Draft Environmental Impact Report

Environmental Impact Report in terms of Section 24 G of NEMA: Development of Lapalala Founders Lodge, Lephalale Local Municipality, Limpopo Province. Reference No. 12/1/9/S24g-W18

Compiled by:

NuLeaf PLANNING & ENVIRONMENTAL

May 2016

Contents

APPENDICES

FOREWORD

This report constitutes the **Draft Environmental Impact Report**, and has been circulated digitally for Stakeholder Comment on 18 May 2016.

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 submission to the Limpopo Department of Economic Development, Environment and Tourism (LEDET).

All comments on the Draft EIR must be in writing and must reach NuLeaf by no later than close of business on **20 June 2016.**

Please mark all comments for the attention of:

Bryony van Niekerk

Email: bryony@nuleafsa.co.za

Tel: (012) 753 5792

Fax: (086) 571 6292

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: indigenous.	A plant or animal species introduced from elsewhere: neither endemic nor
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: 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).

EXECUTIVE SUMMARY

SECTION A- ACTIVITY INFORMATION:

Lapalala Wilderness Pty Ltd unwittingly undertook the development of an eight (8) bed interim, non-commercial lodge on the farm Landmans Lust 595 LR, situated within Lapalala Wilderness in the Lephalale local Municipality, Waterberg District unaware that listed activities were triggered and that Environmental Authorisation was required. In order to construct this lodge development, approximately 250 square meters of indigenous vegetation was cleared within an area classified as a Critical Biodiversity Area 1 and an access road of approximately 7 Km was also constructed.

Owing to the fact that the construction activities have already been undertaken on the farm Landmans Lust 595 LR, there are no reasonable and feasible alternatives for the Lapalala Founders Lodge.

Waterberg District Municipality and Lephalale Local Municipality recognize the important role that tourism plays in the region and local economy. The future intent of Lapalala Founders Lodge is to become the first commercial lodge in the Lapalala Wilderness. This will allow the public to experience not only the Lapalala Wilderness, but also the heart of the Waterberg Biosphere Reserve. Additional benefits of Lapalala Founders lodge include contributing to local economic growth, diversification of the tourism offerings within the area, contributing to the ongoing conservation of Lapalala Wilderness and the creation of employment opportunities.

SECTION B: SITE / AREA / PROPERTY DESCRIPTION:

In general the area is characterised by undulating hills with the Lephalala River towards the north and the Blokland Stream running to the west of the survey area.

The study area is situated within the Waterberg Mountain Bushveld vegetation type classified as **Least Threatened**, which is in the Central Bushveld Bioregion of the Savanna Biome. The area is also classified as a **Critical Biodiversity Area 1**.

Seventy-six species were recorded from the Founders Lodge site, although a wet season survey would significantly increase this total with the addition of herbaceous species. Four **conservation-important species** were recorded, namely *Elaeodendron transvaalense* and *Drimia sanguinea*, both of which are classified as **Near Threatened**, as well as *Combretum imberbe* and *Sclerocarya birrea subsp. caffra*, both of which are **protected** under the National Forests Act (No. 30 of 1998). *Elaeodendron transvaalense* is also protected under the NFA.

No Stone Age settlements, structures, features, assemblages or artefacts were recorded during the survey. Additionally, no graveyards or individual graves were recorded. However, three heritage sites were found within the vicinity of the lodge development site and the access road. Heritage Sites 1 and 3 are rated as having a medium significance while Heritage site 2 has a low significance rating.

SECTION C: PUBLIC PARTICIPATION:

The public participation process included 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 Northern News, a local publication , on 8 April 2016.
- Notice boards where placed at the main entrance gates to Lapalala Wilderness on 14 April 2016.
- Background information documents were circulated to all I&APs on 15 April 2016 notifying them of the project.

SECTION D: IMPACT ASSESSMENT:

Construction of an additional 8 guest tented chalets, the construction impacts if effectively managed and all mitigation measures adhered to, will result in predominately **negligible to low** residual significance ratings.

Operational impacts can be similarly mitigated and will also result in predominately **low** residual significance impacts. However, emissions from vehicles and degradation of local roads will have a moderate post mitigation significance.

These low residual significance ratings are due to the fact that the development footprint is relatively small and the nature of the buildings (canvas tents on raised wooden platforms) is of a low impact. The chalets themselves were also positioned amongst the trees which then reduced the need for additional clearing of vegetation and large trees. The same principle was applied to the construction of the road. Additionally, the use of renewable energy sources is preferable.

Additionally, positive impacts associated with the development of the Lapalala Founders Lodge include employment opportunities and job creation during both the construction of the additional 8 guest chalets and the operational phase, skills development and training and diversifying the tourism offerings within the region.

With the above in mind it is recommended that environmental authorization is granted for the existing Lapalala Founders Lodge and the construction of an additional 8 guest tented chalets.

SECTION E: RECOMMENDATION OF PRACTITIONER:

The construction and development of the Lapalala Founders Lodge has resulted in the permanent removal of indigenous vegetation within an area classified as a CBA 1, as well as, the reduction in faunal habitat. These impacts are, however, considered to be low owing to the large size of Waterberg Mountain Bushveld, the low number of endemics in the savanna biome within which the study area is situated and that all vertebrate fauna present would only occasionally utilise the footprint and would not be resident or restricted to it.

As discussed in the preceding section, all negative impacts can be effectively mitigated and managed to acceptable levels (low residual impact). Mitigation measures mentioned in this report, the EMPr and the specialist reports must be adhered to and implemented at all times during both the construction of the additional 8 guest tented chalets and for the duration of the operational phase.

SECTION A: ACTIVITY INFORMATION

1. ACTIVITY DESCRIPTION

1.1. Project Description

NuLeaf Planning and Environmental was appointed by Lapalala Wilderness 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. Environmental Authorisation is needed for the undertaking of the following listed activities: Listing Notice 3: 4(a)(ii)(ee), 6(a)(ii)(ee), 12(a)(iv), 18(a)(ii)(ee) (No. R. 985, 4 December 2014).

