BASIC ENVIRONMENTAL IMPACT ASSESSMENT FOR THE CONSTRUCTION OF A 12 BED TENTED LODGE IN THE SABI SAND.

Final Report

22 July 2013

EMROSS Consulting Pty Ltd
P O Box 507, White River, 1240

PROJECT TEAM

Applicant.
Chitwa Tented (Pty) Ltd.

PO Box 26291

STEILTES

1213

Tel: 013 744 0876

Fax: 013 744 3748

E-mail: chitwa@iafrica.com

Contact Person: Charl Brink

Consultants.
EMROSS Consulting Pty Ltd

P.O. Box 507

WHITE RIVER

240

Tel: 013 750 2782

Fax: 086 675 4320

Cell: 082 3399 627

Responsible EAP: Andrew Rossaak

E-mail: andrew@emross.co.za

Lead authority.
Mpumalanga Department of Economic Development, Environment and Tourism.

Private Bag X 11219

NELSPRUIT

1200

Responsible Officer: Ms Robyn Luyt

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-187
Project Title:	Construction of tented lodge Chitwa, SSWT
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.

SECTION A: BACKGROUND INFORMATION

Project applicant:	Misty Mountain Trading 2 (Pty) Ltd		
Trading name (if any):	Chitwa Tented		
Contact person:	Charl Brink		
Physical address:	112 Uitsig Estate, Nelspruit		
Postal address:	PO Box 26291, Steiltes		
Postal code:	1213	**Cell:**	083 653 5555
Telephone:	013 744 0876	**Fax:**	013 744 3748
E-mail:	chitwa@iafrica.com		

Environmental Assessment Practitioner:	Emross Consulting (Pty) Ltd		
Contact person:	Andrew Rossaak		
Postal address:	PO Box 507, White River		
Postal code:	1240	**Cell:**	082 3399 627
Telephone:	013 750 2782	**Fax:**	086 675 4320
E-mail:	andrew@emross.co.za		
Qualifications:	M.Sc. Ecology and 15+ years of experience in environmental field		
Professional affiliations (if any):	SACNASP reg no: 400167/08, GSSA registered professional, IAIAsa		

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 construction of a 12 bed tented lodge at Chitwa Sabi Sands

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.):

Remainder portion of the farm Arathusa 241KU

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.

Latitude (S):		**Longitude (E):**	
24^0	45.1591‘	31^0	28.6935‘

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);
6.7 servitudes indicating the purpose of the servitude;
6.8 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:	Kruger National Park		
Contact person:	Tracy-Lee Ann Petersen		
Postal address:	PO Box 394, Skukuza		
Postal code:	1350	**Cell:**	076 896 3399
Telephone:	013 735 4271	**Fax:**	013 735 4051
E-mail:	TracyP@sanparks.org		

Department:	Mpumalanga Parks and Tourism Agency		
Contact person:	Frans Krige		
Postal address:	PO Box 98, Dullstroom		
Postal code:	1110	**Cell:**	084 232 2902
Telephone:	013 254 0279	**Fax:**	013 254 0279
E-mail:	franskrige@telkomsa.net / frans@mtpa.co.za		

Department:	Bushbuck Ridge Local Municipality		
Contact person:	Municipal Manager**,** Mr Doctor Shabangu		
Postal address:	Private Bag X9308, Bush Buck Ridge		
Postal code:	1280	**Cell:**	
Telephone:	013 799 1851/7	**Fax:**	
E-mail:	info@bushbuckridge.gov.za, shabangud@bushbuckridge.gov.za		

Department:	Department of Water Affairs		
Contact person:	Sampie Shabangu		
Postal address:	Private Bag X11259, Nelspruit		
Postal code:	1200	**Cell:**	082 857 4275
Telephone:		**Fax:**	
E-mail:	ShabanguS2@dwa.gov.za		

Department:	Inkomati Catchment Management Agency		
Contact person:	Adolph Mbetse		
Postal address:			
Postal code:		**Cell:**	078 893 8924
Telephone:	013 753 9050	**Fax:**	
E-mail:	adolphm@inkomaticma.co.za		

Department:	Sabi Sand Wildtuin		
Contact person:	Michael Grover / Andrew Parker		
Postal address:			
Postal code:		**Cell:**	078 804 0347
Telephone:		**Fax:**	086 633 9248
E-mail:	gis@sabisand.co.za		

SECTION E: APPENDICES

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

Site plan(s)

Photographs

Facility illustration(s)

Specialist reports

Comments and responses report

Other information

INDEX

1 INTRODUCTION

Emross Consulting was appointed by Chitwa Tented (Pty) Ltd. to undertake the required actions and assessments to apply for environmental authorisation from Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET: the decision-making authority) for the proposed construction of a 12 bed tented lodge, and associated infrastructure and staff accommodation, in the Sabi Sand Game Reserve, Bushbuckridge Local Municipality.

This activity is identified as a listed activity in GN Regulation 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) as **activity 6: "*The construction of resorts, lodges or other tourism accommodation facilities that sleep 15 people or more (a) In Mpumalanga (ii) outside urban areas (aa) A protected area identified in terms of NEMPAA*" and activity 16: "*The construction of: (iii) buildings with a footprint exceeding 10 m² in size where such construction occurs within 32m of a watercourse, measured from the edge of the watercourse (a) In Mpumalanga ii Outside urban areas, in: (aa) A protected area identified in terms of NEMPAA*".**

The Brink family, currently operates two luxury lodges in the Sabi Sand Game Reserve; Chitwa Chitwa Lodge and Chitwa House. It is proposed that the new development will be a semi-tented lodge, with capacity for 12 sleeping guests and staff.

2 DESCRIPTION OF RECEIVING ENVIRONMENT

The sites to be assessed are as follows:

Preferred Site: Co-ordinates 24º45'09.55"S 31º28'42.83"E. This is approximately 1km south of the existing Elephant Plains game lodge. This site extends over a small ephemeral river called the Simba River and along the banks of the Manyeleti river. The site is located 500m from the Elephant Plains landing strip.

Alternative Site 1: Co-ordinates 24º45'50.41"S 31º28'42.83"E. The site is also on the Manyeleti river and was approved for the lodge in a previous assessment ref:17/2/1/1(d) MP-11. The construction of the lodge was voluntarily halted due to neighbour objections.

Alternative Site 2: Co-ordinates 24º44'52.23"S 31º29'56.52"E. This site is closer to the existing Chitwa Chitwa Lodge. This site has dense tree stands in places and is on the banks on an un-named ephemeral river.

All three sites are on the remainder portion of the farm Arathusa 241KU, in the Sabi Sand Game Reserve. The naming of the site follows terminology used in the regulations, and whilst a preferred site is indicated, all sites are assessed with equal rigour. A more thorough description and photo record of the sites is included in the site visit report in Appendix 1.

The quaternary catchment is X32H (see Figure 1 below).

The vegetation type is Granite Lowveld SVI 3 (see Figure 2 below).

Figure 1: Map showing extent of Quaternary Catchment with sites indicated.

Figure 2: Map showing some extent of vegetation type ( ) with sites indicated.

The Sabi Sand Game Reserve is a high-end market tourism area. The proposed development is in line with this activity in a conservation area.

The sites show no other apparent signs of historic activity. A heritage assessment is not considered necessary due to the footprint of the sites being less than 5000 square meters each. Provisions are provided in the EMP (Appendix 5) should any heritage artefacts be discovered.

The vegetation on and around all three sites is natural and in good condition. The alternative site number 1, is disturbed by the commenced lodge construction. All the sites host the vegetation type Granite Lowveld (Mucina & Rutherford 2006) which is a vulnerable vegetation type (Fig 2). Some protected trees were encountered on the proposed sites. It is envisaged that these will be incorporated in the lodge design and should not be impacted by the development. A specialist Ecological Assessment was conducted in March 2013, the resulting report is attached in Appendix 4.

Care should be given to minimising impact on the vegetation on and around the site during and after construction of the facility and provision for this is made in the accompanying draft EMP (Appendix 5).

As vegetation and landscape dictates that potential lodge sites are often located near watercourses, an important criteria in the selection of potential lodge site, was that the sites should not have been flooded during recent severe flood events of January 2012 and January 2013. The preferred site is located at the confluence of the Manyeleti and the Mazieme/Simba Rivers. The banks of both rivers are several meters high at the proposed lodge site and were not overtopped by the 2012 flood, which was the greater flood of the two recent floods.

As can be seen from photo 1 and 2 below, the banks of both rivers showed a sound vegetation cover when visited in April 2013, only three months after the most recent flood. Considering the severity of the two floods this is a useful indicator of the stability of the vegetation on the riverbanks. It is important that this vegetation cover is not disturbed by the proposed lodge construction, as the banks may otherwise be destabilised.

Photo 1: The Manyeleti river bank at the preferred lodge site.

Photo 2: Mazieme/Simba River bank at the preferred lodge site.

Location maps are included in Appendix 1.

3 DESCRIPTION OF PROPOSED ACTIVITY

The proposed activity is the construction of a new 12 bed tented lodge, with associated infrastructure and staff accommodation, in the Sabi Sand Private Nature Reserve. The footprint of the development will be approximately 2000m^2. The lodge is intended to be an environmentally sustainable, low impact development.

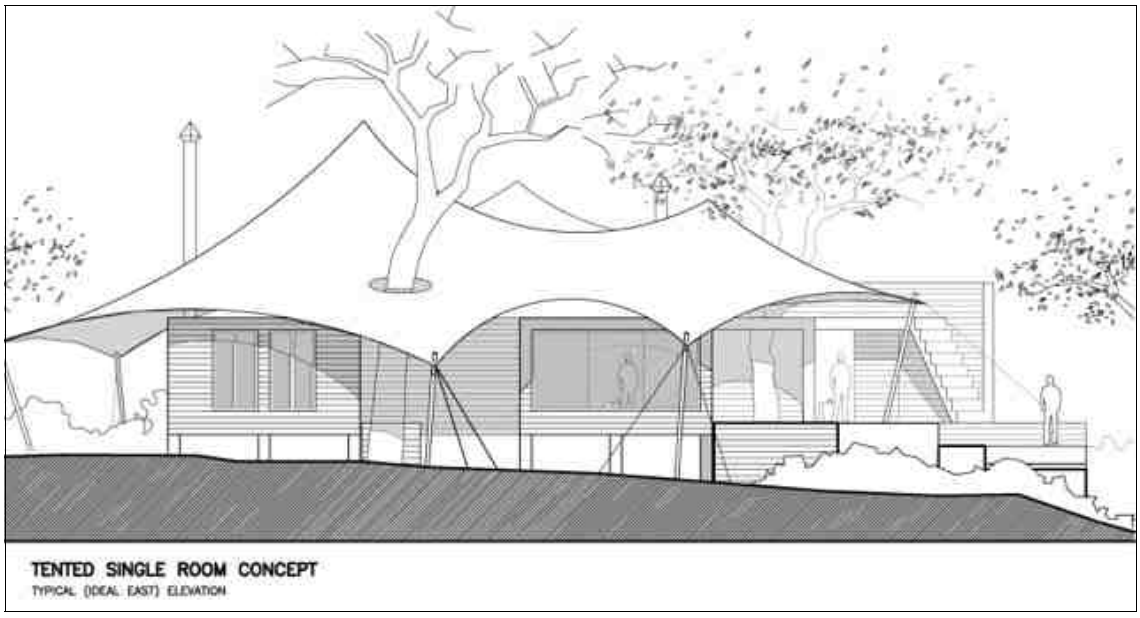


Figure 3: Concept drawing of Proposed Tented Lodge.

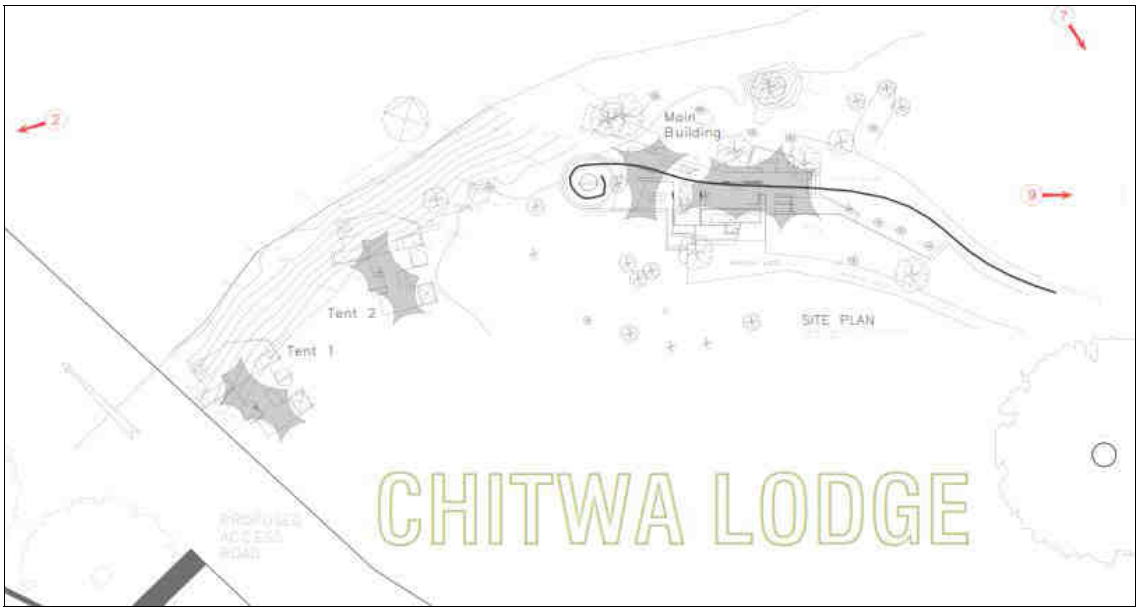


Figure 4: Concept drawing of Proposed Tented Lodge Layout.

The design of the Chitwa Tented Lodge has considered a great deal of sustainability and low impact options and it is intended to implement these.

The lodge will be developed to ensure that all structures blend into the environment. It is intended for the development to be removable and without a long lasting footprint (see Figure 3 and 4 above).

Passive and renewable energy fittings will be used to ensure the tented lodge is energy efficient. Orientation of the camp will be carefully considered with tents to be placed NNW to catch the natural light and warmth of the sun without the excessive glare and overheating that can result from a direct West orientation. Dwellings are also to be sensitively placed to utilise the shade afforded by tree canopies. Adequate shading and cross ventilation will be important in achieving cost effective cooling.
As the Sabi Sand Game Reserve is home to a range of wildlife including the big five, certain considerations should be given to promoting positive interactions. These include maintaining excellent viewing areas, whilst minimising the disturbance to the natural activity of the animals.

Human-animal conflict is often caused by learned behaviour. It is therefore important to design the facilities in a way that prevents this undesirable learnt behaviour. The most common problem animals in this regard are; elephants, hyenas, baboons, vervet monkeys and badgers. The camp area will have no fences. It is important to avoid the animals associating humans with easy food, therefore food should never be left visible, unattended and / or accessible. Much of this is management and service related, but to some extent this can also be incorporated in the design and choice of materials.

Guest rooms should be designed so that food / fruit bowl etc are not close to windows. Mini bar/ kitchenette areas should not be easily visible from the outside.

We understand that people wish to let in the breeze and sound and smell of the bush. If openings are fitted with a tough screen (eg Trellidor Clear Guard), this can be possible without letting in mosquitoes, monkeys or baboons.

An important area to design with scavenger prevention in mind is the kitchen and waste management areas. We suggest that by fitting netting instead of windows and adding a yard enclosed with mesh fencing, one can have optimal ventilation in the kitchen and allow for some outside work area and storage of materials, with reduced animal conflict. In addition, all waste receptacles should be stored out of sight and in vermin proof containers.

4 APPLICABLE LEGISLATION

The proposed activities are identified as listed activities in terms of GN Regulation 544 of 18 June 2010 issued in terms of sections 24(2) and 24D of the National Environmental Management Act (NEMA, Act 107 of 1998) as activity 6: "*The construction of resorts, lodges or other tourism accommodation facilities that sleep 15 people or more (a) In Mpumalanga (ii) outside urban areas (aa) A protected area identified in terms of NEMPAA*" and activity 16: *"The construction of: (iii) buildings with a footprint exceeding 10 m^2 in size where such construction occurs within 32m of a watercourse, measured from the edge of the watercourse (a) In Mpumalanga (ii) outside urban areas, in (aa) a protected area identified in terms of NEMPAA"*.

The following legislation may also be applicable to the proposal, in no particular order, and including the associated regulations:

- Constitution of Republic of South Africa 108 0f 1996;
- National Environmental Management Act 107 of 1998;
- Conservation of Agricultural Resources Act 43 of 1983;
- Environmental Conservation Act 73 of 1989;
- Promotion of Administrative Justice Act 3 of 2000;
- Promotion of Access to Information Act 2 of 2000;
- National Veld and Forest Act 101 of 1998;
- National Forests Act 84 of 1998;
- National Heritage Resources Act 25 of 1999;
- National Environmental Management Biodiversity Act 10 of 2004;
- Mpumalanga Nature Conservation Act 10 of 1998;
- National Environmental Management: Protected Areas Act 57 of 2003;
- National Water Act 108 of 1997; and
- National Environmental Management Waste Act 59 of 2008.

The Constitution, The PAJA and PAIA deals with people's rights – the right to be heard, obtain information, have an environment that is not harmful and the right to receive fair treatment in the process. This is dealt with in the public participation process in section 5 below.

The NEMA, CARA, ECA and NVFA deals with people's responsibility to take due care of the environment. This is covered in various sections of this report, the environmental management plan (EMPr) and specialist report. The specialist ecological report also covers the requirements of the MNCA. The requirements of the water act and waste act will be covered to some extent in section 8 and the EMP.

NEM:PAA Regulation 99 of 8 February 2012, regulates the proper administration of nature reserves. Of especial interest sections 39, 40, 41 and 50.

Section 39. (2) *No person in a nature reserve may, without the prior written authorisation of a management authority, erect, construct or transform or cause to be erected, constructed or transformed any building or any other improvement, including but not limited, to a building or structure of any kind..... road crossing in respect of a building or other immovable property."*

The Heritage Act lists certain activities in section 38 of that act, which requires a heritage impact assessment.

"Section 38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as—

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

(b) the construction of a bridge or similar structure exceeding 50m in length;

(c) any development or other activity which will change the character of a site—

(i) exceeding 5 000m^2 in extent; or

(ii) involving three or more existing erven or subdivisions thereof; or

(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

(d) the re-zoning of a site exceeding 10 000m^2 in extent; or

(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development."

A heritage impact assessment is not required for the proposed activity.

5 PUBLIC PARTICIPATION PROCESS

According to the Constitution of the Republic of South Africa everybody has the right to have the environment protected, amongst others through sustainable development. Everybody also have the right to be informed and to access information. Therefore an important part of the Environmental Impact Assessment is to identify and to provide avenues for interested and affected parties to gain information and provide comment on the proposed development.

This was achieved by contacting neighbouring landowners, by advertising the process in the local newspaper, in this case the Lowvelder, by erecting a notice by the Gowrie entrance gate to the Sabi Sand Game Reserve, and also by contacting identified affected parties directly.

All registered interested and affected parties have the right to comment on the report regarding the development submitted by the consultant to the department.

In return the registered interested and affected party is expected to:

- Submit all comments in writing to the consultant;
- Adhere to time frames given for commenting or submit a written motivation for why a longer commenting period is needed; and
- Disclose any direct business, financial, personal or other interest in the approval or refusal of the development.

Authorities that were consulted or provided details and asked for comment, and included in the EIA process include:

- Bushbuck Ridge Local Municipality;
- Mpumalanga Tourism and Parks Agency;
- Kruger National Park;
- The Department of Water Affairs;
- The Inkomati Catchment Management Agency; and
- Mpumalanga Department of Economic Development, Environment and Tourism;
- Sabi Sands Wildtuin management.

Comments received during the course of the assessment, whether in a participatory meeting or by any other medium, have been recorded as a means of identifying all key environmental issues (including project alternatives) pertaining to the proposed development.

5.1 Notification of I & AP's

The identification of I & AP's was undertaken through 4 distinct processes.:

- Authority identification and contact.
- Land owner contact.
- Notices and media advertising.

- Direct contact.

Authorities having jurisdiction were identified as follows;

As the development is in a Reserve neighbouring Kruger National Park the MTPA and KNP were contacted.

We have attempted to establish the "*Management Authority*" for NEM:PAA GNR99 as quoted above. In terms of section 38(1) of NEM:PAA the Minister must assign the management of protected areas to a suitable management authority. It is at present unknown/ unclear whether a Management Authority has been assigned to the Sabi Sand Game Reserve and where the delegation of authority lies. The MTPA and Sabi Sand Game Reserve Management has therefore been assumed to be responsible for the assessment, approval and regulation of developments in this protected area.

The local municipality was also identified as having jurisdiction. All sites are in the vicinity of a watercourse and the preferred site would span across a small river, therefore the water affairs and catchment management agency has been informed. The respective land owners neighbouring the farm where the proposed activity is to take place were contacted directly, along with the Sabi Sand Game Reserve Management.

A full list of I & AP's and public participation register is presented in Appendix 2.

5.2 Notice boards

Notices were displayed in the media and on site. A site notice was erected at the Gowrie Gate, as this is the only access to the relevant section of the Sabi Sand Game Reserve on the 26th of January 2013. A photograph of this is presented below (*Photos 3*) and in Appendix 2. An advert of the proposed activity was posted in the Lowvelder, the local news media for the Sabi Sand area, on the 29th of January 2013. A copy of this advert is presented in Appendix 2.

Photo 3: Site notice at Gowrie Gate.

5.1 SUMMARY OF COMMENTS AND RESPONSES

The Bushbuck Ridge Local Municipality was contacted via e-mail, with information of the proposed development on 20 January 2013. The municipality had not submitted any comments at the time of finalising the final BA report.

