DRAFT BASIC ASSESSMENT REPORT
February 2014

REMAINDER PORTION 4 AND PORTION 8, RIETVLEY 28 KU, PROPOSED EXTENSION SHARE BLOCK PRIVATE RESORT DEVELOPMENT

DEDET Reference 17/2/3/E-240

Prepared for:

Adolph Private Game Reserve

Prepared by:

NuLeaf PLANNING & ENVIRONMENTAL

For submission to:

the dedet
Department:
Economic Development, Environment and Tourism
MPUMALANGA PROVINCIAL GOVERNMENT

the dedet

Department:
Economic Development, Environment and Tourism
MPUMALANGA PROVINCIAL GOVERNMENT

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2010, promulgated in terms of the National Environmental Management Act, 1998(Act No. 107 of 1998), as amended.

(For applicant / EAP to complete)

File Reference Number:	17/2/3/E-240
Project Title:	RIETVLEY 28 KU REMAINDER PORTION 4 AND PORTION 8, SHARE BLOCK PRIVATE RESORT DEVELOPMENT
Name of Responsible Official:	Robyn Luyt

(For official use only)

NEAS Reference Number:	
Date Received:	

Kindly note that:

1. Required information must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. Tables can be extended as each space is filled with typing.
2. Where applicable **black out** the boxes that are not applicable in the form.
3. An incomplete report may be returned to the applicant for revision.
4. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
5. All reports (draft and final) must be submitted to the Department at the address of the relevant **DISTRICT OFFICE** given below or by delivery thereof to the relevant **DISTRICT OFFICE**. Should the reports not be submitted at the relevant district office, they will not be considered.
6. No faxed or e-mailed reports will be accepted.
7. One copy of the draft version of this report must be submitted to the relevant district office. The case officer may request more than one copy in certain circumstances.
8. **Copies of the draft report must be submitted to the relevant State Departments / Organs of State for comment.** In order to give effect to Regulation 56(7), proof of submission/delivery of the draft documents to the State Departments / Organs of State must be attached to the draft version of this report.
9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
10. All specialist reports must be appended to this document, and all specialists must complete a declaration of independence, which is obtainable from the Department.

DEPARTMENTAL DETAILS

HEAD OFFICE (18 Jones Street, Nelpruit)	EHLANZENI DISTRICT (50 Murray Street, Nelspruit)	NKANGALA DISTRICT (Pavilion Centre, Cnr Botha & Northey Streets, Witbank)	GERT SIBANDE DISTRICT (13 De Jager Street, Ermelo)
Attention: Directorate: Environmental Impact Management Private Bag X 11215 Nelspruit, 1200 Queries should be directed to the Directorate: Environmental Impact Management at: Tel: (013) 759 4000 Fax (013) 759 4165	Attention: Directorate: Environmental Impact Management Private Bag X 11215 Nelspruit, 1200 Queries should be directed to the Directorate: Environmental Impact Management at: Tel: 0824068831 Fax: Email: nvmdhluli@mpg.gov.za	Attention: Directorate: Environmental Impact Management P. O. Box 7255 Witbank, 1035 Queries should be directed to the Directorate: Environmental Impact Management at: Tel: 0136902595/6901358/0766441707 Fax: Email:dtswai@wit.mpu.gov.za	Attention: Directorate: Environmental Impact Management P. O. Box 2777 Ermelo, 2351 Queries should be directed to the Directorate: Environmental Impact Management at: Tel: 0178192828/9 0178114815 0798419582 Fax: E mail:stmarabane@mpg.gov.za

Applications to be sent direct to district office

SECTION A: BACKGROUND INFORMATION

Project applicant:	NDLOPFU SHARE BLOCK (PTY) LTD		
Trading name (if any):	n/a		
Contact person:	MR. DIEDERIK J FOUCHE		
Physical address:	2 Eglin Road, Sunninghill, 2157		
Postal address:	Private Bag X36		
Postal code:	2157	**Cell:**	082 551 0091
Telephone:	011 797 4291	**Fax:**	011 209 4291
E-mail:	diederik.fouche@za.pwc.com		

Environmental Assessment Practitioner:	NULEAF PLANNING AND ENVIRONMENTAL PTY LTD		
Contact person:	PETER VELCICH		
Postal address:	8a TREVOR STREET, MURRAYFIELD, PRETORIA		
Postal code:	0184	**Cell:**	0824420220
Telephone:	0824420220	**Fax:**	+27 86 571 6292
E-mail:	peter@nuleafsa.co.za		
Qualifications:	Registered professional Landscape Architect (PrLArch ML Pret)		
Professional affiliations (if any):	South African Council for the Landscape Architectural Profession SACLAP (No. 20136)		

SECTION B: DETAILED DESCRIPTION OF THE PROPOSED ACTIVITY

Describe the activity, which is being applied for, in detail. The description must include the size of the proposed activity (or in the case of linear activities, the length) and the size of the area that will be transformed by the activity.

The activity includes the development of a share block private resort on the Remainder of Portion 4 and Portion 8 of the farm Rietvley 28 KU.

Rietvley 28KU is situated in Mpumalanga Province, bordering the Kruger National Park to the north. The farm shares a common boundary with the Umbabat Nature Reserve to the south and east, the Klaserie Nature Reserve to the west. The Timbavati Nature Reserve is located 5 km south of the farm. The Olifants River passes the farm less than 4km to the north.

The Remainder of Portion 4 and Portion 8 of Rietvley 28KU covers approximately 1331 ha of land, largely devoid of infrastructure, with the exception of a farmhouse and various outbuildings, sheds and stores. Game drive tracks criss-cross the farm.

The proposed project, for which Environmental Authorisation is required, includes the following basic activities

- Six new holiday homes, single storey thatched structures, with a maximum of 12 beds per house.
- Short (100-200m) access tracks to each site.
- A short 100m gravel link road providing access from the neighbouring share block development, Ndolpfu Share Block Pty Ltd

Each of the proposed 6 development sites is identified by means of a centre point from which a 100m diameter development envelope is defined. Prospective purchases of such sites will be required to developed their holiday homes within such envelope.

The total footprint (cleared area) of the collective development is not expected to exceed 3000 square meters.

This development will be an extension of an existing share block scheme situated on Ndlopfu 102KU, an adjacent property. The current Ndlopfu share block development includes 25 holiday homes, reception and clubhouse, staff quarters and various stores and sheds.

SECTION C: PROPERTY/SITE DESCRIPTION

Provide a full description of the preferred site alternative (farm name and number, portion number, registration division, erf number etc.):

The six preferred site alternatives are all located on the Remainder Portion 4 and Portion 8 of the Farm Rietvley, registration division 28 KU, Province of Mpumalanga.
The following 21 digit SG Numbers apply:

- T0KU00000000002800004
- T0KU00000000002800008

Indicate the position of the activity using the latitude and longitude of the centre point of the preferred site alternative. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection. The position of alternative sites must be indicated in Section B of this document.

SITE	Latitude (S):		Longitude (E):	
1	24°	09'25,9"	31°	17'54,6"
2	24°	09'41,6"	31°	17'50,5"
3	24°	09'42,5"	31°	17'28,3"
4	24°	09'25,5"	31°	17'26,1"
5	24°	09'16,7"	31°	17'11,4"
6	24°	08'53,2"	31°	17'11,2"

SITE OR ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as an appendix to this document.

The site or route plans must be at least A3 and must include the following:

6.1 a reference no / layout plan no., date, and a legend / land use table
6.2 the scale of the plan which must be at least a scale of 1:2000;
6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
6.4 the exact position of each element of the application as well as any other structures on the site;
6.5 the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
6.6 all indigenous trees taller than 1.8 metres and all vegetation of conservation concern (protected, endemic and/or red data species);
6.8 servitudes indicating the purpose of the servitude;
6.9 sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
- watercourses and wetlands;
- the 1:100 year flood line;
- ridges;
- cultural and historical features;

6.9 10 metre contour intervals

SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached as an appendix to this form**.**

FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 as an appendix for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

SECTION D: BASIC ASSESSMENT REPORT

Prepare a basic assessment report that complies with Regulation 22 of the Environmental Impact Assessment Regulations, 2010. The basic assessment report must be attached to this form and must contain all the information that is necessary for the competent authority to consider the application and to reach a decision contemplated in Regulation 25, and must include:

		(Checklist for official use only)
1.	A description of the environment that may be affected by the proposed activity and the manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity.	
2.	An identification of all legislation and guidelines that have been considered in the preparation of the basic assessment report.	
3.	Details of the public participation process conducted in terms of Regulation 21(2)(a) in connection with the application, including – (i) the steps that were taken to notify potentially interested and affected parties of the proposed application; (ii) proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the proposed application have been displayed, placed or given; (iii) a list of all persons, organisations and organs of state that were registered in terms of regulation **55** as interested and affected parties in relation to the application; and (iv) a summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues;	

4.	A description of the need and desirability of the proposed activity;	
5.	A description of any identified alternatives to the proposed activity that are feasible and reasonable, including the advantages and disadvantages that the proposed activity or alternatives will have on the environment and on the community that may be affected by the activity;	
6.	A description and assessment of the significance of any environmental impacts, including— (i) cumulative impacts, that may occur as a result of the undertaking of the activity or identified alternatives or as a result of any construction, erection or decommissioning associated with the undertaking of the activity; (ii) the nature of the impact; (iii) the extent and duration of the impact; (iv) the probability of the impact occurring; (v) the degree to which the impact can be reversed; (vi) the degree to which the impact may cause irreplaceable loss of resources; and (vii) the degree to which the impact can be mitigated;	
7.	Any environmental management and mitigation measures proposed by the EAP;	
8.	Any inputs and recommendations made by specialists to the extent that may be necessary;	
9.	A draft environmental management programme containing the aspects contemplated in regulation **33**;	
10.	A description of any assumptions, uncertainties and gaps in knowledge;	
11.	A reasoned opinion as to whether the activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation	
12.	Any representations, and comments received in connection with the application or the basic assessment report;	
13.	The minutes of any meetings held by the EAP with interested and affected parties and other role players which record the views of the participants;	
14.	Any responses by the EAP to those representations, comments and views;	
15.	Any specific information required by the competent authority; and	
16.	Any other matters required in terms of sections 24(4)(a) and (b) of the Act.	

The basic assessment report must take into account -
(a) any relevant guidelines; and
(b) any departmental policies, environmental management instruments and other decision making instruments that have been developed or adopted by the competent authority in respect of the kind of activity which is the subject of the application.

* In terms of Regulation 22(4), the EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in subregulation 22(2)(h), exist.

Have reasonable and feasible alternatives been identified, described and assessed?	YES	NO
If NO, the motivation and investigation required in terms of Regulation 22(4) must be attached as an Appendix to this document		

SECTION E: CONSULTATION WITH OTHER STATE DEPARTMENTS

Provide a list of all State Departments / Organs of State that have been consulted and registered as interested and affected parties, and to whom draft reports have been submitted for comment. **Proof of submission / delivery of the draft report to all State Department / Organs of State must be attached to this document.**

Department:	DWA: Water Sector Regulation & Use: Strategic Environmental Assessment		
Contact person:	Shabangu Sampie Howard		
Postal address:	Private Bag X11259, Nelspruit		
Postal code:	1200	**Cell:**	082 857 4275
Telephone:	0137597300	**Fax:**	
E-mail:	ShabanguS2@dwa.gov.za		

Department:	Mpumalanga Department of Health		
Contact person:	LH Modipane		
Postal address:	No. 7 Government Boulevard, Building No. 3, Riverside Park, Extension 2, Nelspruit		
Postal code:	1200	**Cell:**	
Telephone:	013 7958600	**Fax:**	013 7955989
E-mail:			

Department:	Mpumalanga Department of Health		
Contact person:	Victor Mkhari		
Postal address:	No. 7 Government Boulevard, Building No. 3, Riverside Park, Extension 2, Nelspruit		
Postal code:	1200	**Cell:**	
Telephone:	013 766 3429	**Fax:**	013 766 3458
E-mail:	CalebM@social.mpu.gov.za		

Department:	South African Heritage Resources Agency		
Contact person:	Jenna Lavin		
Postal address:	PO Box 4637, Cape Town		
Postal code:	8000	**Cell:**	
Telephone:	021 462 4502	**Fax:**	021 462 4509
E-mail:	jlavin@sahra.org.za		

Department:	Klaserie PNR		
Contact person:	Pieter Steenkamp		
Postal address:	P.O.Box 150; Hoedspruit		
Postal code:	1380	**Cell:**	
Telephone:	015 793 3051	**Fax:**	0866 202 418
E-mail:	admin@klaseriereserve.co.za		

SECTION F: APPENDICES

The following appendices must be attached to the basic assessment report as appropriate:

Appendix A: Public Participation Process
Appendix B: Supporting Documentation
Appendix C: Environmental Management Programme

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Appendices:

1. INTRODUCTION

NuLeaf Environmental and Planning (Pty) Ltd was appointed by Ndlopfu Share Block (Pty) Ltd to undertake the required actions and assessments to apply for Environmental Authorization and land-use rights from Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET: the decision making authority) for the proposed construction of a private resort consisting of 6 holiday homes (72 beds) and an existing residence (12 beds) in Portion 4 and 8 of farm Rietvley, Bushbuckridge Local Municipality.

The individual activities which are being applied for in terms of GN Regulations 544 and 546 of 18 June 2010 issued in terms of sections 24(2) and 24D of the National Environmental Management Act (NEMA, Act 107 of 1998), include the following:

NUMBER, DATE AND NOTICE	ACTIVITY NO.	DETAILED LISTING
No R546 of 2010	4 (ii) (bb)	The construction of a road wider than 4 meters with a reserve less than 13.5 meters, Outside urban areas, in National Protected Area Expansion Strategy Focus areas
No R546 of 2010	4 (ii) (gg)	The construction of a road wider than 4 meters with a reserve less than 13.5 meters, Outside urban areas, in: Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve;
No R546 of 2010	6 (ii) (bb)	The construction of resorts, lodges or other tourism accommodation facilities that sleep 15 people or more outside urban areas, In National Protected Area Expansion Strategy Focus areas
No R546 of 2010	6 (ii) (gg)	The construction of resorts, lodges or other tourism accommodation facilities that sleep 15 people or more outside urban areas: In areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve
No R544 of 2010	24	The transformation of land bigger than 1000 square metres in size, to residential, retail, commercial, industrial or institutional use, where, at the time of the coming into effect of this Schedule such land was zoned open space, conservation or had an equivalent zoning.
No R544 of 2010	23 (ii)	residential, retail, commercial, recreational, industrial or institutional use, outside an urban area and where the total area to be transformed is bigger than 1 hectare but less than 20 hectares
No R546 of 2010	13 (c) (ii) (gg)	The clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, except where such removal of vegetation is required for: (1)the undertaking of a process or activity included in the

		list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of2008), in which case the activity is regarded to be excluded from this list. (2)the undertaking of a linear activity falling below the Thresholds mentioned in Listing Notice 1 in terms of GN No. 544 of 2010. Outside urban areas, Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined.
No R546 of 2010	19 (ii) (bb)	The widening of a road by more than 4 meters, or the lengthening of a road by more than 1 kilometre. Outside urban areas, in National Protected Area Expansion Strategy Focus areas
No. R546 of 2010	10 (ii) (gg)	The construction of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres, Outside urban areas, in Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve

2. DESCRIPTION OF RECEIVING ENVIRONMENT

2.1 Background of Ndlopfu Private Game Reserve

Ndlopfu Private Game Reserve is an unfenced, privately owned bushveld getaway, situated in the heart of the Lowveld, 50 km from Hoedspruit, alongside the Umbabat Nature Reserve. It is bordered by the well-known Timbavati and Klaserie Nature Reserves, which form part of the Greater Kruger National Park and has a diversity of fauna and flora which is unsurpassed. It consists of 1200ha Mopane and Combretum veld and its members have traversing rights over a further 800 hectares on neighbouring farms.

Ndlopfu is situated in the heart of a protected environment, and it's owners are committed to the conservation of the area. The farm is well managed by the members who are committed to the improvement of the farm in an ecologically friendly and scientific manner.

There are 25 existing houses on Ndlopfu and they are face-brick, thatched and very private and blend in perfectly with the environment. Members have access to a lovely clubhouse, with a swimming pool, lapa and a viewing area over a nearby waterhole and open plain.