Lapalala Wilderness Pty Ltd unwittingly undertook the development of an eight (8) bed interim, non-commercial lodge on the farm Landmans Lust 595 LR, situated within Lapalala Wilderness in the Lephalale local Municipality, Waterberg District unaware that listed activities were triggered and that Environmental Authorisation was required. In order to construct this lodge development, approximately 250 square meters of indigenous vegetation was cleared within an area classified as a Critical Biodiversity Area 1 and an access road of approximately 7 Km was also constructed.

The lodge consists of the following components:

- A main lodge complex (lounge, kitchen, dining, bar, store, deck and swimming pool);
- 4 x 2 bed staff tents on elevated decks;
- A solar power facility including solar panels and battery system;
- A platform for the construction of a managers house;
- A workshop, store and generator room;
- Elevated timber walkways;
- Septic tanks and French drains;
- Potable water provision from existing borehole;
- 4 x 2 bed tented chalets.
- Managers' accommodation.
- 7 km gravel access road.

The lodge is powered by an independent solar power system and a back-up diesel generator. It should be noted that once the Applicant was made aware of the environmental impact assessment requirements, construction activities were immediately halted pending the outcome of this Section 24(G) application.

The future intent of the Applicant is to upgrade the facility to a 24 bed commercial lodge. In this regard, an additional 16 beds/ 8 tented chalets are still to be constructed. Additionally, the Applicant has also indicated a desire to possibly declare Lapalala Wilderness as a Protected Area in the future.

1.2. Listed Activities triggered

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: e.g. Construction of a 600 mW generator
R 985, 08 December 2014	6(a)(ii)(ee)	The development of hospitality facilities that sleep 15 people or more within a Critical Biodiversity Area.

		The lodge falls within the Lapalala Wilderness which falls in Waterberg Bioregion, which along with the Limpopo C-plan, has identified the area as a Critical Biodiversity Area. *Please note the current facility sleeps 8 people and is not a hospitality facility as it is non-commercial.* *The eventual land use application is for a 24 bed commercial lodge and it is the applicant's intention to upgrade this facility into a 24 bed commercial lodge.*
R 985, 08 December 2014	12(a)(iv)	The clearance of 300 square m or more of indigenous vegetation on land zoned as open space or conservation. *It has been estimated that approximately 250 square meters of indigenous vegetation was cleared.*
R 985, 08 December 2014	4 (a) (ii) (ee)	Development of a road wider than 4 meters with a reserve less than 13,5 m in critical biodiversity areas. A 7 Km gravel road of approximately 4 meters wide has been constructed which extends from the main road. The site falls within the Lapalala Wilderness which falls in Waterberg Bioregion, which along with the Limpopo C-plan, has identified the area as a Critical Biodiversity Area 1.
R 985, 08 December 2014	18 (a) (ii) (ee)	The widening of a road by more than 4 meters, or the lengthening of a road by more than 1 kilometre in critical biodiversity areas. A 7 Km gravel road of approximately 4 meters wide has been constructed which extends from the main road. The site falls within the Lapalala Wilderness which falls in Waterberg Bioregion, which along with the Limpopo C-plan, has identified the area as a Critical Biodiversity Area 1.

2. FEASIBLE AND REASONABLE ALTERNATIVES

The activities mentioned above have already been undertaken on the farm Landmans Lust 595 LR, in the central southern portion of the Lapalala Wilderness. For this reason, there are no reasonable and feasible alternatives for the Lapalala Founders Lodge.

The vision of Lapalala Wilderness is to build awareness of the interdependence between mankind and nature to deliver lasting benefits for communities, the environment and the country as a whole. In order to realize this vision, a strategic plan has been compiled of which tourism enhancement plays a vital role. The construction of a lodge forms part of this strategic plan.

Lapalala Wilderness Pty Ltd, the registered landowners, wished to develop a lodge within the Lapalala Wilderness. The site on which Lapalala Founders Lodge was constructed was eventually chosen owing to the secluded nature and the high visual quality of the site which is conducive to an ecotourism lodge.

The main lodge building is located in the upper northern portion of the development envelope around a large *Schotia brachypetala.* A family tent and a double tent chalet are located on either side of the main lodge building to the east and west. All of these units are connected via elevated wooden walkways. The units themselves are

comprised of canvas tent and wood. The tented chalets are positioned between the trees which negated the need to unnecessarily clear vegetation. The same principle was applied to the elevated boardwalks and supports.

The staff tents are located south of the main building, with the store room located west thereof. The solar panels are pole mounted and located north of the store room. The managers unit is located in the southern portion of the development envelope.

3. ACTIVITY POSITION

Lapalala Founders Lodge is located within the Farm Landmans Lust 595 LR.

Farm Name/ ERF	Latitude	Longitude
Farm Landmans Lust 595 LR	23°51'35.98"S	28°16'56.18"E

Linear Activities

The majority of the access road also lies within the Farm Landmans Lust 595 LR, with portions falling within the Farm Wildeboschdrift 599 LR.

	Latitude	Longitude
Starting Point	23°51'37.88"S	28°16'55.92"E
Additional Point	23°51'55.86"S	28°17'8.34"E
Additional Point	23°52'35.54"S	28°17'16.14"E
Additional Point	23°53'8.12"S	28°17'38.40"E
End Point	23°53'42.24"S	28°17'39.04"E

Please refer to Appendix H.1 for co-ordinates taken every 250 meters along the access road.

4. PHYSICAL SIZE OF THE ACTIVITY

The development footprint for Lapalala Founders Lodge is approximately 0,5 Ha in size. The access track is approximately 7 Km long.

5. SITE ACCESS

Access to the lodge is via a gravel road approximately 7 Km long which extends from the Founders Lodge to an existing district road in a north south direction.

6. SITE OR ROUTE PLAN

Please refer to Appendix A for a detailed Site Plan.

7. SITE PHOTOGRAPHS

Please refer to Appendix B for site photographs.

8. FACILITY ILLUSTRATIONS

Please refer to Appendix C for a detailed illustration of the activity at a scale of 1:200.

9. ACTIVITY MOTIVATION

9.1. Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R 50 million
What is the expected yearly income that will be generated by or as a result of the activity?	R 15-20 million
Will the activity contribute to service infrastructure?	YES
Is the activity a public amenity?	YES
How many new employment opportunities will be created in the development phase of the activity?	30
What is the expected value of the employment opportunities during the development phase?	R 5 million
What percentage of this will accrue to previously disadvantaged individuals?	80%
How many permanent new employment opportunities will be created during the operational phase of the activity?	25
What is the expected current value of the employment opportunities during the first 10 years?	R 12 million
What percentage of this will accrue to previously disadvantaged individuals?	80%

9.2. Need and desirability of the activity

Need

The Section 24G application form was submitted to both the local and district municipalities, Lephalale and Waterberg respectively.