The Mpumalanga Tourism and Parks and Kruger National Park were contacted by e-mail, on 30 January 2013. They have registered respectively as an interested party.

The neighbouring landowners were sent an information document via e-mail to inform of the proposed development also on 30 January 2013.

The Department of Water Affairs and the Inkomati Catchment Management Agency were contacted via telephone and e-mail on 27 February 2013. No comments have been received by DWA or ICMA at the time of finalising the final BAR report.

Copies of correspondence with I&AP's are included in Appendix 2.

The following table contains the broad concerns raised in the first round of public participation:

Aspect	**No of times raised**
Light pollution	2
Noise pollution	2
Sewage	2
Waste	1
Access roads	1
Sense of place in connection to alternative 1	1

The MTPA raises a concern that the construction of the tented lodge on the preferred site may destabilise the river bank and thus increase the speed of the natural movement of the Manyeleti river channel towards the camp. This is a very valid concern. The Manyeleti river bank to the north of the Simba River is very steep. On siting the units, great care should be given to ensure that these are kept well away from the river bank, in order to protect the vegetation which naturally protects and stabilises the river bank. With the current lodge design it will be entirely possible to ensure that the lowest impact sections of each unit is built closest to the river, whilst the higher impact sections are kept as far away as possible. No clearing of vegetation should be done on or near the Manyeleti river bank.

Photo 1 in section 2 above is a representative photo of the Manyeleti River bank, taken at the preferred site (Also included in the site visit report in Appendix 1). On this photo it can clearly be seen that the Manyeleti River bank currently has a very sound vegetation cover and very steep sides.

The levels of the January 2012 flood can be seen on site. In no place did the river go over the banks and enter the proposed preferred site. Should the future bring equal or increased flooding, the infrastructure on the proposed preferred lodge site would still to a large extent be well away and safe from the river.

6 NEED AND DESIRABILITY

At present there are no five star tented camp facilities in the Sabi Sand Game Reserve. Based on requests from tour operators and looking towards the Botswana market, Chitwa assessed that there is a good market and a need for this type of facility in the Sabi Sand. Before construction was stopped at the previously authorised site, the lodge was 60% booked for the year ahead. There appear to be a great need for the more environmentally friendly, low impact type of tourism facility.

Currently Chitwa is having to turn away potential clients due to their limited number of beds. The addition of the new camp will to some extent alleviate this, as well as increasing job opportunities in the area.

The development is assessed to be desirable in that it is in line with the recommended activities for the area in terms of the Mpumalanga Biodiversity Conservation Plan (Lotter, M.C. & Ferrar, A.A. 2006. Mpumalanga Biodiversity Conservation Plan, MTPA, Nelspruit). The proposed development will offer some variation to the otherwise more common “brick and mortar” type accommodation in the Sabi Sand Game Reserve. The availability of this slightly alternative type of luxury safari experience is assessed to be able to attract a different tourist clientèle to the Sabi Sand Reserve.

The proposed low impact, high sustainability, environmentally friendly luxury lodge is also seen as desirable. The small size of the lodge makes it possible for a group to book the entire facility and as such get a very exclusive experience.

7 ALTERNATIVE ACTIVITY AND SITES

Several sites were initially identified for the proposed lodge development. These sites then went through an exclusion process by Chitwa, the land owner and neighbours. The current three alternatives were selected as the most viable (Figure 5 below. Images of each site are included in Appendix 1). The preferred site was selected from these three sites as the most desirable.

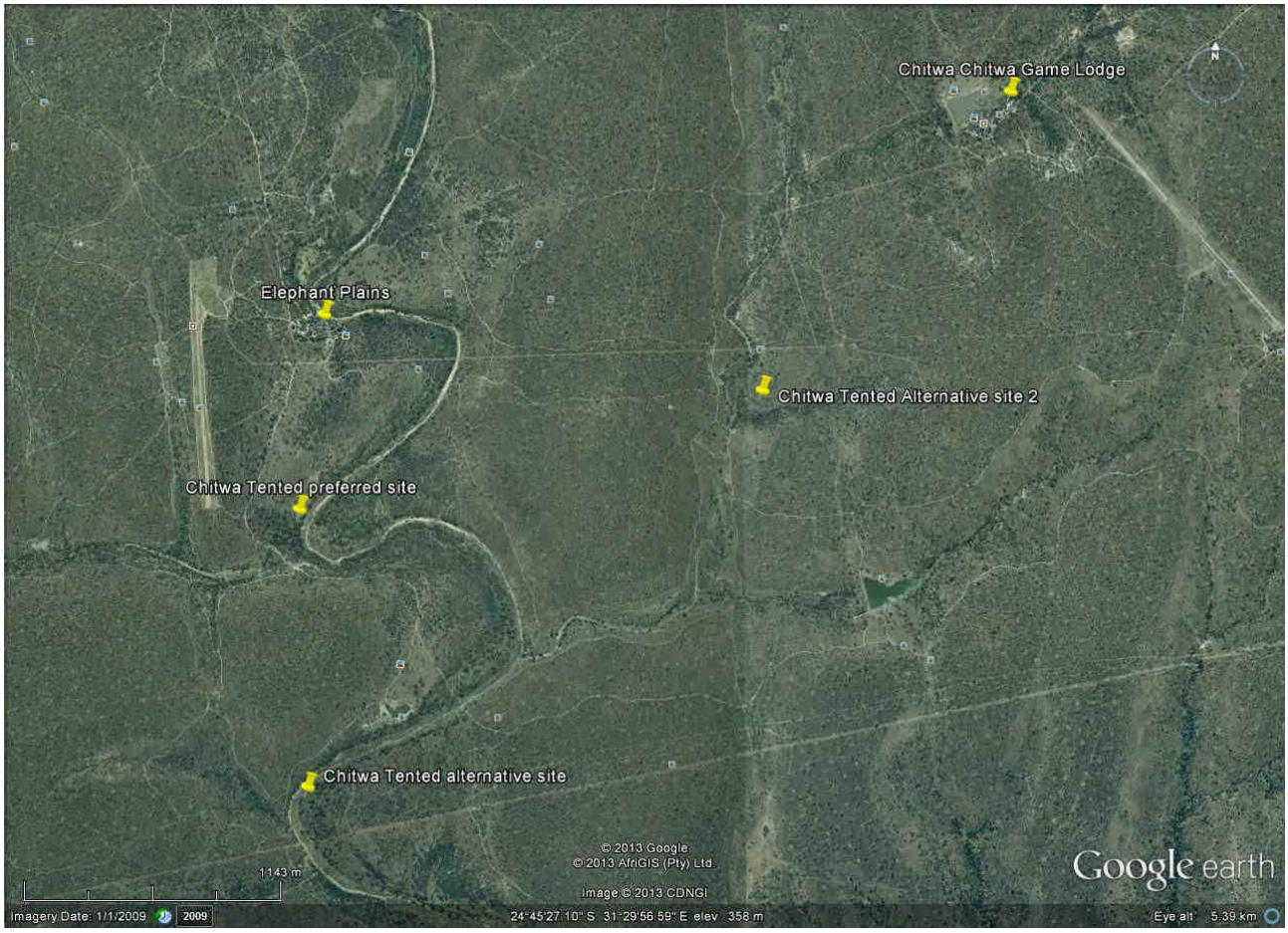


Figure 5: The Three Assessed Alternative Sites.

The proposed activity is in line with the recommended activities for the area (Lotter, M.C. & Ferrar, A.A. 2006. Mpumalanga Biodiversity Conservation Plan, MTPA, Nelspruit). It is also in line with activities in the surrounding area in that it is an upmarket tourism facility, offering luxurious tourism accommodation and game viewing.

No alternative activity has been assessed due to the activity being a desired development and in line with surrounding and recommended activities, and as part of the current product range and skills of the proponent.

The No-Go Alternative

The no-go alternative is the option of not undertaking the proposed activity or any of its alternatives. The no-go alternative also provides the baseline against which the impacts of other alternatives should be compared.

Should the proposed lodge building activity not go ahead, any potential environmental impacts, associated with building and operating the lodge, would be avoided. The proposed tented lodge,

will be the only tented camp operated in the Sabi Sand Reserve (that we are aware of) and as such will serve a niche audience. Should it be decided to not construct the tented camp this type facility will still not be available.

The proposed preferred and second alternative sites have not previously been impacted, and as such are pristine. The first alternative site (currently authorised) has had some clearing and construction undertaken. This impact would need to be considered under the no-go opetion.

The proposed lodge will cause impact to the chosen site, and surrounds, this is recognised as being unavoidable. With the proposed design and construction methods, it is however possible that minimal permanent impact will be caused, particularly if the recommended mitigation measures are implemented. The vegetation type on site, despite being located in a protected area, is not threatened and no irreplaceable habitat will be damaged by the relatively small footprint of the proposed development.
As the facility is desirable and there is an established market, the no-go option is not recommended.

8 POTENTIAL ENVIRONMENTAL IMPACTS

Potential environmental impacts that should be considered when planning, designing and constructing the lodge facility;

Buildings in General

The proposed development could potentially impact on main components of the physical environment:

- **Soils**;

Soil erosion, loss of topsoil and deterioration of soil quality are the main potential impacts that could be caused during the construction of the lodge. Once disturbed, soil becomes more susceptible to erosion. Changes to natural drainage patterns may be created by the building. Diversion of storm-water may result in large volumes of water being concentrated in certain areas, thereby increasing the risk of erosion. Erosion of the soil surface greatly increases the risk of losing topsoil to erosion, impairing the soils ability to support vegetation growth.

When soil is cleared of vegetation, it loses its protection from weathering. Moisture is lost through sun and wind action. Nutrients and seed banks are lost to sun baking and erosion and the humus content will often be reduced (oxidised). This makes future vegetation difficult and favours colonising species like invasive aliens or in worst case desertification.

During construction, hydrocarbons leaking from construction vehicles, refuelling depots and concrete mixing areas, may result in the contamination of soils, leaving the soil sterile or at risk of leaching contamination to surface or ground water (see below).

The sourcing of sand and gravel for the construction of the building, may result in erosion and degradation of soil due to the impacts mentioned above.

- **Surface and Ground Water**

The risk of contamination of ground and surface water may increase during construction.

As mentioned above disturbance to soils caused by construction activities may cause erosion. Elevation of sediment loads due to eroded particles entering watercourses may effect sun penetration, water temperature and levels of oxygen available to aquatic species. Predatory fish often rely on vision for hunting and as such will be highly impacted by sedimentation.

Temporary ablution facilities for the construction crew has the potential to impact on surface water in the form of chemicals, pathogens and nutrients.

Contamination of surface water with cement or concrete can be detrimental to aquatic organisms as it is very alkaline. High alkalinity destroys fish-gills.

Hydrocarbon spills from construction vehicles may have a detrimental impact on surface water.

- **Flora**

Natural vegetation can be impacted by construction activities such as stock piling of materials and clearing of development footprint. Flora may also be impacted by increased access to a site, leading to harvesting or disturbance and removal of plant material.

- **Fauna**

Increased traffic and disturbance to a site may have an impact on the wildlife of an area, both during construction and operation. Human presence and noise may disturb animals resulting in the animals moving away from an area and losing their habitat. Impact can also be directly in the form of killing the animals either by accident or intentionally. Impact on flora will very often have an accumulated impact on animals.

Consideration should be given to the cumulative impact of an increasing number of tourism operation in the Sabi Sand Game Reserve. If the carrying capacity for tourist is exceeded the exclusive experience, and sense of wilderness, of the tourists will be impacted and as such, a great deal of the value will be lost. An excessive number of tourists may also have a negative impact on the wildlife of the reserve. However we are unaware of any scientific studies of carrying capacity of tourist game viewing, particularly in the Sabi Sand game Reserve.

Cultural – Historical / Socio – Economic Impacts

Construction activities may disturb archaeological or cultural artefacts, if any such are present. This is dealt with in the Environmental Management Programme.

Impacts on the Aesthetic Nature and 'Sense of Place' - Nuisance

- **Noise Pollution**

Construction activities, may result in noise pollution, mainly from traffic from vehicles and machinery, but also from the construction crew. This will be strictly monitored as this noise will stress the animals and also potentially detract from the experience of paying guests at nearby facilities.

Once constructed the noise generated at the lodge will be limited, especially as the guests come to experience the peace and quiet and sense of being in the bush. During site visits, the current development was not experienced as noisy and not audibly noticeable from any form of distance.

- **Light Pollution**

Light pollution may be created if construction takes place outside of daylight hours, which is unlikely.

During operation of the lodge the use of outside lights and light emanating from buildings may cause light pollution and increase the visual impact of the lodge.

- **Dust Pollution**

Dust may be produced during construction, but will be limited to the construction site. Dust can be a nuisance but can, to a large extend, be controlled.

Dust generated during operation of the lodge will be limited to vehicle generated dust on the roads. This should be limited as most travels will be at a slow pace.

- **Visual Impact**

A view shed assessment was conducted for each of the proposed sites, in order to assess the potential for visual impact. This study is included in Appendix 4.

As sense of place is very important in an eco-tourism and game reserve context, care is given in both site selection and lodge design to make the development blend in and to be undisturbed and exclusive.

Resources

- **Water use**

Water will be obtained from a new dedicated borehole supply. Impacts from the supply as well as the borehole will be present at the time of installation, however during operation, these should be minimal.

- **Energy consumption**

Energy impact will be through the development and installation of the supply route and through use during the facility operation. Where ever possible power saving solutions will be sought to mitigate the operational component.

- **Wildlife Interaction**

Poor waste management, poor kitchen practices or un-informed visitors can lead to a situation where food rewards are easily available to opportunistic animals which will result in undesirable learned behaviour. Once this behaviour in the problem animals has become established it is difficult to manage the animal-human conflict.

Cumulative impacts

Cumulative impacts are the impacts on the environment, which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Cumulative impacts may be positive or negative. The cumulate impacts may also be considered the impact of an activity that in itself may not be significant, but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

The cumulative impacts of this development are identified to be:

- increased infrastructure in a protected area;
- increased resource use (water particularly);
- increased traffic and associated pollution (dust, exhaust);
- increased waste generation;
- increased noise and visual impacts;
- impacts on fauna and flora; and
- increased fragmentation and habitat reduction

Aspects such as increased infrastructure in a protected area are difficult to mitigate against, care should be taken that developments and their associated environment and ecological footprints do not cause fragmentation or barriers to the natural movements of fauna and avi-fauna. In this regard developments should either be clustered or located on the periphery of the protected area.

Whilst these potential cumulative impacts should not be dismissed, it is anticipated that they will be managed to a large extent through the application of the mitigation measures provided in this assessment.

9 POSSIBLE MITIGATION

9.1 RECOMMENDED ACTIONS TO MITIGATE POTENTIAL IMPACTS

Mitigation means 'to make something less severe'. This is achieved by conducting proper planning and thereby identifying and recognising the potential impacts. This in turn allows mitigation through the implementation of practical measures to reduce, limit and eliminate adverse impacts or enhance project benefits and protect public and individual rights.

The potential environmental concerns have been considered and investigated. Where appropriate, mitigation measures have been proposed. In many cases, the existing procedures

are sound environmental impact prevention measures themselves and little or no additional mitigation is necessary in many aspects.

The mitigation measures provided below cut across various potential impacts and thus have not been presented against one or another particular impact, but should be considered as a suite of mitigation measures that may be implemented.

In order to be effective, the mitigation measures must be implemented through an approved environmental management programme (EMPr). The EMPr must have oversight and audit control by a qualified environmental control officer (ECO).

The Following Mitigation Measures and Procedures are Recommended:

- The site layout, service distribution lines and access areas should be clearly marked out on site by the ECO and Project manager prior to any vegetation clearing taking place in order to prevent unnecessary vegetation clearing.
- Site layout must not impact the river bank, particularly bank stability.
- Minimise the area of vegetation clearance and avoid exposing soils that are vulnerable to erosion.
- Where practically possible the extent of permanent footprint should be reduced, by reducing the size of the concrete slab for each of the units and increasing the floor area suspended on poles.
- Incorporate sustainable principals into the design and materials used.
- Areas susceptible to erosion must be protected by installing appropriate temporary or permanent drainage works and water energy dispersion structures.
- Implement appropriate topsoil management practices (stripping, stockpiling and reuse during rehabilitation of disturbed areas).
- All materials for building must be sourced off site from sustainable and appropriately licensed source (sand, stone etc.).
- Rehabilitate areas disturbed during construction, including spoil dumps and stockpile areas, as soon as possible after the disturbance has ceased.
- Ensure compliance with legislation such as the Conservation of Agricultural Resources Act, Hazardous Substances Act, and the Integrated Pollution and Waste Management Bill.
- Ensure appropriate handling of hazardous substances.
- Ensure appropriate accidental spill response equipment is available on site and re-mediate any polluted soils immediately.
- Ensure correct waste management to avoid pollution and scavenger interactions.

- Ensure correct placing of concrete batching plants and vehicle servicing areas etc. to avoid areas susceptible to soil and water pollution.
- It should be kept in mind that archaeological deposits often occur below ground level. Should artefacts or skeletal remains be revealed during the construction of the building, the project proponent must be notified in order for an investigation and evaluation of the find(s), by a qualified archaeologist or a professional in the related field, to take place according to the National Heritage Resources Act (Act 25, 1999).
- Working hours and access should be kept to normal working hours as per the reserve regulations.
- Suitable site toilet facilities should be put in place. The use of evaporative or eco-loo's, is suggested rather than chemical toilets. Another suitable alternative is to develop sewage facility first.
- Keep the building site orderly at all times and use screening for especially unsightly areas such as temporary ablution facilities and storage areas.
- External flood lights should not be used.
- If dust becomes problematic, roadways should be dampened.
- Water use should be continually monitored and water purified where necessary.
- Water saving measures must be implemented wherever practical and wastage minimised during construction.
- The energy use should be mitigated by the extensive use of LED and CFL light bulbs. Any water heating and other energy uses should be made as environmentally sensitive as possible (solar, heat-pumps etc).
- Trenching in connection with installation of services should be done following the Environmental management programme. All supplied to be installed in the trench must be available in site prior to trenching commencing.

10 ENVIRONMENTAL IMPACT EVALUATION

An ‘environmental impact’ is the likely environmental consequences, whether positive or negative, of a proposed development. The significance of an environmental impact depends on its extent, intensity and duration, the sensitivity of the receiving environment along with the degree of change and probability of the impact to occur.

Method and Criteria

Based on responses to issues identified for the proposed site, and adopting the precautionary principle in cases of uncertainty, potential impacts associated with each issue were subjectively classified according to the direction of impact viz. positive, negative or neutral. Whereas positive

and negative impacts need to be addressed by management intervention, neutral impacts are considered accounted for.

Tables 1 to 3 identify the potential positive and negative impacts identified for the site and are described and assessed for significance. Significance is assessed by scoring each impact on the basis of four variables viz. It's probability, severity, duration and it's spatial implications.

On the understanding that a significant impact is one which, either in isolation or in combination with other impacts, could have a material influence on the decision making process, including the specification of mitigating measures; significance in this study is scaled according to impact scores as follows:

Low (scoring less than 12)
Medium (scoring 12 – 16)
High (scoring more than 16)
The four variables, with their score criteria are detailed below:

Frequency / Probability (FR)
(Frequency or likelihood of activities impacting on the environment)
1. Almost never / almost impossible.
2. Very seldom / highly unlikely.
3. Infrequent / unlikely / seldom.
4. Often / regularly / likely / possible.
5. Daily / highly likely / definitely.

Severity (SV).
(Degree of change to the baseline environment in terms of reversibility of impact; sensitivity of receptor; duration of impact; controversy potential and precedent setting; threat to environmental and health standards).
1. Insignificant / non-harmful.
2. Small / potentially harmful.
3. Significant / slightly harmful.
4. Great / harmful.
5. Disastrous / extremely harmful.

Duration (DR).
(length of time over which activities will cause a change on the environment or vegetation).
1. One day to one month.
2. One month to one year.
3. One year to ten years.
4. Life of operation.
5. Post closure.

Spatial scope (SS).
(geographical coverage).
1. Activity specific.
2. Area specific.
3. Whole site.
4. Regional (neighbouring areas).
5. National.

In order to adequately take both the construction and operation of the proposed Lodge, the impacts have been individually assessed for each of these two activities (construction and operation) for each of the three proposed sites. These assessments are presented in the tables below where *Table 1a* considers impacts from construction at the Preferred site and *Table 1b*

considers the impacts associated with the operation of the proposed lodge. Tables 2a and 2b considers impacts from construction and lodge operation on site alternative 1 and tables 3a and 3b for site Alternative 2.

The impact score is calculated by adding scores for spatial scope, duration, mitigated severity and mitigated frequency. Total impact score is the sum of the various impact scores assessed for either construction or operation.

The subjectivity of the calculations in these tables is recognised and is unfortunately unavoidable in parts of this assessment. Where possible we have utilised actual values in adding to these scores to increase the objectivity of the evaluation process.

10.2 ASSESSMENT OF POTENTIAL IMPACTS

Results of impact assessment are summarised in the following tables.

Table 1a: Assessment of the Potential Impacts of the **preferred site** during Construction.

ISSUE	Frequency		Severity		DR	SS	IMPACT	SIGNIFICANCE
	Unmitigated	Mitigated	Unmitigated	Mitigated				
Lodge								
Soil erosion	4	3	2	1	2	1	7	Low
Loss of topsoil	4	3	2	1	1	1	6	Low
Degradation of soil quality	2	2	1	1	1	1	5	Low
Contamination of surface water	2	1	2	1	2	1	5	Low
Contamination of ground water	2	1	1	1	1	1	4	Low
Destruction of Flora	5	4	4	2	2	2	10	Low
Destruction of Fauna	4	3	4	2	2	2	9	Low
Destruction of Cultural remains	2	2	2	1	2	1	6	Low
Noise	5	4	3	2	2	2	10	Low
Light	1	1	1	1	1	2	5	Low
Dust	4	3	3	1	2	2	8	Low
Visual impact	5	3	4	1	2	4	10	Low
Long lasting footprint	5	4	2	2	4	2	12	Medium
						TOTAL	**97**	

Table 1b: Assessment of the Potential Impacts **preferred site** during Operation.

