

Draft Environmental Impact Report

Environmental Impact Report in terms of Section 24 G of NEMA: Development of Lodges, Roads and other Tourist Infrastructure in Kapama Private Game Reserve, Limpopo Province
Reference No. 12/1/9/S24G-M36

Compiled by:



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FOREWORD

This report constitutes the Draft Environmental Impact Report., and has been circulated digitally for Stakeholder Comment on 17 May 2019.

NuLeaf Planning and Environmental would like to thank all Stakeholders for their participation and input into this process to date, and hereby invite Stakeholders to review this draft report and to provide feedback, input, concerns and comments.

All written comments received, including NuLeaf's response to each, will be captured in a Comments and Responses Register, which will be made available to all I&AP's and included in the Final Environmental Impact Report. for submission to the Limpopo Department of Economic Development, Environment and Tourism.

All comments on the Draft EIR must be in writing and must reach NuLeaf by no later than close of business on **18 June 2019**.

Please mark all comments for the attention of:

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ACRONYMS AND ABBREVEATIONS

BA:	Basic Assessment
BAR:	Basic Assessment Report
CBA:	Critical Biodiversity Area
CMP:	Construction Management Plan
DWS:	South African National Department of Water and Sanitation
EA:	Environmental Authorisation
ECO:	Environmental Control Officer
EIA:	Environmental Impact Assessment
EIR:	Environmental Impact Report
EMPr:	Environmental Management Programme
EMS:	Environmental Management System
EO:	Environmental Officer
I&AP:	Interested and Affected Party
IDP:	Integrated Development Plan
IEM:	Integrated Environmental Management
LED:	Local Economic Development
NEMA:	National Environmental Management Act, Act No. 107 of 1998
NEMPAA:	National Environmental Management: Protected Areas Act, Act No. 57 of 2003
NPAES:	National Protected Area Expansion strategy
OMP:	Operational Management Plan
SAHRA:	South African Heritage Resources Agency
UNESCO:	United Nations Educational, Scientific and Cultural Organization

GLOSSARY OF TERMS

Alien Vegetation:	Alien vegetation 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.
Alien Species:	A plant or animal species introduced from elsewhere: neither endemic nor indigenous.
Alternatives:	In relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to:

- (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, 2010.
Buffer zone:	Is a collar of land that filters out inappropriate influences from surrounding activities, 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. Buffer zones can also provide more landscape needed for ecological processes, such as fire.
Construction Activity:	Any action taken by the Contractor, his subcontractors, suppliers or personnel during the construction process.
Ecology: environments.	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 defined activity. An Impact may be the direct or indirect consequence of the activity and may be simple or cumulative in nature.
Environmental Impact Assessment:	Assessment of the effects of a development on the environment.
Environmental Management Programme:	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.

Invasive vegetation:	Plant species that show the potential to occupy in unnatural numbers, any disturbed area, including pioneer species.
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.
Public Participation:	The legislated process contemplated in terms GN R543, in which all potential interested and affected parties are informed of the proposed project and afforded the opportunity to input, comment and object. Specific requirements are listed in terms of advertising and making draft reports available for comment.
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:	The area within the Road Reserve including all areas beyond the Road Reserve that are affected by the continuous presence of the road i.e. the verge.
Red data plant species:	Are fauna and flora species that require environmental protection based on the World Conservation Union (IUCN) categories and criteria.
RoD:	Record of Decision pertaining to the Application for Environmental Authorisation issued by the Competent Authority. The RoD is legally binding on the Applicant and may contain a positive or negative decision on the Application as well as conditions and provisions for each.
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 EMPr.
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 Officer (EO):	The Contractor shall submit to the Site Agent a nominated representative of the Contractor as an EO 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).

SECTION A: ACTIVITY INFORMATION

1. BACKGROUND

Kapama Private Game Reserve (KPGR) was established in 1986, when the late Johann Roode bought a farm called Moria near Hoedspruit. The farm was initially used for cattle grazing. The Drakensig farm was acquired soon after owing to the need for more land. A year after the farm was established, the transformation of the vast property into an ecotourism business began. This was due to the harsh conditions and the cattle falling prey to predators.

Buffalo Camp was the first commercial tourism lodge built in 1987 and it was used as a Hunting Lodge.

River Lodge was first established in 1990 when Rhino Inn was built as a Dining venue where guests were entertained after a game drive on the reserve. Rhino Inn comprised of a main building with kitchens, lapa, walkways and ablutions. No overnight lodging was available at that time. The River Lodge Rooms and Lounge were built in 2004 and over time, the spa suites and spa were constructed.

The Drakensig site was previously an old farm house that dated back to 1975. This site was then expanded to accommodate the staff residences and workshop.

In 2008, a neighbouring farm was purchased which included a commercial 18 bed Lodge named Gwala Gwala. The existing infrastructure was then upgraded into what is now known as Karula.

In 2011, another neighbouring property was purchased with a commercial lodge called Hongonyi. This Lodge was a 40 bed development that was then upgraded into what is now known as Southern Camp.

Bosplaas is currently in the final stages of construction.

2. ACTIVITY DESCRIPTION

2.1. Project Description

NuLeaf Planning and Environmental was appointed by Kapama Game Reserve (Pty) Ltd to undertake the required environmental impact report (EIR) in terms of Section 24 of the National Environmental Management Act, 1998 (Act No 107 of 1998) as amended in order to obtain environmental authorization.

During the period of 1989-2018, the Applicant, Kapama Game Reserve (Pty) LTD, carried out activities listed under the various EIA Regulations. All of these developments were constructed without the necessary environmental authorization and the Applicant is now applying for *ex post facto* approval.

KPGR has developed several commercial lodges throughout the Reserve, as well as, staff accommodation and other management infrastructure. In order to construct these various developments, approximately 52 Ha of indigenous vegetation was cleared within areas classified as Critical biodiversity areas 1 and 2 and Ecological support areas 1 and 2. The various properties affected are inclusive of the following: Remaining extent of the farm Hoedspruit 82 KU, Portion 228 of the farm Guernsey 81 KU, Remaining extent of Portion 4 of the farm Moria 83 KU, Portion 213 (ptn of Ptn 194) of the Farm Guernsey 81KU, Remaining extent of Portion 3 of the farm Moria 81 KU, Portion 229 Of Guernsey, 81/KU, Remaining extent of Portion 204 of the farm Guernsey 81 KU.

The developments consist of the following:

- River Lodge:

- Sleeps 164 guests and 40 staff
- Reception area and curio shop
- lounge, bars and swimming pools
- dining areas
- spa
- vehicle parking (guest and game drive vehicles)
- brick walkways
- sewage treatment facility
- Buffalo Camp
 - Sleeps 20 guests in canvas tents on elevated platforms and 8 staff
 - Reception area
 - lounge, bar and swimming pool
 - dining area
 - vehicle parking
 - elevated wooden walkways
 - sewage treatment facility
- Southern Camp
 - Sleeps 56 guests and 40 staff
 - Reception area and curio shop
 - lounge, bar and swimming pools
 - dining area
 - vehicle parking (guest and game drive vehicles)
 - brick walkways
 - sewage treatment facility
- Karula
 - Sleeps 28 guests and 40 staff
 - Reception area and curio shop
 - lounge, bar, library and swimming pool
 - dining area
 - spa and wellness center
 - vehicle parking
 - walkways
 - sewage treatment facility
- Drakensig Staff Village
 - Sleeps 60 staff
 - Workshop
- Karula Staff Residence
 - Sleeps 20
- Bosplaas
 - Private residence sleeping 8 guests and a number of staff
- Hongonyi Gate
- Main entrance Gate on R40
- Airstrip
- 2 x 8000 cubic meter Reservoirs and a cell phone tower
- River crossings
- Access roads and game drives roads

Additionally, KPGR is in the process of being proclaimed as a Protected Area.

2.2. Listed Activities triggered

ECA EIA Contraventions: between 08 September 1997 and end of 09 May 2002		
Activities commenced with on or after 08 September 1997 and before end 09 May 2002: EIA regulations promulgated in terms of the ECA, Act 73 of 1989		
Indicate the number and date of the relevant notice: e.g. R. 983, 08 December 2014	Activity No (s) (in terms of the relevant notice) e.g. 1(a)	Describe each listed activity as per project description ¹ : e.g. Construction of a 600 mW generator
Environment Conservation Act, 1989 (Act No. 73 of 1989) GNR 1182 & 1183	1 (d)	The construction or upgrading of roads, railways, airfields and associated structures outside the borders of town planning schemes. Game drive tracks and routes were developed from 1989 to 2017. An unpaved airstrip of 1 Km was also constructed.
	1 (m)	The construction or upgrading of public and private resorts and associated infrastructure. An old day visitor centre was upgraded and expanded into what is now River lodge in 2005. River lodge consists of tourist accommodation, a main complex, reception area, spa.
	1 (i)	The construction or upgrading of canals and channels, including diversions of the normal flow of water in a river bed and water transfer schemes between water catchments and impoundments. River Lodge is constructed within the river bed. Two river crossings have been constructed.
	1 (j)	The construction or upgrading of dams, levees and weirs affecting the flow of a river.
	1 (k)	The construction or upgrading of reservoirs for public water supply. Two 8000 cubic meter reservoirs were constructed to provide water to all of the lodges within Kapama Private Game Reserve i.e. River lodge, Karula Camp, Southern Camp and Buffalo Camp.
ECA EIA Contraventions: between 10 May 2002 and end of 02 July 2006		
Activities unlawfully commenced with on or after 10 May 2002 and before end 02 July 2006: EIA regulations promulgated in terms of the ECA, Act 73 of 1989		
Indicate the number and date of the relevant notice: e.g. R. 983, 08 December 2014	Activity No (s) (in terms of the relevant notice) e.g. 1(a)	Describe each listed activity as per project description ² : e.g. Construction of a 600 mW generator
Amendment of the ECA EIA Regulations promulgated in	1 (d)	The construction or upgrading of roads, railways, airfields and associated structures.