Lephalale Local Municipality Integrated Development Plan (IDP) recognizes that the tourism industry plays a vital role in the local economy and will most likely continue to grow, particularly with regard to the hunting and ecotourism industries. The area is renowned for hunting, wildlife and scenic beauty and nature reserves, sports and adventure. However, a major challenge faced by the tourism industry in the area is the lack of visitors to the region in the summer months.

One way in which to combat this issue is to increase the tourism offerings in the region, as well as, diversifying the tourism products. The future intent of Lapalala Founders Lodge is to become the first commercial lodge in

the Lapalala Wilderness. This will allow the public to experience not only the Lapalala Wilderness, but also the heart of the Waterberg Biosphere Reserve. In this way, Lapalala Founders Lodge and the associated land use thereof, falls within the municipal IDP.

Desirability

Lapalala Wilderness is located within the Waterberg Biosphere Reserve, with the primary land uses being conservation and ecotourism. In this regard, the construction of a 24 bed ecotourism lodge is conducive to the area and surrounds.

The Waterberg Spatial Development Plan (SDP) recognises that the Waterberg Biosphere Reserve plays a pivotal role in conservation and eco-tourism in the Waterberg District Municipality. It also recognises that it is important that the environmental heritage, conservation areas, biodiversity hotspots and ecologically sensitive areas are actively protected, managed, and enhanced to ensure that they are not adversely affected by other activities. Permitted activities within the Biosphere Reserve includes ecotourism, of which the Lapalala Founders Lodge falls under. Also of note, is that the SDP acknowledges the important role that the private sector and land owners play in tourism development.

The Waterberg District Environmental Management Framework (EMF) identifies various zones within the district. Lapalala Wilderness falls within Zone 1: Protection of natural vegetation, scenic landscape and rock paintings areas, with limited appropriate tourism, and Zone 2: Nature and cultural tourism focus areas within a high quality natural setting. Both of these zones allow for some sort of low impact, ecotourism developments.

The benefits of the Lapalala Founders Lodge are positive, contributing to economic growth and diversification of the both the Lapalala Wilderness and the regions tourism offerings. Additionally, approximately 30 jobs were created during the construction phase and approximately 25 jobs will be created in the operational phase which is ideal in an area such as Lephalale where the employment rate is high.

The Lapalala Founders Lodge is not expected to set a precedent, however, it should be noted that the future vision of Lapalala Wilderness is to offer a Custodianship whereby individuals or companies will be offered a unique opportunity to invest and participate in the future of the reserve.

It is not anticipated that any person's rights will be affected on an individual basis. This includes visitors to the Lapalala Wilderness and Waterberg Biosphere Reserve who have a right to access this asset and enjoy an uncompromised natural experience.

The urban edge is not applicable to this project as Lapalala Founders Lodge is located outside of the built environment.

The Applicant has also expressed a strong desire to have Lapalala Wilderness declared as a Protected Area. In doing so, this would ensure that the area is protected and conserved for generations to come.

Benefits

The benefits of Lapalala Founders Lodge to the society in general include the following:

- Contributing to local economic growth through the establishment of a viable economic activity.
- Diversification of the tourism offerings within the area. Lapalala Founders Lodge opens up the Lapalala Wilderness to the public and thus provides an additional attraction for tourists into the area.
- Contributing to the ongoing conservation of Lapalala Wilderness. The increase of local revenue will allow for the continued conservation and protection of the area.

Local communities will similarly benefit from the operation of the lodge:

- 25 permanent jobs have been created
- Opportunity for local SMME development particularly for service providers and local entrepreneurs.

10. 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: The soil mantle is protected and conserved, The natural water sources are protected, 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, Lapalala Wilderness is not a formally declared protected area, it does fall within the Waterberg Biosphere Reserve as recognized by UNESCO.	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, 2011:	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

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 throughput 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, use, operation, application, modification, disposal or dumping of such substances and products; and to provide for matters connected therewith.	Department of Health	1973

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			
Waterberg District Municipality Spatial Development Framework	The Waterberg SDF has identified certain development objectives and strategies: 1) Promotion and facilitation of economic development: support and develop strategic locations that contain the right characteristics inclusive of areas such as the biosphere and tourism nodes. 2) The sustainable management of the natural environmental assets and heritage: identify and isolate valuable natural assets, ensure continuous ecological and open space systems, ensure conservation and sustainable management of the biosphere and other conservation areas. 3) The promotion of tourism development: identify tourism development opportunities, ensure linkages to tourism development areas, and recognise the important role the private sector and land owners play in tourism development.	Waterberg District Municipality	2009
Lephalale Local Municipality Integrated Development Plan	Tourism is one of three key clusters in the Lephalale LM, and the importance thereof, is likely to continue to grow. This is likely to be related to the hunting and ecotourism industries. The location of Lephalale provides unique opportunities for economic development and tourism in particular. The area is renowned for hunting, wildlife, scenic beauty and nature reserves. The LM has identified key projects to aid in the development of tourism inclusive of tourism awareness campaigns, infrastructure to tourism routes and destinations.	Lephalale Local Municipality	2014-2016
Waterberg District Environmental	The Waterberg Biosphere Reserve, as recognized by UNESCO, provides an opportunity to promote biodiversity conservation, as well as, advancing ecotourism. The Waterberg EMF identifies	Waterberg District Municipality	2010

Management Framework	environmental management zones of which zones 1 (protection of natural vegetation, scenic landscape and rock painting areas, with limited appropriate tourism) and zone 2 (nature and cultural tourism focus areas within a high quality natural setting) have relevance.		

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11.1. Solid waste management

Construction
The majority of the construction phase is complete, with just the development of 8 tented guest chalets to be constructed. No solid construction waste was generated during the construction phase, with the exception of timber offcuts.