ISSUE	Frequency		Severity		DR	SS	IMPACT	SIGNIFICANCE
	Unmitigated	Mitigated	Unmitigated	Mitigated				
Lodge								
Soil erosion	3	2	2	1	4	1	8	Low
Loss of topsoil	3	2	2	1	4	1	8	Low
Degradation of soil quality	2	1	1	1	4	1	7	Low
Contamination of surface water	3	2	2	1	4	2	8	Low
Contamination of ground water	3	2	2	1	4	2	9	Low
Destruction of Flora	5	3	4	2	4	2	11	Low
Destruction of Fauna	4	3	4	1	4	2	10	Low
Destruction of Cultural remains	1	1	1	1	5	1	8	Low
Noise	5	3	4	2	4	3	12	Medium
Light	5	3	4	2	4	4	13	Medium
Dust	3	1	4	1	4	2	8	Low
Visual impact	5	3	4	2	4	3	12	Medium
Long lasting footprint	5	4	3	2	4	2	12	Medium
						TOTAL	**126**	

Table 2a: Assessment of the Potential Impacts **alternative 1 site** during Construction.

ISSUE	Frequency		Severity		DR	SS	IMPACT	SIGNIFICANCE
	Unmitigated	Mitigated	Unmitigated	Mitigated				
Lodge								
Soil erosion	4	3	2	1	2	1	7	Low
Loss of topsoil	4	3	2	1	2	1	7	Low
Degradation of soil quality	3	2	2	1	2	1	6	Low
Contamination of surface water	3	2	3	2	2	2	8	Low
Contamination of ground water	2	2	2	1	2	2	7	Low
Destruction of Flora	5	4	4	2	2	2	10	Low
Destruction of Fauna	4	3	4	2	2	2	9	Low
Destruction of Cultural remains	2	2	2	1	2	1	6	Low
Noise	5	4	3	2	2	3	11	Low
Light	1	1	1	1	2	2	6	Low
Dust	3	3	3	2	2	2	9	Low
Visual impact	5	3	4	2	2	3	10	Low
Long lasting footprint	5	4	3	2	4	2	12	Medium
						TOTAL	**108**	

Table 2b: Assessment of the Potential Impacts **alternative 1 site** during Operation.

ISSUE	Frequency		Severity		DR	SS	IMPACT	SIGNIFICANCE
	Unmitigated	Mitigated	Unmitigated	Mitigated				
Lodge								
Soil erosion	4	2	2	1	4	1	8	Low
Loss of topsoil	3	2	2	1	4	1	8	Low
Degradation of soil quality	3	2	2	1	4	1	8	Low
Contamination of surface water	3	2	3	2	4	2	9	Low
Contamination of ground water	3	2	2	1	4	2	8	Low
Destruction of Flora	5	3	4	2	4	2	10	Low
Destruction of Fauna	4	2	4	2	4	2	10	Low
Destruction of Cultural remains	2	1	1	1	5	1	8	Low
Noise	5	3	4	2	4	3	12	Medium
Light	5	3	4	2	4	4	13	Medium
Dust	3	2	4	1	4	2	9	Low
Visual impact	5	2	4	2	4	4	12	Medium
Long lasting footprint	5	3	3	2	4	2	11	Low
						TOTAL	**126**	

Table 3a: Assessment of the Potential Impacts **alternative 2 site** during Construction.

ISSUE	Frequency		Severity		DR	SS	IMPACT	SIGNIFICANCE
	Unmitigated	Mitigated	Unmitigated	Mitigated				
Lodge								
Soil erosion	5	4	4	3	2	2	11	Low
Loss of topsoil	3	2	3	2	2	2	8	Low
Degradation of soil quality	3	2	3	2	2	1	7	Low
Contamination of surface water	3	2	3	2	2	2	8	Low
Contamination of ground water	2	1	2	1	2	3	7	Low
Destruction of Flora	5	3	4	3	2	2	10	Low
Destruction of Fauna	4	3	4	3	2	2	10	Low
Destruction of Cultural remains	2	1	2	1	2	1	5	Low
Noise	5	4	3	2	2	2	10	Low
Light	1	1	1	1	2	3	7	Low
Dust	4	3	3	2	2	2	9	Low
Visual impact	5	3	4	2	2	4	11	Low
Long lasting footprint	5	4	2	2	4	1	11	Low
						TOTAL	**114**	

Table 3b: Assessment of the Potential Impacts **alternative 2 site** during Operation.

ISSUE	Frequency		Severity		DR	SS	IMPACT	SIGNIFICANCE
	Unmitigated	Mitigated	Unmitigated	Mitigated				
Lodge								
Soil erosion	4	3	3	2	4	1	10	Low
Loss of topsoil	3	2	2	1	4	1	8	Low
Degradation of soil quality	2	1	2	1	4	1	7	Low
Contamination of surface water	3	2	2	1	4	2	9	Low
Contamination of ground water	3	2	2	1	4	2	9	Low
Destruction of Flora	5	3	4	3	4	2	12	Medium
Destruction of Fauna	4	3	4	2	4	2	11	Low
Destruction of Cultural remains	1	1	1	1	5	1	8	Low
Noise	5	4	4	2	4	3	13	Medium
Light	5	3	4	2	4	4	13	Medium
Dust	3	2	4	2	4	2	10	Low
Visual impact	5	4	4	3	4	3	14	Medium
Long lasting footprint	5	4	3	2	4	2	10	Low
						TOTAL	**134**	

Conclusions:

It is assessed that the potential impact of the construction activities are very similar on the three sites as is evident from Tables 1a, 2a and 3a. The potential impact on the surrounding natural site and any nearby drainage lines could be significant if not mitigated. However if the mitigation recommendations of this report are taken into account and the environmental management programme followed during construction, it is proposed that the potential impacts will be low.

The operation of the proposed lodge also scores similarly across all sites (tables 1b, 2b and 3b). The small differences are related to other receptors (for noise or visual impacts) in the vicinity as well as the vegetation surrounds.

Impacts of service provision and sewage

The above methodology does not consider the impacts of service provision and sewage. The impact of service provision is usually associated with trenching activities, power lines, erection and borehole drilling.

Water provision for each of the sites is from a borehole and via underground reticulation. In order to evaluate this between the sites, the approximate distance of underground reticulation and the presence of a borehole is tabulated below.

Power provision is related to the approximate distance between the existing power line take off point (and transformer) and the proposed lodge sites. This is tabulated below using the distance of the required power transmission line.

The planned sewage system on all sites is likely to be identical – a latest generation closed system package plant. In all cases it will be located away from the drainage lines and rivers. As the system and approximate distance from the proposed development will be the same in all cases it has not been considered as an aspect in the table below.

	Preferred site	Alternative 1	Alternative 2
Water reticulation	130	280	80
Borehole available	no	yes	no
Power line length	0.928km	2.7km	0.295km
TOTAL	1058	2980	375

Table 4: services

11 SPECIALIST RECOMMENDATIONS

Specialist reports were received on the ecological component and the visual impact.

The construction activity will mostly be away from rivers and drainage lines. All areas proposed were outside of the January 2012 and 2013 floods. This was noted from the debris in the trees at and near each site.

No potential heritage areas were identified and the impacted area is less than that which would require a heritage assessment.

Ecological assessment:

The proposed and alternative areas have been subjected to the same level of assessment.

Site	Preferred	Alternative 1	Alternative 2
Shannon Diversity Index	2.2	2.2	1.371
Number of protected tree species	3	3	2
Number of individuals of Protected tree species	122	81	603
Ranking	1.333	1.67	2.33
Other concern	Air traffic	none	Sodic areas
TOTAL			

Table 5. Summary of Ecological Score

The ecological assessment found examples of protected species on all sites, however these need not all be impacted upon. The study indicates that there were no major concerns for the preferred site and alternative 1. There was one concern regarding the potential impact of and on the two sodic areas near alternative site 2 as well as dense tree canopy. The study showed that the preferred site and alternative site 1 has the same diversity of trees, and these sites thus poses the greatest potential for biodiversity impact. Alternative site 2 was found to be well represented in the area and typical of the bottomlands granitic landscape.

The preferred site has three protected tree species on the site. The presence of many large trees, the small drainage line and open area to the north of the site and the proximity to the Manyeleti River all contributes to an aesthetically pleasing site for a lodge. In addition to the latter, the high quality grazing will attract herbivores and predators to the area which further enhances the tourism potential. Should development take place at this site, care should be taken to develop the site sensitively and the dense bush clumps should preserved for wildlife refuge.

Visual assessment:

The view shed assessment found Alternative 1 to be viewable from less than 4.9% of a 5km radius of the site – and this was the best site in this regard. This is likely to be an over estimate as this analysis does not take into account existing vegetative components and small topographical changes. In addition, this assessment assumed a 5 meter high building.

The following table represents the various sites:

Site	Viewshed 5m high buildings (ha)	Viewshed area per-centage of total as-sessed area	Existing lodges In-frastruc-ture within VS	Length of roads within VS (km)	Percent-age road length within VS	Airstrips within VS
Preferred	426	5.4	1	16.6	9.9	1
Site 1	383	4.9	0	13.6	8.1	1
Site 2	404	5.1	0	16.4	9.7	0

Table 6: Summary of viewshed analysis

12 INTEGRATED SITE EVALUATION

In order to effectively evaluate the sites on their individual merits, the results of the specialist reports as well as the environmental impact assessments and the routing of services should be taken into account. This is attempted in the following table (table 7).

Site	Preferred	Alternative 1	Alternative 2
Ecological score(x100)	220	220	137.1
Protected trees	122	81	603
Viewshed score (ha)	426	383	404
Electrical supply (m)	928	2700	295
Water supply (m)	130	280	80
TOTAL	**1826**	**3664**	**1519.1**

Table 7: Comparison of the sites using objectively assessed potential impacts.

This process attempts to take into account the various aspects that are assessed as well as the requirements for the delivery of services and the servicing through supplies from the main existing lodge infrastructure.

The result indicates a slight preference for Alternative site 2 (ie lowest scoring). Alternative 1 is the least favourable site by a large margin. This is heavily weighted by its distance from Eskom power.

Site	Preferred site	Alternative 1	Alternative 2
Construction impact score	97	108	114
Operation impact score	126	126	134
Total Development Impact scores	223	234	248

Table 8: Summary of the sites assessed potential impacts.

Table 8 (above) summarises the rating scores discussed section 10. Here the preferred site scores the lowest impact, with alternative 2 having the highest rating. The high rating for alternative 2 relates somewhat to the vulnerability of the soil, as well as the likely vegetation impacts. Based on the structure of the vegetation on alternative 2, it is unlikely construction would be able to take place without significant loss of trees, protected plants and influencing the stability of the sensitive sodic soils.

Considering tables 7 and 8 the site with least overall potential and expected impact is the preferred site. Each of the sites have particular merits, but in establishing the proposed lodge, one cannot pick and choose the impacts it may have, and so on the balance of overall potential impacts, the preferred site is the best site of those assessed.

13 DRAFT ENVIRONMENTAL MANAGEMENT PROGRAM

The Draft Environmental Management Program is attached in Appendix 5. The EMP is a draft as it may be required to be amended to accommodate conditions or requirements contained in the authorisation provided. In addition, the EMP remains a 'living' document and may be modified (subject to MEDET approval) to take into account new technology or conditions on site.

In addition to the construction EMP, we have provided a simple EMP for the rehabilitation of Alternative site 1, where there has been some construction activity for reasons explained earlier in the document.

14 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 poultry expansion building.
- 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.

15 EAP RECOMMENDATIONS

All environmental impacts may be mitigated to some degree, however the establishment of a new facility in a protected area will have a lasting footprint and associated negative impacts.

Based on the assessment and information gathered, and presented here, the EAP recommends that the activity is authorised on the preferred site.

15.1 PREFERRED ALTERNATIVES

The lodge should be constructed at the preferred site.

No-go alternative

This is not recommended as the assessed impacts are mostly low and the no-go option would decrease the sustainability of the tourism operation and the associated employment it provides as well as indirect conservation opportunity.

15.2 ADDITIONAL MITIGATION MEASURES

The environmental management programme (EMPr) should form part of the contract between the construction company and the client. This will help ensure that the EMPr is adhered to.

An Environmental Control Officer (ECO) should be appointed for the construction, as this will assist the contractor overcoming any unforeseen issues at the time of construction and be able to provide a level of assurance and oversight to stakeholders that the site is being well managed.

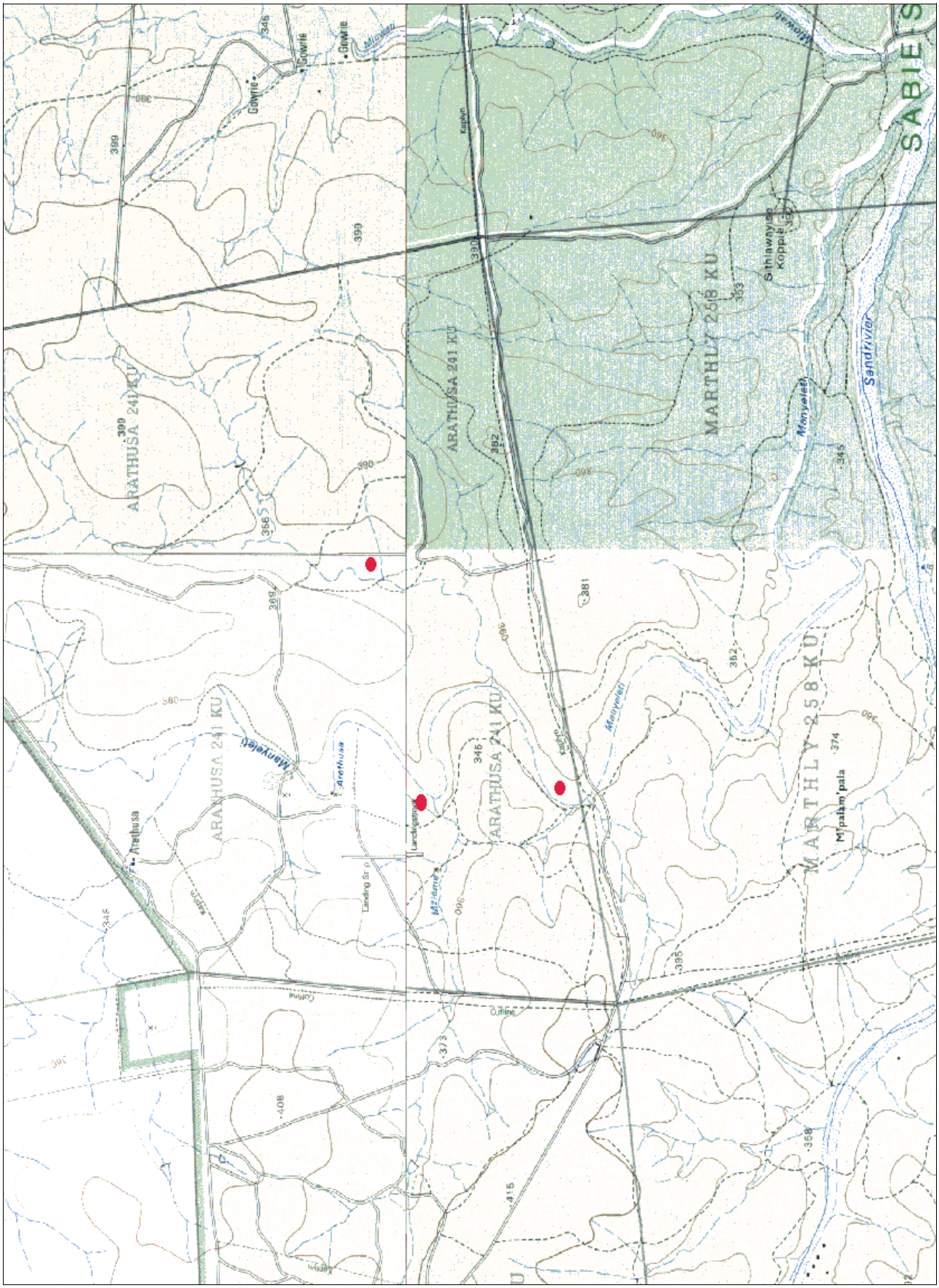
ECO reporting should be at least monthly and depending on the capacity of the contractor, a non-resident ECO should undertake site visits should be every 2 to 4 weeks.

16 CONCLUSION

Based on the information contained in this report, it is the opinion of the environmental assessment practitioner that, provided the negative aspects of the proposed developments are mitigated in accordance with the mitigation measures proposed (and as reflected in the Environmental Management Programme), that the construction of the proposed building may be undertaken.

