increase as a result of contract workers in the area.
- Stockpile areas for construction material, generation and disposal of building waste and liquids and vehicle maintenance could have a negative impact on ground water, surface water and the environment as a whole.
- Impacts associated with stockpiles and building material on fauna (Poisoning and suffocating).
- Possible damage on sub-surface heritage features which were unable not identified in scoping or EIA phase.
- Damage and removal of protected floral species which have been identified on site which require permitting. The philosophy will however be to avoid all tree removal wherever possible.
- Solid Waste Management Impacts on surrounding environment.
- Additional sewage requirements of construction team may have impacts on the surrounding environment if not managed effectively.
- Excavation requirements for service and utility provision.
- Potential impacts of erosion due to storm water runoff.

- Visual Impacts on surrounding developments such as Pestana Hotel and Leopard Creek Golf Estate.
- Unauthorised fire on site could cause potential impacts.

– **Operational Phase**

- Increased traffic congestion at the Malelane Gate which is already congested at peak seasons.
- Increased area of hard surfaces which will increase quantity and velocity of storm water runoff. This runoff could also include impurities from leaks of vehicles which will have a negative impact on surrounding soils and ground water.
- Loss of habitat for fauna, invertebrate and flora, impact on biodiversity (Cumulative Impact).
- Negative visual impact on surrounding operators and visitors visiting the park.
- Waste generation of facility.
- Additional Sewage Requirements of operational phase.
- Noise impacts associated with operations.
- Light pollution of the facility.
- Impacts associated with 24 hour access relating to security, and impacts on fauna.

– **Cumulative Impacts**

- Waste generation;
- Traffic;
- Water Usage;
- Electricity Consumption; and
- Loss of habitat for fauna and flora (long term impact on biodiversity)

8.3 ADVERSE IMPACTS: SAFARI RESORT DEVELOPMENT AND ROAD RE-ALIGNMENT

– **Construction Phase**

- De-vegetation for parking areas, internal roads, services and safari resort development components.
- Loss of smaller faunal species such as invertebrates, reptiles and smaller mammals.
- De-vegetation for new road re-alignment.
- Impacts associated with closure of S114 and rehabilitating decommissioned section.
- Potential poaching of fauna by construction team.
- Impacts on aesthetics of the area and genius loci during construction. This will also specifically relate to tourism and impacts on adjacent developments.
- Noise emanating from construction could have impact on fauna, tourists and surrounding developments.
- Dust generation from construction could impact on fauna, tourists and surrounding developments.
- Removal of vegetation within a protected area.
- Heavy vehicle traffic increase that could have an impact on general traffic in the KNP, impact on roads and potentially increase numbers of road kills.

- Security risk will increase due to large vehicles accessing the park. Poached items could therefore be smuggled out of the park easier than normal.
- Crime may increase as a result of contract workers in the area.
- Stockpile areas for construction material, generation and disposal of building waste and liquids and vehicle maintenance could have a negative impact on ground water, surface water and the environment as a whole.
- Impacts associated with stockpiles and building material on fauna (Poisoning and suffocating).
- Possible damage on sub-surface heritage features which were unable not identified in scoping or EIA phase.
- Damage and removal of protected floral species which have been identified on site which require permitting. The philosophy will however be to avoid all tree removal wherever possible.
- Solid Waste Management Impacts on surrounding environment.
- Additional sewage requirements of construction team may have impacts on the surrounding environment if not managed effectively.
- Excavation requirements for service and utility provision.
- Potential impacts of erosion due to storm water runoff.
- Visual Impacts on surrounding developments such as Pestana Hotel and Leopard Creek Golf Estate due to additional traffic volumes.
- Impacts on sensitive Sodic Sites identified by specialist.
- Impacts on red data faunal species and their breeding habits.
- Impact on elephant, hippo, buffalo and other species which move across the S114 to the crocodile river;
- Impacts on *Adenium Swazicum* populations found on site.
- Unauthorised fire on site could cause potential impacts.
- Impacts of placing electricity supply cable under the Crocodile River to minimise visual impact.