Operational
It is estimated that the lodge will produce less than 4 m^3 of solid waste during the operational phase per month. Waste will be sorted into recyclables and non-recyclables. Recyclables will be stored separately for collection, while the non-recyclables will be stored in fenced 'scavenger proof' areas. The solid waste will be transported to the nearest landfill site.

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

11.2. Liquid effluent

Sewage treatment will be via a septic tank and French drain (soak away) system. Sludge accumulation will take place within the septic tanks before effluent treatment, as the maintenance on such a system will be periodical rather than daily. Sludge will be collected by a specialized service provider and properly disposed of at proper waste treatment sites. Effluent emanating from the septic tank at the tented chalets will be dissipated via a soak away by means of properly designed and installed soak away systems.

A grey water system shall be installed off all bath and shower water in the chalets to irrigate the areas around and in front of the chalets.

11.3. Emissions into the atmosphere

No emissions, other than that of exhaust emissions and dust associated with the removal of stabilizing vegetation will be released into the atmosphere.

11.4. Generation of noise

Standard construction noise (i.e. heavy vehicles and site work) occurred during the construction phase. During operations, minimal noise will be generated at the lodge sites.

12. WATER USE

No municipal water supply is available. In this regard, water will be supplied from ground water sources via an existing borehole. The ground water will be pumped to the raw water JoJo tanks or a reservoir. Raw water will be purified at a proposed purification works through chlorination or UV sterilization and stored in clean water JoJo tanks or a reservoir.

The estimated water demand for the lodge is as follows:

- 24 Guests at 0.40 kilolitres/day/bed = 9.60 m^3/d (9600 L/d)
- 20 Staff (on site) at 0.20 kilolitres/day/staff member = 4.00 m^3/d (4000 L/d)
- Total water demand = 13.60 m^3/d (13 600 L/d)

Due to the expected low occupancy rates of 60%, allowance for the increased storage capacity will be made to deal with peak demands.

The raw and clean water reservoir for the lodge will have a storage capacity of 4 days maximum yield (borehole BH 2) to allow for the off-peak surplus storage. The clean water reservoir for the lodge will not include for fire flow, therefore the total volume clean water storage required for human consumption for the lodge will be approximately 30 m^3.

The fire flow for the lodge will be 100l/s for a 2 hour period. As such, the total storage capacity for fire flow provided will have to be 720 m^3.

The total water demand for the lodge is estimated to be 4964000 liters per annum or 13600 liters per day. According to General Authorization Notice (GN 399), the lodge falls within the Department of Water and sanitation (DWS) A50D quaternary drainage region and is entitled to abstract 45 m^3/ha/annum (45 000 L). Therefore, the total volume of water that may be extracted for the lodge is 79380000 L per annum or 217480 L per day.

Refer to Appendix D.4 for Services report

13. ENERGY EFFICIENCY

The lodge is to be powered by an independent off-grid solar power system with a back-up diesel generator. Additional measures proposed to conserve energy is the use of gas stoves instead of electrical stoves, heating water via heat pumps and the installation of LED lights.

SECTION B: SITE / AREA / PROPERTY DESCRIPTION

The affected property is a portion of the Farm Landmans Lust 595-LR.

1. GRADIENT OF THE SITE

The general gradient of the site is approximately 1:10.

2. LOCATION IN LANDSCAPE

In general the area is characterised by undulating hills with the Lephalala River towards the north and the Blokland Stream running to the west of the survey area. An existing gravel road is located to the north-east of the site. Also note that the footprint of the lodge is situated on an old agricultural field.

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

The study area is located at the base of a small ridge within the quarter-degree grid 2328 CD at an elevation of 1065 mamsl. The topography of the general area comprises undulating hills with steep to level plains situated between them. Lapalala falls within the upper Lephalala River catchment which drains into the Limpopo River.

The area is underlain by coarse-grained purplish sandstone of the Mogalakwena Formation which belongs to the Waterberg Group and is crisscrossed with numerous lineaments inferred from aeromagnetic data. One southeast trending lineament can be seen immediately south of borehole BH1, while another north-northeast trending one can be seen in close proximity to the northwest of the proposed developments footprint area.

The 1: 250 000 geological sheet for the area is further indicative of an intrusive diabase sill to the immediate north of the proposed footprint area. Both boreholes BH1 and BH2 are located within the sill's sub-outcrop delineation.

Refer to Appendix D.1 for Geohydrological Report

4. GROUNDCOVER

According to Mucina & Rutherford (2006), the study area is situated within the Waterberg Mountain Bushveld vegetation type, which is in the Central Bushveld Bioregion of the Savanna Biome.

Waterberg Mountain Bushveld is located in the foothills, escarpment and tablelands of the Waterberg Mountains between Lephalale, Marken and Bela-Bela in the north-western region of Limpopo Province, South Africa. Vegetation structure comprises low to mid-high woodland that is dominated by deciduous, broad-leaved tree species, and has a grass-dominated herbaceous layer. Soils are mostly sandstone, subordinate conglomerate, siltstones and shale of the Kransberg Subgroup. Waterberg Mountain Bushveld was assessed by Mucina & Rutherford (2006) as **Least Threatened** because of a low level of transformation (3%) and because 9% of the protection target of 24% is conserved in Marakele National Park and Moepel Nature Reserve.

Seventy-six species were recorded from the Founders Lodge site, although a wet season survey would significantly increase this total with the addition of herbaceous species. Four **conservation-important species** were recorded, namely *Elaeodendron transvaalense* and *Drimia sanguinea*, both of which are classified as **Near Threatened**, as well as *Combretum imberbe* and *Sclerocarya birrea subsp. caffra*, both of which are **protected** under the National Forests Act (No. 30 of 1998). *Elaeodendron transvaalense* is also protected under the NFA.

The study area is not situated in any floristic centres of endemism, which are areas that have an unusually high number of plants unique to that area (Van Wyk & Smith, 2001) and is not listed as a Threatened Ecosystem (Notice 1002 of Government Gazette 34809, 9 December 2011).

5. LAND USE CHARACTER OF SURROUNDING AREA

The study area falls within the Central Bushveld Bioregion which is classified as Least Threatened. The area and its surrounds do, however, fall within a **Critical Biodiversity Area 1 (CBA1).** CBA 1's are considered "irreplaceable" in that there is little choice in terms of areas available to meet targets. If CBA 1 areas are not maintained in a natural state then targets cannot be achieved. The surrounding areas also form part of the Lapalala Wilderness.