¹ Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description

² Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description

terms of the ECA, Act No 73 of 1989. GNR 670 and GNR 672		Game drive tracks and routes were developed from 1989 to 2017. An unpaved airstrip of 1 Km was also constructed.
	1 (i)	The construction or upgrading of canals and channels, including structures causing disturbances to the flow of water in a river bed, and water transfer schemes between water catchments and impoundments. River Lodge is constructed within the river bed. Two river crossings have been constructed.
	1 (k)	The construction or upgrading of reservoirs for public water supply. Two 8000 cubic meter reservoirs were constructed to provide water to all of the lodges within Kapama Private Game Reserve i.e. River lodge, Karula Camp, Southern Camp and Buffalo Camp.
	1 (m)	The construction or upgrading of public and private resorts and associated infrastructure. An old day visitor centre was upgraded and expanded into what is now River lodge in 2005. River lodge consists of tourist accommodation, a main complex, reception area, spa.
NEMA EIA Contraventions: between 03 July 2006 and end of 01 August 2010		
Activities unlawfully commenced with on or after 03 July 2006 and before end 01 August 2010: EIA regulations promulgated in terms of the NEMA		
Indicate the number and date of the relevant notice: e.g. R. 983, 08 December 2014	Activity No (s) (in terms of the relevant notice) e.g. 1(a)	Describe each listed activity as per project description³: e.g. Construction of a 600 mW generator
2006 EIA Regulations promulgated in terms of the NEMA, Act No 107 of 1998. GNR 386	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). Four lodges were constructed post 1989. Certain portions of Kapama Private Game Reserve have formally been declared under the Nature Conservation Act.
	1 (m)	The construction of facilities or infrastructure, including associated structures or infrastructure, for any purpose in the one in ten year flood line of a river or stream, or within 32 metres from the bank of a river or stream where the flood line is unknown, excluding purposes associated with existing residential use, but including - i. canals; ii. channels; iii. bridges; iv. dams; and v. Weirs. River Lodge is constructed within the river banks, including walkways. Buffalo camp is located within 32 m of the river. Karula Camp is located within 32 m of the river.

³ Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description

		The two river crossings are constructed within the watercourse
	1 (q) (i) (ii)	The construction of facilities or infrastructure, including associated structures or infrastructure, for the landing, parking and maintenance of aircraft including – i. helicopter landing pads, excluding helicopter landing facilities and stops used exclusively by emergency services; ii. unpaved aircraft landing strips shorter than 1,4km An unpaved airstrip of 1 Km long was constructed and was lengthened by 500 m and paved in 2017.
	4	The dredging, excavation, infilling, removal or moving of soil, sand or rock exceeding 5 cubic metres from a river, tidal lagoon, tidal river, lake, in-stream dam, floodplain or wetland. River lodge is constructed within the river banks. Two river crossings have been constructed.
NEMA EIA Contraventions: between 02 August 2010 and end of 07 December 2014		
Activities unlawfully commenced with on or after 02 August 2010 and before end 07 December 2014: EIA regulations promulgated in terms of the NEMA, Act 107 of 1998		
Indicate the number and date of the relevant notice: e.g. R. 983, 08 December 2014	Activity No (s) (in terms of the relevant notice) e.g. 1(a)	Describe each listed activity as per project description ⁴ : e.g. Construction of a 600 mW generator
2010 EIA Regulations promulgated in terms of the NEMA, Act No 107 of 1998	GNR 544: 11 (iv) (x) (xi)	The construction of: (iv) dams; (x) buildings exceeding 50 square metres in size; or (xi) infrastructure or structures covering 50 square metres or more River lodge covers an extent of 15 602 square meters and lies within the river bed. Buffalo Camp covers an extent of 7600 square meters and lies 32 m from the river. Karula Camp is located within 32 m of the river. The two river crossings are constructed within the watercourse
	GNR 544: 12	The construction of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50000 cubic metres or more, unless such storage falls within the ambit of activity 19 of Notice 545 of 2010
	GNR 544: 18 (i)	The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from: (i) a watercourse; River lodge is constructed within the river bed. Two river crossings have been constructed.
	GNR 546: 2	The construction of reservoirs for bulk water supply with a capacity of more than 250 cubic metres. Two 8000 cubic meter reservoirs were constructed to provide water to all of the lodges within Kapama Private Game Reserve

⁴ Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description

		i.e. River lodge, Karula Camp, Southern Camp and Buffalo Camp as well as the staff accommodation sites.
	GNR 546: 4	The construction of a road wider than 4 metres with a reserve less than 13,5 metres. Many game drive routes have been constructed over the years, some of which may exceed 4 m in width.
	GNR 546: 6	The construction of resorts, lodges or other tourism accommodation facilities that sleep 15 people or more. River lodge sleeps 164 guests and 40 staff. Karula Camp sleeps 24 guests and 40 staff. Southern Camp sleeps 20 guests and 40 staff. Buffalo camp sleeps 20 guests and 20 staff. Drakensig Staff village sleeps 60 staff. Bosplaas staff village sleeps 8 staff. Karula staff sleeps 20 staff.
	GNR 546: 12	The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation. A total of approximately 523 575 Ha of indigenous vegetation have been cleared.
	GNR 546: 13	The clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation. A total of approximately 52 Ha of indigenous vegetation have been cleared.
	GNR 546: 16 (iii) (iv)	The construction of: (iii) buildings with a footprint exceeding 10 square metres in size; or (iv) infrastructure covering 10 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line. River lodge covers an extent of 15 602 square meters and lies within the river bed. Buffalo Camp covers an extent of 7600 square meters and lies 32 m from the river. Karula Camp is located within 32 m of the river. The two river crossings are constructed within the watercourse
	GNR 546: 18	The expansion of a resort, lodge, hotel and tourism or hospitality facilities where the development footprint will be expanded. Over the years, various attributes have been added to the lodges such as spas, additional guest units etc.
	GNR 546: 19	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. Post 1989, many game viewing tracks have been constructed and old roads lengthened by more than 1 Km.
NEMA EIA Contraventions: between 08 December 2014 and 06 April 2017		
Activities unlawfully commenced with on or after 08 December 2014 and before end 06 April 2017: EIA regulations promulgated in terms of the NEMA, Act 107 of 1998		

Indicate the number and date of the relevant notice: e.g. R. 983, 08 December 2014	Activity No (s) (in terms of the relevant notice) e.g. 1(a)	Describe each listed activity as per project description ⁵ : e.g. Construction of a 600 mW generator
2014 EIA Regulations promulgated in terms of the NEMA, Act No 107 of 1998	GNR 983: 9	The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water— (vii) with an internal diameter of 0,36 metres or more; or (viii) with a peak throughput of 120 litres per second or more Infrastructure exceeding 1000 m in length may have been constructed for the transportation of water.
	GNR 983: 10	The development and related operation of infrastructure exceeding 1000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes – (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more Infrastructure exceeding 1000 m in length may have been constructed for the transportation of sewage.
	GNR 983: 12 (iii) (iv) (x) (xi) (xii); (a) (c)	The development of— (iii) bridges exceeding 100 square metres in size; (iv) dams, where the dam, including infrastructure and water surface area, exceeds 100 square metres in size; (x) buildings exceeding 100 square metres in size; (xi) boardwalks exceeding 100 square metres in size; or (xii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (a) within a watercourse; (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse River lodge exceeds 100 square meters in size and portions of it are built within the river banks. Walkways are also constructed over the river bed and decks extend out over the river as well. Buffalo camp is located within 32 m of the river. Karula Camp is located within 32 m of the river. The two river crossings are constructed within the watercourse
	GNR 983: 19 (i)	The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from (i) a watercourse; River lodge exceeds 100 square meters in size and portions of it are built within the river banks. Walkways are also constructed over the river bed and decks extend out over the river as well. Two river crossings have been constructed.
GNR 983: 27	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation	

⁵ Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description

		A total of approximately 52 Ha of indigenous vegetation have been cleared.
	GNR 985: 2	The development of reservoirs for bulk water supply with a capacity of more than 250 cubic metres. Two 8000 cubic meter reservoirs were constructed to provide water to all of the lodges within Kapama Private Game Reserve i.e. River lodge, Karula Camp, Southern Camp and Buffalo Camp
	GNR 983: 4	The development of a road wider than 4 metres with a reserve less than 13,5 metres. Many game drive routes have been constructed over the years, some of which may exceed 4 meters in width.
	GNR 983: 6	The development of resorts, lodges, hotels and tourism or hospitality facilities that sleeps 15 people or more. River lodge sleeps 164 guests and 40 staff. Karula Camp sleeps 24 guests and 40 staff. Southern Camp sleeps 20 guests and 40 staff. Buffalo camp sleeps 20 guests and 20 staff. Drakensig Staff village sleeps 60 staff. Bosplaas staff village sleeps 8 staff. Karula staff sleeps 20 staff.
	GNR 983: 12	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. A total of approximately 52 Ha of indigenous vegetation have been cleared.
	GNR 983: 14 (ii) (iii) (iv) (x) (xi) (xii) (a) (c)	The development of— (iii) bridges exceeding 10 square metres in size; (iv) dams, where the dam, including infrastructure and water surface area exceeds 10 square metres in size; (x) buildings exceeding 10 square metres in size; (xi) boardwalks exceeding 10 square metres in size; or (xii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs— (a) within a watercourse; (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; River lodge exceeds 10 square meters in size and portions of it are built within the river banks. Walkways are also constructed over the river bed and decks extend out over the river as well. Buffalo camp is located within 32 m of the river. Karula Camp is located within 32 m of the river. The two river crossings are constructed within the watercourse
	GNR 983: 17	The expansion of a resort, lodge, hotel and tourism or hospitality facilities where the development footprint will be expanded. Over the years, various attributes have been added to the lodges such as spas, additional guest units etc.