2.2 History of the Ndlopfu Private Game Reserve

The farm, Ndlopfu, as it is known today was originally part of the farm Rietvlei. It was owned by Herman de Jager and his wife and was utilized as a cattle farm in the 1950's. Mrs. de Jager planted and marketed tomatoes on the open area below the farm manager's house. At that stage the dwellings consisted only of two rondavels linked by a stoep (the current upgraded guest cottages).

In 1984, Mr. John Jacobs purchased 843 hectares from, the then owner, Mrs. Amanda van der Westhuizen, a daughter of the de Jagers. Mr. Jacobs decided to develop the farm as a game farm and as a share block. Originally it was envisaged that 50 stands would be made available.

However, after some of the stands were sold (hence the close proximity of certain houses), John Jacobs and the first owners decided to decrease the number of shareholders to 20. In 1992 the portion of the farm, now known as Baobab, was purchased from Dr. Reinhold Joubert for an amount of R 1, 8 million. This farm, totalling 390 ha, was consolidated with the original farm purchased from Amanda van der Westhuizen and the area that now totals 1233 ha became known as NDLOPFU.

After negotiating with the National Parks board, it was decided that the Umbabat would form part of the Association of Private Nature Reserves, together with the Timbavati Private Nature Reserve and the Klaserie Private Nature Reserve, totalling an area of 136 000 ha.

The fences between the Kruger National Park and the three reserves were removed in 199 allowing free migration of game on a total area of more than 2 million hectares. In 1995 the members decided to reinstate the dam wall in the Ntsiri River and raise it to create a dam in the river bed, which, when full, extends for approximately 2 km.

The farm has a large biodiversity of fauna and flora. Of the big five, 4 species are regulars, namely lion, elephant, buffalo and leopard. Occasionally rhino move through the farm. Wild dogs are also regularly seen at Ndlopfu farm and hippo have been spotted grazing on the open area in front of the clubhouse.

Ndlopfu borders the Klaserie Nature Reserve in the West, while to the East it borders Ntsiri. Adjacent to the main entry road is the Timbavati Nature Reserve. There are currently 25 shareholders on the

farm. As a norm, no hunting is allowed on the farm whatsoever, and is utilized as a conservation area only.

Ndlopfu Private Game Reserve is a privately owned game reserve which has 25 well-spaced units. The fundamental reason for constructing an additional 6 holiday homes is to fund the acquisition of farm Rietvley to increase and extend its nature/game viewing area. Since the new development can be seen as extension of the existing Ndopfu Private Game Reserve, it shall therefore be subject to Ndlopfu Management, Contractors regulations and Conduct Rules.

2.3 Local Authorities and Magisterial Districts

Local authority: The property in question is within the area of jurisdiction of the Bushbuckridge Local Municipality and the Ehlanzeni District Municipality.

Magisterial district: The property is situated in the Phalaborwa Magisterial District on the Province of Mpumalanga.

2.4 Description, conditions of title and size of the property

- The *Remainder of Portion 4* of the farm Rietvley 28 K U is *722,1841 ha* in extent.
- *Portion 8* of the farm Rietvley 28 K U is *608, 9744 ha* in extent.
- The *total area* of the two farms is *1331, 1585 ha*.

There are *no restrictive conditions* registered against this property that prohibit the usage thereof for the purpose of a private resort development.

Ndlopfu Share Block (Pty) Ltd is the registered owner in terms of title deedsT9996/2013.

2.3 Climate

Rainfall within this veld type variation fluctuates between 450-650 mm per annum. The study area has an elevation between 320 m and 400 m (variation within the veld type is 350 m - 500 m). Temperatures given for this veld type range between – 4 °C to 45 °C, with an average of 22 °C. However, climate on Rietvley is expected to have higher minimum temperatures.

(Extracted from De Wet Report, 2004)

2.4 Geology

The geological substrate at Rietvley consists mainly of Milky-Quartz Pegmatite Gneiss. (A pegmatite is a very course-grained igneous rock having a grain size of 3cm or larger and usually refers to rock of a Granite composition, but the term is also used in combination with plutonic rocks such as very course-grained Gabbro-Pegmatites). These Pegmatites often show evidence of having assimilated the Granitic country rock. Dark coloured Metagabbro rocks are often seen at outcrops in association with Quartz-veins. The Rietvley terrain also contains many Dolorite dykes. However, the layman knows the general geology within the veld type as Granite.

(Extracted from De Wet Report, 2004)

2.5 Vegetation

Acocks (1975) described the vegetation of the study area as Arid Lowveld, one of the Tropical Bush and Savanna Types (Veld Type 11). Bredenkamp and Van Rooyen (1998) classified this veld type as Mixed Lowveld Bushveld (Veld Type 19), one of the veld types of the Savanna Biome.

De Wet (2004) notes that all the proposed development sites all reside on the Broad-leaved Communities of the Shallow Soils on the crests and midslopes – Red Bushwillow (Combretumapiculatum) / Mopane(Colophospermummopane) short/low thickets on lithocutanic sandy to sandy loams viapebble-bed (Glenrosa and Cartref forms).

2.5 Land Use

The property is currently used as a game farm and supports one residential building (the 'farmhouse'), a workshop and shed, staff accommodation and a private runway.

2.6 Cultural Heritage

The sites show no apparent signs of historic activity and a letter of exemption from conducting a heritage and archaeological impact assessment has been lodged. In 2004 an archaeological and cultural assessment was undertaken in the remainder of portion 4 and 5, during the first phase of residential development within the Nature Reserve. The current study area coincides with part of the study covered in 2004. Majority of the findings from the study done by Maguire & van Wyk (2004), consisted of widely and sparsely scattered Early Stone Age tools including hand axes, flakes, choppers, cobles and cores. These tools were rated of low significance as they were found out of context and were isolated. Provisions have been made in the EMP in the event that any heritage artefacts are discovered.

3. DESCRIPTION OF PROPOSED ACTIVITY

3.1 Status Quo

The Rietvley Farm (Rietvley 28KU), bordering the Ndlopfu Game Reserve was resold to a number of different investors. The southern portions, Remainder of Portion 4 and Portion 8 were acquired by the Shareholders of Ndlopfu Shareblock (Pty) Ltd which is located adjacent to the above mentioned properties. Ndlopfu is currently home to 25 privately owned holiday homes.

Ndlopfu Share Block (Pty) Ltd has expressed an intention to expand their business enterprise into the new "Rietvley" Section of the farm. This expansion proposes to develop an additional six privately owned holiday homes.

3.2 Proposed Project

The proposed project, for which Environmental Authorisation is required, includes the following basic activities:

- Six new holiday homes, single storey thatched structures, with a maximum of 12 beds per house.
- Short (100-200m) access tracks to each site.
- A short 100m gravel link road providing access from the neighbouring share block development, Ndolpfu Share Block Pty Ltd

Each of the proposed 6 development sites is identified by means of a centre point from which a 100m diameter development envelope is defined. Prospective purchases of such sites will be required to develop their holiday homes within such an envelope.

The total footprint (cleared area) of the collective development is not expected to exceed 3000 square meters.
This development will be an extension of an existing share block scheme situated on Ndlopfu 102KU, an adjacent property. The current Ndlopfu share block development includes 25 holiday homes, reception and clubhouse, staff quarters and various stores and sheds.

The development of these holiday homes is intended to have a low impact and developed to ensure that all structures blend into the environment.

Existing trees and vegetation will be used as screens to ensure privacy and create shade. No big trees will be removed, but rather incorporated into the design of the units and facilities. The units will also be single story and painted natural colours to blend in with the surrounding environment.

3.3 Proposed Project: Locality of six sites

The proposed locations for the holiday homes are as follows:

Site 1: Coordinates S24° 09' 25.9" E31° 17' 54.6".
Site 2: Coordinates S24°09' 41.6" E31° 17' 50.5"
Site 3: Coordinates S24°09' 42.5" E31° 17' 28.3"
Site 4: Coordinates S24°09' 25.5" E31° 17' 26.1"
Site 5: Coordinates S24°09' 16.7" E31° 17' 11.4"
Site 6: Coordinates S24°08' 53.2" E31° 17' 11.2"

The Appendix B.2.1 illustrates the locality of each site and photo plate which follows provides an aerial view of each site.

3.4 Roads *

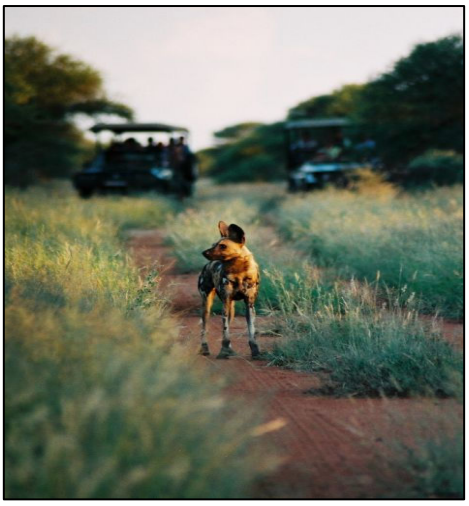
A link road (approximately 100m in length) between Ndlopfu and Rietvley will be built to link the two road systems. This will be a Category C road which is a road on which some imported gravel has been placed, but the in situ material is cleared of vegetation and lightly compacted by low mass compaction equipment.

The existing roads will be used for traversing as well as access to the new proposed holiday cottages. The access roads to the 6 new sites will be typically Category D roads and each will be between 50m and 200m in length. Category D roads are the simplest "low volume roads" and generally consist of parallel ruts separated by vegetation, delineating (for example) an access route to a water hole or links between two-track ring roads.

There are a number of interlinking roads across the border between Portions 8 and Portion 9 of Rietvley which have to be closed due to the new and different ownership of land, and become cul-de-sacs. Traversing on adjacent private game reserves is strictly forbidden.

Investigations have indicated that there is adequate quality gravel material available for road construction and maintenance at various localities on Rietvley, especially from broken or old earth dam walls.

The roads are typically winding game viewing routes with flat to mild gradients. Less than 5% of the total road network requires 4x4 traction in normal weather conditions.



Images of Category C Road (Left) and Category D Road (Right)

3.5 Storm Water *

The Rietvley topography generally slopes mildly from the north to the south, towards the NtsiriRiver. The topography favours natural drainage and run-off without any critical concentration points. No existing infrastructure is affected by 1:100 year flood lines.

The existing Rietvley house is located on a high point. The positions of the proposed 6 stands were selected away from natural water courses, or positions where any surface run-off could possibly concentrate or pond. These 6 sites will not be affected by the 1:100 year floodlines.

Abnormal rain or flooding would affect only isolated positions along game viewing routes, and alternative escape routes would always be available.

3.6 Water Supply *

Potable water is available from 3 existing boreholes on the farm, located as follows:

- Borehole No. 1 is located at the Rietvley Dam approximately 500m north of the Rietvley residence. (Yield of 3 500 l/ hour).
- Borehole No.2 is located approximately 700m west of the Rietvley Dam. (Yield of 3000 l/ hour)
- Borehole No. 3 is located at the Rooibok Pan approximately 2 300m south west of the Rietvley residence. (Yield 4 500 l/hour)

The average daily water demand at each of the proposed 6 new Rietvley stands and the Rietvley house is estimated at 150l/day for a maximum of 12 persons totalling 1 800l/day. Draw-down will be conducted on boreholes No. 1, 2 and 4 during December 2013 to confirm their yield. However it is anticipated that the boreholes will have adequate yield to supply the Rietvley house and the proposed 6 new stands. (The results will be added as an Addendum to the application when available).

The proposed water reticulation system to the 6 new sites will entail 25mm to 50mm diameter Class 6 HDPe pipes installed in pipe trenches, and the routes will follow existing roads as far as possible for maintenance purposes. The two main risks of interruption in the supply system are elephant and veld fires, therefore a minimum cover of 800mm will be maintained, and pipefittings such as air valves and scour valves will be installed inside buried masonry or concrete structures.

3.7 Sanitation

The geology and topography lends itself to sewage and waste water disposal by soak-away systems of French drains as a preferred way of sanitation systems.

The in-situ soils in the region of the Rietvley house and the proposed 6 sites considered for development have a high permeability and absorption rate, with no visible water table or high moisture content.

Septic tanks with appropriately sized soak-away systems are recommended for all domestic generated sewage and waste water.

Pre-fabricated HDPe type septic tanks will be installed.

The sub-surface area of soak-away systems for each site should be investigated and tested by a suitably qualified engineer during construction phase to ensure that a percolation rate of more than 1 000mm/h is achieved. Proposals and details of septic tank systems should be included in the building plans and a suitable proposal made by an engineer. Permeability tests may be required should there be any doubt that an acceptable percolation rate cannot be achieved.

3.8 Solid Waste *

Presently solid waste is collected from individual Ndlopfu units by Management. Members are encouraged to separate domestic waste, glass and plastic into separate bins.

Solid waste is transported to the Ndlopfu waste management building, where further selection and classification is done. The waste is collected by a contracting recycling company, Shadulo, and transported to the Hoedspruit Municipal disposal site.

3.9 Structural Issues *

It is estimated that the in-situ soil conditions at all 6 sites would be suitable for the founding of single storey buildings. Each site was inspected by a professional structural engineer, and there was no indication or presence of conditions that would require special founding methods. It is expected that load bearing capacities in excess of 100kPa can be achieved. There was no sign of expansive or collapsible soils.

3.10 Electrical Power Supply *

The Rietvley residence has an elaborate and effective solar energy supply system which should be retained. Ndlopfu has an extensive Eskom power supply system, backed up by a generator system for the administrative headquarters.

This 3,3kV electricity supply system has capacity to be extended to supply power to the proposed 6 new Rietvley sites. Each house will be supplied with a 150A single phase connection.

Similar to the Ndlopfu, the reticulation system will be by trenched cable to individual kiosks, strategically positioned to service the proposed development. The emphasis of the supply system will be to ensure minimum visual impact.

*** Details of services provided in Section 3.4 – 3.10 were sourced from the Rietvley Services report compiled by Miletus Consulting. (Refer to Appendix B 3.3)**

3.11 Land Use

The farm has for the last number of years, functioned as a game farm. The use/enjoyment was restricted to one owner. Hunting was used as a method of obtaining an income.

The natural vegetation, especially the areas along the water courses, is characterized by large trees and lush vegetation that creates an ideal habitat for many species of game and birds. A wide variety of game, existing game viewing roads and guided walks will entice the visitor to explore. From the above it is clear that the property has a far better recreational/nature reserve potential than agricultural "production" value.

The proposed private resort development will ensure that this natural recreational potential of the property is utilized to its full extent.

It should also be pointed out that some of the properties in the area are being used as game farms or nature areas with private resort developments and some of the other farms function as game farms/nature areas with only one residence per property.

The properties are thus, used for game farms/nature areas with holiday homes/residences at various densities. The proposed development (at a very low density of 1 holiday home/190 ha) will be one of the private resort developments with the lowest density in the area.

It is estimated that the ***footprint*** of the new proposed development will be less than ***⅕ % ha of the 1331 ha***. The remainder of the property will be left untouched. The dominating land-use will thus remain game farm/nature area.

4. APPLICABLE LEGISLATION

4.1 National Environmental Management Act (NEMA)

The proposed activity triggers activities as listed in GN Regulations 544 and 546 of 18 June 2010 issued in terms of sections 24(2) and 24D of the National Environmental Management Act (NEMA, Act 107 of 1998).

The relevant activities include the following:

NUMBER, DATE AND NOTICE	ACTIVITY NO.	DESCRIPTION OF EACH LISTED ACTIVITY AS PER DETAILED PROJECT DESCRIPTION
No R546 of 2010	4 (ii) (bb)	Construction of 100m long link road between the neighbouring property and Rietvley, as well as 6x200 to 300m access 2 spoor tracks to proposed holiday homes.
No R546 of 2010	4 (ii) (gg)	Construction of a 100m long link road between the neighbouring property and Rietvley, as well as 6 x200m to 300m access 2 spoor tracks to proposed holiday homes.
No R546 of 2010	6 (ii) (bb)	The construction of 6 x 12 bed holiday homes (72 beds total) outside of an urban area, within a National Protected Area Expansion Strategy focus area.
No R546 of 2010	6 (ii) (gg)	The construction of 6 x 12 bed holiday homes (72 beds total) outside of an urban area, within 10km of a National or within 5km of a Protected Area.
No R544 of 2010	24	The transformation of undeveloped land bigger than 1000 square metres in size to residential status (6 holiday homes), such land currently zoned agriculture.
No R544 of 2010	23 (ii)	The transformation of undeveloped land of 1 hectare to residential (6 holiday homes), outside an open area.
No R546 of 2010	13 (c) (ii) (gg)	The clearance of a total area of 1 hectare of indigenous vegetation for the construction of the tracks, holiday homes and service trenches (outside of an urban area, within 10km of a National Park or within 5 km of a Protected Area.
No R546 of 2010	19 (ii) (bb)	Development of a 2-spoor access tracks to the six holiday homes, total combined length potentially 1 km. (outside of an urban area, within an NPAES focus area).
No. R546 of 2010	10 (ii) (gg)	Development of 2 spoor access tracks to the six holiday homes, total combined length potentially 1km (outside of an urban area, within 10km of a National Park or within 5km of a protected area).