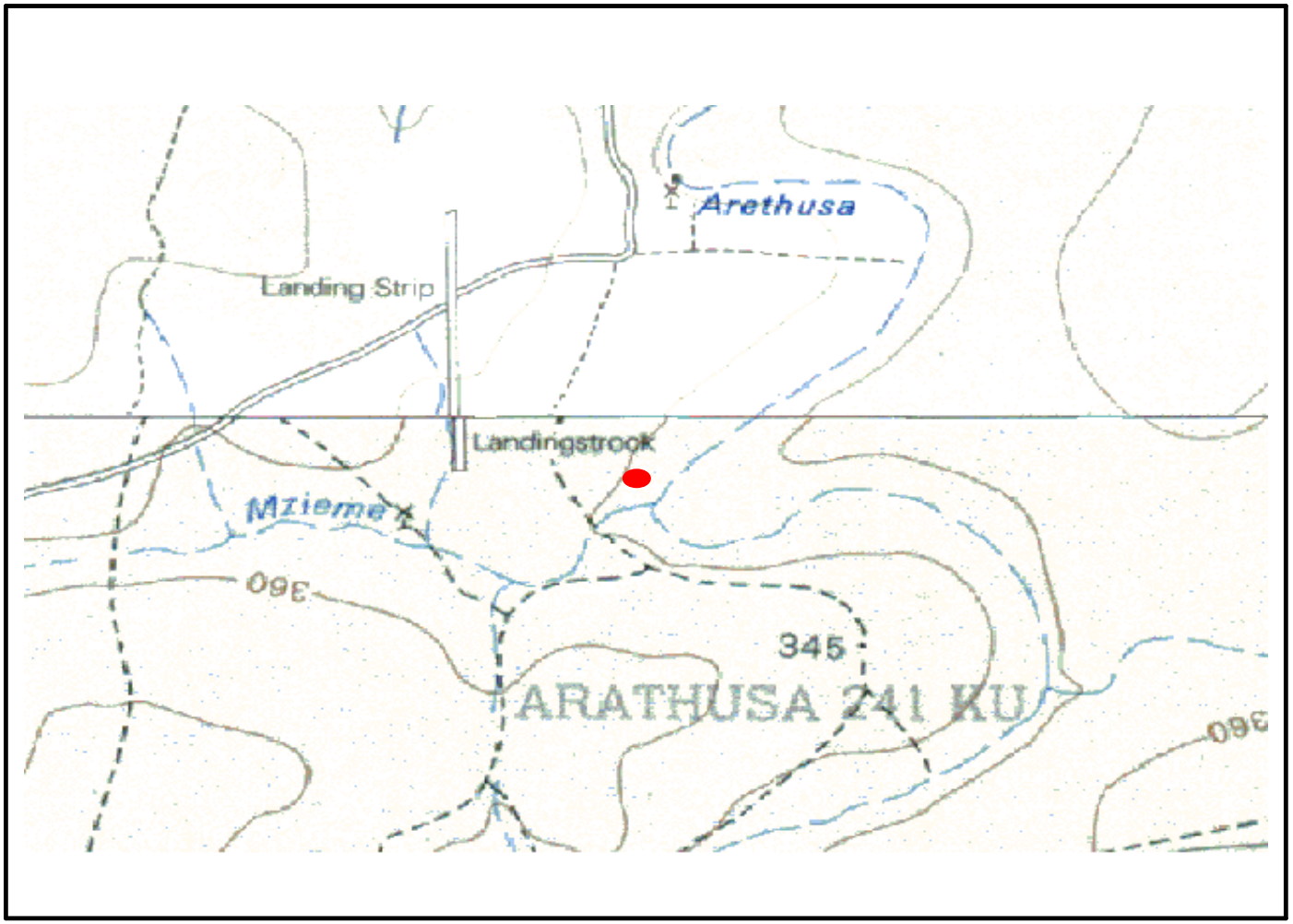
*** END ***

CHITWA TENTED **TOPHOGRAPHIC MAP** **APPENDIX 1**

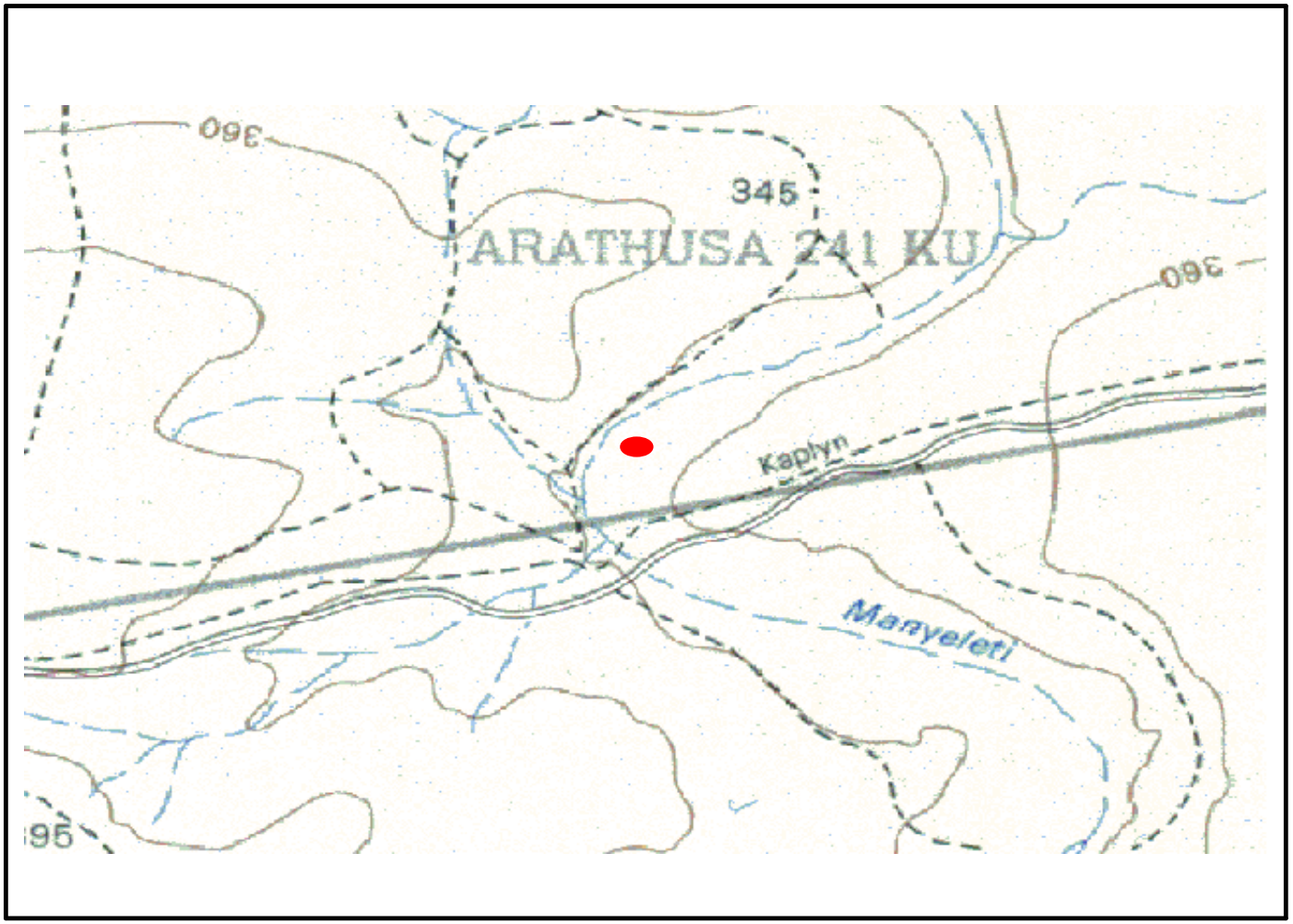


Topographic map 2431 CD and CB

Preferred site



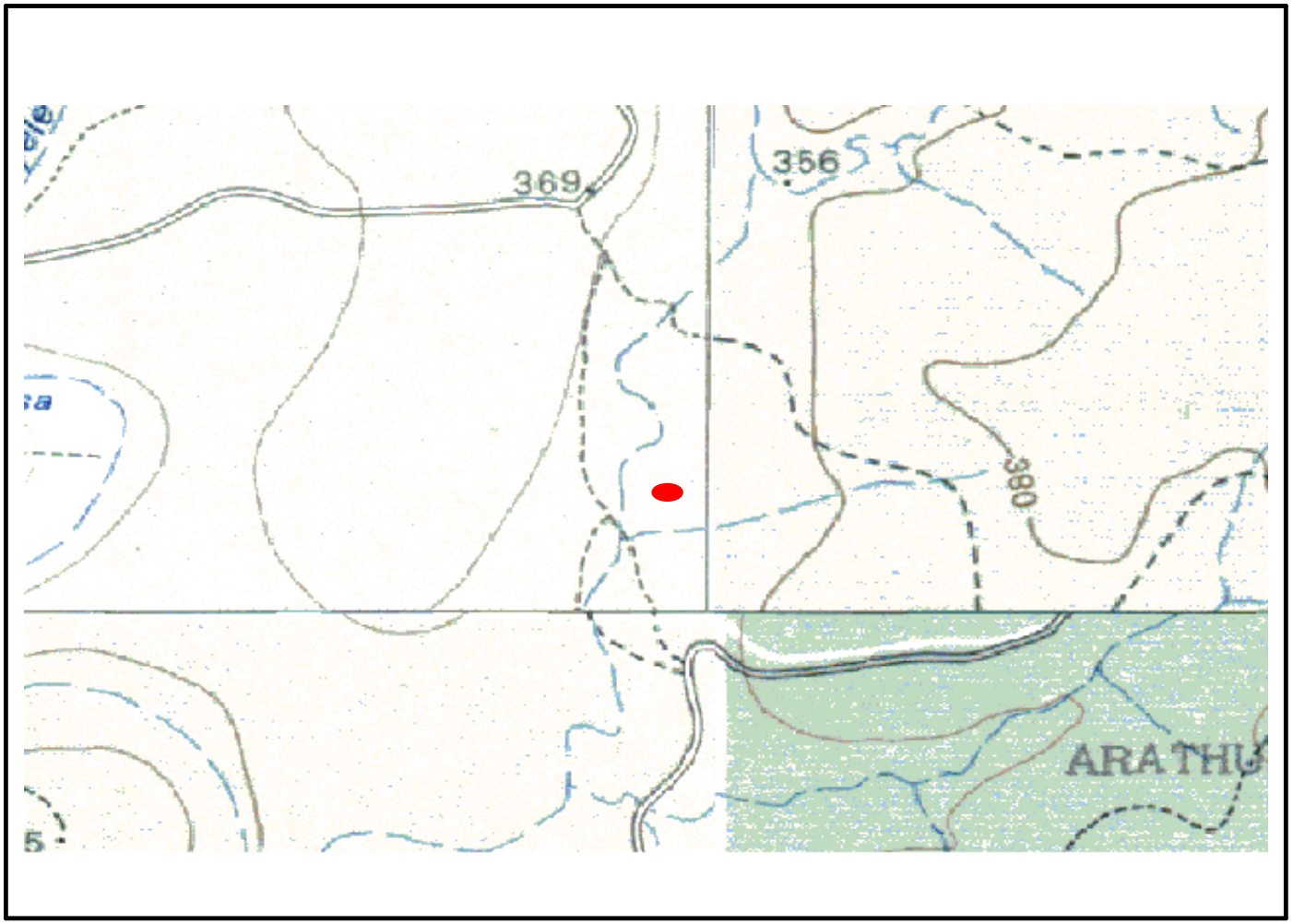
Alternative site 1



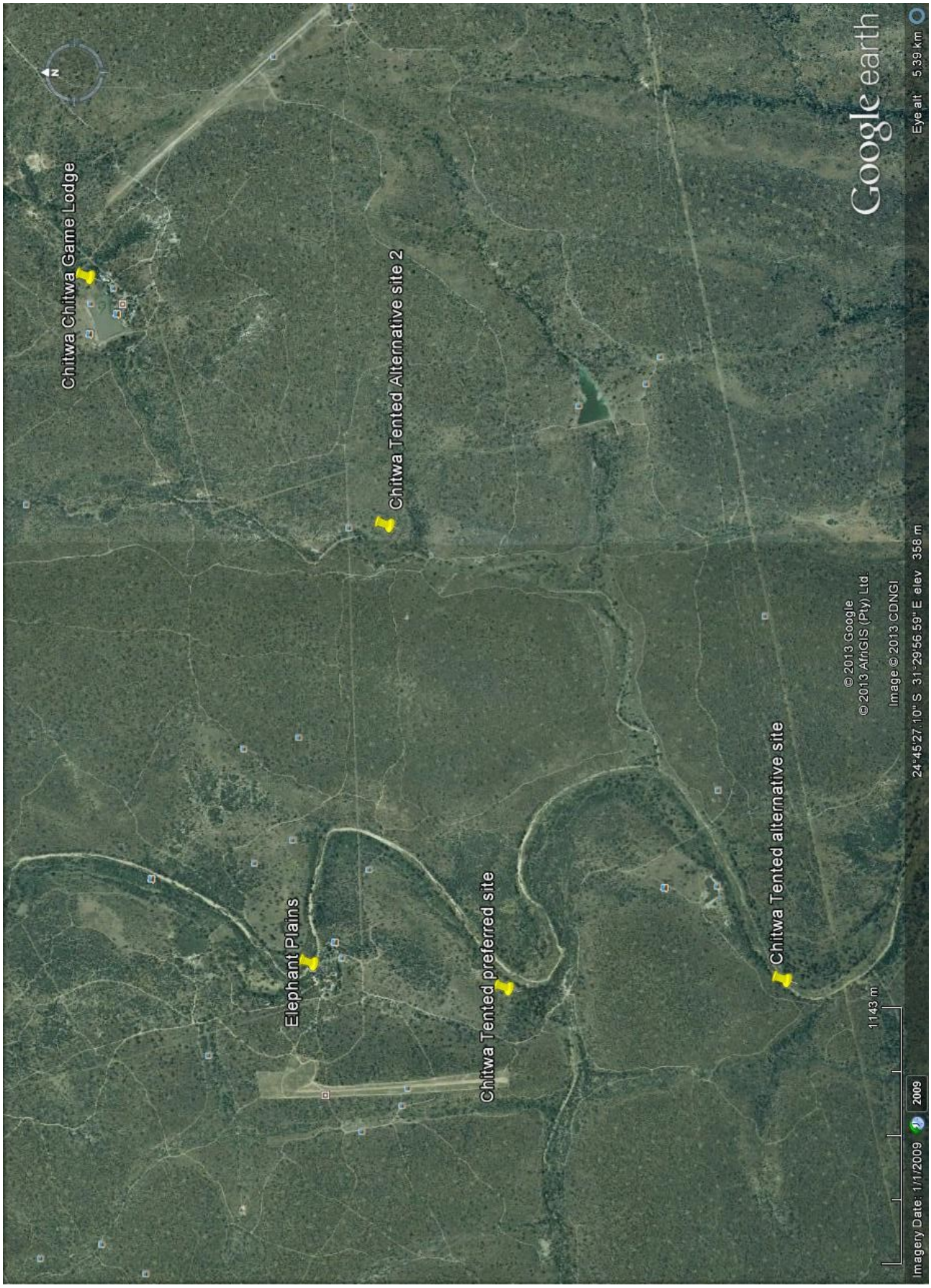
KM
0 0.2 0.4

N

Alternative site 2



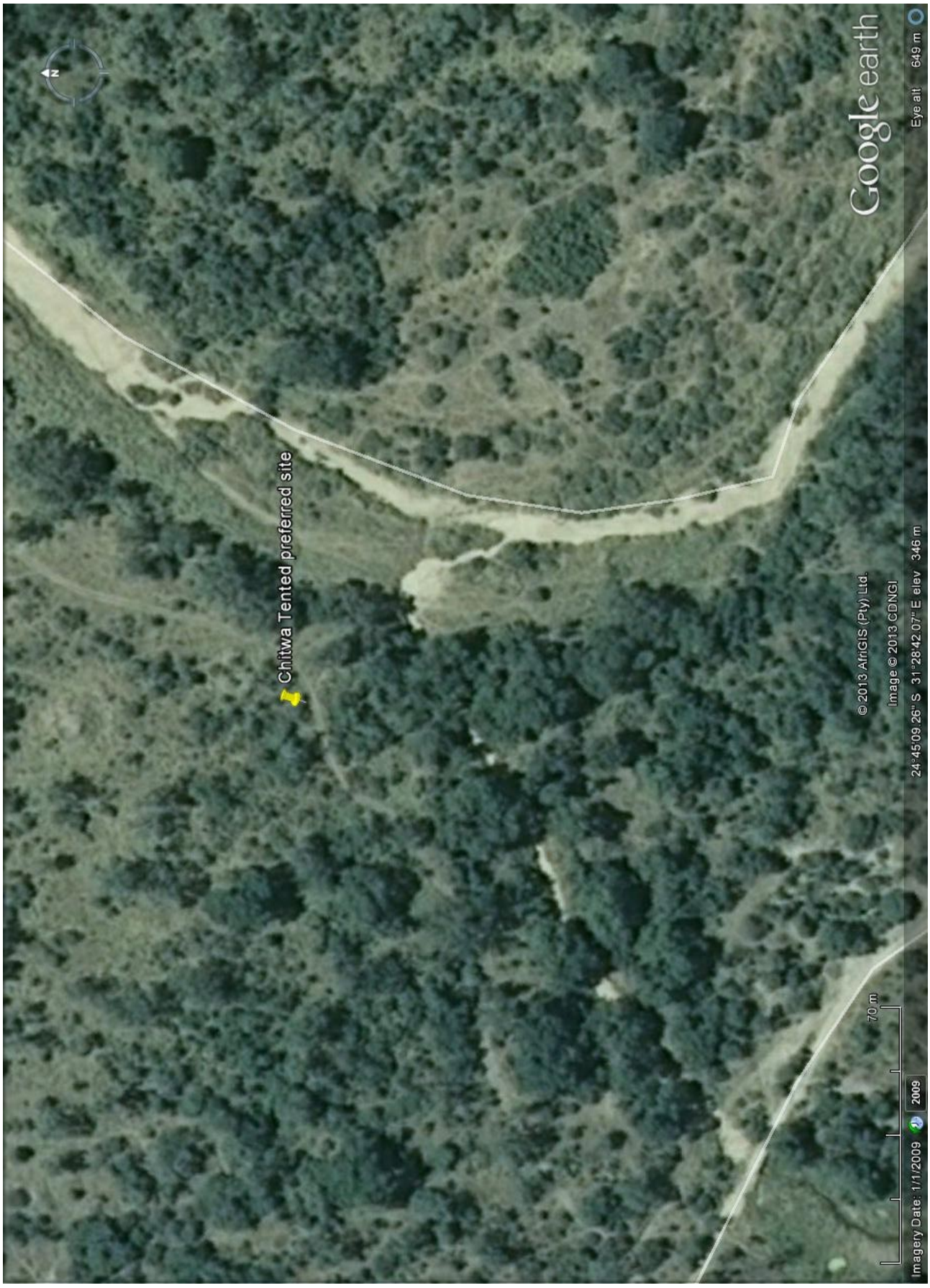
CHITWA TENTED SATELLITE IMAGE APPENDIX 1



Source: Google Earth

CHITWA TENTED **SATELLITE IMAGE** **APPENDIX 1**

Preferred Site



Source: Google Earth

CHITWA TENTED **SATELLITE IMAGE** **APPENDIX 1**

Alternative Site 1

Source: Google Earth

CHITWA TENTED **SATELLITE IMAGE** **APPENDIX 1**

Alternative Site 2

Source: Google Earth

CHITWA TENTED PUBLIC PARTICIPATION PROCESS APPENDIX 2

CORRESPONDENCE WITH LOCAL MUNICIPALITY AND NEIGHBOURS

The Bushbuck Ridge Local Municipality were contacted via e-mail on 30 January 2013, with information of the proposed development.

Correspondence with the Local Municipality is included in the following pages.

Neighbours to the site were approached via e-mail. The proposed development was explained and alternatives discussed.

Interested and Affected Parties:

Name	Interest
Ettiene Swart	Pt 4 Arathusa – Elephant Plains Game Lodge
Hannes Feuth	Pt 5 Arathusa – Arathusa Safari Lodge
Shirley van Wyk	Re Arathusa - Manyelethi
Dave Varty / Chris Goodman	Pt 3 and re Marthly, Pt 5 Gowrie, Pt's 1 & 2 Sparta - Londolozi
Tom Robson / Trish Begbie	Othawa 1,2,3 rem
Andrew Parker	CEO at Sabi Sand Game Reserve
Tracy-Lee Petersen	Kruger National Park
Frans Krige	Mpumalanga Parks and Tourism
Municipal Manager	Bushbuck Ridge Local Municipality
Sampie Shabangu	Department of Water Affairs
Adolph Mbetse	Inkomati Catchment Management Agency

Correspondence with the authorities and neighbours is included in the following pages.

All the stakeholders listed above were sent the same notification of application for environmental authorisation. For practical reasons only one example has been included in this documentation. All copies can be supplied on demand.

The environmental assessment process was advertised in the Lowvelder Local Newspaper on 29 January 2013.

A Site Notice was erected at the Gowrie Gate on 26 January 2013.

Photo: Site notice at Gowrie Gate.

NOTICE OF BASIC ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

Notice is hereby given that an application has been lodged with The Mpumalanga Department of Economic Development, Environment and Tourism in terms of Regulation 56(2)(a) of the regulations published in the Government Notice No. R543 of 18 June 2010 published under section 24(2)(c) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) of intent to carry out the following activities:

THE CONSTRUCTION OF A 12 BED TENTED LODGE NEAR ELEPHANT PLAINS, SABI SAND NATURE RESERVE MDEDET Ref. No. 17/2/3/E-187.

Description of proposed activities: Chitwa Tented wishes to develop a new 12 bed tented lodge on the remainder portion of the farm Arathusa 241KU. This activity are listed under GNR 546 of 18 June 2010, item 5(a(a).

Name of Proponent:	Chitwa Tented (Pty) Ltd. P O Box 26291, Steiltes, 1213.
Name of Consultant:	EMROSS Consulting (Pty)Ltd, P O Box 507, White River, 1240 Tel: 013 750 2782 or Fax: 086 6754 320 e-mail: andrew@emross.co.za
Contact person:	Andrew Rossaak @ 082 3399 627

The date of publication of this advertisement is the 26th of January 2013. In order to ensure that you are identified as an interested and/or affected party, please submit your name, contact information and interest in the matter to the contact person given above within 30 days of publication of this advertisement.

EMROSS
CONSULTING (PTY) LTD

WHITE RIVER KINGSVIEW

Very neat and secure 3 bed, 2 bath units available for the 1 of March, 2013 Opposite the Shoprite Centre. Rent is R6,000 pm.

Contact
013-751-3000
076-667-0629
NB022733

Property for Sale

0605 Farms & Plots
0610 Flats & Units
0615 Houses
0620 Industrial Premises
0625 Offices & Shops
0630 Retirement Villages
0635 Stands
0640 Time Sharing
0645 Town houses / Cluster Homes
0650 Wanted to Buy

0610 Flats / Units

WR MATSAFENI
Flats for sale 2 bed, 2 bath. R700,000 - R800,000
Contact: Chris
082-459-3743
NB022719

0615 Houses

FOR SALE WHITE RIVER
6 Bed, 3 bath, pool, d /garage, builtin braai & bar, b/hole. R1.7 mil.
Contact: Chris
082-459-3743
NB022717

STEILTES
A lovely spacious 4 bedroom house with pool and entertainment area. Extra income from 1 x bachelors flat & 1 x 1 bedroom flat. 550 Sqm under roof. Lots of parking Solar geysers Air conditioning No agents commission R2,1million

Contact:
082-491-4532
ML013527

0635 Stands

STAND FOR SALE
The Edge security complex. 1Ha, R750,000 incl building plans.
Louise
082-571-1853
ML013546

Property?

Phone Maryann 013-754-1671 or Nerisa 013-754-1664 to place your Classified adverts

LEGALS LEGALS LEGALS

NOTICE OF BASIC ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

Notice is hereby given that an application has been lodged with The National Department of Environment in terms of Regulation 56(2)(a) of the regulations published in the Government Notice No. R543 of 18 June 2010 published under section 24(2)(c) of the National Environmental Management Act, 1998 (Act 107 of 1998) of intent to carry out the following activity:

THE CONSTRUCTION OF A 12 BED TENTED LODGE IN THE SABI SAND GAME RESERVE
MDEDET Ref. No. 17/2/3/E-187

Description of proposed activity: Chitwa Tented wishes to develop a new 12 bed tented lodge on the remainder portion of the farm Arathusa 241KU, within the Sabi Sand Game Reserve. These activities are listed under 546 of 18 June 2010, item 5(a)(a). The site is located near the Sabi Sand Game Reserve Gowrie Gate near Phungwe in Bushbuckridge Local Municipality, Mpumalanga Province.

Name of Proponent:	**Chitwa Tented (Pty) Ltd** **PO Box 26291, Steiltes, 1213**
Name of Consultant:	**Emross Consulting (Pty) Ltd** **PO Box 507, White River, 1240** **Tel: 013-750-2782 or** **e-mail: andrew@emross.co.za**
Contact person:	**Andrew Rossaak @ 082-339-9627**

The date of publication of this advertisement is 29 January 2013. In order to ensure that you are identified as an interested and/or affected party, if you so wish, please submit your name, contact information and interest in the above mentioned project to the contact person given above within 30 days of publication of this advertisement.

AC804

Cancel-lations

When cancelling an advert **you must receive a cancel-lation reference number** - no queries can be dealt with if you do Not quote it. Cancel-lation of Adverts will be accepted only in writing or per fax

Tel: 013-754-1669

Fax: 013-753-2422

Subject: Notification of Application for Environmental Authorisation Chitwa Tented Camp
From: Andrew Rossaak <andrew@emross.co.za>
Date: 2013/01/24 08:35 AM
To: shvwyk@mweb.co.za

Dear Sir/ Madam,

EMROSS, an independent environmental services company, have been engaged by Chitwa Tented (Misty Mountain Trading2 Pty. Ltd) to undertake an Environmental Impact Assessment for a proposed tented camp on the remainder portion of the farm Arathusa 241 KU. .

In terms of section 15 of the EIA regulations, you as the property owner: Manyeleti Pty. Ltd must be given written notice of a such application.

As the landowner, you are considered an Interested and Affected Party and we will keep you informed of the progress, reports and outcomes.