	GNR 983: 18	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. Post 1989, many game viewing tracks have been constructed and old roads lengthened by more than 1 Km.
	GNR 983: 19	The expansion of runways or aircraft landing strips where the expanded runways or aircraft landing strips will be longer than 1,4 kilometres in length. In 2017 the existing 1 Km unpaved airstrip was expanded by 500 m (total of 1,5 Km) and paved.
NEMA EIA Contraventions: on or after 07 April 2017		
Activities unlawfully commenced with on or after 07 April 2017: EIA regulations promulgated in terms of the NEMA, Act 107 of 1998		
Indicate the number and date of the relevant notice: e.g. R. 983, 08 December 2014	Activity No (s) (in terms of the relevant notice) e.g. 1(a)	Describe each listed activity as per project description⁶: e.g. Construction of a 600 mW generator
Amended 2014 EIA Regulations promulgated in terms of the NEMA, Act No 107 of 1998	GNR 327: 9	The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more Infrastructure exceeding 1000 m in length may have been constructed for the transportation of water.
	GNR 327: 10	The development and related operation of infrastructure exceeding 1 000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes – (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more Infrastructure exceeding 1000 m in length may have been constructed for the transportation of sewage.
	GNR 327: 12 (i) (ii) (a) (c)	The development of (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (a) within a watercourse; (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse River lodge exceeds 100 square meters in size and portions of it are built within the river banks. Walkways are also constructed over the river bed and decks extend out over the river as well. Buffalo camp is located within 32 m of the river. Karula Camp is located within 32 m of the river. The two river crossings are constructed within the watercourse
	GNR 327: 19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10

⁶ Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description

		<p>cubic metres from a watercourse;</p> <p>River lodge exceeds 100 square meters in size and portions of it are built within the river bed. Walkways are also constructed over the river bed and decks extend out over the river as well.</p> <p>Two river crossings have been constructed.</p>
	GNR 327: 27	<p>The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation</p> <p>A total of approximately 52 Ha of indigenous vegetation have been cleared.</p>
	GNR 327: 48 (i) (a) (c)	<p>The expansion of</p> <p>(i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more; or where such expansion occurs—</p> <p>(a) within a watercourse;</p> <p>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse</p> <p>Over the years, various attributes have been added to the lodges such as spas, additional guest units, staff accommodation, river crossings etc.</p>
	GNR 324: 12 (e) (ii) (iii)	<p>The clearance of an area of 300 square metres or more of indigenous vegetation in (e) Limpopo (ii) critical biodiversity areas (iii) on land zoned open space, conservation or had an equivalent zoning.</p> <p>A total of approximately 523 575 Ha of indigenous vegetation have been cleared.</p> <p>KPGR is located within Limpopo Province, where majority of the reserve is classified as CBA 1 and 2.</p>
	GNR 324: 14 (ii) (a) (c); (e) (i) (ee) (ff) (hh)	<p>The development of (ii) infrastructure or structures with a physical footprint of 10 square meters or more where such development occurs within (a) a watercourse or (c) within 32 m of a watercourse in (e) Limpopo (i) outside urban areas in (ee) sites or areas identified in terms of an international convention (ff) critical biodiversity areas and (hh) within 5 Km of any other protected area.</p> <p>River lodge exceeds 10 square meters in size and portions of it are built within the river bed. Walkways are also constructed over the river bed and decks extend out over the river as well.</p> <p>Buffalo camp is located within 32 m of the river. Karula Camp is located within 32 m of the river. The two river crossings are constructed within the watercourse.</p> <p>KPGR is located within Limpopo Province, where majority of the reserve is classified as CBA 1 and 2. KPGR also falls within the Kruger 2 Canyons Biosphere Reserve and is located within 5 Km of the Klaserie Private Nature Reserve and the Thornybush Game Reserve.</p>
	GNR 324: 17 (e) (i) (dd) (ee) (gg)	<p>The expansion of a resort, lodge, hotel, tourism or hospitality facilities where the development footprint will be expanded and the expanded facility can accommodate an additional 15 people or more in (e) Limpopo (i) outside urban areas in (dd) sites or areas identified in terms of an international convention (ee) critical biodiversity areas within (gg) 5 Km of any protected area</p>

		<p>Over the years, various attributes have been added to the lodges such as spas, additional guest units, staff accommodation, river crossings etc.</p> <p>KPGR is located within Limpopo Province, where majority of the reserve is classified as CBA 1 and 2. KPGR also falls within the Kruger 2 Canyons Biosphere Reserve and is located within 5 Km of the Klaserie Private Nature Reserve and the Thornybush Game Reserve.</p>
	GNR 324: 19 (e) (i) (dd) (ee) (gg)	<p>The expansion of runways or aircraft landing strips where the expanded runways or aircraft landing strips will be longer than 1,4 kilometres in length (e) Limpopo (i) outside urban areas in (dd) sites or areas identified in terms of an international convention (ee) critical biodiversity areas within (gg) 5 Km of any protected area</p> <p>In 2017 the existing 1 Km unpaved airstrip was expanded by 500 m (total of 1,5 Km) and paved.</p> <p>KPGR is located within Limpopo Province, where majority of the reserve is classified as CBA 1 and 2. KPGR also falls within the Kruger 2 Canyons Biosphere Reserve and is located within 5 Km of the Klaserie Private Nature Reserve and the Thornybush Game Reserve.</p>

3. ACTIVITY POSITION

Activity	Latitude	Longitude
River Lodge	-24.427150°	31.027476°
Karula Camp	-24.459113°	31.106222°
Buffalo Camp	-24.466487°	31.051268°
Southern Camp	-24.455188°	31.083122°
Drakensig Staff Camp	-24.434182°	31.017339°
Bosplaas	-24.398420°	31.101490°
Main Gate	-24.429294°	31.013800°
Hongonyi Gate and Staff accommodation	-24.474351°	31.098607°
Kapama Airstrip	-24.464741°	31.089682°
Reservoirs	-24.444229°	31.051313°
River Crossings	-24.445544°	31.119472°

	-24.435903°	31.112958°
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4. PHYSICAL SIZE OF THE ACTIVITY

Activity	Area covered by the activity (m ²)	Capacity of the facility (if applicable);
River Lodge	15 602	164 Guests 40 Staff
Karula Camp	7600	28 Guests 40 Staff
Buffalo Camp	7600	20 Guests 8 Staff
Southern Camp	13 900	56 Guests 40 Staff
Drakensig Staff Camp	21 960	60 Staff
Karula Staff Residence	7063	20 Staff
Bosplaas	4050	8
Hongonyi Gate	1700	-
Kapama Airstrip	142 500	-
Reservoirs	1600	-
River Crossings	1000	-
New Roads	300 000	-
Total area	524 575 m²	

5. SITE PHOTOGRAPHS

Please refer to Appendix B and C for site photographs.

6. ACTIVITY MOTIVATION

6.1. Socio-economic value of the activity

Total project value of *all* buildings and infrastructure on the affected portions of Kapama Private Game Reserve is **R414 million incl VAT**. The table below shows a breakdown in project value of the four lodge sites and certain infrastructure:

Activity	Total Project Value incl VAT
River Lodge and Drakensig Staff Accommodation	R 183 million
Karula Camp and Staff residence	R 67 million
Buffalo Camp	R 23 million
Southern Camp	R 85 million
Bosplaas	R 24 million
Hongonyi Gate	R 1.9 million
Kapama Airstrip	R 700 000

6.2. Need and desirability of the activity

Need

Maruleng Local Municipality (MLM) Integrated Development Plan (IDP) identifies tourism as a cornerstone of the Maruleng economy and a municipal opportunity which has significant opportunity for expansion and growth. Maruleng has tremendous natural assets, including rivers and mountain areas, an abundance of wildlife, and areas of great natural beauty. Maruleng contains a large part of the most extensive area of private game reserves making it an international tourist destination.

The MLM has identified that skills training should be concentrated on three priority areas inclusive of the tourism industry. There is a shortage of technical skills in this sector, particularly the employment of skilled previously disadvantaged persons.

KPGR employs over 600 people of which many are from the local communities. KPGR also provides in-house training to staff. In this way, KPGR and the associated land use thereof, falls within the municipal IDP.

Desirability

Kapama Private Game Reserve is located within the buffer zone of the Kruger to Canyons Biosphere Reserve (K2C), with the primary land uses being conservation, ecotourism and agriculture. The K2C is recognised under the United Nations Educational, Scientific and Cultural Organization (UNESCO) Man and the Biosphere Programme. Biospheres are designated regions where internationally important ecosystems and protected areas lie adjacent to human settlements. Activities permitted in the buffer zone include functions of conservation, research, environmental education and training, as well as tourism and recreation.

In this regard, the construction of the four lodges is conducive to the area and objectives of the K2C.

The benefits of Kapama Private Game Reserve are positive, contributing to economic growth and diversification of the regions tourism offerings. Additionally, approximately 600 jobs have been created in the operational phase which is ideal in an area such as Maruleng where the unemployment rate is high.

The Applicant is also currently in the process of declaring Kapama Private Game Reserve as a Protected Area. In doing so, this would ensure that the critical biodiversity areas are protected and conserved for generations to come.

Benefits

As described below KPGR has a proud history as a private sector champion for ecosystems conservation, rehabilitation, job creation and community support and upliftment in the Lowveld area:

- Conservation Value

KPGR was established in 1986, when the late Johann Roode bought a farm called Moria near Hoedspruit. The farm was initially used for cattle grazing. The Drakensig farm was acquired soon after owing to the need for more land. A year after the farm was established, the transformation of the vast property into an ecotourism business began. This was due to the harsh conditions and the cattle falling prey to predators.

KPGR has since added extensive tracts of land to make it now one of the Africa's premier ecotourism destinations. KPGR is still owner-managed by the Roode family and is the largest private game reserve owned by one family in the area. In addition to luxury game lodge accommodation across four establishments, the Roode family also manages the world-renowned Hoedspruit Centre for Endangered Species.

Between the period of 1986 and the present, much work and financial resources has gone into the rehabilitation of the old cultivated lands, pivot irrigation fields, and cattle grazing areas to return the area to its natural state. In doing this, over 14 000 Ha has been restored and set aside for conservation.

The Hoedspruit Endangered Species Centre (HESC) is located in the southern portion of the KPGR. HESC has been in operation since 1990 and focuses on the conservation of rare, vulnerable and endangered animal species. The center is actively involved in academic research specifically relating to fertility in male cheetahs and DNA studies, breeding of endangered species, education of scholars particularly in the local disadvantaged communities, treatment and rehabilitation of wild animals.

HESC is home to a variety of species, including the following:

- Cape Buffalo (Least Concern)
- Cheetah (Vulnerable)
- African Elephant (Vulnerable)
- Ground Hornbill (Vulnerable)
- King Cheetah (Vulnerable. Extinct in the wild)
- Leopard (Near Threatened)
- Lion (Vulnerable)
- White Rhino (Near Threatened)
- Serval (Least Concern)
- Cape Vulture (Endangered)
- African Wild Dog (Endangered)

Additionally, the majority of the northern portion of KPGR is located within a Critical Biodiversity Area 1 (CBA 1), with the remaining southern portion being located within Critical Biodiversity Area 2 (CBA 2), Ecological Support Area 1 (ESA 1) and a small portion designated as Other Natural Area (ONA) as per the Limpopo Conservation Plan (Version 2). By establishing an ecotourism operation, KPGR has been able to safeguard and protect CBA 1 and CBA 2 vegetation.

- Job Creation

Kapama Private Game Reserve currently employs approximately 600 people throughout the 4 lodges (River lodge, Karula Camp, Southern Camp, Buffalo Camp) and is a major source of direct and indirect, skilled and unskilled employment in an area of high unemployment (i.e. the Maruleng Local Municipality).

- Community Beneficiation

Kapama Private Game Reserve is actively involved with the local communities that surround the Reserve and are passionate about community upliftment and benefication. Two initiatives that are close to KPGR are Thulamahashe Children's Home Trust and the Makwetse School.

Thulamahashe Children's Home is 40 Km south of KPGR and is a safe haven for orphaned and abandoned children. KPGR formed the Kapama Thulamahashe Children's Home Trust in order to aid and support the Home.