4.2 Additional legislation

The following legislation may also be applicable:

- Constitution of Republic of South Africa (108 0f 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.

- Conservation of Agricultural Resources (Act 43 of 1983): Provides for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.

- 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.

- National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004): The purpose of the Biodiversity Act is to provide for the management and conservation of South Africa's biodiversity within the framework 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.

- 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.

- National Forests Act, 1998 (Act no 84 of 1998): This Act provides for the management, utilisation and protection of forests through the enforcement of permitting requirements associated with the removal of protected tree species, as indicated in a list of protected trees (first promulgated in 1976 and updated since). Permits are administered by the Department of Agriculture, Forestry and Fisheries (DAFF).

- National Heritage Resources Act 25 of 1999: The National Heritage Resources Act legislates the necessity for cultural and heritage impact assessment in areas earmarked for development, which exceed 0.5 hectares (ha) and where linear developments (including pipelines) exceed 300 metres in length. The Act makes provision for the potential destruction to existing sites, pending the archaeologist's recommendations through permitting procedures. Permits are administered by the South African Heritage Resources Agency (SAHRA).

- National Veld and Forest Fire Act, 1998 (Act No. 1010 of 1998): This Act provides for the management, utilisation and protection of forests through the enforcement of permitting requirements associated with the removal of protected tree species, as indicated in a list of protected trees (first promulgated in 1976 and updated since). Permits are administered by the Department of Agriculture, Forestry and Fisheries (DAFF).

- National Water Act 108 of 1997: The National Water Act, 1998 (Act No. 36 of 1998) aims to provide management of the national water resources to achieve sustainable use of water for the benefit of all water users. This requires that the quality of water resources is protected

as well as integrated management of water resources with the delegation of powers to institutions at the regional or catchment level. The purpose of the Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in responsible ways.

- National Environmental Management Waste Act 59 of 2008. The Waste Act reforms the law regulating waste management in order to protect environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development; to provide for institutional arrangements and planning matters; to provide for national norms and standards for regulating the management of waste by all spheres of government; to provide for specific waste management measures; to provide for the licensing and control of waste management activities; to provide for the remediation of contaminated land; to provide for the national waste information system; to provide for compliance and enforcement; and to provide for matters connected therewith.

- Occupational Health and Safety Act, 1993 (Act No. 85 of 1993):The purpose of this Act is to provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with, the activities of persons at work; to establish an advisory council for occupational health and safety; and to provide for matters connected therewith.

4.3 Alignment with Ehlanzeni Integrated Development Plan

One of the objectives of the Ehlanzeni District Municipality is to develop and implement tourism as a strategy for Growth and Development. This will be done through:

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

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

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

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

To optimize tourism and its associated activities in Ehlanzeni within the next five years by increasing the number of tourists visiting the District from 900 000 to 1.8 million; thereby creating new employment opportunities in the tourism industry.

- To raise the living standards of historically disadvantaged communities through the economic benefits generated by tourism activities within this area, ensuring that the impact of tourism development reaches the historically disadvantaged communities and ensuring integration with Local Economic Development when implementing tourism development projects.

Other objectives which have been formulated as listed below:

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

4.4 Alignment with Ehlanzeni Spatial Development Framework

Ehlanzeni is strategically well positioned within an international, regional and southern African context. Existing spatial development initiatives of a regional and local importance include the Maputo Development Corridor Spatial Initiative, the Tourism and Biodiversity corridor and the Limpopo Transfrontier Park. The Tourism and Biodiversity Corridor includes the parts of south eastern Mpumalanga, northern Swaziland and southern Mozambique, and is closely associated with the Maputo Corridor Spatial Initiative. It adds a further dimension to the Maputo Corridor in the sense that it promotes the utilisation of the undeveloped tourism development potential in rural areas that house the poor communities. These initiatives span over international boundaries and are managed by international agreements.

Although some of these initiatives are still in a very early stage of implementation, it paves the way for regional, as well as, local development strategies and should be thoroughly taken into account in all levels of integrated development planning.

Accessibility within the district and region needs to be enhanced to enable the optimal application of private and public investments. The regional and international accessibility of Ehlanzeni provides it with the necessary thrust to become an active role player in the SADEC and global economy. The challenge with regard to local spatial planning lies in the utilization and provision of social and engineering infrastructure in a manner, which will support the above initiatives and enhance the comparative advantages of Ehlanzeni within the region.

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

4.5 Land-Use Application in Terms of the Physical Planning Act

Application has been made in terms of Section 6[1] read with Section 8 [1][a] of the Physical Planning Act, 1967 (Act 88 of 1967) to obtain a permit to use the Remainder of Portion 4 and Portion 8 of the farm Rietvley 28 K U for the purpose of a private resort development.

The purpose of the application is to acquire land-use rights for a ***private resort consisting of 6 new holiday homes and an existing residence.***

5. PUBLIC PARTICIPATION PROCESS

The Republic of South Africa's constitution states that everybody has the right to be informed and to have access to information. An important aspect of conducting environmental assessments is to provide avenues for interested and affected parties to gain information and provide input and comments on all proposed developments.

This was accomplished by contacting identified affected parties directly via written notification, placing notices up at the proposed site and by placing an advertisement in the local newspaper, the Lowvelder.

All registered interested and affected parties have the right to comment and provide input on the report regarding the proposed development submitted by the environmental consultant to the relevant authority. All affected parties, in return, are expected to submit all comments in writing to the consultant and observe all time frames given for the commenting period.

5.1 Authority Notifications

Authorities who were notified regarding the proposed development and asked to comment and/or attend an Authorities meeting:

- Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET);
- South African National Parks (SANParks);
- The South African Heritage Resources Agency (SAHRA);
- Mpumalanga Tourism and Parks Authority (MTPA);
- Bushbuckridge Local Municipality (BLM);
- National Department of Environmental Affairs (Waste);
- National Department of Environmental Affairs (Water Quality);
- National Department of Environmental Affairs (Water Sector Regulation and Use);
- National Department of Environmental Affairs (Air Quality);
- Mpumalanga Department of Health
- Mpumalanga Department of Air Quality
- Wildlife and Environment Society (WESSA), Lowveld Branch

5.2 Notice boards

Notices were placed in the media and in and around the site.

Site notices were placed at the following locations on 20 November 2013:

- Office at Ndlopfu Private Game Reserve.
- On the community notice board outside the Pick and Pay, Hoedspruit.
- At the entrance to Ndlopfu Private Game Reserve
- At the control / entrance gate to Umbabat Nature Reserve

Photographs of these notices can be found in Appendix 2.

An advertisement was placed in the legal section of Lowvelder newspaper on 19 November 2013. A copy of this advertisement is presented in Appendix 2.

5.3 Summary of Comments and Responses

All interested and affected parties, including the relevant authorities were contacted via E-mail of the proposed development on 22 November 2013. The Department of Economic Development, Environment and Tourism registered as an interested party. Copies of correspondence with interested and affected parties, and those who registered are included in Appendix 2.

6. NEED AND DESIRABILITY OF PROJECT

6.1 Desirability (As provided by Derick Peacock and Associates)

The Remainder of Portion 4 and Portion 8 of the farm Rietvley is situated adjacent to an existing private resort/share block development on the farm Ndlopfu 102 K U, known as Ndlopfu Private Game Reserve. These properties were offered to Ndlopfu Private Game Reserve by the executor of the deceased estate. Ndlopfu is anxious to increases the area on which its members can undertake game-viewing drives.

Due to the extremely high price of the property Ndlopfu Private Game Reserve had to find a way to fund this purchase. The Ndlopfu Private Game Reserve members are able to fund only about 50 % of the purchase price and the remainder of the funding have to be by other means.

The land-use pattern in the bigger area is made up by mainly private resorts/share block schemes and game farms.

The only feasible way to fund the acquisition of this property (that will fit in with the landuse pattern) is thus to undertake a very limited private resort development on the property. The sale of 6 new holiday homes and the existing residence on a share block basis will be able to fund the remainder of the purchase price.

From the above it is clear that the aim of this development is not to generate profits for a developer, it is merely to be able to supplement the funding of the purchase price of the property to enable the existing Ndlopfu Private Game Reserve development to extend its nature/game viewing area. The acquisition of the land and the limited development will safeguard the property from incompatible uses or over-development.

The property will in effect function as part of Ndlopfu Private Game Reserve with its members being able to do game viewing on this additional 1331 ha area. The development on the property will be restricted to the 6 new holiday homes and one existing residence - no other development will be done on the property.

The property will be utilized for game viewing on the existing roads. Apart from the “link road” between Ndlopfu Private Game Reserve and Rietvley (about 100 m length) and the 6 short access “2-spoor” tracks to the 6 new holiday homes, no new roads will be built. The existing infrastructure (roads, boreholes) will be utilized and are deemed to be sufficient to accommodate the limited proposed development. Where necessary, storm water control will be implemented on roads to prevent soil erosion.

It should also be stressed that the proposed development can be seen as an “extension” of the existing Ndlopfu Private Game Reserve development. The new development will thus be subject to:

- Ndlopfu Management.
- Revised Building & Lighting Regulations
- Ndlopfu Contractors Regulations
- Ndlopfu Conduct Rules

6.2 The Need (As provided by Derick Peacock and Associates)

It is generally accepted that tourism will have to become one of the major contributors to sustained economic growth and job creation in the new South Africa. There are limited accommodation facilities and resorts developed in the greater region that help to unlock the natural potential of the region.

It is important that the natural recreational potential of this region be explored and developed in the same way agricultural, forestry and other potential are utilised to the benefit of all the inhabitants of the region. The property in question is situated in the bushveld area that is popular with both local and overseas visitors due to its outstanding attractions and its favourable warm climate during the winter months.

As is also stated elsewhere, the property has much greater recreational than agricultural "production" potential and lends itself better towards the use as a game farm/nature area. The property has an exceptionally high recreational potential due to its locality within a greater nature area.

The proposed private resort development will ensure that the recreational potential of the property will be "unlocked", developed and utilised to its full extent. The property has previously been used as a game farm and has therefore produced very little income and very few jobs.

More jobs, training and opportunities (that are needed badly in this area) will be created not only during the construction phase, but also in the day to day running of the development. There is thus, a need to develop this property as a private resort/game farm/nature area that will create income, jobs and growth in the area.

The existing Ndlopfu Private Game Reserve development has a need to extend the traversing (game viewing) area for its 25 members. A property adjacent is required for this purpose.

In order to prevent a large scale development (as was proposed 6 years ago by the previous owner) there is a need to secure the property and only undertake a very low intensity development (1 holiday home per 190 ha). In order to partially fund the acquisition of this very expensive land to obtain this goal, the above mentioned very limited development needs to be done.

This will ensure that the development of the property will be in line with the land-use patterns in the greater area.

7. ALTERNATIVE ACTIVITY AND SITES

As the development is an extension to the existing Ndlopfu Share Block Development, the options regarding design, process and technology alternatives is very limited. It is in the intention to seamlessly integrate the 6 holiday homes on Rietvley with the existing 25 holiday homes on adjacent Ndlopfu with a similar 'look and feel', and to make use of existing available services.

However, alternatives in terms of positioning of the new holiday homes were considered, and many sites were explored as options in the early planning phases of the project. Ultimately, 8 alternative sites were identified as viable options based on locality, sense of place, serviceability, seclusion and access.

7.1 Alternative sites for placement of the holiday homes

The selection of 8 alternative sites provided the planners and ecologists with viable options should site specific limitations or 'fatal flaws' be identified on any of the sites during the detailed assessment process.

These sites were again assesses in terms of specific criteria which included the following:

- Accessibility to site (access roads)
- Sense of Place (The value of the sites from a tourism perspective depends on their sense of place and views)
- Obvious environmental sensitivities identified.
- Attractive features on site.
- Location of sites in context of greater Rietvley property. Only a small portion of the property was allocated for the development of additional units.

All 8 sites were assessed by the specialist ecologist, who found that all revealed very limited environmental sensitivities. Furthermore, the detailed assessment of the sites indicated that all were suitable for development from an environmental perspective. Impacts relating to any one of the sites would be similar, if not identical to any of the remaining sites.

Ultimately, 6 sites were identified as 'preferred', not only by the proponent, but also by the EAP. These sites were henceforth referred to as Sites 1 to 6, whilst the remaining sites are referred to as Alternative A and Alternative B.

The locations of the alternative sites are as follows:

- Alternative Site A: Coordinates S24°09' 35.7" E31° 17' 03.9"
- Alternative Site B: Coordinates S24°09' 36.7" E31° 18' 17.1"

Considering the above, it is therefore reasoned that the proponents preferred six sites (Sites 1 to 6), be adopted as the preferred project alternatives.

7.2 The No-Go Alternative

The 'No-Go' alternative explores the option where 'nothing is done'. In other words, the status quo remains and the development is shelved. It is this status quo against which the impact of the proposed project is measured.

In order to adequately address the No-Go option, it is necessary to review the project need and desirability as detailed under Section 6 above. The need and desirability essentially elucidates the

positive contribution that the development would realise for the broader environment. In this case, the following is offered as core to the need for the project:

- *The property became available on the market following the death of the previous owner. The land had been used for hunting and, over the years, development opportunities were explored, one specifically proposing the development of over 50 holiday homes on the property. Ndlopfu Share Block, recognised an opportunity to purchase and secure the land for conservation and non-consumptive eco-tourism in perpetuity, and to ultimately incorporate the property into the Umbabat Nature Reserve. This will be accomplished through generous financial contributions from it's members, and the very limited extension of Ndlopfu onto Rietvley by order of 6 holiday homes.*

Whilst it is recognised that potential environmental impacts relating to the development would be avoided under the No-Go option, it is submitted that the positive impact of securing the land for conservation and non-consumptive ecotourism far outweighs such impact.

It is therefore submitted that the proposed limited development of the property will secure its future, and it is recommended that the No-Go option not be considered.

8. OVERVIEW OF POTENTIAL ENVIRONMENTAL IMPACTS

8.1 General (As provided by Derick Peacock and Associates)

It should firstly be mentioned that the private resort will be developed within demarcated sites totalling approximately 5, 4 ha. The physical space ("footprints") taken up by the 6 holiday homes is estimated to be approximately 3000 m² in total.

The total area taken up by new link road and 6 access "2 spoor" tracks to the sites is estimated to be approximately 3200 m².

The total area physically taken up by the 6 new holiday homes and roads is thus estimated to be approximately 6200 m² – a fraction (⅕%) of a percentage of the total property size.

It is important to stress that the owner realises that the potential of the land is locked up in the natural assets of the property. The owner will therefore do everything within his power to protect the property's natural assets during and after the construction period. A number of development controls (Building Regulations, Contractor Regulations, etc) will be made applicable during the construction period.

The existing trees and vegetation will be used as screens to ensure privacy and to create shade. No big trees (trunks > 15 cm) will be removed but they will rather be incorporated in the design of the units and facilities.

The existing vegetation will where required be complimented by means of landscaping. Indigenous trees and plants will be used if it is at all necessary to do landscaping.

The development will take place in harmony with nature. The proposed private resort development and the usage of the remainder of the property as a nature area will have a lesser impact on the natural assets of the property than commercial agricultural "over utilization" (and/or hunting) on the property.

The vehicular access to the rest of the property for game viewing will be via existing roads. No new roads will be built for this purpose. Nature walks will be guided and no new trails will be demarcated.

From the above it is clear that the proposed private resort development will have no major negative effect on the property but instead will ensure that the owner generates an income from the property that will ensure that the property acquisition can be financed and that it will be utilized in future on a sustainable basis.

8.2 Potential Adverse Impacts Identified

The adverse impacts have been identified in three categories, namely the construction phase, operational phase and cumulative impacts. The detailed list of impacts includes the following:

- **Construction Phase**

    - De-vegetation for Parking Areas, Internal Roads, Services and Holiday Homes.
    - Loss of smaller faunal species such as invertebrates, reptiles and smaller mammals.
    - Potential poaching of fauna by construction team.