PLEASE can I ask you to reply to this email and confirm that this is the correct email address for notification of landowner.
Please also let me have the full name of the person you wish to represent your company for the public participation

If you have any questions - or if we can be of any service, please feel free to contact myself or Mette at the numbers below.

Thank you and kind regards

--
Andrew Rossaak *Pr.Sci.Nat.*

Emross Consulting (Pty) Ltd.
Tel 013 750 2782
Cell 082 3399 627
Fax 086 675 4320

Subject: Re: Notification of Application for Environmental Authorisation Chitwa Tented Camp
From: "Shirley" <shvwyk@mweb.co.za>
Date: 2013/01/24 03:11 PM
To: <andrew@emross.co.za>

Thank you
I confirm that I am the responsible person Shirley-Ann van Wyk 082 336 8846

This is my email address and I am a director of Manyeleti (pty) Ltd and Trustee of the Arathusa Family Trust which owns all the shares in the beforementioned company.

Please address myself or Charl Brink for any further information or queries about the Environmental Impact Study for the Chotwa Tented Lodge

Thank you

Shirley van Wyk

Subject: Application for Environmental Approval for Chitwa Sabi Sand Lodge Development
From: Mette Rossaak <mette@emross.co.za>
Date: 2013/01/30 10:54 AM
To: info@bushbuckridge.gov.za, malatjim@bushbuckridge.gov.za

Dear Sir,

Chitwa Tented is proposing a new tented lodge development in the Sabi Sand Game Reserve.

Emross Consulting has been appointed as independent environmental consultants to apply for environmental authorisation for this activity and in that connection investigate the potential environmental risks in connection with the construction and to propose mitigation measures where possible. An important part of this process is the participation of interested and potentially affected parties. You have been identified as an interested and affected party on behalf of the Bushbuck Ridge Municipality and as such we would value any comments you may have.

I have attached, for your information, a background document that outlines the proposals for each of the developments. We have identified some studies that need to be undertaken in the evaluation of the various proposed sites, and the information provided is what we have at present.

Also attached is a registration and comment form for the proposed development if you would like to use that – alternatively you can use the online form on the downloads page of our website (www.emross.co.za) or simply reply to this email.

We are available to meet with you, or your representative in the Sabi Sand, to discuss the proposals, and hear and document your concerns or comments. Please let us know if you wish to have a face-to-face meeting so that we can make an arrangement.

If you have no comments or concerns at this stage, that is fine (and common) – please just let us know. You will still have an opportunity to view the draft report prior to submission to the authorities.

Should you not wish to receive further correspondence regarding these assessments, please inform us to that effect by replying to this email.

If you have any questions, please feel free to contact me.

Many thanks for your time, and kind regards

--

Mette Rossaak
Certified Environmental Assessment Practitioner

Emross Consulting (Pty) Ltd.
Tel 013 750 2782
Cell 082 3399 627
Fax 086 675 4320

Attachments:

BID Chitwa Tented.pdf	182 KB
PPP Form Chitwa.pdf	143 KB

BACKGROUND INFORMATION DOCUMENT FOR THE PROPOSED CONSTRUCTION OF A 12 BED TENTED LODGE ON REMAINDER PORTION OF ARATHUSA 241KU, SABI SAND NATURE RESERVE
MDEDET REF.NO.: 17/2/3/E-187

January 2013

EMROSS Consulting Pty Ltd

P O Box 507, White River, 1240

PROJECT TEAM

Applicant.

Misty Mountain Trading 2 (Pty) Ltd trading as Chitwa Tented
P O Box 26291
Steiltes
1213
Tel: 013 744 0876
Mobile: 083 653 5555
E-mail: chitwa@iafrica.com
Contact person: Mr. Charl Brink

Consultants.

EMROSS Consulting Pty Ltd
P.O. Box 507, White River, 1240
Fax 086 675 4320
Cell: 082 339 9627
Contact person: Mr. Andrew Rossaak
E-mail: andrew@emross.co.za

Lead authority.

Mpumalanga Department of Economic Development, Environment and Tourism
P. Bag X 11219
Nelspruit,1200
Tel. 013 766 4826
Responsible Officer: Robin Luyt
E-mail: rluyt@mpg.gov.za
MDEDET Reference number: 17/2/3/E-187

1 INTRODUCTION

Emross Consulting was appointed by Chitwa Tented (Pty) Ltd (the applicant), as independent environmental consultants, to undertake the required actions to apply for authorisation to be obtained from the Mpumalanga Provincial Government Department of Economic Development, Environment and Tourism (MDEDET, the decision-making authority) for the proposed development of a 12 bed tented lodge near the Elephant Plains Game Lodge, in the Sabi Sand Game Reserve.

Government notices no. R 544-546 stipulates activities which require authorisation, in terms of the National Environmental Management Act (Act 107 of 1998).

2 PROPOPSED DEVELOPMENT

The Brink family, currently operate two luxury lodges in the Sabi Sand Game Reserve; Chitwa Chitwa Lodge and Chitwa House. It is proposed that the new development will be a tented lodge, with capacity for 12 sleeping guests.

The proposed activity will be undertaken on the remainder portion of the farm Arathusa 241KU, in the Sabi Sand Game Reserve, accessed through the Gowrie Gate, near Phungwe in the Bushbuckridge Local Municipality, Mpumalanga.

Chitwa undertook an environmental authorisation application process for a similar set-up in a different site a few years back, but due to certain site constraints and the economic recession, the granted authorisation was not acted on. An evaluation and negotiation process has identified a preferred site to be subjected to an environmental assessment.

The site to be assessed is as follows:

Preferred Site: This is approximately 1km south of the existing Elephant Plains game lodge.

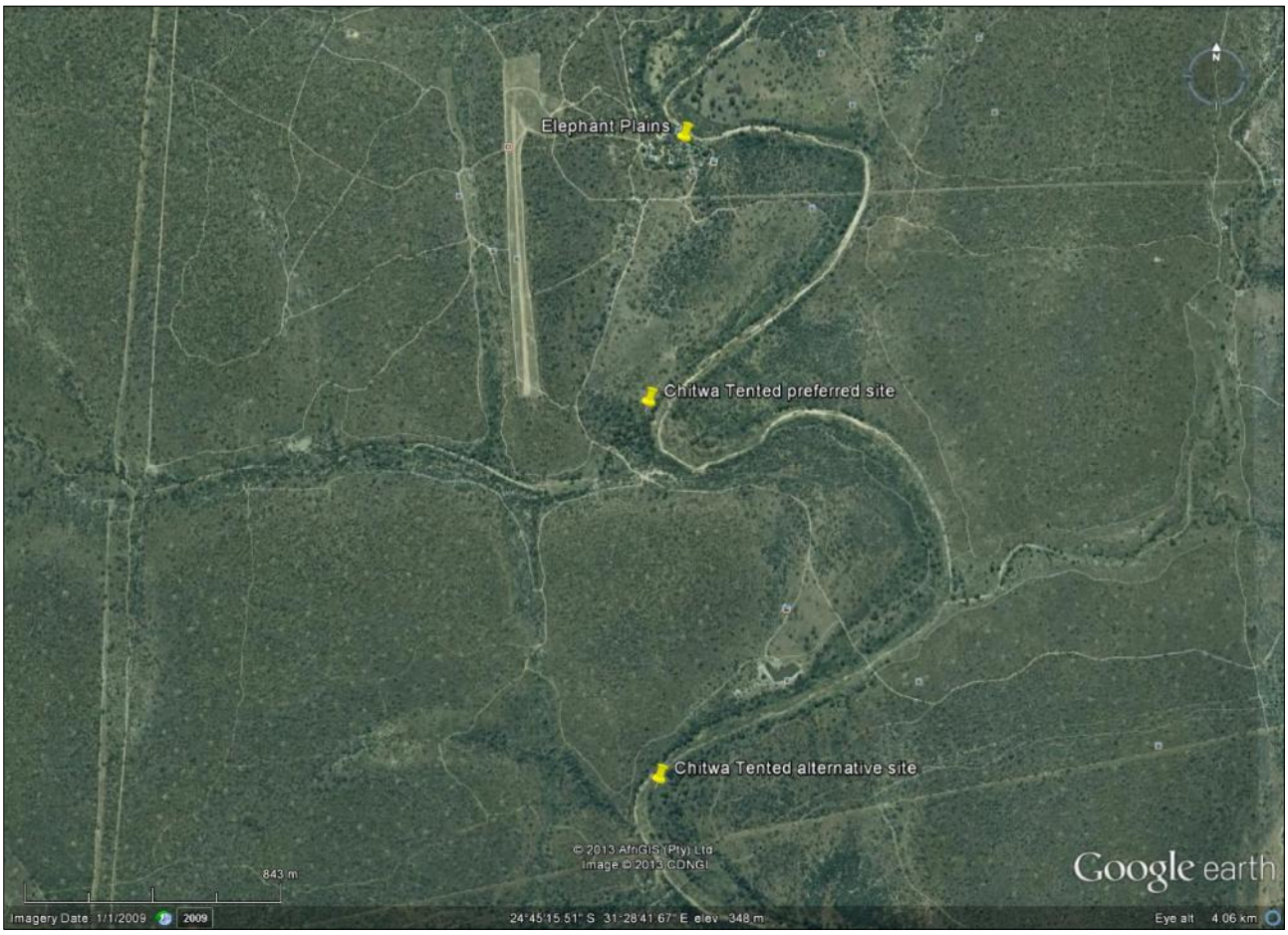
Alternative Site: The site approved during the previous assessment.

Both sites have valuable vegetation components and a vegetation assessment has been commissioned to document and evaluate this.

The following potential environmental impact aspects have been identified:

- Water and power supply
- Noise
- Light pollution and visual impacts
- Waste management (sewage, domestic and hazardous)
- Vegetation impact

A Google Earth image is provided below indicating the proposed sites and the existing Elephant plains runway to aid orientation.



Location of proposed lodge sites

3 LEGISLATIVE CONTEXT

In terms of the National Environmental Management Act (NEMA), the activity proposed is regarded as a listed activity under schedule of activities in GN R 546 activity 5 (a);*"The construction of resorts, lodges or other tourism accommodation facilities that sleep less than 15 people (a) A protected area identified in terms of NEMPAA"*.

This means that the development require a Basic Environmental Assessment in order to obtain environmental authorisation.

The proposed developments may also be subject to regulations contained in other legislation, such as the:

- National Heritage Resources Act 25 of 1999 (Section 38)
- Conservation of Agricultural Resources Act.
- National Water Act 1998 (act 36 of 1998)
- National Environmental Management Act (act 107 of 1998)
- Constitution of the Republic of South Africa (act 108 of 1996)
- Promotion of Access to Information Act (act 2 of 2000)

4 THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The legislation calls for a basic assessment to establish potential environmental and social impacts of the proposed development. The assessment will look at avoiding or minimising potential environmental damage and promote sustainable development.

The assessment process commences with a planning stage. During this stage;

- An application is lodged with the decision making authority, in this case the Mpumalanga Department of Economic Development, Environment and Tourism.
- Site visits by specialists as required to assess the site and potential impacts that could be caused by the proposed development, and
- Potential interested and affected parties to the development are identified.

The planning stage is followed by a participation stage. During this stage;

- A site visit is conducted with the decision making authority, and
- Notices and advertisements are publicised and identified interested and affected parties are consulted.

Once property information and public comment has been obtained, various assessments and specialist inputs are incorporated into a report, assessing the proposed development in context of the site. This report is made available for comment and finally submitted with comments to the lead authority for decision making.

5 PUBLIC PARTICIPATION PROCESS

According to the Constitution of the Republic of South Africa everybody has the right to have the environment protected, amongst others through sustainable development. Everybody also have the right to be informed and to access information.

Therefore a very important part of the Environmental Impact Assessment is to identify and hear the interested and affected parties to the proposed development.

This is done by contacting neighbouring landowners, by advertising the process in the Lowvelder, by erecting notices on site, and also by contacting special affected parties such as the Kruger National Park.

Registered interested and affected parties have the right to comment on reports regarding the development submitted by the consultant to the department.

In return the registered interested and affected party is expected to:

- Submit all comments in writing to the consultant;
- Adhere to time frames given for commenting or submit a written motivation for why a longer commenting period is needed; and

- Disclose any direct business, financial, personal or other interest in the approval or refusal of the development.

6 WHO TO CONTACT

Should you wish to register as an interested and affected party to this scoping process and should you have any special concerns that you wish to be addressed during the scoping process please send your name and contact details and issues:

Emross Consulting Pty Ltd.

Andrew Rossaak

PO Box 507
White River
1240

Cell: 082 339 9627

Fax: 086 675 4320

E-mail: andrew@emross.co.za

There is also a simple registration form on our website which you may wish to use.

Website: www.emross.co.za

Notice in the Lowvelder is published on the 29th of January 2012 and site notices erected at Gowrie Gate on the 26th of January 2013. Interested and affected parties have 30 days to register, however, we will gladly accept registrations and comments throughout the process, which will have an approximate duration of 7 months.

Subject: Application for Environmental Approval for Chitwa Sabi Sand Lodge Development
From: Mette Rossaak <mette@emross.co.za>
Date: 2013/01/30 11:08 AM
To: dave@londolozi.co.za, Chris Goodman <chrisgoodman@londolozi.co.za>

Dear Mr. Varty,

You may be aware that Chitwa Tented is proposing a new tented lodge development on the remainder portion of the farm Arathusa 241KU.

Emross Consulting has been appointed as independent environmental consultants to apply for environmental authorisation for this activity and in that connection investigate the potential environmental risks in connection with the construction and to propose mitigation measures where possible. An important part of this process is the participation of interested and potentially affected parties. You have been identified as an interested and affected party as your property is close to, or neighbouring the site and as such we would value any comments you may have.

I have attached, for your information, a background document that outlines the proposal for the development. We have identified some studies that need to be undertaken in the evaluation of the various proposed sites, and the information provided is what we have at present.

Also attached is a registration and comment form for the proposed development if you would like to use that – alternatively you can use the online form on the downloads page of our website (www.emross.co.za) or simply reply to this email.

We are available to meet with you, or your representative in the Sabi Sand, to discuss the proposals, and hear and document your concerns or comments. Please let us know if you wish to have a face-to-face meeting so that we can make an arrangement.

If you have no comments or concerns at this stage, that is fine (and common) – please just let us know. You will still have an opportunity to view the draft report prior to submission to the authorities.

Should you not wish to receive further correspondence regarding these assessments, please inform us to that effect by replying to this email.

If you have any questions, please feel free to contact me.

Many thanks for your time, and kind regards

Mette Rossaak
Certified Environmental Assessment Practitioner

Emross Consulting (Pty) Ltd.
Tel 013 750 2782
Cell 082 3399 627
Fax 086 675 4320

Attachments:

BID Chitwa Tented.pdf	182 KB
PPP Form Chitwa.pdf	143 KB

Subject: Re: Application for Environmental Approval for Chitwa Sabi Sand Lodge Development
From: "Frans Krige" <franskrige@telkomsa.net>
Date: 2013/01/30 12:31 PM
To: <mette@emross.co.za>

Dear Mette , thank you for notifying me of this proposal.

I am glad that the individual owners of Sabi Sand is now trying to comply with Environmental legislation before they commence with developments.

I will ask Komilla to register this project and you must also register myself as an interested and affected party on behalf of MTPA.

I will inform you when a suitable date is arranged for a site visit, because under the current circumstances it is difficult to travel there. There is however I good chance that I will have to go on a site visit at a development in Manyeleti and then will have a look at this one as well.

I saw the damage to the swimmingpool at Chitwa last year after the floods.

My comments will follow soon.

Kind Regards

Francois Krige
EIA Scientist
LUA Unit SS
Mpumalanga Tourism and Parks Agency

Tel: (+27) 13 254 0279
Mobile: (+27) 84 2322902
Fax: (+27) 13 254 0279
E-mail: frans@mtpa.co.za
franskrige@telkomsa.net
Postal: P.O.Box 98, Dullstroom, 1110
Website: www.mpumalanga.com

EMROSS
CONSULTING (PTY) LTD

PUBLIC PARTICIPATION PROCESS

PROPOSED 12 BED LODGE CHITWA SABI SAND
ON THE FARM ARATHUSA 241KU
REF.NO.: 17/2/3/E-187

Please complete form and fax to 086 675 4320 or mail to PO Box 1309, White River, 1240 on or before 1st March 2013

SURNAME	Robson (Rathaven (Pty) Limited)	TITLE	MR
FIRST NAME	THOMAS	INITIALS	TW
ADDRESS	Physical: FARM ORTHAWA 268 KU SABI SAND WILDTUIN PILGRIMS REST DISTRICT, MPUMALANGA		
	Postal: P O Box 4044 EDENVALE 1610		
TELEPHONE	021 790 5633 OR	FAX	044 870 0367
CELL PHONE	071 679 5047 OR 084 505 4035		
E-MAIL	t.robson@sturrockandrobson.com & trishb@sturrock.co.za		
Please register me as an Interested and affected party		YES	NO
Please send me a copy of the Basic Assessment Report		YES	NO

COMMENTS:

WE ARE INTERESTED IN:

1. LIGHT POLLUTION. A GRID SHOWING THE EXTENT OF POLLUTION ON NEIGHBOURING FARMS FROM THE HIGHEST LIGHT PLANNED, AND NO SHIELDING FOLIAGE, WILL BE REQUESTED.
2. NOISE POLLUTION IN A SENSITIVE AREA
3. SEWAGE PLANT DESIGN IN LIGHT OF LOCATION AND SOIL TYPE IN A SENSITIVE AREA
4. ACCESS ROAD. ROUTE AND DESIGN (IF CONSIDERED)
5. POWER TRANSMISSION TO THE SITE. POWER LINES ROUTE & TYPE, GENERATOR NOISE SUPPRESSION STANDARD

Signature: P W Robson **Date:** 6.2.2013
for TW Robson

Subject: Chitwa Tented Comment form received
From: Mette Rossaak <mette@emross.co.za>
Date: 2013/02/06 11:44 AM
To: Trish Begbie <trishb@sturrocksa.co.za>
CC: t.robson@sturrockandrobson.com

Hi Trish,

I have received your comment form in regard of the basic environmental assessment for Chitwa Tented.

Your concerns have been noted and will be assessed.

We expect to have the draft environmental assessment report ready for comment in early March.

Kind regards
--
Mette Rossaak
Certified Environmental Assessment Practitioner

Emross Consulting (Pty) Ltd.
Tel 013 750 2782
Cell 082 3399 627
Fax 086 675 4320

EMROSS CONSULTING (PTY) LTD

PUBLIC PARTICIPATION PROCESS

PROPOSED 12 BED LODGE CHITWA SABI SAND
ON THE FARM ARATHUSA 241KU
REF.NO.: 17/2/3/E-187

Please complete form and fax to 086 675 4320 or mail to PO Box 1309, White River, 1240 on or before 1st March 2013

SURNAME	VARTY		**TITLE**	MR
FIRST NAME	DAVID		**INITIALS**	DB
ADDRESS		Physical	LONDOLOZI GAME RESERVE GAME RESERVE, MPUMALANGA	
		Postal	PO BOX 6 SKUKUZA 1350	
TELEPHONE	013 735 5653		FAX	013 735 5100
CELL PHONE	082 892 0315			
E-MAIL	dave@londolozi.co.za			
Please register me as an interested and affected party			(YES)	NO
Please send me a copy of the Basic Assessment Report			(YES)	NO

COMMENTS: LONDOLOZI DOES NOT SUPPORT THE ALTERNATIVE SITE.

Signature: [signature] Date: 2/2/13

Subject: Registration as interested and affected party
From: "Michael Grover" <gis@sabisand.co.za>
Date: 2013/02/01 10:14 AM
To: "Andrew - EMROSS" <andrew@emross.co.za>
CC: <ceo@sabisand.co.za>, <ops@sabisand.co.za>

Hi There Andrew

The Sabi Sand Wildtuin would like to register as an interested and affected party for the building of Chitwa Tented Camp. Please keep us informed with all documents that are released as well as any developments that may occur.

Our areas of concern are the adequate treatment of sewerage and minimisation of pollution (light, noise, waste) etc As well as post-development clean-up of the building site as well as clean up of the "alternative site" where foundations and building have already taken place.

I would also like to bring to your attention a typo in the BID Chitwa Tented document. The site notices are put up at Gowrie Gate not Newington.

Thanks
Mike (on behalf of Sabi Sand Wildtuin)

MICHAEL GROVER SSW CONSERVATION OFFICER
| *Mobile:* 078 804 0347 | *Fax:* 086 633 9248
Website: www.sabisand.co.za

Subject: Re: Registration as interested and affected party
From: Andrew Parker <ceo@sabisand.co.za>
Date: 2013/02/01 11:49 AM
To: <mette@emross.co.za>, Michael Grover <gis@sabisand.co.za>
CC: <ops@sabisand.co.za>

Hi Andrew

Please send to both of us but Mike will be the point-man on this.

Kind regards
Andrew

Andrew Parker
CEO
Sabi Sand Wildtuin

From: Mette Rossaak <mette@emross.co.za>
Reply-To: <mette@emross.co.za>
Date: Friday 01 February 2013 11:35 AM
To: Michael Grover <gis@sabisand.co.za>
Cc: Andrew Parker <ceo@sabisand.co.za>, <ops@sabisand.co.za>
Subject: Re: Registration as interested and affected party

Hi Michael,

Thank you I have noted this. Will you be the contact person rather than Andrew or do you both wish to receive notices?

Apologies for the typo, thank you for pointing that out.