Kapama Private Game Reserve not only assists the community in and around the KPGR through employment of local staff, but also in the education of the community's children.

KPGR has partnered with an NGO called Eco Children. This non-profit organization, which was initiated by the Klaserie Private Nature Reserve, focuses on hands-on environmental education and whole school development. One of the schools that benefits from this partnership is Makwetse School in Acornhoek, about 30 km from KPGR. Eco Children's mantra is "Sowing Seeds of Change" and empowering children by increasing their awareness of conservation, stimulating their desire to learn, improving their learning environment and their quality of education and more importantly providing opportunities for talented learners. By stimulating an interest in nature and improving learning environments we can strive to have a positive impact on environmental awareness and education amongst children in the area around the KPGR.

KPGR, together with Eco Children, have developed a broad-based relationship with Makwetse, through the creating of an Eco Village consisting of a large vegetable garden that demonstrates to learners the principles of food production and sustainability and contributes to the school feeding scheme. Any surplus can be made available to the local community, also educating them on its importance. In addition, refurbished classrooms with vibrant murals for conservation-based lessons are part of the project.

- Tourism

All four of the lodges within KPGR are 5 star rated and bring in many overseas tourists year round. This contributes to the local economy and boosts tourism within the region.

7. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

TITLE OF LEGISLATION, POLICY OR GUIDELINE	APPLICABILITY TO THE PROJECT	ADMINISTERING AUTHORITY	DATE
LEGAL FRAMEWORK			
Constitution of Republic of South Africa (Act No.108 of 1996):	This is the fundamental law of South Africa, setting out the Bill of Rights as well as the relationship of various government structures to each other.	National Government	1996
Conservation of Agricultural Resources Act (Act No. 43 of 1983):	Provides for control over the utilization of the natural agricultural resources of the Republic. The project will be required in terms of this legislation to ensure that: <input type="checkbox"/> The soil mantle is protected and conserved, <input type="checkbox"/> The natural water sources are protected, <input type="checkbox"/> Vegetative cover is conserved and weeds and invader plants are removed from the site.	Department of Agriculture	1983
National Environmental Management Act (Act No. 107 of 1998)	To provide 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; to provide for certain aspects of the administration and enforcement of other environmental management laws; and to provide for matters connected therewith.	Department of Environmental Affairs	1998
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. While, Kapama Private Game Reserve is not a formally declared protected area, it does fall within the Kruger to Canyon Biosphere Reserve as recognized by UNESCO and an application for proclamation has been submitted.	Department of Environmental Affairs	2003
National Environmental Management: Biodiversity Act (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 set out by 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 (see below). The Act lists species that are threatened or require protection to ensure their survival in the wild, while regulating the activities, which may involve such listed threatened or protected species and activities which may have a potential impact on their long-term survival. The Act has listed flora and fauna species.	Department of Environmental Affairs	2004
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.	Department of Environmental Affairs	2011

2011:			
National Forests Act (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).	Department of Agriculture, Forestry and Fisheries	1998
National Veld and Forest Fire Act (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.	Department of Water Affairs	1998
National Heritage Resources Act (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 exceed 300 metres in length. Potential impact on cultural heritage, paleontological or archaeological resources through excavation activities or disturbance will need to be monitored. Permits may be required per the National Heritage Resources Act (Act No. 25 of 1999).	South African Heritage Resources Agency (SAHRA)	1999
The National Water Act (Act No. 36 of 1998)	This Act aims to provide management of the national water resources to achieve sustainable use of water for the benefit of all water users. The development will have to ensure that local water resources are protected, used, developed, conserved, managed and controlled in a responsible way.	Department of Water Affairs	1998
The National Water Services Act (Act No. 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.	Department of Water Affairs	1997
National Environmental Management Waste Act (Act No. 59 of 2008)	The Waste Act reforms the law regulating waste management in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation. The development will be subject to this Act in terms of the disposal of waste.	Department of Environmental Affairs	2008
Hazardous Substances Act (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,	Department of Health	1973

	use, operation, application, modification, disposal or dumping of such substances and products; and to provide for matters connected therewith.		
National Environmental management Air Quality Act (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.	Department of Environmental Affairs	2004
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.	Department of Labour	1993
Integrated Environmental Management Information Series	IEM is a key instrument of NEMA and provides the overarching framework for the integration of environmental assessment and management principles into environmental decision-making. The aim of the information series is to provide general information on techniques, tools and processes for environmental assessment and Management. ERM have referred to these various documents for information on the most suitable approach to the environmental assessment process for the proposed development.	Department of Environmental Affairs	1992
REGIONAL PLANNING POLICIES			
Mopani District Municipality Spatial Development Framework	<p>One of the goals identified in the Mopani SDF is to establish strong economic and transportation linkages with Sub-Saharan countries and regional, national and international tourism markets.</p> <p>The Maruleng Municipality is largely rural in nature with tourism and agriculture as the corner stones of the economy. Hoedspruit is the area with the most extensive occurrence of private game reserves and hence an international tourist destination. Economically, the municipality is focused around the town of Hoedspruit as commercial centre, the wildlife and ecotourism reserves and estates, and the Kruger to Canyon Biosphere.</p> <p>The economic strength of Maruleng is tourism associated with wildlife and the natural beauty of the area. Agriculture, including agro-processing, tourism and retail and service businesses is seen as the major economic pillars of the municipality.</p>	Mopani District Municipality	2014
Maruleng Local Municipality Integrated	Tourism has been recognized as a competitive advantage of the Limpopo Province and the Mopani District has placed strategic emphasis investments on tourism. Additionally, the provincial economic development study identified tourism as sector with potential growth in the	Maruleng Local Municipality	2016-2017/21

Development Plan	<p>Mopani District. A national park, nature reserves and game farms cover almost half of the district, identified as one of the five best conserved ecosystems in the world, providing ample opportunity for Eco Tourism and SMME development. Tourism is also a key sector with significant opportunities for expansion and growth.</p> <p>The region forms part of the UNESCO designated Kruger to Canyon biosphere region. Tourism is both a growing industry with potential for further growth in Maruleng, and is relatively labour intensive, making it suitable in terms of the development challenges in the municipality. Tourism is also a highly specialised and competitive industry.</p>		
Kruger to Canyons Biosphere Reserve	<p>Biosphere Reserves, which have been internationally recognized by UNESCO in the Man and the Biosphere (MaB) Programme, are areas of terrestrial or coastal ecosystems. The Programme promotes and demonstrates a balanced relationship between people and nature.</p> <p>There are 3 zones in the K2C:</p> <p><i>Core Zone</i>- consists of formally proclaimed reserves. These areas must be strictly protected.</p> <p><i>Buffer Zone</i>- surrounds core zones and serves functions of conservation as well as research, environmental education, training, tourism and recreation.</p> <p><i>Transition Zone</i>- encompasses the regions outside of the buffer zone.</p> <p>The proposed site falls within the buffer zone of the K2C.</p>	Kruger to Canyons Biosphere Reserve	
Kapama Private Game Reserve Management Plan	<p>The primary objective of KPGR is to provide for ecologically and aesthetically sustainable (non-consumptive and consumptive) use of the area for its owner, based on wildlife focused recreation and tourism. Additionally, the zonation of Kapama is to adopt a strategy to ensure that developments and human use of the area occurs in such a way that these do not take place at the expense of the primary conservation objectives. In the broader conservation context, the zonation of Kapama should preferably be synchronised with that of existing infrastructure. This allows on the one hand maximising the benefits from adjoining low intensity use zones. On the other hand it would minimise the negative impact of a development zone if the adjoining zone has a similar level of development and disturbance associated with it.</p> <p>The objectives of the tourism development of Kapama are to generate revenue that will enable</p>	Kapama Private Game Reserve	2012

	Kapama to achieve its conservation objectives and meet its annual operating budget, ensure optimal use of the area so that it is recognized as being an asset to both the province and country.		
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8. SERVICES

8.1. Solid waste management

Solid waste from all of the lodges is separated at source. All organic wet waste is collected two (2) times per week from River Lodge by a local pig farmer. All recyclables and non-recyclables are collected from the various lodges and taken to the waste incineration site within KPGR. Here the recyclables are stored for collection, while the non-recyclables are incinerated.

No part of the solid waste can be classified as hazardous in terms of the relevant legislation.

9. WATER USE

9.1. Water Supply

Water for the respective lodges in the Kapama Game Reserve is abstracted from the Kubu Dam, which is a concrete wall in-stream dam on the Klaserie River. Water is abstracted by means of a submersible pump to a fluctuant based water treatment system, after which a sand filtration process is used for the removal of suspended matter. A flocculant is added to the water to promote efficiency of the filtration process, prior to the water flowing through a pressure driven sand system. Subsequently, the treated water from the purification system is pumped to two 8000 cubic meter reservoirs near the centre of the Reserve where it is stored. The water stored in the reservoirs is distributed to each camp via a network of underground pipelines.

The estimated water demand for the lodge is as follows:

	River Lodge	Southern Camp	Karula	Buffalo Camp
Water use at lodge (m ³ /annum)*	48 768.60	19 390.30	13 336.20	8 573.40
Bed capacity	136	56	28	20
Bed nights booked**	35 510	12 325	5 236	5 323
Water use per person (m ³ /ppn)	1.40	1.60	2.50	1.60

*Calculated from monthly water supply records to each lodge Mar 2018 to Mar 2019

**Calculated using guest records from 1 Mar 2018 to 28 Feb 2019 (1 guest staying one night)

The dam in the Klaserie River (Kubu Dam) has an existing authorisation in terms of Section 62(2H)(a) of the Water Act, 1956. The extraction (supply) of water for the respective lodges is undertaken from water allocated to the respective portions of Kapama by the Klaserie River Irrigation Board.

9.2. Wastewater Treatment

Oxidation pond systems are used for treatment of wastewater at the various camps in Kapama Private Game Reserve. The wastewater enters the ponds from a septic tank located near each lodge / staff housing and is treated inside the pond using natural interactions between sunlight, bacteria, and algae, with varying degrees of oxygenation. The overall current condition of the pond systems ranges from poor to moderate.

Wastewater is mainly generated from water used for domestic use, staff use and laundry. Therefore, the volume of wastewater discharged from each of the lodges for onsite treatment and disposal is estimated as follows:

Lodge	Wastewater discharge (m ³ /annum)
River Lodge	39 990
Southern Camp	15 900
Karula	10 936
Buffalo Camp	7 030
Total	73 856

A small volume of treated effluent from the oxidation ponds is currently being used for irrigation surrounding the lodges and staff accommodation.