- Impacts on aesthetics of the area and genius loci during construction. This will also specifically relate to tourism and impacts on adjacent developments.

- Noise emanating from construction could have an impact on fauna, tourists and surrounding developments.
- Dust generation from construction could impact on fauna, tourists and surrounding developments.
- Removal of vegetation within a protected area.
- Heavy vehicle traffic increase that could have an impact on general traffic in the In the area, impact on roads and potentially increase numbers of road kills.
- Security risk will increase due to large vehicles accessing the area. Poached items
- could therefore be smuggled out of the conservation area easier than normal.
- Stockpile areas for construction material, generation and disposal of building waste and liquids and vehicle maintenance could have a negative impact on ground water, surface water and the environment as a whole.
- Impacts associated with stockpiles and building material on fauna (Poisoning and suffocating).
- Possible damage on sub-surface heritage features which were unable not identified in Planning Phase of the project.
- Damage and removal of protected floral species which have been identified on site which require permitting. The philosophy will however be to avoid all tree removal wherever possible.
- Solid Waste Management Impacts on surrounding environment.
- Additional sewage requirements of construction team may have impacts on the surrounding environment if not managed effectively.
- Excavation requirements for service and utility provision.
- Potential impacts of erosion due to storm water runoff.
- Visual Impacts on surrounding developments.
- Impacts on sensitive Sodic Sites identified by specialist.
- Impacts on red data faunal species and their breeding habits.
- Unauthorised fire on site could cause potential impacts.

- **Operational Phase**

- Increase of hard surface area i.e. increased storm water run-off, pollution, erosion & destruction of habitat (Cumulative Impact);
- Loss of habitat for fauna, invertebrate and flora, impact on biodiversity (Cumulative Impact);
- Negative visual impact on character of the park should architecture not be in line with natural surroundings;
- Waste generation (Cumulative Impact) could impact on capacity of landfill site;
- Waste generation & management could impact on fauna;
- Potential Impact of RBC treatment plant for sewage management;
- Increased traffic generation during operational phase(Cumulative Impact);
- Financial impact on existing concessions within the Park and surrounding tourist accommodation facilities;
- Sustainability of carrying capacity of Safari Resort;
- Light pollution (i.e. visual impact) could impact on surrounding properties and environment;
- Noise pollution could impact on surrounding properties and environment;
- Possible depletion of natural resources such as water, or contamination of groundwater should the development not be managed properly
- Loss of potential natural habitat;

- Additional burden on electrical service provider(Cumulative Impact);
- Disturbance of nocturnal fauna through night driving (Staff);

- **Cumulative Impacts**

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

8.3 Potential Beneficial Impacts Identified

- **Construction Phase**

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

- **Operational Phase**

  - Rehabilitation of disturbed areas;
  - Skills development and long term job opportunities;
  - Generation of funds to contribute to the management of the Reserve;
  - Economic multiplier effect of tourism on businesses in the local and regional economy; and
  - Creation of a destination that appeals to the tastes and preferences of a new or broader tourist market and exposes them to nature and heritage.

9. ENVIRONMENTAL IMPACT EVALUATION

9.1 Assessment Criteria

The impacts anticipated to occur as a result of the proposed development are assessed/ evaluated to determine their significance. The following assessment criteria are used:

Extent (how far the impact extends):

- **(1) Very low:** within the site only
- **(2) Low:** within the local neighbourhoods
- **(3) Medium:** within the region
- **(4) High:** Nationally
- **(5) Very high:** Internationally

Duration (the timeframe over which the effects of the impact will be felt):

- **(1) Very short:** 0-1 yrs
- **(2) Short:** 2-5 yrs
- **(3) Medium:** 5-15 years
- **(4) Long:** >15 years
- **(5) Permanent**

Magnitude (the severity or size of the impact):

- (**0) None**
- **(2) Minor**
- **(4) Low**
- **(6) Moderate**
- **(8) High**
- **(10) Very High**

Probability (the likelihood of the impact actually occurring):

- **(1) Very improbable:** Less than 20% sure of the likelihood of an impact occurring
- **(2) Improbable:** 20-40% sure of the likelihood of an impact occurring
- **(3) Probable:** 40-60% sure of the likelihood of an impact occurring
- **(4) Highly probable:** 60-80% sure of the likelihood of that impact occurring
- **(5) Definite:** More than 80% sure of the likelihood of that impact occurring

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

The significance rating scale is interpreted as follows:

- **(2-12) Negligible**: Impact would be of a very low order. In the case of negative impacts, almost no mitigation and or remedial activity would be needed, and any minor steps, which might be needed, would be easy, cheap, and simple. In the case of positive impacts, alternative means would almost all likely be better, in one or a number of ways, than this means of achieving the benefit.

- **(2-30) Low:** Impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and / or remedial activity would be either easily achieved or little would be required, or both. In case of positive impacts alternative means for achieving this benefit

would likely be easier, cheaper, more effective, less time-consuming, or some combination of these.

- **(31-56) Moderate**: Impact would be real but not substantial. In the case of negative impacts, mitigation and / or remedial activity would be both feasible and fairly easily possible. In the case of positive impacts, other means of achieving these benefits would be about equal in time, cost, and effort.

- **(57-90) High**: Impacts of a substantial order. In the case of negative impacts, mitigation and / or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these. In the case of positive impacts, other means of achieving this benefit would be feasible, but these would be more difficult, expensive, time-consuming or some combination of these.

- **(90-100) Very High:** Of the highest order possible. In the case of negative impacts, there would be no possible mitigation and / or remedial activity and in the case of positive impacts, there is no real alternative to achieving the benefit.

9.2 Impact Assessment Table: Construction Phase

Potential impacts: Construction Phase	Extent (1-5)	Duration (1-5)	Magnitude(0-10)	Probability (1-5)	**Significance**	Proposed mitigation:	Extent (1-5)	Duration (1-5)	Magnitude (0-10)	Probability (1-5)	**Significance**
Direct Impacts											
Ground water											
Depletion of ground water resources due to over use and waste during construction.	3	3	4	3	**30 L**	• Register boreholes to be used for potable water extraction as per DWA requirements. • Monitor the consumption of water on a monthly basis and keep up to date records. • Ensure that all construction personnel are trained in water wise principles, and that they practise prudent use of water during the Construction phase. • Ensure that sufficient numbers of mobile toilets are available on site and that these are located beyond the buffer zones. • Ensure that mobile toilets are maintained in a sanitary and operational state. • Ensure that all hazardous substances (chemicals, oils, etc) are stored in locked stores on bunded surfaces. • Ensure that all hazardous substances are used and handled by qualified personnel on bunded surfaces. • Ensure that a spills containment kit is available on site and that personnel are trained in spills clean up procedures. • Immediately clean leaks and spills of hazardous substances and dispose of as hazardous waste. • Report major spills to the regional DWA office.	3	3	2	2	**16 L**
Alteration of water quality – increasing the amounts of nutrients (phosphate, nitrite, nitrate) due to disposal or discharge of human (including partially treated and untreated) sewage.	3	3	4	3	**30 L**		3	3	2	2	**16 L**
Alteration of water quality – toxic contaminants including toxic metal ions (e.g. copper, lead, zinc) and hydrocarbons due to: • Runoff from road surfaces • Discharge of solvents, paints, chemicals etc • Leaking fuel / oil from construction vehicles	3	2	4	3	**27 L**		3	3	2	2	**16 L**
Hydrology (surface water)											

Disturbance to hydrological function (quality and fluctuation properties) of the drainage lines due to: • Development and activity within the water courses • Invasion by woody alien invasive plants • Discharges into the water resource • Impeding features redirecting flows • Alteration of surface characteristics (roughness)	3	3	8	4	**56 M**	• Establish a buffer of 20m along all drainage lines on site. • No construction activities may take place within buffer areas. Clearly demarcate the construction work areas and prevent pedestrian and vehicular access into buffer areas. • Ensure that sufficient numbers of mobile toilets are available on site and that these are located beyond the buffer zones. • Ensure that mobile toilets are maintained in a sanitary and operational state. • Ensure that all hazardous substances (chemicals, oils, etc) are stored in locked stores on bunded surfaces. • Ensure that all hazardous substances are used and handled by qualified personnel on bunded surfaces. • Ensure that a spills containment kit is available on site and that personnel are trained in spills clean up procedures. • Immediately clean leaks and spills of hazardous substances and dispose of as hazardous waste. • Report major spills to the regional DWA office. • Ensure that concrete and cement works are undertaken in specified areas only. • Install a drainage diversion system to divert clean runoff around areas of potential pollution, e.g. batching area, workshops, etc. • Direct polluted runoff and waste water emanating from the construction site into a collection system (e.g. sump, attenuation dam, PVC porta-ponds, etc.) for treatment or collection and disposal. • Prevent storm water or contaminated water directly entering any watercourse. • Make use of existing access roads and drainage line crossings wherever possible.	3	3	4	2	**20 L**
Changes in the amount of sediment entering the water resource and the associated change in turbidity due to: • Bulk earthworks • Soil disturbances • Construction of roads and tracks • Changes in runoff characteristics • Artificial infilling • Erosion	3	3	8	4	**56 M**		3	3	4	2	**20 L**
Alteration of water quality – increasing the amounts of nutrients (phosphate, nitrite, nitrate) due to disposal or discharge of human (including partially treated and untreated) sewage.	3	3	4	2	**20 L**		3	3	2	2	**16 L**
Alteration of water quality – toxic contaminants including toxic metal ions (e.g. copper, lead, zinc) and hydrocarbons due to: • Runoff from road surfaces • Discharge of solvents, paints, chemicals etc • Leaking fuel / oil from construction vehicles	3	3	8	4	**56 M**		3	3	4	2	**20 L**
Alteration of water quality due to: • Unmanaged runoff of grey water, cement slurry and wash water. • Litter and other inert construction waste.	3	3	4	3	**30 L**		3	3	2	2	**16 L**
Changing the physical structure within a water resource (habitat) due to: • Encroachment to achieve maximum commercial returns • Deposition of wind-blown sand • Loss of fringing vegetation and erosion	3	4	8	4	**60 H**		3	4	4	2	**22 L**

• Alteration in natural fire regimes • Shading of natural vegetation						• Do not create additional drainage line crossings without the express permission of the ECO. The ECO will ensure that the crossing is permitted in terms of DWA's General Authorisations, Construction and rehabilitation of the crossing must be as per the ECO's instruction. • Where access through drainage lines and non-perennial rivers is unavoidable, only one road is permitted, constructed perpendicular to the drainage line. • Avoid roads that follow drainage lines within the floodplain. • Implement measures to ensure that the crossing has minimal effect on the flow of water through the watercourse, e.g. by using a high level clear span bridge or box culverts rather than pipes. In all instances, ensure that the movement of aquatic as well as terrestrial species along the watercourse is possible. • Avoid the sealing of sealing of surfaces under a bridge or gabion construction. • Drainage line crossings and power lines (if and where required) may not impact on the permanent or seasonal zones. • Where power lines cross drainage lines (if and where required), ensure that the pylon footprint is placed within the protective buffer zones. Restrict construction activities to as small a footprint possible. • Construction within or near drainage lines should take place outside of the rainy season when the flow of the non-perennial rivers is at a minimum. • Eradicate alien plants and carry out follow-up controls throughout construction to prevent spread into disturbed soils. • Implement ongoing weed control in buffer zones. Consult a wetland specialist if necessary.					

						• Ensure that the least amount of vegetation is removed ahead of construction. • Ensure that the construction site is rehabilitated using appropriate indigenous vegetation. • Rehabilitation plans must be drawn up for all disturbed areas, and must be approved by the ECO. • Rehabilitation must be implemented immediately upon completion of construction. • Ensure that all personnel are familiar with waste management requirements on site; • Collect and sort-at-source the different types of waste (recyclables, inert rubble, hazardous and non-recyclable general waste) by placing receptacles at specific points throughout the construction site; • Ensure that personnel make use of the receptacles provided; • Empty receptacles for disposal at least once per week, but more often if required; • Dispose of solid waste at the nearest, applicably licensed recycling centre, salvage yard or landfill site; • Undertake weekly site cleanup operations to maintain the site in a neat and litter-free state. • No open fires will be allowed anywhere on the site; • No incineration or burning of waste is permitted on the site; • Provide personnel with gas for cooking in designated and safe areas. • A firebreak should be established around the perimeter of the site prior to the commencement of the construction phase. • The contractor should contact all of the adjacent farm owners prior to the commencement of the construction phase and ensure that he/she has the contact numbers so that they can be contacted in the event of a fire. • Contractor to ensure that construction related					

						activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. • Measures to reduce the risk of fires include clearing working areas and avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high risk dry, winter months; • Contractor to provide adequate fire fighting equipment on-site; • Contractor to provide fire-fighting training to selected construction staff.					
Soil											
Soil pollution due to disposal or discharge of human (including partially treated and untreated) sewage.	1	2	4	3	**21 L**	• Establish a buffer of 100m along all watercourses on site. • No construction activities may take place within buffer areas. Clearly demarcate the construction work areas and prevent pedestrian and vehicular access into buffer areas. • Ensure that sufficient numbers of mobile toilets are available on site and that these are located beyond the buffer zones. • Ensure that mobile toilets are maintained in a sanitary and operational state. • Ensure that all hazardous substances (chemicals, oils, etc) are stored in locked stores on bunded surfaces. • Ensure that all hazardous substances are used and handled by qualified personnel on bunded surfaces. • Ensure that a spills containment kit is available on site and that personnel are trained in spills clean up procedures; • Immediately clean leaks and spills of hazardous substances and dispose of as hazardous waste. • Ensure that concrete and cement works are undertaken in specified areas only;	1	2	2	3	**15 L**
Soil pollution due to toxic contaminants including toxic metal ions (e.g. copper, lead, zinc) and hydrocarbons due to: • Runoff from road surfaces • Discharge of solvents, paints, chemicals etc • Leaking fuel / oil from construction vehicles	1	2	4	3	**21 L**		1	3	4	2	**16 L**
Soil pollution due to: • Unmanaged runoff of grey water, cement slurry and wash water. • Litter and other inert construction waste.	1	3	6	3	**30 L**		1	3	4	2	**16 L**
Soil erosion due to the removal of stabilising vegetation during construction. The removal of surface vegetation will expose the soils and leave the site susceptible to mechanical erosion by wind and / or incidental heavy rain. Soil compaction as a result of construction vehicles and traffic, could lead to a decrease of water infiltration and an increase of water runoff. In addition, storm water laden with silt could choke non-perennial rivers in proximity of construction.	1	2	8	3	**33 M**		1	2	6	2	**18 L**

						• Install a drainage diversion system to divert clean runoff around areas of potential pollution, e.g. batching area, workshops, etc. • Direct polluted runoff and waste water emanating from the construction site into a collection system (e.g. sump, attenuation dam, PVC porta-ponds, etc.) for treatment or collection and disposal. • Dissipate concentrated storm water flows through energy dissipaters or vegetated areas. • Ensure that all personnel are familiar with waste management requirements on site; • Collect and sort-at-source the different types of waste (recyclables, inert rubble, hazardous and non-recyclable general waste) by placing receptacles at specific points throughout the construction site; • Ensure that personnel make use of the receptacles provided; • Empty receptacles for disposal at least once per week, but more often if required; • Dispose of solid waste at the nearest, applicably licensed recycling centre, salvage yard or landfill site; • Undertake weekly site cleanup operations to maintain the site in a neat and litter-free state. • Ecologically-sound storm water management principles, as set out in the Environmental Management Programme (EMPr), must be adhered to during the construction phase. • The protective buffer around the non-perennial rivers must be respected as it acts as a trap for sediment and contaminants from the construction area. • Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. • Ensure that measures are in place to control the flow of excess water so that it does not impact on the					

						surface vegetation. • Runoff from roads must be managed to avoid erosion and pollution problems. • Repair all erosion damage as soon as possible. Do not allow erosion to develop on a large scale before effecting repairs. • Prevent storm water or contaminated water directly entering any watercourse. • Dissipate concentrated storm water flows through energy dissipaters or vegetated areas. • Ensure that the least amount of vegetation is removed ahead of construction. • Ensure that the construction site is rehabilitated using appropriate indigenous vegetation. • Rehabilitation plans must be drawn up for all disturbed areas, and must be approved by the ECO. • Rehabilitation must be implemented immediately upon completion of construction. • Conserve topsoil though pre-emptive stripping and stockpiling prior to the commencement of works in any area, pending reapplication during rehabilitation; • Do not disturb, compact or disrupt topsoil stockpiles, and ensure that nothing is stored on them; • Regulate and control movement over the site. Personnel, vehicles and equipment to move along designated routes; • Demarcate the perimeter of all construction sites. Prohibit construction activities and access by personnel beyond these barriers. • Do not excavate until all required materials / services are on-site, to facilitate immediate laying of services / construction of subsurface infrastructure; • Preferably undertake clearing activities during the dry season in order to prevent erosion and siltation; • Compact backfilled trenches to prevent erosion;					