Four (4) nature reserves surround the Lapalala Wilderness; Alkantrant Nature Reserve to the north (15 Km away), Moepel Nature Reserve to the east (17 Km away), Madikela Game Reserve to the south (20 Km away) and Grootwater Nature Reserve to the west (30 Km away).

6. CULTURAL/HISTORICAL FEATURES

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

No Stone Age settlements, structures, features, assemblages or artefacts were recorded during the survey. Additionally, no graveyards or individual graves were recorded.

However, three heritage sites were found within the vicinity of the lodge development site and the access road.

Site 1 is most likely the remains of a Late Iron Age iron smelting site located just outside of the development envelope in the north eastern portion. Although no clear furnace could be discerned a possible smelting area was identified. Several pieces of slag that were washed downhill, were noted on the surface. Small granules of iron ore and potsherds were also noted. Several secluding taboos are upheld during smelting and as a result these sites are usually not associated with settlements.

Site 2 mainly consists of the foundations of a historical farmhouse complex (older than 60 years) located north east of the development envelope. The site comprises the dilapidated remains of a historical farm house complex (6x6 metres) with a surrounding wall. Most of the stone blocks were dressed and built with some sort of plaster of early quick lime cement. Most of the walls have collapsed and in most places only the foundations remain. Pieces of glass and ceramics were noted on the surface. Note that a domestic midden (predominately ash and cinder) was noted at the back of the house. Several partial foundations of outbuildings were noted to the east of the main house.

Site 3 is a small Late Iron Age site found along the access road. The site is roughly 50 x50 metres in extent and is situated on a level area on a steep slope located south of the lodge site. During construction of the lodge access road the site was extensively damaged. The road passes right through the middle of the site and several houses and sections of foundation walling were destroyed. Several remaining house foundations were recorded (and pieces of clay from the plastered walls), a number of smaller stone-walled enclosures and several retaining (terrace) walls were also noted. Although several pieces of potsherds were noted no decorated pieces were found. The site is small and probably served as a lookout point or outpost for looking after cattle.

Refer to Appendix D.2 for the full Heritage Impact Assessment Report.

7. BIODIVERSITY

A specialist biodiversity survey was undertaken by Duncan McKenzie of Ecorex in January 2016.

7.1. Flora

A single untransformed vegetation community was identified in 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 community at Founders Lodge is *Combretum apiculatum – Grewia flavescens* Closed Woodland.

***Combretum apiculatum – Grewia flavescens* Closed Woodland:**

The study area around the Founders Lodge comprises a tall tree canopy dominated by *Combretum apiculatum* and a mid-dense to dense understory dominated by the shrub *Grewia flavescens*. Overall vegetation structure is

Low to Tall Closed Woodland although parts are best described as Low Thicket (sensu Edwards, 1983). Most of the study area is situated on the lower foot of a ridge although a few areas also cover the level plains below the ridge. These flatter areas are dominated by the trees *Combretum imberbe* and *Acacia nilotica,* but are considered merely a sub-group of the dominant vegetation community and are too small to map. The extended area as supplied by NuLeaf after the survey took place does incorporate more of this community. Other common canopy species throughout the community include *Combretum imberbe, C. zeyheri, Acacia nigrescens* and *Schotia brachypetala.* Less frequently observed canopy trees include *Pappea capensis, Ziziphus mucronata, Peltophorum africanum* and *Acacia nilotica*. Additional understory shrubs recorded include *Dichrostachys cinerea subsp. africana, Elephantorrhiza burkei, Grewia bicolor, G. flava* and *Euclea natalensis subsp. angustifolia*.

Due to the dry conditions herbaceous plants were not abundant but included *Ruellia patula, Psiadia punctulata, Rhynchosia totta* and *Stylochaeton natalensis*. Succulents recorded include *Kleinia longiflora, Kalanchoe paniculata, K. rotundifolia* and *Sansevieria hyacinthoides*. Dominant grasses located include *Enneapogon cf. scoparius, Ctenium concinnum, Elionurus muticus* and *Panicum maximum*.

No alien plants were recorded from the study area.

Confirmed Conservation-Important Flora:

Three tree species confirmed to occur within the Founders Lodge site are **protected** under the National Forests Act (No. 30 of 1998): *Combretum imberbe, Sclerocarya birrea subsp. caffra* and *Elaeodendron transvaalense*. Two species are considered to be of **conservation concern** as defined by Raimondo et al. (2009).

i. *Transvaal Saffron Elaeodendron transvaalense:* Transvaal Saffron is a small to medium-sized evergreen tree occurring in northern and eastern South Africa, and further afield through Namibia, Botswana, Zimbabwe, Mozambique and Zambia. The species is heavily harvested in South Africa for traditional medicine and some sub-populations have declined as a result; as such it has been assessed as **Near Threatened** (Williams et al., 2008a). A single tree is growing adjacent to the boardwalk close to the main lodge.
ii. Snake-root *Drimia sanguinea:* This is another species confined to southern Africa, occurring from western Free State and Northern Cape through northern South Africa to Namibia, Botswana and Zimbabwe. Snakeroot is a well-known highly poisonous species which has resulted in large-scale mortality in livestock in the past. It is also one of the most widely traded species in traditional medicine markets and populations have declined by 20-25% as a result; the species has therefore been assessed as **Near Threatened** (Williams et al., 2008b). One small colony consisting of seven bulbs was located near the large solar panels in the western portion of the study area.

An additional 14 plant species of conservation concern have been recorded from the quarter degree grid 2328 CD and surrounding grids, of which only one species has a moderate chance of occurring, namely *Hypoxis hemerocallidea*. This bulb is listed as **Declining** due to over-collection for the medicinal plant trade and, although this species was not confirmed during fieldwork, it could have been overlooked because of the dry and withered state of much of the vegetation during the dry conditions during fieldwork.

7.2. Terrestrial Fauna

- *Mammals*

The study area is situated within the savannah biome within the Lapalala Wilderness and threatened species confirmed for the reserve include White and Black Rhinoceros, Tsessebe, Roan, Sable, Cheetah, Hippopotamus and Wild Dog. The mammal diversity for the reserve is highly likely to be high although many of these would be small mammals such as rodents, insectivores and bats, most of which would not be located through active searching methods employed during daylight.