9.3. Water Use Licence

It should be noted that a water use licence is currently being undertaken by Aquaeco in order to ensure that all water abstraction and discharge is legalized. As it stands, the dam in the Klaserie River (Kubu Dam) has an existing authorisation in terms of Section 62(2H)(a) of the Water Act, 1956. The extraction (supply) of water for the respective lodges is undertaken from water allocated to the respective portions of Kapama by the Klaserie River Irrigation Board.

Refer to Appendix D.4 for Water Services report

SECTION B: SITE / AREA / PROPERTY DESCRIPTION

1. CULTURAL/HISTORICAL FEATURES

A retro-active cultural heritage impact assessment was conducted by Francois Coetzee.

No archaeological (both Stone Age and Iron Age) or historical artefacts, assemblages, features, structures or settlements were recorded during the survey at the locations of the various existing developments.

Based on the assessment, from a heritage perspective, no archaeological or historical remains were impacted on during the developmental phase of the existing infrastructure, however, care should be taken not to cause any future impact on cultural heritage remains that might still exist in the region. As such, no re-active mitigation measures are required.

Refer to Appendix D.1 for the full Heritage Impact Assessment Report.

2. BIODIVERSITY

A specialist terrestrial ecological assessment was undertaken by Duncan McKenzie of Ecorex in April 2019.

According to the current National Vegetation Map (SANBI, 2018), the vegetation type present within the study area is Granite Lowveld. This occurs in a narrow strip from Phongola in northern KwaZulu-Natal in the south, through central Swaziland, and to Giyani in Limpopo Province in the north. Granite Lowveld originally covered about 19 838 km², of which 21% has been transformed, mostly through agriculture and urbanisation. Mucina & Rutherford (2006) assessed this community to be **Vulnerable**, but it is not situated within any Threatened Ecosystems as listed in Government Gazette No. 34809 of 9 December 2011 (DEAT, 2011). The study area is not situated in any of southern Africa's floristic centres of endemism, which are areas that have an unusually high number of plants unique to that area (Van Wyk & Smith, 2001).

The Limpopo Province Biodiversity Conservation Assessment (LPBCA) classifies most of the study area and general surroundings as a **Critical Biodiversity Area 1 & 2** (CBA1, CBA2) (Desmet et al., 2013). CBA's are described as **Irreplaceable** Sites that are required to meet biodiversity pattern and/or ecological processes targets. A few small, formerly degraded / cultivated areas such as around the Airstrip and Hongonyi Gate are classified as **Ecological Support Area 2** (ESA2).

2.1. Flora

Four untransformed vegetation communities were identified within the study area on the basis of distinctive vegetation structure (grassland, woodland, thicket, etc.), floristic composition (dominant and diagnostic species) and position in the landscape (mid-slopes, terrace, crest, etc.). The untransformed vegetation communities are described in detail below, with alien plant species indicated by an asterisk:

***Combretum erythrophyllum – Diospyros mespiliformis* Riparian Forest**

This vegetation community occurs along the Klaserie River in the eastern border of Kapama. The following Application Sites are situated within Riparian Forest:

1. Karula Lodge
2. Water Purification Plant
3. Klaserie River Crossing 1
4. Klaserie River Crossing 2 (Kubu Dam)
5. Bosplaas (owner's house)

Approximately 11 ha of this vegetation community has been impacted by the above-listed developments. Vegetation structure is mostly Tall Forest (sensu Edwards, 1983). Tall riparian trees such as *Combretum erythrophyllum* and *Diospyros mespiliformis* dominate in the canopy, while other common trees are *Ficus sycomorus*, *Schotia brachypetala*, *Acacia xanthophloea* and *A. robusta*. Smaller trees and woody shrubs that are commonly encountered in the understory include *Searsia gueinzii*, *Mystroxydon aethiopicum*, *Azima tetraacantha* and *Gymnosporia senegalensis*. The ground layer is sparse in places due to the dense canopy and mid-stratum, but the herbs *Barleria elegans* and *Commelina benghalensis*, as well as the shade-loving grasses *Panicum deustum* and *P. maximum* occur throughout. In places, the sandier riverbed is dominated by the reed *Phragmites australis*, while various alien invasive species such as **Xanthium spinosum*, **Sesbania punicea*, **Ricinus communis* and **Lantana camara* are well established. The sedges *Cyperus dives* and *C. sexangularis* are evident where muddier sediments have deposited, as well as the grass *Leersia hexandra*.

A total of 60 species (30% of the entire list) was recorded from *Combretum erythrophyllum – Diospyros mespiliformis* Riparian Forest, the lowest species list of the four communities present. Species fidelity, which is closely linked to community uniqueness, is **high** with 18 species (30% of the community list) occurring nowhere else in the study area.

Six **conservation-important** species were recorded from this community, although all are rarely encountered within the community and none are considered to be national Species of Conservation Concern (SCC) as defined by Raimondo et al. (2009). The International Union for Conservation of Nature (IUCN) considers the epiphyte *Ansellia africana* to be **Vulnerable (VU)** and the small tree *Dalbergia melanoxylon* to be **Near Threatened (NT)**. The trees *Sclerocarya birrea*, *Philenoptera violacea* and *Breonadia salicina* are **protected** under the National Forests Act (No. 30 of 1998, NFA), while the tree *Spirostachys africana* is **protected** under the Limpopo Environmental Management Act (No. 7 of 2003). Riparian Forest was assessed as having **Medium-High Ecological Sensitivity (ES)** from a combination of Medium RSI value and Very High Conservation Value. Riparian forest is situated in a **CBA1** Irreplaceable area and is an important community for faunal migration corridors and habitat for specialised and VU species such as Nile Crocodile *Crocodylus niloticus* and Hippopotamus *Hippopotamus amphibius*.

Schotia brachypetala – *Euclea divinorum* Riparian Thicket

Riparian Thicket occurs along the banks of seasonal drainage lines throughout Kapama. It is characterised by moderately tall riparian trees with a clumped, dense understory layer. Vegetation structure is mostly Short Thicket (sensu Edwards, 1983). The following Application Sites contain Riparian Thicket:

1. River Lodge
2. Buffalo Camp

Approximately 7 ha of this vegetation community has been impacted by the above-listed developments.

The tree *Schotia brachypetala* dominates the canopy of this community with a lower abundance of additional trees such as *Mystroxydon aethiopicum*, *Spirostachys africana*, *Acacia robusta*, *Combretum hereroense*, *Elaeodendron transvaalense* and *Commiphora neglecta*. Smaller trees and shrubs found include *Euclea natalensis* and *E. divinorum*, *Gymnosporia senegalensis*, *Acacia exuvialis*, *Croton menyharthii*, *Pappea capensis*, *Searsia gueinzii*, *Grewia flavescens*, *Dalbergia melanoxylon* and *Phyllanthus reticulatus*. Dwarf shrubs and herbs found include *Hypoestes forskalii*, *Barleria elegans*, *B. obtusa* and **Ageratum conyzoides*. Grasses are sparse but include *Panicum maximum* and *Eragrostis trichophora*.

A total of 95 species (48% of the entire list) was recorded from Riparian Thicket, the second highest species list of the four vegetation communities present. Species fidelity, which is closely linked to community uniqueness, is **high**, with 27 species (28% of the community list) occurring nowhere else in the study area.

Five **conservation-important** species were recorded with one considered to be a national SCC. *Elaeodendron transvaalense* is assessed as **NT** by Raimondo et.al. (2009) while the IUCN has assessed the epiphyte *Ansellia africana* to be **VU** and the small tree *Dalbergia melanoxylon* to be **NT**. *Sclerocarya birrea* and *Elaeodendron transvaalense* are **protected** under the National Forests Act (No. 30 of 1998) and *Spirostachys africana* is **protected** under the Limpopo Environmental Management Act (No. 7 of 2003). Riparian Thicket was assessed as having **Medium ES** through a combination of High Conservation Value and Medium RSI. It is situated in a **CBA1** Irreplaceable area, houses nationally threatened mammal and bird species and is an important community for faunal migration corridors.

Combretum apiculatum – *Sclerocarya birrea* Closed Woodland

This is the dominant vegetation community on KPGR, occurring in eight of the Application Sites. Vegetation structure is Short to Tall Closed Woodland (Edwards, 1983). The following Application Sites contain Closed Woodland:

1. River Lodge (incl. staff accommodation and waste water treatment works)
2. Karula Lodge (incl. staff accommodation)
3. Southern Camp (incl. staff accommodation and waste water treatment works)
4. Drakensig Staff Quarters and Workshop
5. Main Gate
6. Reservoirs & Cell Tower
7. Bosplaas (owner's house)
8. Buffalo Camp

Approximately 15 ha of this vegetation community has been impacted by the above-listed developments.

A high diversity of trees dominate the canopy with the most dominant including *Sclerocarya birrea*, *Combretum apiculatum*, *C. zeyheri*, *C. hereroense*, *Peltophorum africanum*, *Acacia nigrescens*, *Strychnos madagascariensis* and *Terminalia sericea*. Common shrubs found include *Euclea divinorum*, *Acacia gerrardii*, *Dichrostachys cinerea* and *Mundulea sericea*. Dominant forbs, bulbs and herbs found include *Ocimum americanum*, *Waltheria indica*, *Kyphocarpa angustifolia* and *Agathisanthemum bojeri*. The dominant grasses found include *Eragrostis rigidior*, *Urochloa mosambicensis*, *Sporobolus pyramidalis*, *Eragrostis superba* and *Heteropogon contortus*.

A total of 106 species (54% of the entire list) was recorded in *Combretum apiculatum* – *Sclerocarya birrea* Closed Woodland, the highest of the four communities present. Species fidelity is **high**, with 36 species (34% of the community list) occurring nowhere else in the study area.

Six **conservation-important** species were recorded. One of these is listed by the IUCN as **VU**, namely *Ansellia africana*, and one as **NT**, namely *Dalbergia melanoxylon*. Four species are **protected** under the NFA, namely *Sclerocarya birrea*, *Philenoptera violacea*, *Combretum imberbe* and *Balanites maughamii*. Closed Woodland was assessed as having **Medium ES** through a combination of High Conservation Value and Medium RSI. It is situated in a **CBA1** Irreplaceable area and houses nationally threatened mammal and bird species.

Acacia nilotica – Dichrostachys cinerea Degraded Woodland

Acacia nilotica – *Dichrostachys cinerea* Degraded Woodland occurs in the southern parts of Kapama, in areas that were possibly historically old lands or other degraded areas. Vegetation structure is Short Closed Woodland (Edwards, 1983). The following Application Sites are situated within Degraded Woodland:

1. Waste Incineration Site
2. Hongonyi Gate (incl. staff accommodation)
3. Air Strip
4. Karula Waste Water Pond

Approximately 20 ha of this vegetation community has been impacted by the above-listed developments.