						• Monitor backfilled areas for erosion and remediate as required; • Progressively rehabilitate (rip, scarify and plant) areas as soon as works have been completed. • Cordon off rehabilitated areas and do not allow grazing or access into these areas until such time that re-vegetation was found to be successful. • Regularly inspect all rehabilitated areas and implement remedial measures as required.					
Air												
Air pollution by emissions from construction vehicles and equipment.	1	1	4	5	**30 L**	• Maintain site vehicles and equipment in an acceptable state of repair (these may not smoke and must comply with SABS standards). • Construction vehicles transporting materials to and from the construction site must be covered to reduce the formation of dust. • Maintain all site roads and repair these as required. • Regularly spray construction and haul roads with water to reduce dust. • All vehicles must be road-worthy and regularly serviced, and drivers must be qualified and made aware of the need for strict speed limits. • Vegetate or cover long-term stockpiles of soil and fine spoil material to minimise the sources of dust pollution. • Progressively rehabilitate (rip, scarify and plant) areas as soon as works have been completed. • Cordon off rehabilitated areas and do not allow grazing or access into these areas until such time that re-vegetation was found to be successful. • No open fires will be allowed anywhere on the site; • No incineration or burning of waste is permitted on the site; • Provide personnel with gas for cooking in designated and safe areas. • A firebreak should be established around the	2	1	4	4	**28 L**
Dust liberated by general construction activities and movement of construction vehicles to, from and over the site.	3	1	6	5	**50 M**		3	1	4	3	**24 L**
Smoke from open fires used by site staff for heating and cooking as well as from uncontrolled fires.	3	1	6	4	**40 M**		3	1	2	2	**12 L**

						perimeter of the site prior to the commencement of the construction phase. • The contractor should contact all of the adjacent farm owners prior to the commencement of the construction phase and ensure that he/she has the contact numbers so that they can be contacted in the event of a fire. • Contractor to ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. • Measures to reduce the risk of fires include clearing working areas and avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high risk dry, winter months; • Contractor to provide adequate fire fighting equipment on-site; • Contractor to provide fire-fighting training to selected construction staff.					
Biodiversity (Flora)											
Removal of exotic and declared invader species (positive impact).	1	2	4	5	**35 M**	• *No mitigation.*	1	2	4	5	**35 M**
Destruction of Mopane Bushveld and Sweet Lowveld vegetation during the construction of private holiday homes as a result of the activities of workers, heavy machinery, haulers and other construction vehicles and equipment. The vegetation of the study site will need to be removed for the construction of the proposed plant. The removal of vegetation could lead to a loss in the floral species richness of the area. Although this vegetation is currently not of conservation concern the removal of vegetation from the study area could also lead to a loss in the current ecological function and a general loss of species and genetic diversity.	1	4	4	5	**45 M**	• An independent Ecological Control Officer (ECO) should be appointed to oversee construction. • Plan construction so as to leave as much of the natural vegetation intact as possible. • A perimeter fence or suitable perimeter demarcation must be erected around the construction works area to prevent access to sensitive environs. • Prohibit vehicular or pedestrian access into natural areas beyond the demarcated boundary of the construction area. • Maintain site demarcations in position until the cessation of construction work. • Formalise access roads and make use of existing roads and tracks where feasible, rather than creating	1	1	4	5	**30 L**
Removal of protected tree species, specifically	1	3	8	3	**36**		1	1	4	5	**30**

Leadwood, Appleleaf and Marula (confirmed to occur over sites 1,2 and 5) and the destruction of their natural habitat. These species occur in low densities of about 3 to 4 plants per site. As far as possible these trees will be included in the design of the holiday homes. If that is not possible then the next option will be relocation. Removal of the trees will be the last option considered. No protected trees or plants may be removed without permits from the local conservation authorities					**M**	new routes through naturally vegetated areas. • Regulate and control movement over the site. Personnel, vehicles and equipment to move along designated routes. • Where possible, required equipment and infrastructure should be placed within existing disturbed areas. • Ensure that the least amount of vegetation is removed ahead of construction. Where open rows are planned between PV panels, or within space underneath these panels, the natural vegetation should be retained, and allowed to grow, preferably to maximum height. • Retain vegetation and soil within construction areas in position for as long as possible, removing it immediately ahead of construction / earthworks in that area. • No vegetation outside of the demarcated construction areas may be removed. • Only wood from trees felled as part of the construction contract may be sold / made available for firewood. • No large tree may be felled without the permission of the ECO. • A vegetation / tree specialist should walk the final site layout to identify and mark all protected trees/plants that could be impacted upon. • Draw up a plan (during project planning) indicating the mapped positions of vegetation specimens to be conserved and which should be removed and replaced. Avoid the requirement to remove protected trees wherever possible. • Demarcate specimens to be retained with danger tape and / or fencing as required. This barrier to be at least 2m from the stem of the specimen. • No protected trees or plants may be removed without the relevant permits from the local					**L**
Increase in exotic vegetation as alien plant species spread to disturbed soils. During construction, vegetation will be removed and soil disturbed. The seed of alien invasive species that occur on and in the vicinity of the construction area could spread into the disturbed and stockpiled soil. In addition, the construction vehicles and equipment were likely used on various other sites and could introduce alien invasive plant seeds or indigenous plants not belonging to this vegetation unit to the construction site.	1	3	6	3	**30 M**		2	3	4	2	**18 L**
Disturbance to non-perennial drainage lines and loss of stabilising vegetation due to construction activities undertaken nearby, and crossing of the drainage lines with vehicles and equipment. The study site includes numerous non-perennial rivers and drainage lines on sites 2, 4, 6 and Alt A. Removal of vegetation surrounding the drainage lines will result in a disturbance and potential loss of faunal habitat associated with the stream as well as loss of mature trees which could destabilise soil conditions. In addition, all watercourses (including non-perennial rivers) in South Africa are protected by legislation and must be classified as no-go areas along with protective buffer zones. Note that any	2	4	8	4	**56 H**		3	4	6	2	**26 L**

activities within the watercourses (non-perennial rivers and natural channels included) are subject to authorisation by the Department of Water Affairs (DWA) by means of a Water Use License.						authority. • Implement fines for the damage or destruction of marked and protected specimens. It is the contractor's responsibility to ensure that these are retained.					
The movement of heavy machinery will result in soil compaction that will modify habitats, destroy vegetation and inhibit re-vegetation. Soil compaction as a result of construction vehicles and traffic, could lead to a decrease of water infiltration and an increase of water runoff.	1	4	8	5	**65 H**	• Workers may not tamper or remove flora and neither may anyone collect seed from the plants without permission from the local authority. • Implement a Plant Rescue Plan for protected species within the construction areas. Where feasible, these should be removed by a suitably qualified specialist and replanted as part of vegetation rehabilitation plan. • No open fires will be allowed anywhere on the site; • No incineration or burning of waste is permitted on the site; • Provide personnel with gas for cooking in designated and safe areas. • Ensure that the necessary fire fighting equipment is on site in terms of SABS 1200 and act in accordance with relevant legislative requirements. • A rehabilitation plan must be implemented that will restore natural vegetation in disturbed areas beyond the footprint of the infrastructure to what it was prior to construction. • Ensure that the construction site is rehabilitated using appropriate indigenous vegetation. • With the permission of the local authority, seed from appropriate indigenous species may be harvested for later use during rehabilitation. An ecologist should be consulted in this regard. • Plants that are removed / propagated during construction may be maintained on site and used to re-vegetate the disturbed soil. • All harvested seeds and seedlings, as well as plants removed for transplanting which are not	1	4	6	3	**33 M**

						immediately re-planted, are the responsibility of the Contractor and must be kept under approved nursery conditions. • Once construction is complete, obsolete roads should be obliterated by breaking the surface crust and erecting earth embankments to prevent erosion, while vegetation should be re-established. • Cordon off rehabilitated areas and do not allow grazing or access into these areas until such time that re-vegetation was found to be successful. • Rehabilitation plans must be drawn up for all disturbed areas, and must be approved by the ECO. • Rehabilitation must be implemented immediately upon completion of construction. • Ecologically-sound storm water management principles, as set out in the Environmental Management Programme (EMPr), must be adhered to during the construction phase. • The protective buffer around the non-perennial rivers must be respected as it acts as a trap for sediment and contaminants from the construction area. • Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. • Ensure that measures are in place to control the flow of excess water so that it does not impact on the surface vegetation. • Runoff from roads must be managed to avoid erosion and pollution problems. • Repair all erosion damage as soon as possible. Do not allow erosion to develop on a large scale before effecting repairs. • Prevent storm water or contaminated water directly entering any watercourse. • Dissipate concentrated storm water flows through energy dissipaters or vegetated areas.					

						• Conserve topsoil though pre-emptive stripping and stockpiling prior to the commencement of works in any area, pending reapplication during rehabilitation; • Do not disturb, compact or disrupt topsoil stockpiles, and ensure that nothing is stored on them; • Do not excavate until all required materials / services are on-site, to facilitate immediate laying of services / construction of subsurface infrastructure; • Preferably undertake clearing activities during the dry season in order to prevent erosion and siltation; • Compact backfilled trenches to prevent erosion; • Monitor backfilled areas for erosion and remediate as required; • Progressively rehabilitate (rip, scarify and plant) areas as soon as works have been completed. • Cordon off rehabilitated areas and do not allow grazing or access into these areas until such time that re-vegetation was found to be successful. • Regularly inspect all rehabilitated areas and implement remedial measures as required; • With the relevant permission from the local conservation authorities, tree seed from the study area could be grown within a nursery for later rehabilitation. • Draw up a management and monitoring programme for invasive species detailing actions to prevent the establishment of invasive plants of site during construction. • Implement management actions according to the management plan. • All alien seedlings and saplings must be removed as they emerge or become evident. • Manual / mechanical removal is preferred to chemical control. • All construction vehicles and equipment, as well as construction material should be free of plant					

						material. Therefore, all equipment and vehicles should be thoroughly cleaned prior to access on to the construction site or general study area. • Establish a buffer of 100m along all watercourses on site. • No construction activities may take place within buffer areas. Clearly demarcate the construction work areas and prevent pedestrian and vehicular access into buffer areas. • Make use of existing access roads and drainage line crossings wherever possible. • Do not create additional drainage line crossings without the express permission of the ECO. The ECO will ensure that the crossing is permitted in terms of DWA's General Authorisations, Construction and rehabilitation of the crossing must be as per the ECO's instruction. • Where access through drainage lines and non-perennial rivers is unavoidable, only one road is permitted, constructed perpendicular to the drainage line. • Avoid roads that follow drainage lines within the floodplain. • Implement measures to ensure that the crossing has minimal effect on the flow of water through the watercourse, e.g. by using a high level clear span bridge or box culverts rather than pipes. In all instances, ensure that the movement of aquatic as well as terrestrial species along the watercourse is possible. • Avoid the sealing of surfaces under a bridge or gabion construction. • Drainage line crossings and power lines (if and where required) may not impact on the permanent or seasonal zones. • Where power lines cross drainage lines (if and where required), ensure that the pylon footprint is placed					

						within the protective buffer zones. Restrict construction activities to as small a footprint possible. • Construction within or near drainage lines should take place outside of the rainy season when the flow of the non-perennial rivers is at a minimum.					
Biodiversity (Fauna)												
Loss of faunal habitat and fragmentation due to vegetation clearing and alteration of existing habitat The proposed development will occur mainly within ecological zones identified as development zones, with some sites overlapping onto sensitive zones. The development will involve the clearing of vegetation communities for construction of the associated infrastructure. Considering the dynamics of the available habitats, the fauna species most likely to be affected will slow-moving and microhabitat-bound faunal species such as reptiles.	1	5	4	5	**50 M**	• Establish a buffer of 100m along all watercourses on site. • No construction activities may take place within buffer areas. Clearly demarcate the construction work areas and prevent pedestrian and vehicular access into buffer areas. • A perimeter fence or suitable perimeter demarcation must be erected around the construction works area to prevent access to sensitive environs. • Prohibit vehicular or pedestrian access into natural areas beyond the demarcated boundary of the construction area. • Maintain site demarcations in position until the cessation of construction work.	1	4	4	4	**36 M**
Faunal disturbance due to the presence of construction personnel of site, and noise due to construction activities. Construction activities are generally associated with high ambient noise levels as well as habitat destruction discussed previously. Many of the larger terrestrial species will vacate the study area and become displaced during the construction phase. It is however unlikely that the fauna community structures will change although there may be temporary changes in the distribution and abundance of faunal species during the construction phase.	1	2	4	5	**35 M**	• Formalise access roads and make use of existing roads and tracks where feasible, rather than creating new routes through naturally vegetated areas. • Regulate and control movement over the site. Personnel, vehicles and equipment to move along designated routes. • No vegetation outside of the demarcated construction areas may be removed. • The development should promote connectivity between ecologically important habitats by retaining natural corridors for the movement of fauna; • Roads should be planned to encourage faunal dispersal and minimize fragmentation of ecologically sensitive areas. Roads should preferably be maintained as gravel tracks;	1	6	4	3	**33 M**
Persecution and hunting of fauna by construction personnel on site Killing and snaring of fauna species may occur	2	3	8	3	**39 M**	• Appropriate road design and traffic control measures	2	3	4	3	**27 L**

when construction personnel and visitors are on the site. This may occur out of fear for certain fauna assemblages, a need for food or persecution for sport.						are recommended to reduce air pollution and animal mortality. • Construction vehicles transporting materials to and from the construction site must be covered to reduce the formation of dust. • Construction activities should be limited to daylight hours. • Develop a procedure for dealing with animals encountered on the site. • Develop a procedure for dealing with dangerous animals and vermin. Where necessary, call in professionals to remove the animals. • Ensure that all personnel are aware of what the procedures for dealing with animals are. It is the contractor's responsibility to ensure that proper procedures are followed. • Construction personnel should be encouraged not to harm any wildlife. • Pets and livestock should not be allowed on site. If pets are to be allowed on site, they should be isolated from the general wildlife and properly controlled.					
Land Use & Agricultural Potential												
Loss of potentially arable land due to construction activities.	1	5	0	3	**18 L**	• Establish a buffer of 100m along all watercourses on site. • No construction activities may take place within buffer areas. Clearly demarcate the construction work areas and prevent pedestrian and vehicular access into buffer areas. • Plan construction so as to leave as much of the natural vegetation intact as possible. • A perimeter fence or suitable perimeter demarcation must be erected around the construction works area to prevent access to sensitive environs. • Prohibit vehicular or pedestrian access into natural	1	3	2	3	**18 L**

						areas beyond the demarcated boundary of the construction area. • Maintain site demarcations in position until the cessation of construction work. • Formalise access roads and make use of existing roads and tracks where feasible, rather than creating new routes through naturally vegetated areas. • Regulate and control movement over the site. Personnel, vehicles and equipment to move along designated routes. • Where possible, required equipment and infrastructure should be placed within existing disturbed areas. • Ensure that all personnel are familiar with waste management requirements on site; • Collect and sort-at-source the different types of waste (recyclables, inert rubble, hazardous and non-recyclable general waste) by placing receptacles at specific points throughout the construction site; • Ensure that personnel make use of the receptacles provided; • Empty receptacles for disposal at least once per week, but more often if required; • Dispose of solid waste at the nearest, applicably licensed recycling centre, salvage yard or landfill site; • Undertake weekly site cleanup operations to maintain the site in a neat and litter-free state. • No open fires will be allowed anywhere on the site; • No incineration or burning of waste is permitted on the site; • Provide personnel with gas for cooking in designated and safe areas. • Ensure that the necessary fire fighting equipment is on site in terms of SABS 1200 and act in accordance with relevant legislative requirements.					