Four mammal species were recorded through incidental observations. One of these, Spotted Hyena, is classified as **Near Threatened** and is listed as **Protected** under the National Environmental Management: Biodiversity Act (No. 10 of 2004) Threatened and Protected Species Lists (GG Notice 256, 2015). Old scats were observed in the western portion of the study area.

An estimated 41 conservation-important mammals potentially occur within the general vicinity of Founders Lodge. One of these species, Spotted Hyaena, has already been confirmed to occur. Of the 20 species with a moderate or high likelihood of occurring within the study area, only five are considered to be of conservation concern, four of which are classified as Near Threatened and one as Vulnerable. Three of these are carnivores, namely Leopard, Brown Hyaena and Honey Badger, while one species is a small bat (Rusty Bat). The remaining species is Black Rhinoceros which is classified as Vulnerable. All of these species could potentially occur anywhere in natural habitat in the study area but due to the small size probably only as occasional visitors. The rest of the potentially occurring species are classified as Data Deficient, meaning that not enough data were available in order to assess their Red Data status. It is probable that at least a few Data-Deficient species do occur, particularly shrews in the genera *Crocidura* and *Suncus*. Twelve potentially occurring species with a moderate likelihood of occurrence are protected either under the Threatened and Protected Species Lists.

- *Avifauna*

Of the nine biomes in Southern Africa, the savannah biome supports the highest diversity of bird species within the sub-region. Evidence in support of this is the combined total of 274 species recorded within the quarter-degree grid 2328 CD, in which the study area falls, during the first and second Southern African Bird Atlas Projects (SABAP2). Sixty species were confirmed to occur in the study area during fieldwork, a reasonable total considering the size and homogenous nature of the study area.

Fourteen threatened or Near Threatened bird species potentially occur within the general vicinity of the study area, although only three of these species have so far been recorded in the quarter-degree grid 2328 CD during SABAP2 (2007-present). No species of conservation concern were located during fieldwork. Three of the fourteen species with a moderate to high likelihood of occurring in the vicinity of Founders Lodge are threatened species, one of which is classified as Endangered and two as Vulnerable. Martial Eagle (Endangered), Verreaux's Eagle (Vulnerable) and Lanner Falcon (Vulnerable). The only other species of conservation concern that has been confirmed for 2328 CD is Black Stork but no habitat is present for this species in the study area.

- *Reptiles and Frogs*

Sixty-two species of reptiles have been recorded from the entire degree grid 2328. Three potentially occurring species are species of conservation concern: Orange-throated Flat Lizard is classified as Endangered, Nile Crocodile is classified as Vulnerable and is listed as Vulnerable under the National Environmental Management: Biodiversity Act (No. 10 of 2004) Threatened and Protected Species Lists (GG Notice 256, 2015) and Southern African Python is listed as Protected under the National Environmental Management: Biodiversity Act (No. 10 of 2004) Threatened and Protected Species Lists (GG Notice 256, 2015). The flat lizard and crocodile both have a Low likelihood of occurrence due to lack of suitable habitat and the python was confirmed to occur in adjacent habitat.

No frog species were recorded during fieldwork.

Refer to Appendix D.3 for Ecology Report.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENTS AND NOTICES

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 Northern News, a local publication , on 8 April 2016.
- Notice boards where placed at the main entrance gates to Lapalala Wilderness on 14 April 2016.
- Background information documents were circulated to all I&APs on 15 April 2016 notifying them of the project.

2. COMMENTS AND RESPONSE REPORT

Refer to Appendix E for Public Participation report.

3. AUTHORITY PARTICIPATION

Authorities are key interested and affected parties in each application. The following Authorities were notified during the process.

Name of Authority informed	Comments received (Yes or No)
Edith Tukakgomo- Lephalale Local Municipality- Municipal Manager	No
Riekie Coetzee- Lephalale Local Municipality- Municipal Manager Secretary	No
Bonolo Nkoe- Secretary to Mr Lesibana Thobane Community Services Manager, Lephalale LM	No
Mr Vincent Raphunga- Waterberg District Municipality- Environmental Health Practitioner	No
Ms Nozi Molteno- Waterberg District Municipality- Environmental management official	No
V. Egan- LEDET: Biodiversity Management	No
Ms MM Komape- DWS	No
Mahlakoane FA- Department of Agriculture, Forestry and Fisheries	No

4. CONSULTATION WITH OTHER STAKEHOLDERS

No comments have been received yet from any interested and affected parties.

SECTION D: IMPACT ASSESSMENT

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

No issues have been raised by I&APs as of yet.

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

2.1. Construction Phase

Direct Impacts:

GROUND WATER

- Depletion of ground water due to overuse and waste during construction activities.
- Pollution and contamination of ground water due to surface runoff, unmanaged sewage discharge, leaks and spills, solvent, paints and chemical spills, hydrocarbon and fuel leaks and spills.

SURFACE WATER

- Disturbance and loss of ecological and hydrological function of the habitat (physical structure) along the drainage lines due to clearing and destruction of riparian and wetland vegetation, loss of fringing vegetation and erosion of denuded areas, invasion by alien invasive trees and plants, alteration in natural fire regimes, shading of natural vegetation.
- Pollution and contamination of surface water resources.

SOIL

- Soil contamination and pollution.
- Soil erosion by wind and rain due to the removal of stabilising vegetation, soil compaction, decrease in water infiltration and an increase of water runoff in construction areas.

AIR

- Air pollution due emissions from construction vehicles and equipment.
- Dust liberated by general construction activities and movement of construction vehicles.

BIODIVERSITY (FLORA)

- *Removal of invader alien species found on site (positive impact).*

- Loss of Waterberg Mountain Bushveld vegetation classified as Least Threatened and associated loss of species richness due to site clearing ahead of construction, general construction activities and movement of construction vehicles, unmanaged sewage discharge, leaks and spills, solvent, paints and chemical spills, hydrocarbon and fuel leaks and spills, litter and other inert construction waste.
- Destruction and damage to Red List/Conservation important and protected trees.