The dominant canopy species in this community are the pioneer trees *Acacia nilotica* and *A. tortilis*, while other prevalent trees and shrubs include *Dichrostachys cinerea*, *Ziziphus mucronata*, *Combretum hereroense* and *C. imberbe*. A number of alien herbs dominate the ground layer, including **Richardia brasiliensis*, **Acanthospermum australe*, **Alternanthera pungens*, **Bidens pilosa* and **Zinnia peruviana*. Grasses are sparse due to overgrazing but include *Heteropogon contortus*, *Cynodon dactylon* and *Eragrostis superba*.

A total of 65 species (33% of the entire list) was recorded from Degraded Woodland - the third most species-rich of the vegetation communities in the study area. Species fidelity is moderate, with 13 species (20% of the community list) occurring nowhere else in the study area. A total of 16 alien plant species were recorded from this community, reflecting the high levels of degradation.

Only two **conservation-important** species were recorded from this community, namely the trees *Sclerocarya birrea* and *Combretum imberbe* which are **protected** under the NFA. Degraded Woodland was assessed as having **Medium ES** through a combination of High Conservation Value and Medium RSI. It is situated in a **CBA** Irreplaceable area and houses nationally threatened mammal and bird species.

2.2. Terrestrial Fauna

- *Mammals*

KPGR is situated in the savanna biome adjacent to the GKNP and therefore has very high mammal diversity, relatively low numbers of endemics and a relatively high number of Red Data species. Most of the surrounding area is formally conserved with roads and lodges the primary types of development. Mammal populations, therefore, are well protected and reasonably secure.

Twenty-six mammal species were recorded during fieldwork, 23 of which were recorded from Closed Woodland. These included many common and widespread species such as Impala *Aepyceros melampus*, Greater Kudu *Tragelaphus strepsiceros*, Plains (Burchell's) Zebra *Equus quagga burchelli* and Chacma Baboon *Papio ursinus*. Seven species were recorded from Forest / Thicket habitats, including Nyala *Tragelaphus angasii* and Vervet Monkey *Chlorocebus pygerythrus*, while two mammals were recorded from aquatic habitat, namely Hippopotamus *Hippopotamus amphibius* and African Elephant *Loxodonta africana*.

An estimated 28 conservation-important mammals potentially occur within the project area, which is an extremely high total but this is due to the study area being situated within a large, formally protected conservation area in the savanna biome. Of the 28 potentially occurring species, 17 are considered to be **SCC** with only nine considered **threatened**. Of these, four were confirmed during fieldwork namely, African elephant listed as **VU** by IUCN, Leopard *Panthera pardus* (**VU**), Hippopotamus (**VU**) and Lion *Panthera leo* (**VU** by IUCN).

Seven potentially occurring species are assessed as **Near Threatened**, which are species close to or likely to soon qualify for the status of Vulnerable. Two species were located during fieldwork, namely Spotted Hyaena *Crocuta crocuta* and White Rhinoceros *Ceratotherium simum*.

- Avifauna

The savanna biome supports the highest diversity of bird species within the Southern African sub-region. The study area, situated within the ODGS 2431 AC, is especially diverse with a total of 348 species recorded during the second Southern African Bird Atlas Project (SABAP2), which is currently in progress. At a finer scale, data from SABAP2 indicate that 332 bird species from 156 full protocol lists have already been recorded from the four pentads (mapping units) in which the study area is situated (2420_3100, 2420_3105, 2425_3100 & 2425_3105).

The study area falls within the Kruger National Park and Adjacent Areas Important Bird and Biodiversity Area (IBA) and qualifies as a Global IBA under criteria A1, A2, A3 and A4i. Eleven globally threatened species are resident within the GKNP, in addition to fourteen resident regionally threatened birds. A number of migratory and vagrant threatened species also occur.

A total of 157 bird species were confirmed to occur in the study area during fieldwork. Three assemblages were present, namely Woodland Assemblage, Riparian Forest/Thicket Assemblage and Aquatic Assemblage.

An estimated 32 conservation-important birds potentially occur within the study area. Twenty-four of these are considered **threatened**, three of which were confirmed to occur during fieldwork: Bateleur (**Endangered**), White-backed Vulture (**Critically Endangered**) and Hooded Vulture (**Critically Endangered**).

Eight **Near Threatened** species potentially occur within the study area with only one confirmed during fieldwork, the Marabou Stork. A flock was recorded roosting at the waste water treatment works adjacent to River Lodge and it is likely to regularly forage within the study area.

- Reptiles

The Lowveld of eastern Limpopo province supports a high diversity of reptile species with 100 species already recorded from the degree grid 243144. Fifty species of reptiles have been recorded from the ODGS 2431 AC, in which Kapama is situated, as listed on the Reptile Atlas of Southern Africa website (<http://vmus.adu.org.za/>) and in Bates et al. (2014), indicating that reptile diversity in the area is high.

Nine reptiles were recorded during fieldwork, all of which are common and widespread in the Lowveld (Bates et al., 2014). Species recorded in the Woodland assemblage include Speke's Hinged Tortoise *Kinixys spekii*, Bushveld Lizard *Heliobolus lugubris* and Eastern Black-lined Plated Lizard *Gerrhosaurus intermedius*. Serrated Hinged Terrapin *Pelusios sinuatus* and Water Monitor *Varanus niloticus* were recorded from aquatic habitats. No reptiles were recorded from Forest / Thicket environments.

Of the potentially occurring species, only two **conservation-important** reptiles potentially occur. Only one of these is considered a **SCC**, namely Nile Crocodile *Crocodylus niloticus*, which is also **protected** under NEMBA ToPS. Although not recorded during fieldwork, this species is confirmed from Kapama.

- *Frogs*

Only two species of frogs were recorded during fieldwork, one from the Forest / Thicket community, namely Southern Foam Nest Frog *Chiromantis xerampelina*, and one from Aquatic Habitat, namely Common Platanna *Xenopus laevis*. Both frogs are common and widespread in the Lowveld (Minter et al., 2004).

Refer to Appendix D.2 for Ecology Report.

3. VISUAL IMPACT ASSESSMENT

The affected properties are all situated within Kapama Private Game Reserve in Maruleng Local Municipality, approximately 10 Km south of Hoedspruit. The Kapama Private Game Reserve is approximately 15 000 ha in size.

The topography of the general area is flat to undulating with shallowly incised drainage lines. Most of the study area contains untransformed vegetation, but existing infrastructure is present within the KPGR.

In general, the landscape character of the greater study area presents as rural and natural, with some agriculture. The sites themselves are natural in character and furthermore is situated within a conservation zone of the surrounding reserve.

The visual quality of the receiving environment within the study areas is high, by virtue of the vast and predominately undeveloped nature of the environment. This lends a distinct sense of place to the area. This area is known as a tourist destination in its own right and owing to its location in its adjacency to the Greater Kruger National Park and other game reserves within the region.

Overall, the Visual Absorption Capacity (VAC) of the site and surrounds is high due to the nature of the vegetation (i.e. thicket and woodland).

Since this visual impact has already taken place it is expected any sensitive visual receptors in the area are expecting or accustomed to the impact. This, together with the inclusion of the High VAC of the surrounding area, has resulted in the a negligible visual impact considered for areas outside of the Reserve and low for the areas within the Reserve.

Refer to Appendix D.3 for Visual Impact Assessment.

SECTION C: PUBLIC PARTICIPATION

A public participation process was undertaken which consisted of the following:

- A list of interested and affected parties (I&APs) was compiled inclusive of local and district municipalities and adjacent land owners.
- A newspaper advertisement was placed in the Hoedspruit Herald, a local publication, on 23 November 2018.
- Notice boards were placed at the main entrance gates and the four lodges on 29 March 2019.
- Background information documents were circulated to all I&APs on 28 March 2019 notifying them of the project.

Refer to Appendix E for Public Participation report.

SECTION D: IMPACT ASSESSMENT

1. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION AND OPERATIONAL, PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

Activity	Impact summary	Significance (post mitigation)	Proposed mitigation / comments
Developments			
Planning and Design Phase	Direct impacts:		
	Ground Water		
	None.		
	Surface Water		
	Risk to ecological function of drainage lines, rivers and dam due to placement of structures and infrastructure within the habitat.	44 M	<ul style="list-style-type: none"> EMPr section 7.1 EMPr section 7.2
	Risk to hydrological function (quality and fluctuation properties) along the drainage lines, rivers and dam due to activity and disturbance in the watercourse.	44 M	
	Soil		
	Erosion risk to soils	27 L	<ul style="list-style-type: none"> EMPr section 7.1 EMPr section 7.2
	Air		
	None.		
	Biodiversity (Flora)		
	Risk to critical biodiversity areas	52 M	<ul style="list-style-type: none"> EMPr section 7.1
	Risk to Granite Lowveld vegetation	22 L	<ul style="list-style-type: none"> EMPr section 7.2
	Risk to sensitive habitats	48 M	
	Destruction and damage to Red data species and protected trees.	48 M	
	Biodiversity (Fauna)		
	Risk of habitat fragmentation	27 L	<ul style="list-style-type: none"> EMPr section 7.1 EMPr section 7.2
	Land use and agricultural potential		
	None.		
	Heritage		
None.			
Visual			
Risk to visual quality of the surrounding area and sense of place due to the development of structures and	18 L	<ul style="list-style-type: none"> EMPr section 7.2 EMPr section 7.3 	