Kind regards

Mette Rossaak
Certified Environmental Assessment Practitioner
-
Emross Consulting (Pty) Ltd.
Tel 013 750 2782
Cell 082 3399 627
Fax 086 675 4320

Subject: Re: The construction of 12 bed tented lodge in the Sabi sand game reserve MDEDET REF NO.17/2/3/E-187
From: "Danisile Hlatshwayo" <priscillahdans@gmail.com>
Date: 2013/02/01 07:40 PM
To: mette@emross.co.za

I want to know more about this project I am interest
Sent via my BlackBerry by PD Hlatshwayo

-----Original Message-----
From: Mette Rossaak <mette@emross.co.za>
Date: Fri, 01 Feb 2013 13:53:49
To: <priscillahdans@gmail.com>
Reply-To: mette@emross.co.za
Subject: Re: The construction of 12 bed tented lodge in the Sabi sand game reserve MDEDET REF NO.17/2/3/E-187

Hi Priscilla,

I received your message below.

Please can you give me more detail?

Do you wish to register as an interested and affected party to the assessment?
Where do you live and what is your interest in the project?
Do you have any concerns or comment that we need to register?

Thank you an kind regards

Mette Rossaak
Certified Environmental Assessment Practitioner
-
Emross Consulting (Pty) Ltd.
Tel 013 750 2782
Cell 082 3399 627
Fax 086 675 4320

On 2013/01/29 11:03 PM, Danisile Hlatshwayo wrote:

> Priscilla Danisile Hlatshwayo Contact no:0761839674 E-mail: Priscillahdans@gmail.com
> Sent via my BlackBerry by PD Hlatshwayo

Subject: construction of 12 bed tentrd at sabi sand game reserve
From: solly mhlongo <richrockproperties@gmail.com>
Date: 2013/02/21 05:42 PM
To: andrew@emross.co.za

After the conversation that we had earlier on today about the construction of that lodge,you have requested my e-mail address and a brief profile about my company,my e-mail adress si,richrockproperties@gmail.com and my company specialise in building,glazing,painting,thatching and civil construction.I hope you will find this information in orsder.please confirm by phoning me if you have find my info on the nunber below

083 4026 575

kind regards
SOLLY

Subject: RE: Application for Environmental Approval for Chitwa Sabi Sand Development
From: "Shabangu Sampie Howard \(NSP\)" <ShabanguS2@dwa.gov.za>
Date: 2013/03/04 01:53 PM
To: <mette@emross.co.za>

Dear Mette

Send the Environmental Report for DWA considerations and register her as an interested stakeholder

Kind Regards

Mr. Sampie Howard Shabangu
Department Of Water Affairs
Private Bag X 11259
MBOMBELA,1200

35 BROWN STREET
PROROM BUILDING
2ND FLOOR, ROOM 199
MBOMBELA/ NELSPRUIT
MPUMALANGA PROVINCE
SOUTH AFRICA

Timestamp	Full Name	Your interest in the project	Phone number	E-mail address	Your comments:	Do you want to receive notification of the draft report ?
2/4/2013 9:07:32	Rene Cathro	Representative	333431130	ReneC@L2B.co.za	Would like to be recorded as an Interested party and would like update emails on the progress of the EIA. Please could you send me a copy of the BID, the link on your website is faulty. Thank you	Yes, please keep me informed

Subject: Registration as Interested and Affected Party Chitwa 12bed Tented Lodge Sabi Sand
From: Mette Rossaak <mette@emross.co.za>
Date: 2013/05/15 09:16 AM
To: ReneC@l2b.co.za

Hi Rene,

We have received your registration as and Interested and Affected Party to the Chitwa Tented Camp environmental assessment process, thank you.

Please find attached the background information document as requested.

Our apologies for the faulty link, it has been restored.

The draft basic assessment report should be available for comment within the next week.

Regards
--
Mette Rossaak
Certified Environmental Assessment Practitioner

Emross Consulting (Pty) Ltd.
Tel 013 750 2782
Cell 082 3399 627
Fax 086 675 4320

Attachments:

BID Chitwa Tented.pdf	353 KB

Subject: Chitwa Tented Sabi Sand Lodge Draft Environmental Report Available for Comment
From: Mette Rossaak <mette@emross.co.za>
Date: 2013/05/23 12:06 PM
To: undisclosed-recipients:;
BCC: t.robson@sturrockandrobson.com, trishb@sturrocksa.co.za, Chris Goodman <chrisgoodman@londolozi.co.za>, dave@londolozi.co.za, Robyn Luyt <RLuyt@mpg.gov.za>, Michael Grover <gis@sabisand.co.za>, ssw_ceo <ceo@sabisand.co.za>, Tracy-Lee Ann Petersen <tracy.petersen@sanparks.org>, info@bushbuckridge.gov.za, malatjim@bushbuckridge.gov.za, reservations@elephantplains.co.za, arathusa@telkomsa.net, Shirley <shvwyk@mweb.co.za>, adolphm@inkomaticma.co.za, "Shabangu Sampie Howard (NSP)" <ShabanguS2@dwa.gov.za>, Charl Brink <charl@chitwa.co.za>, ReneC@l2b.co.za, priscillahdans@gmail.com, Frans Kriege <franskrige@telkomsa.net>

Dear Interested and Affected Party,

The DRAFT Environmental Assessment Report for the proposed tented lodge at Chitwa Sabi Sand is now available for comment.

As the file size is more than 14MB, we understand that many e-mail systems cannot handle this file size.
In order to make the draft report as available as possible, we would like to provide the following options:

1. Download the .pdf file from our website www.emross.co.za/downloads
The report will be available for download later today.

2. Request a CD with a .pdf version of the report to be posted or otherwise made available to you.
Please send us a request with your postal address for this option.

3. Request a hard copy
We ask that you please consider the environment before choosing this option. Should you require a hard copy to be posted to you, please send us a request with your postal address.

Please feel free to share this e-mail with other I & AP's who may not yet be registered.

You may submit comments to us via reply to this e-mail address, via fax 086 675 4320, by filling in the form on our web-page (given above), or via registered mail to PO Box 1309, White River, 1240.

We would be most grateful if we could please receive any comments on or before the **2nd July 2013**.

As many of the I & AP's are not resident in the area, but visit periodically, we don't believe an open public meeting will be suitable. We however will make ourselves available to discuss any concerns you may have or provide clarity on any points you may wish, through one-on -one meetings, or at least through a phone call. Please contact us so we can arrange to get together.

Kind regards

Mette Rossaak

EMROSS

Emross Consulting (Pty) Ltd.
Tel 013 750 2782
Cell 082 3399 627
Fax 086 675 4320

Subject: Re: Chitwa Tented Sabi Sand Lodge Draft Environmental Report Available for Comment
From: "Frans Krige" <franskrige@telkomsa.net>
Date: 2013/05/24 11:26 AM
To: <mette@emross.co.za>, "Queen Mahlangu" <queen@mtpa.co.za>, "Komilla Narasoo" <knarasoo@mtpa.co.za>

Hi Mette

MTPA requires a hard copy to be posted to Komilla Narasoo
at :

Postal: P/Bag X11338, Nelspruit, 1200

Kind Regards

Francois Krige
EIA Scientist
Mpumalanga Tourism and Parks Agency

Tel: (+27) 13 254 0279
Mobile: (+27) 84 2322902
Fax: (+27) 13 254 0279
E-mail: frans@mtpa.co.za
franskrige@telkomsa.net
Postal: P.O.Box 98, Dullstroom, 1110
Website: www.mpumalanga.com

Subject: FW: Chitwa Tented Sabi Sand Lodge Draft Environmental Report Available for Comment
From: "Michael Grover" <gis@sabisand.co.za>
Date: 2013/05/25 12:32 PM
To: <mette@emross.co.za>
CC: <ceo@sabisand.co.za>, <ops@sabisand.co.za>

HI THERE METTE

I have read through the EIA proposal for the new Chitwa tented camp. I only have one concern highlighted below is a piece from the attached pdf

Chitwa undertook an environmental authorisation application process for a similar set-up in a different site a few years back, but due to certain site constraints and the economic recession, the granted authorisation was not acted on. An evaluation and negotiation process has identified a preferred site to be subjected to an environmental assessment.

As was evident from a visit to site 1 it was acted on just not to completion. The SSW recommendation is that if the preferred site or site 2 are used the previous site be full removed and totally rehabilitated before the completion of the new one. Measures must be in place to ensure the new development must comply strictly with the provisions of the designs and all environmental approvals. I have had a chat to Andrew and have raised all these concerns.

Thanks

MICHAEL GROVER SSW ECOLOGICAL OFFICER
| *Mobile:* 078 804 0347 |
Website: www.sabisand.co.za

Subject: Re: Chitwa Tented Sabi Sand Lodge Draft Environmental Report Available for Comment
From: Mette Rossaak <mette@emross.co.za>
Date: 2013/05/29 09:56 AM
To: Michael Grover <gis@sabisand.co.za>

Hi Michael,

Thank you for your comment, it is noted.

We will compile a rehabilitation management plan for site 1 if any of the other sites end up being the preferred. We will also compile a management plan for the construction of the lodge and recommend that an environmental control officer be appointed to monitor the implementation.

Please do not hesitate to submit further comment if any such arises.

Kind regards
Mette Rossaak
Certified Environmental Assessment Practitioner

Emross Consulting (Pty) Ltd.
Tel 013 750 2782
Cell 082 3399 627
Fax 086 675 4320
On 2013/05/25 12:32 PM, Michael Grover wrote:

Subject: RE: Chitwa Tented Sabi Sand Lodge Draft Environmental Report Available for Comment
From: "Shabangu Sampie Howard \(NSP\)" <ShabanguS2@dwa.gov.za>
Date: 2013/05/29 08:49 AM
To: <mette@emross.co.za>

A hardcopy will be appreciated

Kind Regards

Mr. Sampie Howard Shabangu
Department Of Water Affairs
Private Bag X 11259
MBOMBELA,1200

35 BROWN STREET
PROROM BUILDING
2ND FLOOR, ROOM 199
MBOMBELA/ NELSPRUIT
MPUMALANGA PROVINCE
SOUTH AFRICA

Subject: Reminder Comment Period for Chitwa Tented Draft Environmental Assessment Report is ending 2 July
From: Mette Rossaak <mette@emross.co.za>
Date: 2013/06/21 09:24 AM
To: t.robson@sturrockandrobson.com, Trish Begbie <trishb@sturrocksa.co.za>, Chris Goodman <chrisgoodman@londolozi.co.za>, dave@londolozi.co.za, Michael Grover <gis@sabisand.co.za>, Andrew Parker <ceo@sabisand.co.za>, Tracy-Lee Petersen <TracyP@sanparks.org>, Frans Kriege <franskrige@telkomsa.net>, info@bushbuckridge.gov.za, reservations@elephantplains.co.za, arathusa@telkomsa.net, Shirley <shvwyk@mweb.co.za>, adolphm@inkomaticma.co.za, "Shabangu Sampie Howard (NSP)" <ShabanguS2@dwa.gov.za>, Charl Brink <charl@chitwa.co.za>, ReneC@l2b.co.za, priscillahdans@gmail.com

Dear Interested and Affected Party,

Please be reminded that the comment period for the draft environmental assessment for the proposed Chitwa tented lodge in Sabi Sand is ending on Tuesday 2 July.

The report is still available on our website www.emross.co.za under the downloads section.

You can send your comment in reply to this e-mail, via fax no 086 675 4320 or simply fill in the comment form on our website.

Please do not hesitate to contact us for any questions regarding the assessments.

Thank you and kind regards
--
Mette Rossaak
Certified Environmental Assessment Practitioner

EMROSS

Emross Consulting (Pty) Ltd.
Tel 013 750 2782
Cell 082 3399 627
Fax 086 675 4320

Subject: Re: Reminder Comment Period for Chitwa Tented Draft Environmental Assessment Report is ending 2 July
From: "Frans Krige" <franskrige@telkomsa.net>
Date: 2013/06/26 08:34 AM
To: <mette@emross.co.za>, <t.robson@sturrockandrobson.com>, "Trish Begbie" <trishb@sturrocksa.co.za>, "Chris Goodman" <chrisgoodman@londolozi.co.za>, <dave@londolozi.co.za>, "Michael Grover" <gis@sabisand.co.za>, "Andrew Parker" <ceo@sabisand.co.za>, "Tracy-Lee Petersen" <TracyP@sanparks.org>, <info@bushbuckridge.gov.za>, <reservations@elephantplains.co.za>, <arathusa@telkomsa.net>, "Shirley" <shvwyk@mweb.co.za>, <adolphm@inkomaticma.co.za>, "Shabangu Sampie Howard \(NSP\)" <ShabanguS2@dwa.gov.za>, "Charl Brink" <charl@chitwa.co.za>, <ReneC@l2b.co.za>, <priscillahdans@gmail.com>
CC: "Johan Eksteen" <johan@mtpa.co.za>, "Robyn Luyt" <rluyt@mpg.gov.za>

Dear All

It was decided with a special meeting with Mr Andrew Parker that any new developments in the SSW will have to undergo an EIA and that the proposed development must be approved by the SSW Management Authority , in other words it must form part of an approved INTEGRATED Management Plan before any Consultant can be commissioned to undertake the EIA study.

From my side as the MTPA ,Land Use Advisor (EIA Scientist) , I will not react on requests to assess the EIAR unless I have received an authorization for such an proposal from the Chairman or CEO of the Management Authority. Secondly it is not possible to do an evaluation or assessment of the EIAR unless I have been on site to do a site inspection.

With regards to the Chitwa Tented Camp, Mette has requested me to give my comments on the proposal , but unfortuneatly I did not have the means to do the requested site visit. As soon as we have received a hard copy through Komilla Narasoo at our head office and the blessing of the Management Authority , I will arrange a site visit with Johan Eksteen and Robyn Luyt also to have a look at the historical issues.

Kind Regards

Francois Krige
EIA Scientist
LUA Unit SS
Mpumalanga Tourism and Parks Agency

Tel: (+27) 13 254 0279
Mobile: (+27) 84 2322902
Fax: (+27) 13 254 0279
E-mail: frans@mtpa.co.za
franskrige@telkomsa.net
Postal: P.O.Box 98, Dullstroom, 1110
Website: www.mpumalanga.com

Subject: Re: Reminder Comment Period for Chitwa Tented Draft Environmental Assessment Report is ending 2 July
From: Mette - EMROSS <mette@emross.co.za>
Date: 2013/07/22 07:58 PM
To: Frans Krige <franskrige@telkomsa.net>

Dear Frans,

Thank you for your comments. I am required to reply to these as there are some misconceptions contained therein.

We have, from inception included Sabi Sand Game Reserve management as an identified Interested and Affected Party (as we have included you for MTPA). Our interaction with SSW has included e-mails and meetings between us and SSW management. Most of these were prior to the meeting you mention (I believe our draft report was available then). Thus, we believe SSW were well informed of our client's proposal.

We were not aware of your meeting or the conditions therein agreed until your email. However we are in support of the desired outcomes and processes and have since requested and received the written approval of SSW through the CEO.

We would be grateful if you could please forward a copy of the appointment letter for SSW as the Management Authority as it has been difficult for us to gain clarity on who is the legislated management authority for the area and we intend complying with Regulation 99 of 2012 under NEMPA.

We are keen to assist and support SSW in any way we can in getting an integrated management plan finalised and approved as we understand the benefits.

Finally, we believe that we have undertaken the proper consultative processes with SSW throughout the assessment.

Kind regards

Andrew Rossaak *Pr.Sci.Nat.*

Emross Consulting (Pty) Ltd.
Tel 013 750 2782
Cell 082 3399 627
Fax 086 675 4320

Subject: Re: Reminder Comment Period for Chitwa Tented Draft Environmental Assessment Report is ending 2 July
From: Andrew Parker <ceo@sabisand.co.za>
Date: 2013/07/07 10:25 AM
To: Frans Krige <franskrige@telkomsa.net>, <mette@emross.co.za>, <t.robson@sturrockandrobson.com>, Trish Begbie <trishb@sturrocksa.co.za>, Chris Goodman <chrisgoodman@londolozi.co.za>, <dave@londolozi.co.za>, Michael Grover <gis@sabisand.co.za>, Tracy-Lee Petersen <TracyP@sanparks.org>, <info@bushbuckridge.gov.za>, <reservations@elephantplains.co.za>, <arathusa@telkomsa.net>, Shirley <shvwyk@mweb.co.za>, <adolphm@inkomaticma.co.za>, "Shabangu Sampie Howard (NSP)" <ShabanguS2@dwa.gov.za>, Charl Brink <charl@chitwa.co.za>, <ReneC@l2b.co.za>, <priscillahdans@gmail.com>, Iain Mackensie <iain@afcinvestment.co.za>
CC: Johan Eksteen <johan@mtpa.co.za>, Robyn Luyt <rluyt@mpg.gov.za>

Dear Frans

This is to confirm that the Executive Committee has reviewed the proposed Chitwa/Arathusa development and has no objections subject to (a) the original site being rehabilitated, (b) light pollution being minimised, (c) appropriate treatment of sewerage and (d) the original site not being used. Therefore, the proposed development can be considered approved by the SSW Executive Committee.

Kind regards
Andrew

Andrew Parker
CEO
Sabi Sand Wildtuin

Subject: Re: Reminder Comment Period for Chitwa Tented Draft Environmental Assessment Report is ending 2 July
From: "Frans Krige" <franskrige@telkomsa.net>
Date: 2013/07/09 11:08 AM
To: "Andrew Parker" <ceo@sabisand.co.za>, <mette@emross.co.za>, <t.robson@sturrockandrobson.com>, "Trish Begbie" <trishb@sturrocksa.co.za>, "Chris Goodman" <chrisgoodman@londolozi.co.za>, <dave@londolozi.co.za>, "Michael Grover" <gis@sabisand.co.za>, "Tracy-Lee Petersen" <TracyP@sanparks.org>, <info@bushbuckridge.gov.za>, <reservations@elephantplains.co.za>, <arathusa@telkomsa.net>, "Shirley" <shvwyk@mweb.co.za>, <adolphm@inkomaticma.co.za>, "Shabangu Sampie Howard \(NSP\)" <ShabanguS2@dwa.gov.za>, "Charl Brink" <charl@chitwa.co.za>, <ReneC@l2b.co.za>, <priscillahdans@gmail.com>, "Iain Mackensie" <iain@afcinvestment.co.za>
CC: "Johan Eksteen" <johan@mtpa.co.za>, "Robyn Luyt" <rluyt@mpg.gov.za>

Dear Andrew, thank you very much for this confirmation.

I will assess the application now, and send my comments to Mette.

The site visit will be done at a convenient date.

Kind Regards

Francois Krige
EIA Scientist
LUA Unit SS
Mpumalanga Tourism and Parks Agency

Tel: (+27) 13 254 0279
Mobile: (+27) 84 2322902
Fax: (+27) 13 254 0279
E-mail: frans@mtpa.co.za
franskrige@telkomsa.net
Postal: P.O.Box 98, Dullstroom, 1110
Website: www.mpumalanga.com

Subject: FW: Chitwa Tented - SSW
From: Andrew Parker <ceo@sabisand.co.za>
Date: 2013/07/02 10:04 AM
To: Andrew - EMROSS <andrew@emross.co.za>

FYI – can we get an assurance from Shirley and Charl that the old site is no longer an option?

Andrew Parker
CEO
Sabi Sand Wildtuin

From: Dave Varty <dave@londolozi.co.za>
Reply-To: Dave Varty <dave@londolozi.co.za>
Date: Tuesday 02 July 2013 9:53 AM
To: Andrew Parker <ceo@sabisand.co.za>
Subject: Re: Chitwa Tented - SSW

Dear andrew. Can you get assurance that the old site close to marthly arathusa boundry is definitely no longer an option harold mentioned that is still recorded as an alternate. Site. Regards dave v
Sent via my BlackBerry from Vodacom - let your email find you!

Dave Varty
dave@londolozi.co.za
Tel: +27-13-735-5653
Fax: +27-13-735-5100
http://www.londolozi.com/
http://blog.londolozi.com/

From: Andrew Parker <ceo@sabisand.co.za>
Date: Tue, 2 Jul 2013 09:32:53 +0200
To: Carlos dos Santos<carlos@inyati.co.za>; Dave Varty (dave@londolozi.co.za)<dave@londolozi.co.za>; Harold<Harold@haleo.co.za>; Iain McKensie (iain@afcinvestment.co.za)<iain@afcinvestment.co.za>; Luke Bailes (luke.b@singita.co.za)<luke.b@singita.co.za>; Nico Wilkens<nicow@koshcom.co.za>; Sidney Frankel (sfrankel@frankels.co.za)<sfrankel@frankels.co.za>; Tom Robson (t.robson@sturrockandrobson.com) <t.robson@sturrockandrobson.com>; Trish Begbie<trishb@sturrocksa.co.za>; Davis, Mick (Corporate) <MDavis@x2resources.com>; More Guy<guy.more@swaziplant.co.za>; Etienne Swart<eswart@elephantplains.co.za>
Subject: FW: Chitwa Tented - SSW

Dear colleagues

Further on the emails below, I met with Andrew Rossak yesterday, the EIA consultant for the Chitwa tented camp project. The window for comments on the current draft will close during this week. Interested and affected parties will have a further opportunity to comment on the final draft. From the SSW's perspective, other than obvious issues such as light pollution and sewerage, the only concern we have raised is the rehabilitation of the old site. My understanding is that our obligation is to ensure that any developments on the SSW conform to the provisions of the Constitution and that the necessary environmental approvals are obtained. In this regard, the proposed 12-bed tented camp on Arathusa falls well within the bed density limitation even with the allowance for 4 beds presently being "leased" to Simbambili. The property is 1196ha in extent and the development of 12 beds over and above the existing lease to Simbambili of 4 beds equates to a density of 1 bed per 75ha. The landowner and developer are pursuing the necessary environmental approvals and hence I can see no reason why the SSW as the de facto management authority should object to this development. Accordingly, unless there are any concerns, I propose that I issue a letter of endorsement as requested by the Department by the end of this week.