– Operational Phase

- Increase of hard surface area i.e. increased stormwater run off, which could impact on Crocodile River and Timfenheni Spruit pollution, erosion & destruction of habitat (cumulative impact);
- Loss of habitat for fauna, invertebrate and flora, impact on biodiversity (Cumulative impact);
- Negative visual impact on character of the park should architecture not be in line with natural surroundings;
- Waste generation (Cumulative impact) could impact on capacity of landfill site;
- Waste generation & management could impact on fauna;
- Potential Impact of RBC treatment plant for sewage management;
- Increased traffic generation during operational phase (Cumulative impact);
- Financial impact on existing concessions within the Park and surrounding tourist accommodation facilities;
- Sustainability of carrying capacity of Safari Resort;
- Existing capacity of KNP to accommodate additional tourist numbers;
- The re-routing of the S114 Road could impact on existing Game Drive Routes and other tourist road users;
- Light pollution (i.e. visual impact) could impact on surrounding properties and environment;

- Noise pollution could impact on surrounding properties and environment;
- Possible depletion of natural resources such as water, or contamination of groundwater should the development not be managed properly (Cumulative impact);
- Loss of potential natural habitat;
- Additional burden on electrical service provider
- (Cumulative Impact);
- Disturbance of nocturnal fauna through night driving;
- Impact on elephant, hippo, buffalo and other species which move across the S114 to the crocodile river;
- Roadkill due to night driving (staff);
- Safety measures implemented to protect guests could pose a danger to fauna and impact on migration routes.

– **Cumulative Impacts**

- Waste generation;
- Traffic;
- Water Usage;
- Electricity Consumption; and
- Loss of habitat for fauna and flora (long term impact on biodiversity)

8.4 BENEFICIAL IMPACTS: ENTIRE SAFARI RESORT DEVELOPMENT

– **Construction Phase**

- Creation of employment opportunities for local communities.
- Increased income generation for local entrepreneurs and service providers providing services/supplies to the construction process.
- In-direct benefit will include the increased standard of living for many families in the surrounding communities.
- Payment of funds to contribute to the management of the Park.

– **Operational Phase**

- Rehabilitation of disturbed areas;
- Skills development and long term job opportunities;
- Community and local socio-economic upliftment;
- Generation of funds to contribute to the management of the Park;
- Environmental Interpretation, education and awareness opportunities to educate visitors to the KNP about the importance of conservation;
- Increased income generation for local entrepreneurs and service providers providing services/supplies to the operations process;
- Economic multiplier effect of tourism on businesses in the local and regional economy; and
- Creation of a destination that appeals to the tastes and preferences of a new or broader tourist market and exposes them to nature and heritage.

CHAPTER 9 – WAY FORWARD

The Draft Scoping Report has been made available for 40 days to key stakeholders and all registered Interested and/or Affected Parties (I&APs) for review.

Comments received from I&AP's on both the Draft Scoping and Amended Draft Scoping Report submitted by ILA, along with the comments received by V&L, to date have been included in the Comments and Response Report which forms part of this Draft Scoping Report for Public Review. Should the DEA accept the Scoping Report, V&L shall proceed with preparing the Environmental Impact Assessment Report.

The Environmental Impact Report shall contain all finalised specialist reports as well as extensive analysis of:

- Assessment of alternatives to the proposed development;
- Assessment of issues raised during the Scoping Phase;
- Assessment of identified impacts and determining of significance of impacts;
- Mitigation of environmental issues.
- The report shall also include an Environmental Impact Statement and a Draft Environmental Management Plan, as well as any other information that may have been requested by the authority following submission of the Scoping Report.

This report will once again be made available for review and comment by the stakeholders as mentioned previously in this section.

The comments received during this period will be included in the final EIA Report for submission to DEA and for issuing of a decision by the afore-mentioned authority.

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