	infrastructure within an otherwise natural environment.		
	Socio-economic		
	None.		
	Municipal services and traffic		
	None.		
	Indirect impacts:		
	None.		
	Cumulative impacts:		
	Biodiversity (Flora)		
	Cumulative loss of Granite Lowveld vegetation	22 L	<ul style="list-style-type: none"> • EMPr section 7.1 • EMPr section 7.2
	Cumulative reduction of Red data species and protected trees.	56 M	
	Biodiversity (Fauna)		
	Cumulative loss of faunal habitat	24 L	<ul style="list-style-type: none"> • Same as above
Construction Phase	Direct impacts:		
	Ground water		
	Depletion of ground water	14 L	<ul style="list-style-type: none"> • EMPr section 8.1 • EMPr section 8.2
	Pollution and contamination of ground water	14 L	
	Surface water		
	Disturbance and loss of ecological function of the habitat (physical structure) of the dam, drainage lines and Klasserie River	40 M	<ul style="list-style-type: none"> • EMPr section 8.1 • EMPr section 8.2 • EMPr section 8.3 • EMPr section 8.4 • EMPr section 8.5 • EMPr section 8.6 • EMPr section 8.7 • EMPr section 8.8 • EMPr section 8.9 • EMPr section 8.10
	Pollution and contamination of the dam, drainage lines and Klasserie River	36 M	
	Soil		
	Soil contamination and pollution.	18 L	<ul style="list-style-type: none"> • Same as above
	Soil erosion via wind and rain.	18 L	
	Air		
	Air pollution due to emissions from construction vehicles and equipment.	32 M	<ul style="list-style-type: none"> • EMPr section 8.2 • EMPr section 8.4 • EMPr section 8.5 • EMPr section 8.7 • EMPr section 8.8 • EMPr section 8.9 • EMPr section 8.10
	Generation of dust owing to construction activities.	21 L	
	Biodiversity (Flora)		
	Loss of critical biodiversity areas	70 H	<ul style="list-style-type: none"> • EMPr section 8.1 • EMPr section 8.2 • EMPr section 8.3 • EMPr section 8.4 • EMPr section 8.5 • EMPr section 8.6 • EMPr section 8.7 • EMPr section 8.8 • EMPr section 8.9
	Loss of Granite Lowveld vegetation and associated loss of species richness.	35 M	
	Disturbance of sensitive habitats.	70 H	<ul style="list-style-type: none"> • EMPr section 8.5 • EMPr section 8.6 • EMPr section 8.7 • EMPr section 8.8 • EMPr section 8.9
	Destruction and damage to Red data species and protected trees.	56 M	
	Increase in exotic vegetation/alien species and bush encroachment into	55 M	<ul style="list-style-type: none"> • EMPr section 8.9

disturbed soils and areas.		•	EMPr section 8.10
Biodiversity (Fauna)			
Loss of faunal habitat which acts as a wildlife corridor	44 M	•	Same as above
Loss of general faunal habitat and ecological connectivity.	36 M		
Fauna mortality	22 L		
Poaching and snaring of faunal species by construction workers.	52 M		
Increased opportunity for smuggling of poached items.	39 M		
Land use and agricultural potential			
None			
Heritage			
Damage to and / or destruction of archaeological, paleontological or historical artefacts unearthed during construction.	20 L	•	EMPr section 8.1 • EMPr section 8.2
Visual			
Visual impact of construction, lighting and dust on sensitive visual receptors owing to the presence of construction equipment, camps and workers.	21 L	•	EMPr section 8.1 • EMPr section 8.2 • EMPr section 8.3 • EMPr section 8.4
Visual impact of construction, lighting and dust on conservation areas within the region (Kapama Reserve).	24 L	•	EMPr section 8.5 • EMPr section 8.6 • EMPr section 8.7 • EMPr section 8.8 • EMPr section 8.9 • EMPr section 8.10
Socio-economic			
<i>Stimulation of the local economy, especially the local service delivery industry (positive impact)</i>	16 L	•	EMPr section 8.1 • EMPr section 8.2 • EMPr section 8.7
<i>Short term employment and business opportunities and the opportunity for skills development and on-site training. (Positive impact).</i>	27 L	•	EMPr section 8.8 • EMPr section 8.9
Noise, dust and safety impacts and disturbance to adjacent landowners	18 L		
An increase in construction workers and associated increase in social problems for the community	16 L		
Increase in casual workers and associated increase in poaching.	24 L		
Increased risk of veld fires	16 L		
Municipal services and traffic			
Increase in traffic on the surrounding local	21 L	•	EMPr section 8.1 • EMPr section 8.2
Increase in the number and frequency of construction vehicles accessing the site	21 L	•	EMPr section 8.7 • EMPr section 8.8
Indirect impacts:			
Traffic and Services			
Degradation of local roads due to the increase in the numbers of heavy vehicles.	21 L	•	As above
Cumulative impacts:			

	Biodiversity (Flora)		
	Cumulative loss of Granite Lowveld vegetation and associated loss of species richness.	21 L	<ul style="list-style-type: none"> • EMPr section 8.1 • EMPr section 8.2 • EMPr section 8.3
	Loss of critical biodiversity areas	45 M	<ul style="list-style-type: none"> • EMPr section 8.4 • EMPr section 8.5
	Cumulative loss of ecological function of sensitive habitats.	39 M	<ul style="list-style-type: none"> • EMPr section 8.6 • EMPr section 8.7
	Cumulative reduction and damage to Red data species and protected trees.	45 M	<ul style="list-style-type: none"> • EMPr section 8.8 • EMPr section 8.9 • EMPr section 8.10
	Biodiversity (Fauna)		
	Cumulative loss of faunal habitat	36 M	<ul style="list-style-type: none"> • As above
	Socio-economic		
	<i>Community upliftment and the opportunity to increase the skill level in the area (positive impact).</i>	24 L	<ul style="list-style-type: none"> • EMPr section 7.4 • EMPr section 8.1 • EMPr section 8.2 • EMPr section 8.7 • EMPr section 8.8 • EMPr section 8.9
	Services and traffic		
	Cumulative increase in traffic and the resultant noise, dust, and safety impacts on other road users	32 M	<ul style="list-style-type: none"> • EMPr section 8.1 • EMPr section 8.2 • EMPr section 8.7 • EMPr section 8.8
	Operational Phase	Direct Impacts:	
Ground water			
Depletion of ground water resources (water quality)	18 L	<ul style="list-style-type: none"> • EMPr section 9.1 • EMPr section 9.2 	
Pollution and contamination of ground water	26 L	<ul style="list-style-type: none"> • EMPr section 9.3 • EMPr section 9.4 • EMPr section 9.5 	
Surface water			
Disturbance and loss of ecological function of the habitat (physical structure) along the dam, drainage lines and Klasserie River	44 M	<ul style="list-style-type: none"> • As above 	
Pollution and contamination of surface water.	20 L		
Disturbance and loss of hydrological function (quality and fluctuation properties) along the dam, drainage lines and Klasserie River	33 M		
Soil			
Pollution and contamination of the soil	33 M	<ul style="list-style-type: none"> • As above 	
Soil erosion	18 L		
Air			
Air pollution by emissions from increased numbers of game drive vehicles and private vehicles.	33 M	<ul style="list-style-type: none"> • EMPr section 9.5 	
Air pollution from incineration of waste	56 M		
Biodiversity (Flora)			

<i>Rehabilitation of old cultivated fields and lands</i>	65 H	<ul style="list-style-type: none"> • EMPr section 9.1 • EMPr section 9.2 • EMPr section 9.3 • EMPr section 9.4 • EMPr section 9.5 • EMPr section 9.6
Loss of Granite Lowveld vegetation and associated loss of species richness	18 L	
Loss of critical biodiversity areas	22 L	
Disturbance of sensitive habitats	27 L	
Destruction and damage to Red data species and protected trees	20 L	
Increase in exotic vegetation/alien species and bush encroachment into disturbed soils and areas in the event that the rehabilitation process is not successful	22 L	
Biodiversity (Fauna)		
Loss of faunal habitat.	18 L	<ul style="list-style-type: none"> • As above
Faunal disturbances and changes in distribution and abundance.	27 L	
Faunal mortality	20 L	
Poaching and snaring of fauna by staff.	24 L	
Land use and agricultural potential		
None.		
Visual		
Potential visual impact on sensitive visual receptors in close proximity to the proposed developments.	18 L	<ul style="list-style-type: none"> • EMPr section 9.5
Potential visual impact on sensitive visual receptors within the region	20 L	
The potential visual impact of safety and security lighting of the developments at night on sensitive visual receptors in close proximity	20 L	
Socio-economic		
<i>Stimulation of the local economy, especially the local service delivery industry (positive impact)</i>	33 M	<ul style="list-style-type: none"> • As above
<i>Creation of long term employment and business opportunities as well as opportunities for skills development and transfer (positive impact)</i>	56 H	
<i>Creation of opportunities for local SMME's (positive impact)</i>	48 M	
Impact on adjacent land uses and activities	8 N	
Service and traffic		
Increase in traffic on the surrounding roads	30 L	<ul style="list-style-type: none"> • EMPr section 9.5
Increase in the number and frequency of vehicles accessing the site	20 L	
Indirect impacts:		
Visual		
The potential visual impact of the	18	<ul style="list-style-type: none"> • As above

	development on the visual character of the landscape and sense of place of the region (particularly the Waterberg Biosphere Reserve).	L	
Cumulative impacts:			
Biodiversity (Flora)			
	Cumulative loss of Granite Lowveld vegetation and associated loss of species richness.	22 L	<ul style="list-style-type: none"> • EMPr section 9.1 • EMPr section 9.2 • EMPr section 9.3
	Cumulative disturbance of sensitive habitats	22 L	<ul style="list-style-type: none"> • EMPr section 9.4 • EMPr section 9.5
	Cumulative reduction and damage to Red data species and protected trees.	28 L	<ul style="list-style-type: none"> • EMPr section 9.6
Visual			
	Accumulation of built infrastructure in a natural environment.	22 L	<ul style="list-style-type: none"> • EMPr section 9.5
Socio-economic			
	<i>Creation of permanent employment and skills and development opportunities for members from the local community and creation of additional business and economic opportunities in the area. (positive impact)</i>	33 M	<ul style="list-style-type: none"> • As above
	<i>Promotion of social and economic development in the local communities (positive impact)</i>	27 L	
Services and traffic			
	Cumulative increase in traffic on the surrounding roads	18 L	<ul style="list-style-type: none"> • EMPr section 7.1 • EMPr section 9.2
	Cumulative increase in the number and frequency of vehicles accessing the site	22 L	<ul style="list-style-type: none"> • EMPr section 9.5
Decommissioning phase			
None			

Please refer to Appendix G for the complete impact tables.

2. ENVIRONMENTAL IMPACT STATEMENT

Kapama Private Game Reserve is situated within Granite Lowveld vegetation type, which is in the Lowveld Savannah Bioregion of the Savanna Biome. Granite Lowveld was assessed by Mucina & Rutherford (2006) as **Least Threatened**.

Kapama Private Game Reserve is not situated in any floristic centres of endemism and is not listed as a Threatened Ecosystem.

The Limpopo Province Biodiversity Conservation Assessment (LPBCA) classifies most of the study area and general surroundings as a **Critical Biodiversity Area 1 & 2** (CBA1, CBA2) (Desmet et al., 2013). CBA's are described as **Irreplaceable** Sites. A few small, formerly degraded / cultivated areas such as around the Airstrip and Hongonyi Gate are classified as **Ecological Support Area 2 (ESA2)**.