						• A rehabilitation plan must be implemented that will restore natural vegetation in disturbed areas beyond the footprint of the infrastructure to what it was prior to construction. • Once construction is complete, obsolete roads should be obliterated by breaking the surface crust and erecting earth embankments to prevent erosion, while vegetation should be re-established. • Cordon off rehabilitated areas and do not allow grazing or access into these areas until such time that re-vegetation was found to be successful. • Ensure that the construction site is rehabilitated using appropriate indigenous vegetation. • Rehabilitation plans must be drawn up for all disturbed areas, and must be approved by the ECO. • Rehabilitation must be implemented immediately upon completion of construction.					
Heritage												
Damage to and / or destruction of low significance Early, Middle and Later Stone Age tools and house foundations on the site.	1	1	0	2	**4 N**	• A buffer zone of 10 m must be observed around the potential grave site and the area must be fenced off to prevent any possible impact • If archaeological or historical 'chance finds' are encountered, then work in the area must be halted, and the heritage specialist will assess the situation and make recommendations.	1	1	0	1	**1 N**
Damage to and / or destruction of a possible grave identified on site.	2	5	6	2	**26 L**		3	5	6	1	**14 L**
Damage to and / or destruction of archaeological or historical artefacts unearthed during construction.	4	5	6	2	**30 L**		4	5	6	1	**15 L**
Visual												
Potential visual impact of construction on visual receptors in close proximity to the proposed holiday homes.	2	1	6	4	**36 M**	• Ensure that vegetation is not unnecessarily cleared or removed during the construction period. • Reduce the construction period through careful logistical planning and productive implementation of resources. • Plan the placement of lay-down areas and temporary construction equipment camps in order to minimise vegetation clearing (i.e. in already disturbed areas) wherever possible. • Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads.	3	1	6	2	**22 L**

						• Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed regularly at licensed waste facilities. • Reduce and control construction dust through the use of approved dust suppression techniques as and when required (i.e. whenever dust becomes apparent). • Restrict construction activities to daylight hours in order to negate or reduce the visual impacts associated with lighting. • Rehabilitate all disturbed areas, construction areas, roads, slopes etc immediately after the completion of construction works.					
Socio-economics											
Stimulation of the local economy, especially the local service delivery industry, (, transport and security, etc.). *(positive impact)*	*3*	*1*	*6*	*4*	***40 M***	• *Where reasonable and practical, Ndlopfu Share Block should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories.*	*3*	*1*	*6*	*4*	***40 M***
Short term employment and business opportunities and the opportunity for skills development and on-site training. *(positive impact)*	*2*	*1*	*4*	*4*	***28 L***	• *Where feasible, efforts should be made to employ local contactors that are compliant with Black Economic Empowerment (BEE) criteria.* • *Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase.* • *The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.* • *Ndlopfu Share Block should identify local companies, specifically BEE companies, that qualify as potential service providers (e.g. construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction contractors. These companies should be notified of the tender process and invited to bid for project-related work;* • *Where possible, Ndlopfu Share Block should assist*	*3*	*1*	*6*	*4*	***40 M***

						local BEE companies to complete and submit the required tender forms and associated information.					
An increase in construction workers and associated increase in social problems for the community, including: • An increase in alcohol and drug use; • An increase in crime levels; • The loss of girlfriends and or wives to construction workers; • An increase in teenage and unwanted pregnancies; • An increase in prostitution; • An increase in sexually transmitted diseases (STDs).	3	1	4	3	**24 L**	• Consideration should be given for the need for the establishment of a Monitoring Forum (MF) for the construction phase. The role of the MF would be to monitor the construction phase and the implementation of the recommended mitigation measures. The MF should also be briefed on the potential risks to the local community associated with construction workers. • Ndlopfu and the contractor should, in consultation with representatives from the MF, develop a Code of Conduct for the construction phase. The code should identify what types of behaviour and activities by construction workers are not permitted. • Should such a MF be required it should be established prior to commencement of the construction phase. The Code of Conduct should be signed by Ndlopfu and the contractors before the contractors move onto site; • Contractors appointed by Ndlopfu should ensure that all workers are informed at the outset of the construction phase of the conditions contained on the Code of Conduct, specifically consequences of stock theft, poaching and trespassing on adjacent farms; • Construction workers that breach the code of good conduct should be dismissed. All dismissals must comply with the South African labour legislation. • The MF should also monitor and identify any potential problems that may arise due to the influx of job seekers to the area. • Implement a policy that no employment will be available at the gate. • Ndlopfu and the contractor will implement an HIV/AIDS awareness programme for all construction	2	1	4	3	**21 L**
Potential impacts on family structures, social networks and community services associated with the influx of job seekers including: • Competition for housing, specifically low cost housing; • Competition for scarce jobs; • Increase in incidences of crime. The concern is that these job seekers may not leave town immediately and, in some cases, may stay indefinitely.	2	2	4	3	**24 L**		2	2	2	3	**18 L**
Potential loss of livestock, poaching and damage to farm infrastructure associated with the presence of construction workers on site.	3	1	8	3	**36 M**		2	1	4	3	**21 L**
Potential loss of livestock, crops and houses, damage to farm infrastructure and threat to human life associated with increased incidence of veld fires	3	1	10	4	**60 H**		2	1	6	3	**27 L**

						workers at the outset of the construction phase. • The movement of construction workers on and off the site should be closely managed and monitored by the contractors. In this regard the contractors should be responsible for making the necessary arrangements for transporting workers to and from site on a daily basis, specifically construction workers who are not from the area. • The contractor should make the necessary arrangements for allowing workers from outside the area to return home over weekends. This would reduce the risk posed by construction workers to local family structures and social networks. • No construction workers, with the exception of security personnel, should be permitted to stay overnight on the site. • The housing of construction workers on the site should be limited to security personnel. • Ndlopfu should enter into an agreement with the affected landowners whereby the company will compensate farmers for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. The agreement should also cover loses and costs associated with fires caused by construction workers or construction related activities (see below); • Contractors appointed by Ndlopfu should ensure that construction workers who are found guilty of stealing livestock and or poaching are dismissed and charged. • No open fires will be allowed anywhere on the site; • No incineration or burning of waste is permitted on the site; • Provide personnel with gas for cooking in designated and safe areas.					

						• A firebreak should be established around the perimeter of the site prior to the commencement of the construction phase. • The contractor should contact all of the adjacent farm owners prior to the commencement of the construction phase and ensure that he/she has the contact numbers so that they can be contacted in the event of a fire. • Contractor to ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. • Measures to reduce the risk of fires include clearing working areas and avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high risk dry, winter months; • Contractor to provide adequate fire fighting equipment on-site; • Contractor to provide fire-fighting training to selected construction staff; • In the event of a fire being caused by construction workers and or construction activities, the responsible contractor must compensate farmers for damage caused to their farms. The contractor should also compensate the fire fighting costs borne by farmers and local authorities.					
Municipal services & traffic												
Impact of construction vehicles and the resultant noise, dust, and safety impacts for other road users and the residents.	3	1	6	3	**30 L**	• Maintain site vehicles and equipment in an acceptable state of repair (these may not smoke and must comply with SABS standards). • Construction vehicles transporting materials to and from the construction site must be covered to reduce the formation of dust. • Maintain all site roads and repair these as required. • Regularly spray construction and haul roads with water to reduce dust.	2	1	2	3	**15 L**

						• All vehicles must be road-worthy and regularly serviced, and drivers must be qualified and made aware of need for strict speed limits. • The movement of construction vehicles, specifically heavy construction vehicles, should be confined to the period of 07h00 and 18h00. This is aimed at reducing the potential noise impacts on residents. • All drivers employed during the construction phase should be briefed and notified of the potential safety risks posed by construction vehicles to members of the local community (specifically young children) and their domestic pets and livestock; • The contractor must ensure that damage caused to roads by the construction related activities, including heavy vehicles, is repaired before the completion of the construction phase. The costs associated with the repair must be borne by the contractor.					
Indirect Impacts												
None.						•						
Cumulative Impacts												
Ground water												
Depletion of ground water resources due to accumulated use by increasing numbers of users in the region.	3	3	4	2	**20 L**	• As above	3	3	2	1	**8 L**
Biodiversity (Flora)												
Cumulative loss in the floral species richness of the area which will subsequently lead to a reduction in the overall extent of the vegetation. Although this vegetation is currently not of conservation concern the cumulative impact of projects similar to this must be considered.	3	5	2	2	**20 L**	• As above	3	5	2	1	**10 N**
Biodiversity (Fauna)												
Cumulative loss of faunal habitat and fragmentation due to vegetation clearing and alteration of existing habitat.	2	3	4	2	**18 L**	• As above	3	3	2	1	**8 N**
Land Use & Agricultural Potential												
Overall loss of farmland could affect the livelihoods of the affected farmers, their families, and the	2	5	2	2	**18 L**	• As above	3	3	2	1	**8 N**

workers on the farms and their families. However, disturbed areas can be rehabilitated.											
Socio-economics											
Opportunity to up-grade and improve skills levels in the area. However, due to relatively small number of local employment opportunities this benefit is likely to be limited. *(positive impact)*	*3*	*1*	*4*	*4*	***28 L***	• As above	*3*	*1*	*6*	*4*	***40 M***
Municipal services & traffic											
If damage to roads is not repaired then this will impact on other road users and result in higher maintenance costs for vehicles of local farmers and other road users. The costs will be borne by road users who were no responsible for the damage.	3	3	4	3	**30 L**	• As above	3	3	2	2	**16 L**

9.3 Impact Assessment Table: Operational Phase

Potential impacts: Operational Phase	Extent (1-5)	Duration (1-5)	Magnitude 0-10)	Probability (1-5)	Significance	Proposed mitigation:	Extent (1-5)	Duration (1-5)	Magnitude (0-10)	Probability (1-5)	Significance
Direct Impacts											
Ground water											
Depletion of ground water resources due to over use and waste during operation.	2	4	4	2	**20 L**	• Register boreholes to be used for potable water extraction as per DWA requirements. • Monitor the consumption of water on a monthly basis and keep up to date records. • Make use of water saving devices and technologies wherever possible. Measures include the specification of low flow shower heads and taps, and the use of grey water from ablutions and tea kitchens for road wetting and irrigation in selected areas. • Ensure that all facility staff is trained in water wise principles, and that they practise prudent use of water at all times. • Ensure that the facility sewage system is maintained in a sanitary and operational state. • Maintain site vehicles and equipment in an acceptable state of repair (these may not smoke and must comply with SABS standards). • All vehicles must be road-worthy and regularly serviced, and drivers must be qualified and made aware of the need for strict speed limits. • Maintain the storm water management system for the facility on an ongoing basis and ensure that this is always in good working order.	3	4	2	2	**18 L**
Alteration of water quality – increasing the amounts of nutrients (phosphate, nitrite, nitrate) due to disposal or discharge of human (including partially treated and untreated) sewage.	3	4	4	3	**33 M**		3	4	2	2	**18 L**
Alteration of water quality – toxic contaminants (including toxic metal ions (e.g. copper, lead, zinc) and hydrocarbons due to: • Runoff from road surfaces • Discharge of solvents, paints, chemicals etc • Pesticides and herbicides • Solvents and detergents	3	4	8	2	**30 L**		3	4	6	2	**26 L**

						• The protective buffer around the non-perennial rivers must be respected as it acts as a trap for sediment and contaminants. • Runoff from roads must be managed to avoid erosion and pollution problems. • Prevent storm water or contaminated water directly entering any watercourse. • Ensure that all solvents, detergents, chemicals, fuels etc are stored in locked stores on bunded surfaces. • Ensure that all potentially hazardous substances are used and handled by qualified personnel. • Follow manufacturer's instruction when using potentially hazardous substances, especially in terms of quantities, time of application etc. • Ensure that a spills containment kit is available on site and that personnel are trained in spills clean up procedures. • Immediately clean leaks and spills of hazardous substances and dispose of as hazardous waste. • Report major spills to the regional DWA office. • Develop operational guidelines for implementing Clean Technologies (solvents and detergents). • Where washing of panels is required, make use of minimal amounts of environmentally friendly solvents and detergents, only where necessary. • Ensure that all products are used according to manufacturer's instructions and that staff are trained in the use and handling thereof. • Ensure that the disposal of wash water is in accordance with operational policy and that this wash water does not threaten ground water or surface water systems or create erosion problems. • Maintain all buffer zones to trap sediments.					
Hydrology (surface water)												
Changing the amount of sediment entering water resource and associated change in turbidity due to	3	4	10	4	**68 H**	• Monitor all rehabilitated areas for at least a year	3	4	8	2	**30 L**

failure of rehabilitation and of vegetation to re establish in cleared areas.						following the completion of rehabilitation works for failure of vegetation to establish and / or erosion. Immediately implement remedial measures as required. • Cordon off rehabilitated areas and do not allow grazing or access into these areas until such time that re-vegetation was found to be successful. • Maintain site vehicles and equipment in an acceptable state of repair (these may not smoke and must comply with SABS standards). • All vehicles must be road-worthy and regularly serviced, and drivers must be qualified and made aware of the need for strict speed limits. • Ensure that the facility sewage system is maintained in a sanitary and operational state. • Maintain site vehicles and equipment in an acceptable state of repair (these may not smoke and must comply with SABS standards). • All vehicles must be road-worthy and regularly serviced, and drivers must be qualified and made aware of the need for strict speed limits. • Maintain the storm water management system for the facility on an ongoing basis and ensure that this is always in good working order. • The protective buffer around the non-perennial rivers must be respected as it acts as a trap for sediment and contaminants. • Ensure that measures are in place to control the flow of excess water so that it does not impact on the surface vegetation. • Runoff from roads must be managed to avoid erosion and pollution problems. • Repair all erosion damage as soon as possible. Do not allow erosion to develop on a large scale before effecting repairs.					
Alteration of water quality – toxic contaminants including toxic metal ions (e.g. copper, lead, zinc) and hydrocarbons due to: • Runoff from road surfaces • Discharge of solvents, paints, chemicals etc • Pesticides and herbicides • Solvents and detergents	3	4	8	2	**30 L**		3	4	6	2	**30 L**

						• Prevent storm water or contaminated water directly entering any watercourse. • Dissipate concentrated storm water flows through energy dissipaters or vegetated areas. • Compile and implement an alien invasive monitoring plan to prevent the colonisation and spread of alien invasive plant species. • Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge. • Manual / mechanical removal is preferred to chemical control. • Follow manufacturer's instruction when using chemical methods, especially in terms of quantities, time of application etc. • Ensure that only properly trained people handle and make use of chemicals. • Ensure that all solvents, detergents, chemicals, fuels etc are stored in locked stores on bunded surfaces. • Ensure that all potentially hazardous substances are used and handled by qualified personnel. • Follow manufacturer's instruction when using potentially hazardous substances, especially in terms of quantities, time of application etc. • Ensure that a spills containment kit is available on site and that personnel are trained in spills clean up procedures. • Immediately clean leaks and spills of hazardous substances and dispose of as hazardous waste. • Report major spills to the regional DWA office. • Develop operational guidelines for implementing Clean Technologies (solvents and detergents). • Ensure that all products are used according to manufacturer's instructions and that staff are trained in the use and handling thereof.					