Kind regards
Andrew

Andrew Parker
CEO
Sabi Sand Wildtuin

From: Andrew Parker <ceo@sabisand.co.za>
Date: Wednesday 26 June 2013 3:36 PM
To: Carlos dos Santos <carlos@inyati.co.za>, Dave Varty <dave@londolozi.co.za>, Harold <Harold@haleo.co.za>, Hilton Loon <hloon@sabisabi.com>, Iain Mackensie <iain@afcinvestment.co.za>, Jurie Moolman <jurie@djuma.co.za>, Luke Bailes <luke.b@singita.co.za>, Nico Wilkens <nicow@koshcom.co.za>, Sidney Frankel <sfrankel@frankels.co.za>, Tom Robson <t.robson@sturrockandrobson.com>, Trish <trishb@sturrocksa.co.za>
Cc: Cherene Kruger <cherene@frankels.co.za>
Subject: FW: Chitwa Tented - SSW

Dear colleagues

Further on my meeting with MTPA and the Department two weeks ago regarding EIA's, they indicated that they would not sign off on any developments in the SSW without approval from the SSW as the de facto management authority. This is a very positive development in that the authorities already recognise us as a competent management authority even though our management plan has not yet been approved. In this regard, it is necessary for the Exco to review proposed developments and I have received notification from the Department that they require our approval before issuing the RoD for the Chitwa/Arathusa tented camp development. This will be included on the agenda for Friday's Exco meeting. Andrew Rossak has been appointed as the EIA consultant and the details can be found by following the link below.

Kind regards
Andrew

Andrew Parker
CEO
Sabi Sand Wildtuin

From: Andrew - EMROSS <andrew@emross.co.za>
Date: Wednesday 26 June 2013 1:11 PM
To: Andrew Parker <ceo@sabisand.co.za>
Cc: Michael Grover <gis@sabisand.co.za>, <charl@chitwa.co.za>
Subject: Chitwa Tented - SSW

Hi Andrew,

Following our conversation today, please find all the relevant details and draft report for the proposed Chitwa tented camp on our website:

www.emross.co.za under the downloads section.

Note that the report is a draft and we are still in the comment period.

I would be grateful if you could put the proposal before the SSW board / Exco to approval / ratification this weekend. In addition, if they wish to make any comments or ask any questions, please could be sent through to me - we would like to ensure all concerns are addressed in the EIA.

Please feel free to contact me if you require any additional information.

Kind regards

Andrew Rossaak *Pr.Sci.Nat.*
EMROSS logo email.bmp
Emross Consulting (Pty) Ltd.
Tel 013 750 2782
Cell 082 3399 627
Fax 086 675 4320

Subject: Re: FW: Chitwa Tented - SSW
From: Andrew - EMROSS <andrew@emross.co.za>
Date: 2013/07/02 10:59 AM
To: Andrew Parker <ceo@sabisand.co.za>

Hi Andrew,

The preferred site has approvals from all the neighbours. The 'old authorised' site (where the lodge was started) has objections from at least one I & AP. The other alternative is also a viable site.

The old site was included as an alternative as it was felt it would be useful to benchmark the new proposed sites against it. The old site has a valid and existing environmental authorisation from MDEDET.

This EIA process was under taken following neighbour requests to seek an alternative site for the lodge. This additional expense and significant delay indicates the applicants intention to re-site the lodge.

I do not believe it would be appropriate to remove the 'old site' alternative from the EIA process now - which is the request.

Kind regards

Andrew Rossaak *Pr.Sci.Nat.*

Emross Consulting (Pty) Ltd.
Tel 013 750 2782
Cell 082 3399 627
Fax 086 675 4320

Mpumalanga
TOURISM AND PARKS AGENCY

Ref: LUA 13 /351
Unit: LUA/SS
Enquiries: F.N. Krige
Tel/ Fax: 013 2540279
E-Mail: frans@mtpa.co.za

Attention: Mrs. Mette Rossaak

EMROSS CONSULTING PTY Ltd
P.O.Box 507
White River
1240
Fax: 086 675 4320

E-Mail: Andrew@emross.co.za

Dear Mrs. Rossaak

SUBJECT: MTPA COMMENTS ON THE BASIC ASSESSMENT REPORT FOR THE PROPOSED CONSTRUCTION OF THE CHITWA 12 BEDS TENTED LODGE ON A PORTION OF THE REMAINDER OF THE FARM ARATHUSA 241 KU, SABI SANDS WILDTUIN, MPUMALANGA PROVINCE.

With reference to your BAR, MDEDET reference: 17/2/3E -187 of 23 May 2013 that was only received on 2 July 2013 herewith our comments:

MTPA firstly thank Mr. Andrew Parker for the SSW Executive Committee's approval letter for this project and secondly apologise for the delay in our comments. MTPA has no objection to the development of the tented lodge at the preferred site as illustrated clearly with maps and photographs in the Report but is concerned about the risks and sustainability involved with that site.

The ecological sensitivity of all the alternative sites for the lodge is basically the same. The vegetation consists of certain tree species at all 3 sites, of which some are protected species. The larger trees should blend in with the infrastructure. The soils apparently have the same sandy structure, as seen from the photos. Sodic areas are indicated in the report. The aesthetic value of the preferred site might be higher.

The only negative impact that the lodge may have on the environment at the preferred site is that it can disturb the sense of place by being there and its change of the vegetation. Apart from the removal of vegetation on the construction site will these camping facilities also affect root systems and uptake of water of larger nearby trees? The low impact design is not exactly a tread softly design because the wooden structures of the main building is build on more permanent concrete slabs and brick walls. The

MTPA COMMENTS ON THE BASIC ASSESSMENT REPORT FOR THE PROPOSED CONSTRUCTION OF THE CHITWA 12 BEDS TENTED LODGE ON A PORTION OF THE REMAINDER OF THE FARM ARATHUSA 241 KU .

increased traffic of customers and service deliverers might disturb behavioural patterns of certain faunal species, which might adapt over time.

A question that needs to be answered is what is the availability of semi permanent open water near the lodge for game viewing in the dry seasons? From the report it is not clear if the Manyeleti flows constantly.

The floods of 2012 and the high water mark of debris about 3 meters high from the dry river bed in a tree along the Mezieme (Simba river) next to the river bend of the Manyeleti river whose banks are about 2 meters high above the dry river bed is an indication of what the risks are of building a lodge just a meter above the river banks height.

Figure 1, (MBCP, Lotter & Ferrar 2007), attached to this letter indicates the direction of in which the river are growing, the sand banks are very prone to water erosion because of the low clay and rock content. The only stabilizers are the roots of the riverine vegetation. If the impact of the infrastructure, road and increased trampling of the soils around the trees root systems increases it might die and allow the riverbank to erode faster backwards to the lodge.

Legislation allows the lodge to be build within 32 meters of the edge of the river course. In this instance where there is apparently no hippo hollow the need to have it that close is not there.

The risks of similar or larger flash floods to occur must be anticipated in the design of the infrastructure.

MTPA recommends that:

1. The risks of building the lodge within 32 meters of the Manyeleti and Mezieme rivers be investigated
2. The stability of the soil and the overall height is re-evaluated.
3. The Building design adapted in order to reduce the impact of storm and floodwaters. (Suggests that build the whole structure on pillars (Poles) for water to move freely through underneath and to cause less disturbance to the root systems of trees.

MTPA COMMENTS ON THE BASIC ASSESSMENT REPORT FOR THE PROPOSED CONSTRUCTION OF THE CHITWA 12 BEDS TENTED LODGE ON A PORTION OF THE REMAINDER OF THE FARM ARATHUSA 241 KU.

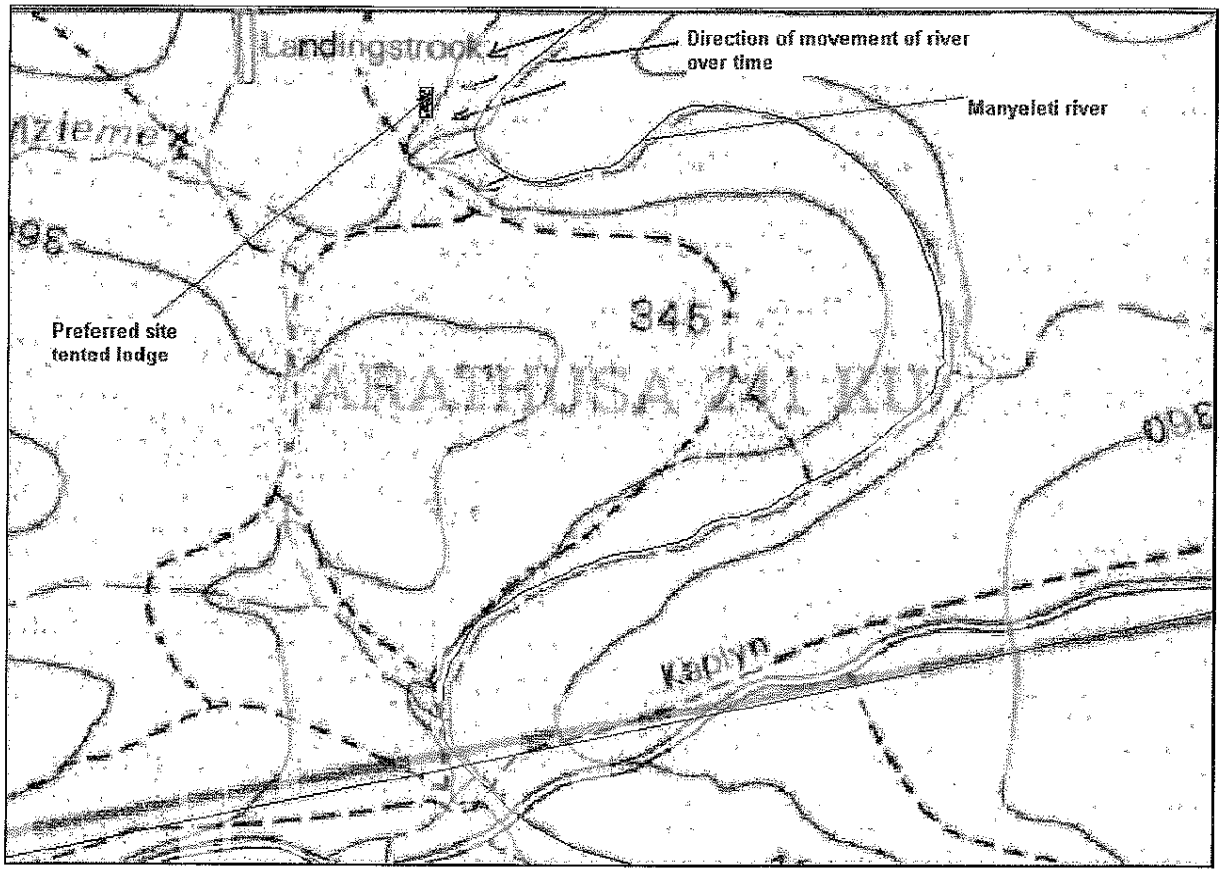


Figure 1. Map indicating the risks involved with the river movement over time

Kind Regards

.....
Mr. D. MAHLANGU
For: CEO
DATE: 15/07/2013

Subject: Re: Comment Chitwa Tented Draft Environmental Assessment Report
From: Mette Rossaak <mette@emross.co.za>
Date: 2013/07/18 03:11 PM
To: Frans Krige <franskrige@telkomsa.net>

Hi Frans,

Thank you for your comments received on 15 July 2013.

The draft report was delivered to the MTPA Nelspruit offices on 30 May 2013 as per your request, it is unfortunate that you only received it on 2 July.

You raise some very valid concerns regarding sense of place and disturbance caused by traffic of customers and deliveries.
It is our assessment that, in the greater scheme of things, these are expected impacts, but also impacts of limited extent.

The Manyeleti is a perennial river, and the river system is dynamic so some years there may be semi permanent open water during the dry season and other years there will not be any. It is not a prerequisite for the lodge to have open water for game viewing.

The 2012 flood waters did not overtop the river banks of the Mazieme/Simba River near the lodge site.
The attached photo shows the Manyeleti River bank at the preferred site. The bank has a very sound vegetation cover which was not impacted by the January 2012 or January 2013 floods. The greater of the two, the flood of 2012, did not overtop the Manyeleti River banks at the preferred site. This was an important criteria in the site selection process.

The flood risk indication is however there, and it is a very real warning of the risk involved. The applicant is aware of the risk, but it is considered that the immediate risk of loss of, or damage to, infrastructure due to flooding of the proposed lodge site is limited (we base this on the size of the 2012 flood and the return period calculated by engineers on a similar area to be in the order of 700 years). If you require a specialist hydrological assessment in order to get a more precise assessment of the risk, please indicate this to us as soon as possible.

We agree with the recommendation of reducing permanent impacted areas, by reducing the size of the concrete slab for each of the units and increasing the extent of the floor area suspended on poles where practically possible.

The choice of the lodge site near the river has to do with the landscape and vegetation of the site, not the availability of water to attract animals. The areas away from watercourses are dominated by fairly flat savanna landscape, giving no vegetative screening or topography to reduce the visual aspect of a low impact lodge site. The tall trees and clumps of vegetation near the river will afford shade and shelter for the lodge, hugely minimising the visual impact of the lodge and evening out the temperature fluctuations which the tents will be exposed to.

In your recommendations point 2 "The stability of the soil and the overall height is re-evaluated" the meaning is not clear with regard to the height of what needs to be re-evaluated. Please could you clarify?

The presence of sodic soils were limited to Alternative site 2. No sodic soils were observed at the preferred or alternative 1 sites.

I trust the above answers your concerns, please feel free to contact me again should this not be the case.

Kind regards

Mette Rossaak
Certified Environmental Assessment Practitioner

EMROSS

Emross Consulting (Pty) Ltd.
Tel 013 750 2782
Cell 082 3399 627
Fax 086 675 4320

Subject: Re: Comment Chitwa Tented Draft Environmental Assessment Report
From: "Frans Krige" <franskrige@telkomsa.net>
Date: 2013/07/19 04:16 PM
To: <mette@emross.co.za>

Dear Mette, thanks for your response.

To explain my comments on the stability of the soil and the re-evaluation of the height the following.

It is really a pity that we could not do a proper site visit. My concern is that if the trees and other vegetation is removed for the construction phase that the stability of the "floor" or riverbank, will be compromised especially if it consist of a sandy base. The height has to do with the the height of your housing units floor that is as indicated only more or less one meter above the flood mark. If the January 2013 Floods at Shingwedzi camp is taken as a benchmark flood you can really see what risks are involved especially if the floodwaters remove the riverbank in a short time. If your client wants to prevent his camp from being washed away he can lift everything higher on poles or pillars that are planted very deep. Think about Wetchies Pier in Durban. Those original structures were build many years ago in the see and the tides washed through it for many years.

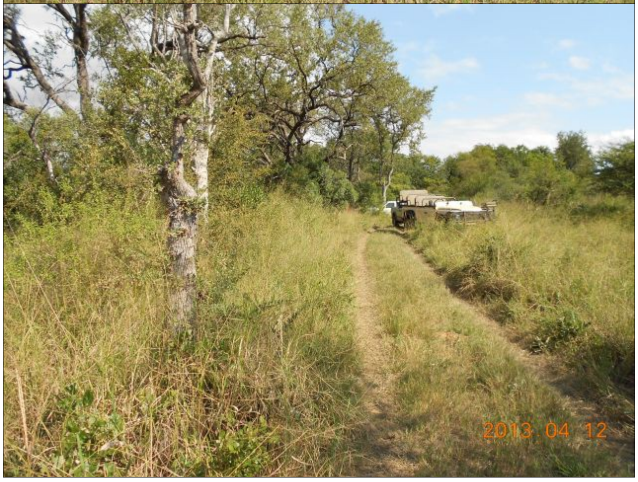
Those sement and brick walls at the previous site that must be rehabilitated now will not be able to withstand any floods. I am worried that the tented camp will be build on similar non- sustainable walls.

Kind Regards

Francois Krige
EIA Scientist
LUA Unit SS
Mpumalanga Tourism and Parks Agency

Tel: (+27) 13 254 0279
Mobile: (+27) 84 2322902
Fax: (+27) 13 254 0279
E-mail: frans@mtpa.co.za
franskrige@telkomsa.net
Postal: P.O.Box 98, Dullstroom, 1110
Website: www.mpumalanga.com

Preferred Site:



Alternative Site 1:

Alternative Site 2:

ECOLOGICAL REPORT

TheT

The floristic survey was undertaken in March 2013. Only one site visit was undertaken. The ecologist has 24 years of experience working in the area and as such felt it sufficient to not undertake a second visit.

TERMS OF REFERENCE: ECOLOGY ASSESSMENT.

1. Project Description

Chitwa Tented (Pty) Ltd. wishes to apply for an environmental authorisation for a 12 bed tented camp within the Sabi Sand Game Reserve. As part of the assessment, an ecological study is required.

Three alternative sites have been identified for assessment for the proposed development. All three sites are on the remainder portion of the farm Arathusa 241KU.
Preferred site: 24º45'09.55"S 31º28'42.83"E Note, this site extends across the small river.
Alternative site 1: 24º45'50.41"S 31º28'42.83"E (previously authorised site)
Alternative site 2: 24º44'52.23"S 31º29'56.52"E
Approximate site areas are provided in the accompanying map.

2. Ecological Assessment

The Ecological Specialist is to survey at least an area of one hectare around each site. The following must be included in the reporting:

- A site description including soil parent material, plant community structure and ecosystem – and importance in the ecosystem.
- Describe and map plant communities
- Establish a baseline condition of the terrestrial ecological systems of the site
- The assessment is to comply with the minimum requirements for Environmental assessments as stipulated by the Mpumalanga Tourism & Parks Agency. (copy attached)
- Use standard and repeatable ecological methods for the assessment (transects etc) and provide methodology to achieve above
- Provide a statistical measure / analysis of biodiveristy and vegetation condition
- Identify potential ecological impacts related to the proposed project and include details of how these impacts could be managed.
- All threes 1.8m and taller must please be identified and geo-referenced.
- All protected, endemic and/or red list species found must be identified and geo-referenced.
- Note that some of the area is riparian
- Note any alien invading species

- A list of seen fauna and flora (based on sightings, spoor, scats etc)
- A species list of fauna and flora likely to, or can potentailly occur and with particular attention to threatened and protected species.
- Indication of faunal species richness
- Data analysis based system of ranking the sites
- Any development recommendations and proposal as to the best site for the proposed development

3. Mapping

All mapping to be done by Emross Consulting.

Mapping data can be provided in a spreadsheet format

4. Quotation

- The quotation must include all travel, S & T, analysis and other disbursements.
- A time line for all deliverables
- Details of any additional information required

5. Deliverables

- An electronic copy of the Ecological Assessment Report in MS word and pdf formats.
- All GPS points to be provided in WGS84 format.
- Original signed Specialist Declaration.
- Brief CV outlining expertise and experience.
- Be available to answer any ecology / biodiversity issues brought forward by I & AP's.
- Be available to provide answers to any comments on your report

VEGETATION ASSESSMENT:
PROPOSED LODGE DEVELOPMENT SITES CHITWA CHITWA SABI SAND WILDTUIN

May 2013©$_{v2}$

Prepared for: Emross Consulting (Pty) Ltd

Prepared by: Dr Mike Peel

P.O. Box 7063

Nelspruit

1200

EXECUTIVE SUMMARY

A vegetation assessment was done to determine the vegetation elements that would be impacted on at potential sites for a lodge development at Chitwa Chitwa Sabi Sand. The objective of this assessment was to conduct a survey of the footprint within the proposed sites.

The study area is situated within the Granite Lowveld (Mucina & Rutherford 2006). This plant vegetation type is considered to be vulnerable due to transformation through human activities largely outside of protected areas.

Some 30 tree species were recorded within the study area during the fieldwork although there are many more on these areas. Three species, *Sclerocarya birrea*, *Combretum imberbe* and *Philenoptera violaceae* are classified as protected species according to the 'Notice of List of Protected tree Species under the National Forest Act 1998 (ACT NO. 84 of 1998 – updated 2012) while Spirostachy africana is considered a protected species in Mpumalanga (MPUMALANGA NATURE CONSERVATION ACT: NO. 10 OF 1998). More than 30 grass species, dominated by palatable species were recorded on the various sites.

A list of mammal species that are considered to have a high likelihood of occurring in the study area is included. 'Threatened' species include: Critically endangered – Black rhinoceros (*Diceros bicornis*); Endangered – African elephant (*Loxodonta africana*) and Wild dog (*Lycaon pictus*); Vulnerable – Cheetah (*Acinonyx jubatus*) and Lion (*Panthera leo*).

In terms of reptiles, the Nile crocodile (*Crocodylis niloticus*) and the African Rock Python (*Python sebae natalensis*) are considered vulnerable. Other species of reptiles and amphibians in the 'Threatened' category may be present but were not observed during the survey.

Regarding the sites proposed for possible lodge construction, there were no major areas of concern. Objectively ranked, 'Preferred' site 1 and 'Alternative' site 1 are the most likely to be impacted on in terms of measured diversity paramaters. Construction was already started on 'Alternative' site 1 but was discontinued after an objection by neighbours regarding the location was upheld. 'Alternative' lodge site 2 is typical of the granitic landscape that is widespread throughout the Sabi Sand Wildtuin, is the least diverse and would be least sensitive to impact on protected species should a lodge be constructed at this location. It is however considered the least aesthetically pleasing of the three sites. Further, it is located adjacent to a relatively large sodic area which would become waterlogged during the rainy season making access difficult and requiring extensive mitigation and/or an entrance from the top of the catena. The 'Preferred' lodge site provides a highly suitable location for the lodge. The site has many large trees with a smaller drainage line (the Mzieme River) which flows into the Manyeleti River all of which contributes to an aesthetically pleasing site for a lodge. In addition to the latter, the high quality grazing will attract herbivores which in turn will attract predators to the area thus enhancing the wildlife product. If sensitively developed (for example there are no plans to develop any infrastructure to the north of road that runs through the site) and taking into account the aesthetically pleasing natural attributes this site would be the preferred site.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

We thank Charl Brink, Andrew and Mette Rossaak and Andrew Emery for their logistic support. Andrew Rossaak also provided the photographs for this report.