BIODIVERSITY (FAUNA)

- Loss of faunal habitat due to site clearing ahead of construction, general construction activities and movement of construction vehicles, construction dust, construction material, litter and other inert construction waste.
- Loss of general faunal habitat and ecological connectivity.
- Mortality of fauna due to dangerous trenches and excavations, persecution and extermination, solvent, paints and chemical spills (poisoning), construction material, litter and other inert construction waste (suffocation), collisions with construction vehicles.
- Poaching and snaring of fauna on site and in the greater Lapalala Wilderness by construction staff.

LAND USE AND AGRICULTURAL POTENTIAL

- None.

HERITAGE

- *Possible discovery of new important artefacts (Positive Impact).*

- Damage to and / or destruction of archaeological, paleontological or historical artefacts unearthed during construction due to site clearing ahead of construction, general construction activities and movement of construction vehicles (applicable to the construction of the remaining 8 tented chalets).

VISUAL

- Visual impact of construction, lighting and dust on locals using internal roads.
- Visual impact of construction, lighting and dust on Lapalala Wilderness visitors/ residences.

SOCIO-ECONOMICS

- *Stimulation of the local economy, especially the local service delivery industry (i.e. accommodation, catering, cleaning, transport and security, etc.) (positive impact).*
- *Creation of short-term employment and business opportunities and the opportunity for skills development and on-site training (Positive impact).*
- Noise, dust and safety impacts and disturbance to adjacent residences/ camps in Lapalala wilderness
- Increase in casual workers and associated increase in poaching.

SERVICES AND TRAFFIC

- Degradation of internal roads due to construction vehicles..
- Increase in the number and frequency of construction vehicles accessing the site and the resultant noise, dust, and safety impacts on other road users, residents of the local community and adjacent tourism developments.

Indirect Impacts:

BIODIVERSITY (FLORA)

- Loss of floral biodiversity, Red data species and protected trees due to increased incidence of veld fires.

BIODIVERSITY (FAUNA)

- Loss of faunal biodiversity due to increased incidence of veld fires.

SOCIO-ECONOMICS

- Loss of property and threat to human life due to increased incidence of veld fires.

TRAFFIC AND SERVICES

- Degradation of local roads due to the increase in the numbers of heavy vehicles.

Cumulative Impacts:

BIODIVERSITY (FLORA)

- Cumulative loss of Loss of Waterberg Mountain Bushveld vegetation classified as Least Threatened and associated loss of species richness.
- Cumulative reduction and damage to Red List/Conservation important and protected trees.

BIODIVERSITY (FAUNA)

- Cumulative loss of faunal habitat.

SOCIO-ECONOMICS

- *Community upliftment and the opportunity to up-grade and improve skills levels in the area (positive impact).*

SERVICES AND TRAFFIC

- Cumulative increase in traffic and the resultant noise, dust, and safety impacts on other road users, residents/ existing camps/ lodges.

2.2. Operational Phase

Direct Impacts:

GROUND WATER

- Depletion of ground water resources due to over use and waste during operation.

- Pollution and contamination of ground water due to unmanaged storm water runoff, unmanaged sewage discharge, sewage leaks and spills, herbicides, pesticides and fertilisers, discharge and spill of solvents, paints, chemicals and cleaning products, discharge and spill of hydrocarbons and fuel.

SURFACE WATER

- Pollution and contamination of surface water due to unmanaged storm water runoff, litter and uncontrolled waste, sewage leaks and spills, herbicides, pesticides and fertilisers.

SOIL

- Soil contamination and pollution.
- Soil erosion due to soil compaction by uncontrolled movement of staff and guests (especially vehicles), runoff over exposed or cleared areas that have failed to rehabilitate.

AIR

- Air pollution by emissions from increased numbers of tourist vehicles and game drive vehicles.

BIODIVERSITY (FLORA)

- Loss of Waterberg Mountain vegetation classified as Least Threatened and associated loss of species richness due to uncontrolled vegetation clearing and access by staff and guests, encroachment of alien invasive species, litter and waste.
- Destruction and damage to Red List/Conservation important and protected trees due to uncontrolled vegetation clearing and access by staff and guests.
- Increase in exotic vegetation/alien species and bush encroachment into disturbed soils and areas in the event that the rehabilitation process is not successful.

BIODIVERSITY (FAUNA)

- Loss of faunal habitat due to uncontrolled vegetation clearing and access by staff and guests, encroachment of alien invasive species, litter and waste.
- Faunal disturbances, displacement of taxa and changes in distribution and abundance due to uncontrolled vegetation clearing and access by staff and guests, general operations (activities) of the facility, noise from guests, staff and vehicles, night drives and perimeter safety fences.
- Mortality of fauna due to persecution and extermination, solvents, paints, chemicals and cleaning products (poisoning), litter and waste (suffocation).
- Poaching and snaring of faunal species by staff.

LAND USE AND AGRICULTURAL POTENTIAL

- None.

HERITAGE

- Damage to and / or destruction of archaeological, paleontological or historical artefacts owing to uncontrolled access by staff and guests.

VISUAL

- The visibility of the lodges to, and potential visual impact on existing camps/lodges/ residences within Lapalala Wilderness.
- The visibility of the lodges to, and potential visual impact on, observers travelling along game drive routes within Lapalala Wilderness.

- The potential visual impact of the lodge on the visual character of the landscape and sense of place of the region.
- The potential visual impact of lighting of the lodge at night on observers residing in close proximity to the development.

SOCIO-ECONOMICS

- *Stimulation of the local economy, especially the local service delivery industry (accommodation, catering, cleaning, transport, security etc.) (positive impact).*
- *Creation of long term employment and business opportunities as well as opportunities for skills development and transfer (positive impact).*
- *Creation of opportunities for local SMME's (positive impact).*
- Noise impact on existing camps/lodges/ residences within Lapalala Wilderness.

SERVICES AND TRAFFIC

- Increase in traffic on the D1756 and on other internal roads due to increased visitor numbers.
- Increase in the number and frequency of vehicles accessing the site, and the resultant noise, dust, and safety impacts on other road users, residents of the local community and adjacent tourism developments.
- *Operational cost of running services and infrastructure, specifically electricity (positive impact)*

<u>Indirect Impacts:</u>

VISUAL

- Visual impact of Lapalala Founders Lodge on the sense of place and visual character of the region.