						• Ensure that the disposal of wash water is in accordance with operational policy and that this wash water does not threaten ground water or surface water systems or create erosion problems. • Maintain all buffer zones to trap sediments.					
Soil											
Soil pollution due to disposal or discharge of human (including partially treated and untreated) sewage.	1	4	4	3	**27 L**	• Monitor all rehabilitated areas for at least a year following the completion of rehabilitation works for failure of vegetation to establish and / or erosion. Immediately implement remedial measures as required. • Cordon off rehabilitated areas and do not allow grazing or access into these areas until such time that re-vegetation was found to be successful. • Maintain site vehicles and equipment in an acceptable state of repair (these may not smoke and must comply with SABS standards). • All vehicles must be road-worthy and regularly serviced, and drivers must be qualified and made aware of the need for strict speed limits. • Ensure that the facility sewage system is maintained in a sanitary and operational state. • Maintain site vehicles and equipment in an acceptable state of repair (these may not smoke and must comply with SABS standards). • All vehicles must be road-worthy and regularly serviced, and drivers must be qualified and made aware of the need for strict speed limits. • Implement a 'sort-at-source' approach to waste management, and separate recyclable waste from non-recyclable waste; • Undertake regular cleanups and litter removal across the entire site. • Recyclables and general waste must be collected from the development by reputable companies on a	1	4	2	2	**14 L**
Soil pollution due to toxic contaminants including toxic metal ions (e.g. copper, lead, zinc) and hydrocarbons due to: • Runoff from road surfaces • Discharge of solvents, paints, chemicals etc • Leaking fuel / oil from vehicles • Pesticides and herbicides • Litter.	1	4	8	4	**52 M**		1	4	6	2	**22 L**
Erosion resulting from the concentration of rainwater and / or wash water rushing off the unit's surfaces. In the event of rain, water will run off from the units roofs and be concentrated onto the soil directly below. If the soil is not stabilised by vegetation, is compacted or exposed, the water will erode the soils which could destabilise the soil around the units and / or cause soil to wash towards the drainage lines and non-perennial rivers and cause sedimentation.	1	4	6	3	**33 M**		1	4	4	2	**18 L**

						regular basis. • Maintain the storm water management system for the facility on an ongoing basis and ensure that this is always in good working order. • The protective buffer around the non-perennial rivers must be respected as it acts as a trap for sediment and contaminants. • Ensure that measures are in place to control the flow of excess water so that it does not impact on the surface vegetation. • Runoff from roads must be managed to avoid erosion and pollution problems. • Repair all erosion damage as soon as possible. Do not allow erosion to develop on a large scale before effecting repairs. • Prevent storm water or contaminated water directly entering any watercourse. • Dissipate concentrated storm water flows through energy dissipaters or vegetated areas. • Ensure that all solvents, detergents, chemicals, fuels etc are stored in locked stores on bunded surfaces. • Ensure that all potentially hazardous substances are used and handled by qualified personnel. • Follow manufacturer's instruction when using potentially hazardous substances, especially in terms of quantities, time of application etc. • Ensure that a spills containment kit is available on site and that personnel are trained in spills clean up procedures. • Immediately clean leaks and spills of hazardous substances and dispose of as hazardous waste. • Report major spills to the regional DWA office. • Develop operational guidelines for implementing Clean Technologies (solvents and detergents). • Ensure that all products are used according to					

						manufacturer's instructions and that staff are trained in the use and handling thereof. • Ensure that the disposal of wash water is in accordance with operational policy and that this wash water does not threaten ground water or surface water systems or create erosion problems. • Maintain all buffer zones to trap sediments. • During washing and cleaning, ensure that the use of excessive amounts of water is avoided.					
Air											
Air pollution by emission from private vehicles travelling to and from the site.	2	4	2	5	**40 M**	• Encourage group travel and lift clubs wherever possible.	2	4	2	3	**24 L**
Biodiversity (Flora)											
The spread of alien invasive plants in poorly rehabilitated areas. Alien invasive plant species not removed prior to construction, re-emergent weeds or introduced weeds could colonise disturbed soils. Alien invasive species tend to out-compete indigenous, slower growing species and could also result in unsuccessful rehabilitation. The invasive potential of the area is relatively low. However, the lack of adequate rehabilitation will allow alien invasive plant species to colonise disturbed areas and lead to a species poor transformed landscape.	1	4	6	3	**33 M**	• Ensure that all conserved species and specimens are suitably protected for the duration of the operational phase. • No protected trees or plants may be removed without the relevant permits from the local authority. • Implement fines for the damage or destruction of marked and protected specimens. • Workers may not tamper or remove flora and neither may anyone collect seed from the plants without permission from the local authority. • No open fires will be allowed anywhere on the site; • No incineration or burning of waste is permitted on the site; • Provide personnel with gas for cooking in designated and safe areas. • Ensure that the necessary fire fighting equipment is on site in terms of SABS 1200 and act in accordance with relevant legislative requirements. • Monitor all rehabilitated areas for at least a year following the completion of rehabilitation works for	1	4	4	2	**18 L**
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						failure of vegetation to establish and / or erosion. Immediately implement remedial measures as required. • Cordon off rehabilitated areas and do not allow grazing or access into these areas until such time that re-vegetation was found to be successful. • Maintain the storm water management system for the facility on an ongoing basis and ensure that this is always in good working order. • The protective buffer around the non-perennial rivers must be respected as it acts as a trap for sediment and contaminants. • Ensure that measures are in place to control the flow of excess water so that it does not impact on the surface vegetation. • Runoff from roads must be managed to avoid erosion and pollution problems. • Repair all erosion damage as soon as possible. Do not allow erosion to develop on a large scale before effecting repairs. • Prevent storm water or contaminated water directly entering any watercourse. • Dissipate concentrated storm water flows through energy dissipaters or vegetated areas. • Compile and implement an alien invasive monitoring plan to prevent the colonisation and spread of alien invasive plant species. • Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge. • Manual / mechanical removal is preferred to chemical control. • Follow manufacturer's instruction when using chemical methods, especially in terms of quantities, time of application etc. • Ensure that only properly trained people handle and					

						make use of chemicals. • The development should promote connectivity between ecologically important habitats by retaining natural corridors. • Maintain a buffer of 100m along all watercourses on site. • No unauthorised access is permitted to buffer areas or any natural areas outside of the facility footprint. All areas not impacted by the holiday homes, as well as those considered to have a high biological diversity, should be maintained in their natural states. • Maintain a game fence or suitable equivalent around the perimeter of the facility. This fence should, however, be designed to allow access by small mammals, tortoises etc. • Regulate and control movement over the site. Personnel, vehicles and equipment to move along designated routes. • The internal road network should be maintained as gravel tracks that allow for faunal dispersal and minimize fragmentation of ecologically sensitive areas. • No wood may be collected for firewood or any other purpose, and no large tree may be felled without the permission of the ECO. • No additional drainage line crossings may be developed without the express permission of DWA. • Maintain all roads in good condition to prevent dust and erosion. • Maintain all drainage line crossings to ensure that the crossing has minimal effect on the flow of water through the watercourse. In all instances, ensure that the movement of aquatic as well as terrestrial species along the watercourse is possible.					

						• Speed control measures must be implemented on site and in the surrounding area to reduce air pollution and animal mortality. • Maintenance activities should be limited to daylight hours and vehicles should remain on the designated roads at all times. • Limit herbicide and pesticide use to non-persistent, immobile products and apply in accordance with label and application permits directions and stipulations for terrestrial and aquatic applications. • Bury electrical supply lines in a manner that minimizes additional surface disturbance. Use overhead lines in cases where the burial of lines would result in further habitat disturbance.					
Biodiversity (Fauna)											
Faunal disturbance due to operational activities and people present on site. However, it is not expected for the composition of fauna species to alter significantly and the distribution and abundance of the faunal species should revert to that similar of the composition before construction.	1	4	2	3	**21 L**	• The development should promote connectivity between ecologically important habitats by retaining natural corridors for the movement of fauna. • Maintain a buffer of 100m along all watercourses on site. • No unauthorised access is permitted to buffer areas or any natural areas outside of the facility footprint. All areas not impacted by the units, as well as those considered to have a high biological diversity, should be maintained in their natural states. • Maintain a game fence or suitable equivalent around the perimeter of the facility. This fence should, however, be designed to allow access by small mammals, tortoises etc. • Regulate and control movement over the site. Personnel, vehicles and equipment to move along designated routes. • The internal road network should be maintained as gravel tracks that allow for faunal dispersal and minimize fragmentation of ecologically sensitive	1	4	2	2	**14 L**
Mortality of fauna due to exposure to collisions with infrastructure and cables. During the operational phase, contaminates such as pesticides and oils may be used and / or spilt on site. The presence of such contaminants may result in the death of fauna species.	1	4	4	2	**18 L**		1	4	2	1	**7 N**
Persecution and hunting of fauna by visitors on site. This may occur out of fear for certain fauna assemblages, a need for food or persecution for sport.	1	4	2	2	**14 L**		1	4	2	2	**14 L**

						areas. • Only vehicles that are necessary for the maintenance of the PV plant and its facilities should be allowed to use the internal roads • Speed control measures must be implemented on site and in the surrounding area to reduce air pollution and animal mortality. • Maintenance activities should be limited to daylight hours and vehicles should remain on the designated roads at all times. • Limit herbicide and pesticide use to non-persistent, immobile products and apply in accordance with label and application permits directions and stipulations for terrestrial and aquatic applications. • Apply spill prevention practices and response actions in refuelling and vehicle-use areas to minimize accidental contamination of habitats. • Bury electrical supply lines in a manner that minimizes additional surface disturbance. Use overhead lines in cases where the burial of lines would result in further habitat disturbance. • Develop a procedure for dealing with animals encountered on the site. • Develop a procedure for dealing with dangerous animals and vermin. Where necessary, call in professionals to remove the animals. • Ensure that all personnel are aware of what the procedures for dealing with animals are. It is the contractor's responsibility to ensure that proper procedures are followed. • Staff should be encouraged not to harm any wildlife. • Pets and livestock should not be allowed on site. If pets are to be allowed on site, they should be isolated from the general wildlife and properly controlled.					

Land Use & Agricultural Potential												
None.						•						
Heritage												
Damage to a possible grave identified on site.	3	5	6	2	**28 L**	• A buffer zone of 10 m must be observed and the area must be fenced off to prevent any possible impact.	3	5	6	1	**14 L**
Visual												
Potential visual impact on users of main and secondary roads in close proximity to the proposed sites	3	4	8	3	**45 M**	• Refine the final layout of holiday homes so that the clearing of vegetation, especially large and significant trees, is minimised. • Consolidate buildings and infrastructure as much as possible, and make use of already disturbed areas rather than pristine sites wherever possible. • Combine access roads with power line servitudes, firebreaks etc wherever possible. • Retain a buffer (approximately 50m wide) of intact natural vegetation on either side of the gravel road for the full length of the proposed facility. • Supplement the buffer where the natural vegetation is less dense. Consult an ecologist regarding species specifications. • Retain and maintain natural vegetation in all areas outside of the development footprint. • Maintain the general appearance of the facility as a whole, including roads and servitudes.	3	4	8	3	**45 M**
Potential visual impact on residents of homesteads and settlements in close proximity to the proposed units.	3	4	8	3	**45 M**		3	4	8	3	**45 M**
Potential visual impact on sensitive visual receptors within the region	3	4	6	2	**26 L**		3	4	6	1	**13 L**
Potential visual impact of the substation on observers in close proximity to the proposed units	4	4	6	2	**28 L**		4	4	6	1	**14 L**
Potential visual impact of access roads on observers in close proximity to the proposed units	2	4	4	2	**20 L**		4	4	4	1	**12 L**
Potential visual impact of lighting on visual receptors in close proximity of the proposed units.	2	4	4	3	**30 M**	• Shield sources of light by physical barriers (walls, vegetation, or the structure itself); • Limit mounting heights of lighting fixtures, or alternatively use foot-lights or bollard level lights; • Make use of minimum lumen or wattage in fixtures; • Make use of down-lighters, or shielded fixtures; • Make use of Low Pressure Sodium lighting or other types of low impact lighting. • Make use of motion detectors on security lighting. This will allow the site to remain in relative darkness, until lighting is required for security or maintenance purposes.	4	4	6	2	**28 L**
Socio-economics												
Potential loss of livestock, crops and houses,	3	1	10	4	**60**	• No open fires will be allowed anywhere on the site;	2	1	6	3	**27**

damage to farm infrastructure and threat to human life associated with increased incidence of veld fires.					**H**	• No incineration or burning of waste is permitted on the site; • A firebreak should be maintained around the perimeter of the site for the duration of the operational phase. • The operator should remain in contact with all of the adjacent farm owners to ensure that he/she has the contact numbers so that they can be contacted in the event of a fire. • The operator must ensure that adequate fire fighting equipment is on-site; • The operator must ensure that fire-fighting training is provided to selected staff.					**L**
Municipal services & traffic												
None						•						
Indirect Impacts												
Visual												
Potential visual impact of the proposed holiday homes on visual character of the landscape and sense of place of the region.	3	4	4	2	**22 L**	• Refine the final layout of the holiday homes e so that the clearing of vegetation, especially large and significant trees, is minimised. • Consolidate buildings and infrastructure as much as possible, and make use of already disturbed areas rather than pristine sites wherever possible. • Combine access roads with power line servitudes, firebreaks etc wherever possible. • Retain a buffer (approximately 50m wide) of intact natural vegetation on either side of the gravel road for the full length of the proposed facility. • Supplement the buffer where the natural vegetation is less dense. Consult an ecologist regarding species specifications. • Retain and maintain natural vegetation in all areas outside of the development footprint. • Maintain the general appearance of the facility as a whole, including roads and servitudes.	3	4	6	1	**13 L**
Potential visual impact of the proposed holiday plans on tourist facilities and tourist access routes within the region.	3	4	6	2	**26 L**		3	4	6	1	**13 L**
.												

Cumulative Impacts											
Ground water											
Depletion of ground water resources due to accumulated use by increasing numbers of users in the region.	3	3	4	2	**20 L**	• As above	3	3	2	1	**8 L**
Socio-economics											
Promotion of social and economic development and improvement in the overall well-being of the community. *(positive impact)*	*2*	*4*	*8*	*3*	***42 M***	• *As above*	*2*	*4*	*8*	*4*	***56 M***

10. SPECIALIST RECOMMENDATIONS

10.1 Specialist Ecological Assessment

Ralf Kalwa from Rhengu Environmental Services was requested by NuLeaf Planning and Environmental (Pty) Ltd to undertake the Ecological Assessment which would assess the potential impacts of the development on the ecological integrity of the proposed holiday home sites. This investigation includes various aspects of the terrestrial components (flora, fauna and soil) in the ecosystem.

This report describes the approach which was followed to obtain answers and submit recommendations to address the following questions:

- Identify and describe the main vegetation/habitat types of the study area.
- Identify the types of plant communities that occur in the study area with emphasis on threatened- and vulnerable ecosystems.
- Identify (if any) plant- and animal species of conservation concern.
- Identify and describe the main soil types prevalent in the study area and highlight the limitations these soils place on potential development opportunities.
- Give an indication of potentially expected impacts on the biodiversity that can be expected as a result of the proposed activity.
- Assess the possibility of mitigation where significant impacts may occur.
- Submit applicable recommendations to ensure the conservation of the biodiversity of the development nodes.

10.1.1 Methodology

- A site visit was undertaken to each holiday home site.
- At each site, the specialist covered a 100m x 100m area by foot around the centre point as indicated by the site peg.
- Using the Specialist Studies (fauna; flora and soils) as a reference, we assessed each site against the findings listed in these reports.
- The specialist assessed the sites specifically for plant species of concern and the presence of sensitive habitats (if any), e.g. rocky outcrops, drainage lines, wetlands or pans.
- Individual species of conservation importance and or individual importance in a local sense were identified where applicable and noted for special attention.
- Special attention was also given to species listed by the South African National Botanical Research Institute (SANBI) as rare or threatened.
- Representative habitats were noted and classified regarding habitat aspects and coverage.
- All faunal species and signs of animals were recorded in the relevant habitat/s along the route.
- Finally, the specialist looked for impacts and disturbances (e.g. roads, dump sites; pollution etc.) which could play a role in the site condition or explain prevailing conditions or could have an influence on the ecology of the site.

10.1.2 Detailed Ecological Assessment

Please see Appendix B 3.1 for the detailed Specialist Ecological Assessment.

This assessment was conducted in October 2013 as per Mpumalanga Provincial Guidelines relating to Ecological Assessments.

The below table briefly describes the results of the ecological assessment:

Site No.	Summarised Results	Photo of special requirement/limitation
1	- No soil limitation - Leadwood species should be avoided. - Other protected tree species. - A martial eagle has made a nest to the north of the site. - Site is suitable for development. **Image: Martial Eagle nest.**	
2	- Soil limitation: Holiday home placement should avoid the western boundary of the site. - Sensitive termitaria on site. - Avoid leadwood and apple leaf species. - Other protected tree species. - Eastern boundary of site is suitable for development. **Image: Termitarium and Drainage Line**	
3	- Soil limitation: Holiday home placement should avoid the eastern boundary of the site. - Western boundary of the site is suitable for development. - Tamboti trees should be avoided. - The site borders duplex soil types which should be avoided. - Western Boundary of the site is suitable for development. **Image: Sodic soils and Tamboti Trees**	
4	- Soil limitation: Holiday home placement should avoid the northern boundary of the site. - Potential occurrence of protected tree species. - Avoid impacting on the drainage line north of the site. **Image: Development area south of centre peg.**	

5	- No soil limitations noted. - Avoid apple leaf, marula and brown ivory species. - Avoid termitarium on site. - Suitable for development. **Image: Termitarium**	
6	- Soil limitation: Holiday home placement should avoid the southern boundary of the site. - Suitable for development, drainage line south of the site should be avoided. **Image: Drainage line**	
Alt A	- Soil limitation: Holiday home placement should avoid the western boundary of the site. - Avoid impacting upon drainage line north of the site. - Avoid impacting on termitarium. - Suitable for development, drainage line south of the site should be avoided. **Image: Drainage line and termitarium**	
Alt B	- No soil limitations notes. - Suitable for development. **Image: Alternative B**	

10.1.3 Specialist recommendations

Project Statement:

All 8 proposed holiday home sites can be developed provided the following recommendations and measures of mitigation are implemented. The following boundary limitations must be adhered to:

- **Site 1:** The road access route to the site must be aligned away from the martial eagle nest.
- **Site 2:** The development footprint must be sited **east** of the centre peg.
- **Site 3:** The development footprint must be sited **west** of the centre peg.
- **Site 4:** The development footprint must be sited **south** of the centre peg.
- **Site 5:** The development footprint must be sited **north** of the centre peg.
- **Alternative A:** The development footprint must be sited **east** of the centre peg.
- **Alternative B**: No real limitations

All recommended mitigation measures have been included in Section 11: Possible Mitigation.