An Ecological Sensitivity analysis of each of the vegetation communities represented in the study area was undertaken and the results are as follows:

The Riparian Forest community has Low Resilience, meaning that it cannot be easily restored ecologically with human intervention. It only has Medium Vulnerability as it occurs within a formerly protected area but experiences threats such as alien plant infestation, weir and lodge developments and associated impacts such

as eutrophication from waste water treatment works and an increase in sedimentation from rainwater runoff. These two assessments combine to result in a **Medium** RSI rating. Riparian Forest has a **Very High** Conservation Value due to being classified as a CBA1, providing important migration corridors for fauna and provides habitat for many specialised threatened aquatic species such as Hippopotamus, African Finfoot and Nile Crocodile. Six conservation-important plant species were confirmed during fieldwork. Two VU mammals were confirmed to occur. When Conservation Value and RSI are combined it results in an ES of **Medium-High**.

The Riparian Thicket vegetation community has Low Resilience, meaning that it cannot easily be restored ecologically. It only has Medium Vulnerability as it occurs within a formerly protected area but experiences threats such as alien plant infestation, dam construction, lodge developments and associated impacts such as eutrophication from waste water treatment works and an increase in sedimentation from rainwater runoff. These two assessments combine to result in a **Medium** RSI rating. Riparian Thicket is classified as a CBA1 or CBA2, providing migration corridors for fauna and provides habitat for many threatened species such as African Elephant, Leopard and Lion. The ephemeral nature of the hydrology of this community eliminates the regular presence of species such as African Finfoot and Nile Crocodile, both listed as VU, as well as African Clawless Otter which is listed as NT. Therefore the Conservation Value is assessed as **High**. Five conservation-important plant species were confirmed during fieldwork. Two VU mammals were confirmed to occur, one VU reptile (Nile Crocodile) has been recorded by KGR staff and is probably resident. When Conservation Value and RSI are combined it results in an ES of **Medium**.

The Closed Woodland community has Medium Resilience, meaning that, with assistance, it can be restored ecologically. It only has Medium Vulnerability as it occurs within a formerly protected area but experiences threats such as alien plant infestation and road and lodge development. These two assessments combine to result in **Medium** RSI rating. Six conservation-important plant species were recorded from Closed Woodland. Three VU mammals were confirmed, namely African Elephant, Lion and Leopard, and two NT species, namely White Rhinoceros and Spotted Hyaena. Two CR birds were confirmed, namely White-backed and Hooded Vultures, and one EN bird, namely Bateleur. A number of additional threatened species occur. It is also classified as a CBA1 or CBA2. Despite this, Closed Woodland only attains **High** Conservation Value as this is the dominant vegetation community in the entire Lowveld and vast areas are protected in the adjacent GKNP. The High Conservation Value, when combined with the RSI rating of Medium, results in an ES rating of **Medium**.

The Degraded Woodland community has Medium Resilience, meaning that it can only be moderately easily restored ecologically with some human intervention due to the large number of alien plant species present. It has Medium Vulnerability as potential impacts include alien plant infestation and lodge and road development. These two assessments combine to result in **Low** RSI rating. Only two conservation-important plant species were recorded from this community. A number of threatened and NT mammals and birds potentially occur, such as Lion, Leopard and African Elephant (all VU) and White-backed and Hooded Vultures (CR), Martial (EN) and Tawny (VU) Eagles and more. Degraded Woodland is also classified as an ESA2. This leads to a **High** Conservation Value which, when combined with a Low RSI Value, results in an ES rating of **Medium**.

No cultural heritage sites were recorded on the Reserve.

Sewage treatment is via septic tanks and evaporation dams.

Statement:

A number of developments have impacted the habitats on KPGR, including lodges, staff housing, workshops, waste incineration and dumping, weir construction, waste water treatment works and water purification plant. The construction and operation of this infrastructure has taken place over many years and has had a limited overall impact on the ecology of the area.

Majority of the infrastructure at River Lodge is located within areas classified as having a **moderate** sensitivity. However, the lodges suites, lounge/bar and spa suites are all located in the 32 m buffer zone of the non-perennial river which has a **high** sensitivity. The kitchen, boma, the lodges suites, portions of the lounge/bar and

swimming pool, the spa suites and portions of the spa are all located within the 1:100 year flood line. Protected trees are scattered throughout the site.

All of the guest units, the reception, dining and back of house at Karula are all located in areas with a **high** sensitivity. The spa, staff accommodation and the evaporation pond are located in areas of **moderate** sensitivity. Additionally, guest units 1 to 9 and the dining/lounge area are located within the 1:100 year flood line. Protected trees are scattered throughout the site. It should be noted that the impact is slightly lower than assessed owing to the fact that the portions of the site were already impacted upon by an existing 18 bed lodge that was already on the property.

All of the infrastructure at Buffalo Camp (10 guest units, staff housing, dining and lounge/bar and the evaporation pond) are located within the 32 m buffer of the non-perennial river which is classified as having a **high** sensitivity. The reception area is located within an area of **moderate** sensitivity. Additionally, units 7 to 10 and the staff accommodation are located within the 1:100 year flood line. Protected trees are scattered throughout the site.

All of the infrastructure at Southern Camp is located within areas classified as having a **moderate** sensitivity. Protected trees are scattered throughout the site. It should be noted that the impact is slightly lower than assessed owing to the fact that the portions of the site were already impacted upon by an existing 40 bed lodge that was on the property prior to KPGR acquiring it.

The main entrance gate on the R40, Drakensig Staff accommodation, the workshop and the waste incineration site are all located on areas classified as having a **moderate** sensitivity. Protected trees are scattered throughout the sites.

The Bosplaas private residence slightly encroaches into the 32 m buffer zone of the Klasserie River which has a **high** sensitivity. A number of protected trees are scattered around the site and some may have been destroyed.

Hongonyi Gate and the staff accommodation are located in areas classified as having a **moderate** sensitivity.

The Kapama Airstrip is located in an area classified as having a **moderate** sensitivity. Large portions of the airstrip is located in an ESA 2. Additionally, the land appears to have been cultivated many years ago but is now recovering.

The two (2) Reservoirs and mast/tower are located in an area of moderate sensitivity.

It is not known what tree or plant species were destroyed during construction but a number of conservation-important species were confirmed during fieldwork or potentially occur.

All of the developments and infrastructure within Kapama Private Game Reserve have already been completed and have been operational for many years, with the exception of Bosplaas which is in the final stages of construction. While it is difficult to assess what impacts the construction phase has had on the receiving environment, the impacts have been found to be **low to moderate**. The loss of critical biodiversity areas and disturbance to sensitive habitats was found to have a **high** post mitigation significance owing to the placement of certain lodges and other infrastructure within the 32 m buffer zone of the river and drainage lines, placement of certain lodges and infrastructure within the 1:100 year flood line and the clearing of vegetation (CBA 1 in most cases).

The operational impacts have been assessed and should all mitigation measures mentioned in this report, the specialist reports and the EMP be implemented and adhered to as soon as possible, negative impacts can be mitigated to acceptable levels of **low to moderate**. It should be noted that not all impacts can be mitigated, as the impact occurred many years ago, however, measures can be put in place in order to prevent further impact from occurring on the environment.

The cumulative impact of the 52 ha of unauthorized developments on KPGR should also be taken into context. The area was formerly a cattle and crop farm and now protects some of the most threatened species in South Africa such as Hooded and White-backed Vultures, Leopard and Ground Pangolin. Biodiversity has significantly

increased since agriculture ceased and the tourism venture was initiated and it appears as if the Reserve is being managed to maintain and even improve it.

Additionally, many positive impacts associated with the development of the lodges and tourist infrastructure have been experienced, namely employment opportunities and job creation during both the construction phases and the operational phases, whereby 600 people are currently employed. Other positive impacts are skills development and training, diversifying the tourism offerings within the region, the conservation of almost 14 000 Ha of CBA 1 and 2, as well as the rehabilitation of old cultivated lands.

With the above in mind it is recommended that environmental authorization is granted for all developments mentioned in this report.

SECTION E: RECOMMENDATION OF PRACTITIONER

The construction and development of the lodges and other tourist infrastructure within KPGR has resulted in the permanent removal of indigenous vegetation within an area classified as a CBA 1 and 2 and ESA 2, as well as, the reduction in faunal habitat. These impacts are, however, considered to be low to moderate owing to the large size of the Kapama Private Game Reserve, and the fact that both Karula and Southern Camp had existing impacts. Additionally, all vertebrate fauna present would only occasionally utilise the sites and would not be resident or restricted to them.

As discussed in the preceding section, all negative impacts can be effectively mitigated and managed to acceptable levels (low to moderate residual impact). Mitigation measures mentioned in this report, the EMPr and the specialist reports must be adhered to and implemented during the operational phase and during any future construction.

Additionally, the following is recommended:

- No further development takes place on KPGR without ecological studies taking place first to assess the impact of the developments on untransformed habitats.
- In order to comply with the Conservation of Agricultural Resources Act (Act 43 of 1983), all listed invasive exotic plants as indicated in Appendix 1 of the Ecology Study should be targeted and controlled. This is especially applicable to **Lantana camara*, **Datura stramonium*, **Ricinus communis*, **Xanthium spinosum*, **Salvinia adnata*, **Sesbania punicea* and **Opuntia stricta*.
- All existing roads should contain adequate stormwater drainage and erosion control measures.
- All litter and building rubble around the Bosplaas Application Site should be removed and disposed of in a suitable manner. Additionally, the contractors should be encouraged to maintain the site free of litter and rubble.
- The open dumps adjacent to the Waste Incinerator Site should be tidied up and adequately fenced off to prevent access, similar to what has been done around the Airstrip.
- All waste water treatment sites / settling ponds should be fenced off to prevent access by animals. The leak below the Southern Camp settling ponds should be repaired.
- All water uses must be legal in terms of the National Water Act. This is currently being done through discussions with the Department of Water and Sanitation, which are informing an application for an integrated Water Use License, with due consideration to historical entitlements.

- Ponds which receive raw sewerage be lined with an HDPE or similar liner that prevents groundwater seepage, or that the wastewater be treated to a standard that can be accommodated in an earthen pond without risk to the environment.
- An engineer should be appointed to undertake an assessment of the wastewater treatment systems and to recommend improvements and upgrades in wastewater management to the level that the final effluent can be safely used in irrigation.
- Water saving measures should be implemented where possible. This may include the use of low-flow shower heads, the use of draught resistant species in landscaping around the lodges, limiting irrigation to the volumes that can be obtained from wastewater treatment and embarking on a staff and guest awareness programme around responsible use of water.
- An Environmental Control Officer should be appointed to oversee all current and future construction sites.
- Specialist advice sought to determine whether a waste licence would be needed for the incineration of waste.