<u>Cumulative Impacts:</u>

BIODIVERSITY (FLORA)

- Cumulative loss of Loss of Waterberg Mountain Bushveld vegetation classified as Least Threatened and associated loss of species richness.
- Cumulative reduction and damage to Red List/Conservation important and protected trees.

VISUAL

- The accumulation of built forms and within an otherwise natural environment.

SOCIO-ECONOMIC

- *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).*
- *Promotion of social and economic development in the local communities and improvement in the overall wellbeing of the community (positive impact).*

SERVICES AND TRAFFIC

- Degradation of local roads infrastructure due to increased numbers of tourist vehicles and deliveries.
- Cumulative increase in the number and frequency of vehicles accessing the site, and the resultant noise, dust, and safety impacts for other road users, adjacent tourism development and residents of the local communities.

2.3. Decommissioning Phase

The decommissioning of the facility is not anticipated at this stage and, therefore, no impacts are anticipated

Please refer to Appendix G for the complete impact tables

3. ENVIRONMENTAL IMPACT STATEMENT

Lapalala Wilderness is located within a Critical Biodiversity Area 1, though does not form part of a Threatened Ecosystem. The Lapalala Founders Lodge is located within *Combretum apiculatum – Grewia flavescens* Closed Woodland which forms part of the Waterberg Mountain Bushveld vegetation classified as Least Threatened.

Nationally protected tree species were confirmed to be scattered throughout the development envelope.

The sensitivity of the site has been reduced through construction of the lodge. The former ecological sensitivity would have been Moderate to High but this has been reduced to Moderate. Although the style of construction provides relatively low impact (raised walkways and tents on platforms), much of the vegetation below these structures has been cleared and is unlikely to re-establish underneath these. Drivers with high scores (negative drivers) included Current Ecological State, Potential to Support Biodiversity, Potential to Support Red-Listed Species and Potential for Negative Associated Impacts. Many of these high scores are linked to the study area being situated within a reserve with many potential Red Data Mammal species present. Drivers with low scores (positive drivers) were Relative Size of Impact Footprint and Presence of Unique Habitat / Taxa.

Three (3) heritage sites were found in and around the development envelope and the access track. Sites 1 and 3 have a medium significance rating, while Site 2 has a low significance rating.

Waste treatment is via septic tanks and soak-aways and electricity will be supplied via pole mounted solar panels with a backup diesel generator.

Statement:

The Ecological State of the lodge site prior to construction would likely have been **unmodified** but construction of roads, a workshop, staff and tented guest chalets and a main lodge building has resulted in it becoming **moderately modified.** The Current Ecological State, Potential to Support Biodiversity, Potential to Support Red-Listed Species and Potential for Negative Associated Impacts have all **decreased** from **High** to **Moderate** due to construction of the lodge and associated supporting infrastructure. It is not known what plant species were destroyed during construction but a number of conservation-important species were confirmed during fieldwork or potentially occur.

The layout of Lapalala Founders Lodge respects all buffer zones and slopes within excess of 15 degrees. The chalets are positioned between the trees. The access track marginally encroaches into the 32 m buffer zone around the drainage line.

Heritage Sites 1 and 2 are not impacted upon by the development, however measures will be put in place to ensure that these sites are conserved and protected from any damage. Site 3 has already been impact upon by

the development of the access road. In order to ensure that no further damage is incurred, the site will be clearly marked.

With regard to the construction of an additional 8 guest tented chalets, the construction impacts if effectively managed and all mitigation measures adhered to, will result in predominately **negligible to low** residual significance ratings.

Operational impacts can be similarly mitigated and will also result in predominately **low** residual significance impacts. However, emissions from vehicles and degradation of local roads will have a **moderate** post mitigation significance.

These low residual significance ratings are due to the fact that the development footprint is relatively small and the nature of the buildings (canvas tents on raised wooden platforms) is of a low impact. The chalets themselves were also positioned amongst the trees which then reduced the need for additional clearing of vegetation and large trees. The same principle was applied to the construction of the road. Additionally, the use of renewable energy sources is preferable.

Additionally, positive impacts associated with the development of the Lapalala Founders Lodge include employment opportunities and job creation during both the construction of the additional 8 guest chalets and the operational phase, skills development and training and diversifying the tourism offerings within the region.

With the above in mind it is recommended that environmental authorization is granted for the existing Lapalala Founders Lodge and the construction of an additional 8 guest tented chalets.

SECTION E: RECOMMENDATION OF PRACTITIONER

The construction and development of the Lapalala Founders Lodge has resulted in the permanent removal of indigenous vegetation within an area classified as a CBA 1, as well as, the reduction in faunal habitat. These impacts are, however, considered to be low owing to the large size of Waterberg Mountain Bushveld, the low number of endemics in the savanna biome within which the study area is situated and that all vertebrate fauna present would only occasionally utilise the footprint and would not be resident or restricted to it.

As discussed in the preceding section, all negative impacts can be effectively mitigated and managed to acceptable levels (low residual impact). Mitigation measures mentioned in this report, the EMPr and the specialist reports must be adhered to and implemented at all times during both the construction of the additional 8 guest tented chalets and for the duration of the operational phase.

SECTION F: APPENDICES

The following appendixes must be attached as appropriate:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

- Appendix D.1: Geohydrological Report
- Appendix D.2: Heritage Impact assessment
- Appendix D.3: Ecological Impact Assessment

Appendix D.4: Services Report

Appendix E: Public Participation

Appendix F: Environmental Management Programme (EMPr)

Appendix G: Impact Tables Assessment

Appendix H: Other information

APPENDIX A: SITE PLANS AND LAYOUT MAPS

APPENDIX B: PHOTOGRAPHS

APPENDIX C: FACILITY ILLUSTRATIONS

APPENDIX D: SPECIALIST REPORTS

APPENDIX D.1: GEOHYDROLOGICAL REPORT

APPENDIX D.2: HERITAGE IMPACT ASSESSMENT

APPENDIX D.3: ECOLOGICAL IMPACT ASSESSMENT

APPENDIX D.4: SERVICES REPORT

APPENDIX E: PUBLIC PARTICIPATION

APPENDIX F: ENVIRONMENTAL MANAGEMENT PROGRAMME

APPENDIX G: IMPACT TABLES

APPENDIX H: OTHER INFORMATION