10.2 Specialist Heritage Opinion

Strategic Environmental Focus (Pty) Ltd (SEF) as independent Environmental Consultants were commissioned by NuLeaf Planning and Environmental (Pty) Ltd to investigate the heritage potential of Remainder of Portion 4 and Portion 8, Rietvley 28KU and the impact of a proposed development on possible heritage resources on the sites.

10.2.1 Baseline Findings

To make a comprehensive and solid recommendation regarding the proposed project, NuLeaf Planning and Environmental (Pty) Ltd, provided a brief description indicating what the proposed development will entail, the proposed locations of the housing units within the study area as well as two alternative sites (Alternative A and Alternative B) which will be considered during the Basic Assessment Phase of the project. SEF undertook a desktop investigation of the existing South African Heritage Resource Information System (SAHRIS), aerial photographs and existing literature. The desktop survey revealed that in 2004, an archaeological and cultural assessment of Portion 4 (Remainder) and Portion 5 of the Farm Rietvley 28 KU was undertaken during the first phase of a proposed residential development within the nature reserve. The current study area coincides with part of the study covered in 2004.

The bulk of the findings from the study undertaken by Maguire & van Wyk (2004) consisted of widely and sparsely scattered Early Stone Age tools including hand axes, flakes, choppers, cobles and cores. These tools were rated of low significance as they were found out of context and were isolated.

10.2.2 Recommendations

Based on the desktop investigation and the study undertaken by Maguire & van Wyk (2004), the specialist recommends, in her capacity as an independent Heritage Specialist at SEF, that there are no significant heritage or archaeological resources, historic structures and burial grounds on which the proposed development could negatively impact on. As such, it is further recommend that the project be exempted from any archaeological and heritage impact assessment studies.

10.2.3 Legal Framework

It is important for the developer to take cognizance of that fact that any measures to cover up suspected archaeological material or collect heritage resources is illegal and punishable by law. In the

same manner, no person may exhume or collect such remains, whether of recent origin or not, without the endorsement by SAHRA.

10.3 Visual Impact Assessment

The Visual Impact Assessment was undertaken by NuLeaf Planning and Environmental, using Geographic Information Systems (GIS) software as a tool to generate viewshed analyses and to apply relevant spatial criteria to the proposed development of six 12 bed holiday homes on the Remainder of Portion 4 and Portion 8 of the farm Rietvley 28KU, Mpumalanga. Refer to Appendix B.3.5.

10.3.1 Study Approach

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

- The creation of a detailed digital terrain model (DTM) of the potentially affected environment using 5m interval contours;
- The sourcing of relevant spatial data, including cadastral features, vegetation types, land use activities, topographical features, site placement, etc.;
- The identification of sensitive environments or receptors upon which the proposed facility could have a potential impact;
- The creation of viewshed analyses from the proposed development area in order to determine the visual exposure and the topography's potential to absorb the potential visual impact.

10.3.2 Objective of Study

This study sets out to identify the possible visual issues related to the proposed development of facilities and associated infrastructure, to offer potential mitigation measures where required and to make a recommendation in terms of additional study required.

Of relevance to this analysis is the following:

- Potential visual exposure
- Visual distance and observer proximity to the proposed development
- Visual absorption capacity (VAC) of the landscape
- Viewer Incidence and viewer perception

10.3.3 Visual Impacts Identified

Anticipated visual impact issues related to the proposed development of the six holiday homes include:

- The visibility of the holiday homes to, and potential visual impact on, observers travelling along game drive routes within the Umbabat and Klaserie Nature Reserves
- The visibility of the holiday homes to, and potential visual impact on residences, tourist camps and lodges within the Umbabat and Klaserie Nature Reserves, and specifically the Ndolpfu and Ntsiri Share Block Developments.
- The potential visual impact of the facility on the visual character of the landscape and sense of place of the region.
- The potential visual impact of lighting of the homes at night on observers residing in close proximity of the facility.
- Potential visual impacts associated with the construction phase.

10.3.4 Impact of existing holiday home

In its current state, the existing holiday home located in the study area has a significanct visual impact on the surrounding region. The initial proposal was to demolish this structure but after further review, NuLeaf Planning were able to design mitigation measures to minimise visual impacts of this house. A detailed assessment was conducted and designs are available for the developers to implement. Please refer to Appendix B 3.6 and B 3.7 for the detailed reports and graphics.

10.3.4 Specialist Recommendations

The finding of the Viewshed Analysis undertaken for the proposed development of 6 holiday homes on the Remainder of Portion 4 and Portion 8 of the Farm Rietvley 28KUis that:

- The visual exposure footprint of the 6 proposed sites is very limited in extent, especially beyond the 2 km range.
- The visual exposure footprint illustrates that the proposed sites have been judiciously selected to ensure that they are visually secluded, with little or no impact on the surrounding camps, lodges and residences.
- The VAC of the landscape is high, and will effectively ameliorate the potential line of sight impacts related to the visual exposure footprint.
- Furthermore, the severity of any potential visual impact can be further mitigated to acceptable levels by applying basic management and mitigation procedures tabulated under section 6.

It is concluded that no potential fatal flaws exist for the proposed development, and the expected visual issues are likely to be limited in both extent and magnitude. In this respect, no further assessment of visual impacts is recommended.

It is furthermore submitted, that the development as proposed, would not result in any unacceptable visual impact on sensitive visual receptors or alter the visual quality of the landscape. The development proposed is supported from a visual perspective; subject to the implementation of the management and mitigation procedures.

11. PROPOSED MITIGATION PROVIDED BY SPECIALISTS

In order to minimise the impacts associated with the proposed development, the following mitigation measures have been identified for implementation:

1. **General Limitations**

   The management zone least suited for development includes duplex soils of the footslopes/pans and on deeper neocutanic/alluvial soils of the footslopes and riverbanks. Most of the midslopes and crest areas of the southern parts of Rietvley can therefore be safely developed, as these are ecologically the least sensitive within the Rietvley area.

   One exception is, however, relevant. Cartref soils included within the Development Zone are sensitive if the grey E-horizon is exposed to the soil surface during the rainy season. E.g. Site 3 could fall into this soil form if the developer sites the development footprint east of the centre peg.

2. **No-go Areas**:

   The Environmental Control Officer (ECO) must mark and demarcate all protected tree species, termitaria and drainage lines **prior** to architectural drawings being completed. These sites will then be classified as **no-go areas**.

3. **Special Habitats**

   No development may take place on a termitatrium and or within the flood zone of any drainage line.

4. **Invader-Alien Plants**

   All invader species must be controlled and removed off site under the guidance of the ECO.

5. **Holiday Home Placement**

   It is recommended that the ECO is commissioned prior to final architectural drawings being submitted to ensure that the presence of the 3 Protected Tree Species (Leadwood, Appleleaf and Marula) are indicated on the site development plan for each unit. We must emphasize that these species occur in low densities and one is talking of 3 to 4 plants per site.

   We are of the opinion that all holiday home units can be sited around these species as they contribute to the aesthetics and ambience of each site.

   Should this approach not be possible/practical it is recommended that an attempt be made to relocate these trees. Finally, when all else fails these trees should be permitted by the Department of Agriculture, Forestry and Fisheries (DAFF) for removal with the provision that they are used commercially by local community carpenters (marula and leadwood). This approach would thus translate into a small commercial enterprise for local job seekers.

   It is also customary to replace all protected tree species (which are removed) with individual plants from an indigenous nursery on a one by one basis. Tamboti Trees (Site 3), although not protected, are considered special in terms of inherent characteristics of attracting

birds and reptiles, notwithstanding the fact that it produces a special wood. This species should be protected at Site 3.

The unique ecosystem that has been established at Site 5 by the termitarium and the brown ivory requires special mention. This represents a unique habitat type which must be demarcated for protection during the development process.

6. 'Leave that Log' Principle

Implement the "leave that log" principle. By implication we say that if we conserve and leave elements of habitat untouched, the various role players will continue to function as normally as possible. Leaving a dead log in the veld, will allow insects, small vertebrates, reptiles, birds etc. to go about their business of survival and well being.

Access roads must follow the natural contours into and out of the property, keeping to the higher lying areas and crests. The removal of any vegetation not affected by the development should not be allowed. This approach will go a long way towards maintaining habitat integrity.

7. Top Soil

Top soil must not be compacted, nor should any object be stored or stockpiled upon it.

The Contractor must backfill according to the requirements of progressive reinstatement, i.e. the reinstatement of disturbed areas to the top soil profile must continue on an ongoing basis, immediately after selected construction activities are completed, which will allow for passive rehabilitation.

Excess top soil must be spread evenly over the area in a manner that blends in with the natural topography. Ensure that all construction activities/trenching activities allow for the natural dispersion of run-off water gradually channelling water away from the sites into the natural vegetation.

8. Waste Management

No refuelling of equipment and vehicles are allowed near or close to any drainage line.

All waste to be disposed of off-site at the Ndlopfu Recycling and Separation Facility. The Ndlopfu Game Reserve is well known for its waste management- and recycling programme.

The Contractor is not to dispose of any waste and/or construction debris through burning or by burying. Contractor to supply tamper proof waste bins throughout the site at locations where construction workers are working. Tamper proof refuse bins to be emptied on a daily basis.

Refuse bins not to be used for any other purpose. Contractor has to designate specific areas for staff to enjoy their lunches and tea and he must provide for access to adequate refuse bins at these sites.

All litter must be removed off site daily and deposited at the designated waste collection point near the Maintenance Yard (Ndlopfu Offices).

Waste includes cigarette boxes, cigarette butts, paper, plastic bags, tin, glass, wires, cable ties, and organic waste e.g. peels and bones. Under no circumstances will cigarette butts be

discarded anywhere on the development site. The developments are located in a sensitive, nature area and bush fires can spread for kilometres devastating wildlife during untimely fires.

9. Cultural Resource Management

In the event that archaeological material is unearthed, construction activities within a radius of at least 20m of such features should cease and the area demarcated with a danger tape pending an investigation by an archaeologist. This specialist will provide recommendations on what actions will need to take place in the discovery area to ensure that construction can resume.

Project Managers should be informed of what archaeological features are and what to look for.

10. Visual Impacts: Physical Building Limitations (height footprint)

- Limit and break up bulk infrastructure and straight lines.
- Recommended design elements should be provided for as per the existing Ndlopfu guidelines.
- Maximum roof height should be provided for each holiday home.

11. Visual Impacts: Colours and Textures

- The colour and texture of the proposed structures must respond to the natural colours and textures of the environment. In this regard, a colour palette is provided in the Visual Impact Assessment for the treatment of all exterior walls.

12. Visual Impacts: Lighting

- No directional spotlights / floodlights should be permitted.
- No coloured lights should be permitted, only 'cool white' lighting.
- Minimum wattage and lumen in all light fixtures.
- Exterior lights - make use of down-lighters, or shielded fixtures;
- Limit the mounting heights of lighting fixtures, or alternatively using foot-lights or bollard level lights.
- Make use of Low Pressure Sodium lighting or other types of low impact lighting (spotlights).
- If applicable, make use of motion detectors on security lighting. This will allow the site to remain in relative darkness, until lighting is required for security or maintenance purposes.

The graphics in Appendix B.3.6 provide a representation of the proposed mitigation measures.

12. DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

As the Independent Environmental Assessment Practitioner for the project, NuLeaf Planning and Environmental were appointed to compile the Environmental Management Plan (Programme) for the proposed development.

Definition of an "Environmental Management Plan":

A plan or programme that seeks to achieve a required end state and describes how activities that have or could have an adverse impact on the environment, will be mitigated, controlled, and monitored.

The EMP will address the environmental impacts during the design, construction and operational phases of a project. Due regard must be given to environmental protection during the entire project. In order to achieve this number of environmental specifications/recommendations are made. These are aimed at ensuring that the contractor maintains adequate control over the project in order to:

- Minimise the extent of impact during construction.
- Ensure appropriate restoration of areas affected by construction.
- Prevent long term environmental degradation.

The contractor must be made aware of the environmental obligations that are stipulated in this document, and declares himself/ herself to be conversant of all relevant environmental legislation. The contractor should also be aware that the Reserve Manager / Environmental Control Officer will monitor the implementation of the procedures.

The EMP is a dynamic and flexible document subject to review and updating. During the implementation of a project there is always the possibility that unforeseen issues could arise, this EMP should therefore be revised where necessary to mitigate unanticipated impacts.

Please see Appendix C for the detailed EMP.

13. ASSUMPTIONS AND LIMITATIONS

The Basic Assessment Report has been prepared on the strengths of the information available, from our field surveys, specialist reports and that provided by the applicant at the time of the assessment. The assessment was conducted as a desktop and field survey. Topographical and Ecological maps were used. The assumptions made and constraints that were prevalent did not obviously have any restrictive or negative implications on the study.

In undertaking this investigation and compiling the Basic Assessment Report, the following has been assumed:

- The information provided by the client is accurate;
- The scope of this investigation is limited to assessing the environmental impacts associated with the construction of the proposed holiday homes and associated infrastructure.
- Should the project be authorised, the applicant will implement any layout changes, recommendations and mitigation measures outlined in this assessment, EMP and authorisation into the detailed design and construction contract specifications of the proposed project.

14. EAP RECOMMENDATIONS

As independent Environmental Assessment Practitioners, we recommend that all mitigation measures included in the impact assessment tables be implemented along with the proposed mitigation measures as suggested by the various specialists.

We would however like to emphasise the following recommendations:

Recommendations in the Planning Phase:

- An Ecologist should walk through the final site layout for the 6 holiday homes, and identify and mark all protected plant and tree species. Every effort must be made to incorporate all trees into the design of the units and facilities to ensure the protection of the properties natural assets.
- Implement the 'Leave that Log' Principle. By leaving elements of the habitat untouched, it will ensure that insects, reptiles etc. will continue on as normal.
- The final design and layout of the units and facilities must be in line with the land-use patterns in the greater area. By building single story units and using natural paint colours, the units will not intrude on the natural environment.
- Draw up a Constructions Operation Plan indicating how the construction site will operate in terms of access, activities, phasing, etc (during project planning).

Recommendations in the Construction Phase:

- A 'locals first' policy should be implemented where possible and local contractors should be appointed especially for low-skilled jobs.
- Contact numbers of all adjacent and neighbouring farms should be collected by the contractor so that in the event of a fire, they can be contacted.
- Dust during construction should be controlled via the dampening of exposed areas.
- Alien plant species must be eradicated and follow up measures must be put in place to prevent the spread of these alien plants in the disturbed soils.
- A Rehabilitation Plan must be implemented after construction to ensure that all exposed areas around the units are re-vegetated with local endemic plant species, using the topsoil stockpiled. No alien vegetation is permitted.
- A sound Storm water management plan must be implemented to avoid the pollution of drainage lines, ground and surface water.

Recommendations in the Operational Phase:

- All rehabilitated areas should be monitored for a year to ensure the re-establishment of vegetation and the prevention of erosion.
- Ensure the units and facilities sewage system is well maintained to prevent pollution of water sources.
- Maintain the Storm water management system to ensure that surface and runoff water from hard surfaces does not contribute to erosion and pollution.
- Implement an alien invasive monitoring programme to prevent the colonization and spreading of these species.

15. CONCLUSION

After reviewing the potential impacts of the proposed development and the inputs of the various specialists, it became evident that there are no fatal flaws associated with this project and the impacts are not of a significance level where the Department needs to be concerned.

It is obvious that the developers are very conservation conscious and their approach to this development is commendable.

NuLeaf Planning and Environmental (Pty) Ltd see no reason why the development of the preferred option may not proceed and would recommend that the Department approve this application.

It is however critical that all conditions and mitigation measures included in this report and the Environmental Management Programme be implemented and maintained for the full duration of the project.

We would like to take this opportunity to thank all stakeholders who provided support and input during the compilation of this Draft Basic Assessment Report.