The team working on this project included:
Mike Peel
John Peel
Andre Jacobs
Lukas Manaka

Declaration of Independence

We declare that we have been appointed as independent consulting ecologists with no affiliation with or vested financial interests in the proponent, other than for work performed. We have no conflicting interests in the undertaking of this activity and have no interests in secondary developments resulting from the authorisation of this project. Remuneration for our services is not linked to approval by any decision-making authority responsible for authorising this development.

The Savanna Ecosystem Dynamics project was initiated by the author of this report in 1989 and represents one of the longest if not the longest formal ecological monitoring effort in South Africa. The project covers an area of some 450 000 ha of the eastern Lowveld between the Sabi and Letaba Rivers and includes some 800 vegetation-sampling sites, as well as an ongoing monitoring programme which is aimed at detecting vegetation change over time (24 years – with annual land owner reports and scientific publications).

Mike J.S. Peel April 2013

1) INTRODUCTION

EMROSS Environmental Consulting (Pty) Ltd ("Emross") appointed Mike Peel to conduct an assessment of the vegetation within the proposed footprint of potential infrastructure development nodes viz. three potential sites for the erection of a lodge. This part of the study comprised a survey of the vegetation of each potential lodge site.

The Savanna Ecosystem Dynamics project was initiated by the author of this report in 1989 and represents one of the longest if not the longest formal ecological monitoring effort in South Africa. The project covers an area of some 450 000 ha of the eastern Lowveld between the Sabi and Letaba Rivers and includes some 800 vegetation-sampling sites, as well as an ongoing monitoring programme which is aimed at detecting vegetation change over time (24 years). The database includes environmental (e.g. rainfall) and management (e.g. animal number and type) data. The extensive database provides a user friendly decision support system to the land user irrespective of their objectives (from commercial, through communal livestock systems to protected area systems). Models describing a range of different 'states' and 'transitions' (paths to follow to reach them) of the resource are being continually refined in terms of the objectives of the land user. These models facilitate management that will promote optimal veld condition. This brings into consideration the setting of realistic goals and objectives for the different areas. The result is a flexible management style option in which hazards are avoided and opportunities grasped, to the benefit of the property of concern.

2) TERMS OF REFERENCE

Conduct an assessment of the terrestrial ecosystems within the proposed impact footprint (vertebrate fauna and flora), which will include the following:

a) Description of vegetation communities and provide statement of vegetation type noting sensitive/special habitat present and conservation importance;
b) Appropriateness of the proposed development at each site calculated objectively using a diversity index, number of protected species and total number of each protected species surveyed at each site;

c) Reference, if found, all protected, endemic and/ or red list species with a co-ordinate and a comment;
d) Provide co-ordinates and species for all trees taller than 1.8m;
e) Supply lists of plants, mammals and reptiles one could expect to find on the sites within this habitat/ vegetation type (presented in a table format).

3) THE STUDY AREA

All three sites are on the remainder portion of the farm Arathusa 241KU within the Sabi Sand Wildtuin (Figure 1). This area of the Lowveld is underlain by the basement gneisses and granites. Using Walraven (1989) the Sabi Sand Wildtuin contains the following: A central band running from close to the eastern boundary to the western boundary is dominated by medium to coarse grained, sphene bearing tonalite. A narrow band of Timbavati Gabbro, a medium- to coarse-grained gabbro, olivine gabbro and quartz gabbro is found on the eastern boundary of Ravenscourt stretching to the northern boundary as well as over much of Castleton. These are basic rocks with an irregular outcrop pattern distinguished by a clearly recognizable vegetation type. A very prominent dyke (Rykoppies), consisting of fine to medium grained, hybridized gabbro, with abundant inclusions of acid rocks extends in a west-east direction across the granites and gneisses of the pre-Transvaal basement. This dyke protrudes above the flat topography formed by the granite and gneiss. In the SSW it stretches in a narrow band from Wallingford in the west, where it is most pronounced, through Ravenscourt, Marthly and into Marthly and Eyrefield in the neighbouring Mala Mala Reserve. There are dykes that generally run slightly east of north and diabasic dykes scattered throughout the SSW.

In terms of the vegetation, the study area is situated entirely in the Savanna Biome. Acocks (1988) divides the study area into Lowveld and Arid Lowveld, while Low & Rebelo (1996) classify the area into Mixed Lowveld Bushveld and Sweet Lowveld Bushveld. According to the latest South African classification (Mucina & Rutherford 2006) the larger part of the vegetation of the SSW is classified as Granite Lowveld (SVI3 with elements of SVI6). Peel *et al.* (2007) provide a description of vegetation patterns of the area at a spatial scale that allows for the meaningful examination and comparison of the structure, functioning, and ultimately effective management, of these savannas and include the Thornveld on Gabbro

element as described by Gertenbach (1983).

Figure 1 illustrating the position of the potential lodge sites on Chitwa Chitwa (Google Earth 2013).

4) METHODS

The vegetation survey was undertaken as per the terms of reference received from the principal consultants.

a) Sampling Sites

All three potential sites are located along drainage lines. Subjectively speaking - 'Alternative' site 2 and the current preferred site are relatively untransformed while 'Alternative' site 1 is transformed in that the foundations for a lodge were built before an objection was lodged, upheld and construction halted.

One approximately 100 m x 100 m 'quadrat' (representing an area of 1ha) was surveyed around the central point (Table 1) of each potential site in order to quantitatively survey the vegetation (Table 1). Transects were systematically traversed and individual trees and bush

clumps were recorded and geo-referenced. In addition a list of grass species and any other noteworthy life form or feature was noted.

Table 1 Sampling sites in the study area.

Site	Co-ordinates	Altitude (masl)	Landscape position	Vegetation/Soil association
Lodge alternative site (site 1)	24.764456S 31.4785E	340	Bottomland	Granitic template
Lodge alternative site (site 2)	24.746561S 31.4987E	356	Bottomland	Granitic template
Lodge preferred site	24.752642S 31.478586E	345	Bottomland	Granitic template

b) Other Vertebrate Fauna

Historically, the SSW is expected to have carried a full complement of the megafauna traditionally associated with these savannas (large grazers and browsers that occurred historically (du Plessis 1969) (Appendix C). A wide range of carnivores and other smaller mammals have been recorded (Pienaar *et al.* 1983; Rautenbach 1982; Skinner & Smithers 1999) (Appendix D). A list relating to the conservation status of various species of reptiles and mammals that may occur on Chitwa Chitwa is provided.

5) RESULTS

a) Herbaceous layer

The results for the herbaceous layer are presented in Table 2 for each of the potential sites. A comprehensive list of grasses that may be encountered is provided in Appendix A.

b) Woody layer

The results for the woody layer are presented in Tables 3-5 for each of the potential sites. As stated above the appropriateness of the proposed development at each site is calculated objectively using: a diversity index; the number of protected species on the site; and the total number of each protected species surveyed at each site. This means that the site with the lowest ranking is ecologically the least sensitive and thus the most suitable for the lodge as the chance of impacting protected species is the lowest. A short subjective discussion is included at the end of each Table. A more comprehensive list of woody species that may be encountered is provided in Appendix B. Tree species protected under the following Act are highlighted in the Tables.

No. 716 **7 September 2012**

NOTICE OF THE LIST OF PROTECTED TREE SPECIES UNDER THE NATIONAL FORESTS ACT, 1998 (ACT NO 84 OF 1998)

By virtue of powers vested in me under Section 15(3) of the National Forests Act, 1998, I, Tina Joemat-Pettersson, Minister of Agriculture, Forestry and Fisheries hereby publish a list of all protected trees belonging to a particular species under Section 12(1) (d) set out in Schedule below.

The effect of this declaration is that in terms of Section 15(1) of the National Forests Act, 1998, no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree, except under a licence or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated.

Contravention of this declaration is regarded as a first category offence that may result in a person who is found guilty of being sentenced to a fine or imprisonment for a period up to three years, or to both a fine and imprisonment.

Table 2 Grass species recorded on potential lodge sites (Figures 2 - 4).

Species	
Aristida spp.	*Heteropogon contortus*
Bothriochloa radicans	*Melinis repens*
Brachiaria nigropedata	*Panicum coloratum*
B. deflexa	*P.deustum*
Chloris virgata	*P. maximum*
Digitaria eriantha	*Perotis patens*
Cymbopogon plurinodis	*Pogonarthria squarrosa*
Eragrostis racemosa	*Schmidtia pappophoroides*
E. heteromera	*Sporobolus africana*
E. lehmanniana	*S. fimbriatus*
E. rigidior	*S. nitens*
E. superba	*Themeda triandra*
E. trichophera	*Tragus berteronianus*
Forbs	

Figure 2 showing the area representing ‘Alternative’ site 1 (Photograph Andrew Rossaak).

Figure 3 showing the area representing ‘Alternative’ site 2 (Photograph Andrew Rossaak).

Figure 4 showing the area representing the ‘Preferred’ site (Photograph Andrew Rossaak).

Table 3 Woody species recorded on 'Alternative' lodge site 1 (national protected species in yellow and Mpumalanga in green).

'Alternative' 1	Co-ordinates (S)	Co-ordinates (E)	Species	Co-ordinates (S)	Co-ordinates (E)
Combretum hereroense	244552.1	312842.5	*Acacia nigrescens*	244552.7	312844.6
Acacia burkei	244552.1	312842.5	*Combretum hereroense* 2	244552.9	312844.7
Euclea natalensis	244551.7	312842.4	*Euclea natalensis*	244552.6	312845.1
Combretum hereroense 3	244551.7	312842.4	*Diospyros mespiliformis*	244552.6	312845.1
Gymnosporia buxifolia	244551.7	312842.4	*Combretum hereroense*	244553.5	312845.4
Terminalia sericea	244551.7	312842.4	*Spirostachys africana* 12	244553.7	312845.0
Philenoptera violaceae	244552.0	312842.9	*Combretum imberbe*	244554.4	312845.2
Peltophorum africanum	244552.0	312842.9	*Combretum imberbe*	244554.0	312845.2
Combretum imberbe	244552.1	312843.4	*Euclea divinorum* 10	244552.1	312844.8
Euclea natalensis 3	244552.1	312843.4	*Spirostachys africana*	244552.1	312844.8
Terminalia sericea	244552.1	312843.4	*Spirostachys africana* 5	244551.6	312844.7
Terminalia sericea	244552.0	312843.8	*Diospyros mespiliformis*	244550.9	312844.1
Ziziphus mucronata	244552.0	312843.8	*Diospyros mespiliformis*	244550.9	312843.7
Philenoptera violaceae	244552.0	312843.8	*Diospyros mespiliformis*	244549.8	312843.2
Combretum imberbe	244551.9	312843.9	*Combretum imberbe*	244550.2	312844.4
Euclea natalensis 4	244551.9	312843.9	*Combretum imberbe*	244550.1	312844.8
Spirostachys	244551.9	312843.9	*Philenoptera*	244551.0	312844.8

'Alternative' 1	Co-ordinates (S)	Co-ordinates (E)	Species	Co-ordinates (S)	Co-ordinates (E)
africana			*violaceae*		
Spirostachys africana	244552.2	312844.0	*Combretum imberbe*	244551.3	312845.9
Euclea divinorum	244552.2	312844.0	*Combretum hereroense*	244551.4	312846.4
Combretum hereroense	244552.2	312844.0	*Combretum imberbe*	244551.9	312847.2
Gymnosporia buxifolia	244552.2	312844.0	*Combretum imberbe*	244551.2	312847.2
Euclea natalensis	244552.2	312844.0	*Combretum imberbe*	244550.4	312847.4
Spirostachys africana	244552.2	312844.0	*Combretum imberbe*	244550.8	312847.4
Combretum hereroense	244552.2	312844.0	*Combretum hereroense*	244550.7	312847.1
Spirostachys africana	244552.8	312844.4	*Philenoptera violaceae*	244551.1	312846.3
Combretum imberbe	244550.4	312847.4	*Philenoptera violaceae*	244550.5	312846.1
Philenoptera violaceae	244551.2	312846.9	*Combretum imberbe*	244549.7	312845.1
Diospyros mespiliformis	244550.6	312846.3	*Diospyros mespiliformis*	244549.3	312845.1
Philenoptera violaceae	244549.7	312845.1	*Peltophorum africanum*	244549.0	312844.7
Combretum imberbe	244549.7	312845.1	*Spirostachys africana* 3	244548.3	312845.4
Diospyros mespiliformis 3	244549.0	312844.7	*Combretum imberbe*	244548.5	312845.5
Spirostachys africana	244549.0	312844.7	*Combretum imberbe*	244548.8	312845.6
Spirostachys africana	244548.4	312845.5	*Combretum imberbe*	244548.7	312845.9
Combretum imberbe	244548.6	312845.6	*Combretum imberbe*	244548.0	312846.0

'Alternative' 1	Co-ordinates (S)	Co-ordinates (E)	Species	Co-ordinates (S)	Co-ordinates (E)
Combretum imberbe	244549.0	312845.1	*Philenoptera violaceae*	244548.0	312846.4
Combretum imberbe	244548.4	312845.9	*Spirostachys africana*	244547.8	312846.5
Combretum imberbe	244547.8	312846.5	*Spirostachys africana*	244547.2	312846.5
Combretum imberbe	244547.9	312846.5	*Combretum imberbe*	244547.3	312847.3
Diospyros mespiliformis	244547.3	312846.6	*Combretum imberbe*	244549.7	312846.0
Combretum imberbe	244547.0	312846.9	*Diospyros mespiliformis*	244550.5	312846.2
Combretum imberbe	244547.7	312847.2	*Combretum hereroense*	244550.5	312846.2
Dovyalis sp.	244549.7	312845.7	*Euclea natalensis* 3	244550.2	312846.6
Philenoptera violaceae	244550.5	312846.2	*Combretum hereroense*	244550.0	312846.8
Euclea divinorum	244550.0	312846.3	*Euclea natalensis* 2	244549.5	312846.4
Euclea divinorum	244550.2	312846.6	*Combretum imberbe*	244549.6	312846.0
Diospyros mespiliformis	244550.0	312846.8	*Combretum imberbe* 2	244549.0	312846.6
Diospyros mespiliformis 2	244549.5	312846.4	*Euclea divinorum*	244549.2	312847.3
Euclea natalensis 2	244549.0	312846.6	*Combretum imberbe* 3	244548.9	312847.2
Euclea divinorum	244548.9	312847.0	*Diospyros mespiliformis* 5	244548.9	312847.2
Combretum hereroense	244549.2	312847.3	*Gymnosporia buxifolia* 4	244548.8	312846.9
Gymnosporia buxifolia 4	244548.9	312847.2	*Diospyros mespiliformis*	244548.8	312846.9
Euclea	244548.9	312847.2	*Gymnosporia*	244548.5	312847.1

'Alternative' 1	Co-ordinates (S)	Co-ordinates (E)	Species	Co-ordinates (S)	Co-ordinates (E)
natalensis 2			*buxifolia* 5		
Euclea divinorum	244548.8	312846.9	*Combretum imberbe*	244548.5	312847.4
Euclea natalensis	244548.5	312847.1	*Euclea natalensis* 2	244548.5	312847.4
Combretum imberbe	244548.5	312847.1	*Euclea divinorum* 4	244547.7	312848.2
Gymnosporia buxifolia 5	244548.5	312847.4	*Combretum imberbe*	244547.3	312848.9
Diospyros mespiliformis	244547.9	312848.1	*Euclea natalensis* 4	244547.3	312848.9
Euclea natalensis 4	244547.7	312848.2	*Euclea divinorum* 3	244546.9	312848.3
Euclea divinorum 4	244547.3	312848.9	*Combretum hereroense*	244546.9	312848.3
Diospyros mespiliformis 2	244546.9	312848.3	*Combretum imberbe*	244546.8	312848.7
Euclea natalensis 2	244546.9	312848.3	*Euclea natalensis* 3	244546.8	312848.7
Combretum imberbe 2	244546.9	312848.3	*Euclea natalensis*	244546.4	312848.2
Euclea divinorum 4	244546.8	312848.7	*Rhus spp.*	244546.3	312847.9
Diospyros mespiliformis	244546.4	312848.2	*Euclea natalensis*	244546.9	312848.0
Combretum imberbe	244546.4	312848.2	*Euclea natalensis*	244546.8	312847.7
Euclea natalensis	244546.5	312848.0	*Peltophorum africanum*	244546.8	312847.4
Combretum hereroense	244546.9	312848.0	*Acacia nigrescens*	244546.7	312847.4
Euclea divinorum	244546.8	312847.7	*Combretum imberbe*	244547.0	312847.1
Combretum hereroense 4	244546.7	312847.4	*Combretum imberbe*	244547.3	312847.2

'Alternative' 1	**Co-ordinates (S)**	**Co-ordinates (E)**	**Species**	**Co-ordinates (S)**	**Co-ordinates (E)**
Philenoptera violaceae	244546.7	312847.4			
Euclea divinorum	244547.3	312847.2			

Parameter	Index or Number	Ranking 3 lodge sites
Shannon Diversity Index	2.2	1
Number of protected tree species	2 +1 = 3	1
Number of individuals of protected tree species	10 (Pv) + 42 (Ci) + 29 (Sa) = 81	3
Grass species	High quality associated with bottomlands.	

General Comments:
Construction was already started on 'Alternative' site 1 but was discontinued after an objection by neighbours regarding the location was upheld. Overall the site ranks second in terms of the three woody parameters indicating that this site would not be selected as there is a chance of impacting on protected species during construction. There are fine examples and healthy numbers of trees such as *Spirostachys Africana, Combretum imberbe, Diospyros mespiliformis* and *Acacia nigrescens* which in conjunction with the outstanding riverine habitat presents an aesthetically pleasing setting. With careful planning however this site would make a most suitable lodge site. Significantly higher diversity of trees than 'Alternative' site 2.

Table 4 Woody species recorded on 'Alternative' lodge site 2 (national protected species in yellow and Mpumalanga in green).

'Alternative' 2	Co-ordinates (S)	Co-ordinates (E)	Species	Co-ordinates (S)	Co-ordinates (E)
Schotia brachypetala	244454.9	312955.3	*Gymnosporia senegalensis 19*	244454.9	312955.3
Spirostachys africana 14	244454.9	312955.3	*Spirostachys africana 3*	244454.9	312955.6
Spirostachys africana 22	244454.8	312955.6	*Spirostachys africana 41*	244435.1	312955.6
Acacia nilotica	244454.8	312955.6	*Spirostachys africana 37*	244455.0	312955.5
Combretum hereroense 2	244455.0	312955.5	*Spirostachys africana 11*	244455.1	312955.8
Combretum hereroense 6	244455.1	312955.8	*Euclea divinorum*	244455.1	312955.8
Spirostachys africana 27	244455.2	312956.1	*Combretum hereroense 2*	244455.2	312956.1
Spirostachys africana 7	244455.2	312956.0	*Combretum hereroense 6*	244455.2	312956.0
Bolusanthus speciosus	244455.2	312956.0	*Spirostachys africana 13*	244455.0	312956.2
Combretum hereroense 2	244455.0	312956.2	*Spirostachys africana 9*	244455.2	312956.0
Ziziphus mucronata	244455.2	312956.0	*Combretum hereroense 3*	244455.2	312956.2
Spirostachys africana 36	244455.1	312956.4	*Combretum hereroense 2*	244455.1	312956.4
Gymnosporia buxifolia 2	244455.1	312956.4	*Euclea divinorum 3*	244455.2	312956.2
Gymnosporia senegalensis 2	244455.2	312956.2	*Combretum hereroense*	244455.2	312956.2
Rhus spp.	244455.2	312956.2	*Spirostachys africana 25*	244455.0	312956.6
Euclea divinorum	244455.0	312956.6	*Acacia nilotica*	244455.0	312956.6
Bolusanthus speciosus	244455.0	312956.6	*Spirostachys africana 13*	244454.9	312956.6
Combretum hereroense	244454.9	312956.6	*Spirostachys africana 12*	244455.2	312956.9
Euclea divinorum	244455.2	312956.9	*Euclea divinorum 2*	244455.2	312956.4
Spirostachys africana 5	244455.2	312956.4	*Spirostachys africana 5*	244455.2	312956.6
Combretum hereroense 2	244455.2	312956.6	*Combretum imberbe 2*	244455.2	312956.6
Spirostachys africana 17	244455.1	312956.9	*Spirostachys africana 22*	244455.2	312956.8
Euclea divinorum 4	244455.2	312956.8	*Acacia nigrescens*	244454.9	312957.1

'Alternative' 2	Co-ordinates (S)	Co-ordinates (E)	Species	Co-ordinates (S)	Co-ordinates (E)
Spirostachys africana 6	244454.9	312957.1	*Spirostachys africana 8*	244455.2	312957.0
Combretum hereroense	244454.9	312957.1	*Euclea divinorum*	244454.8	312957.3
Spirostachys africana 14	244454.8	312957.3	*Gymnosporia senegalensis*	244455.2	312957.2
Spirostachys africana 11	244455.2	312957.2	*Spirostachys africana 3*	244455.2	312957.5
Spirostachys africana 17	244454.7	312957.7	*Acacia nilotica*	244455.2	312957.5
Combretum hereroense 2	244455.2	312957.5	*Acacia gerrardii*	244454.6	312957.7
Spirostachys africana 27	244454.6	312957.7	*Combretum hereroense*	244455.3	312957.5
Acacia nigrescens	244454.6	312957.7	*Acacia nilotica*	244454.6	312957.8
Spirostachys africana	244454.6	312957.8	*Combretum hereroense*	244454.6	312957.8
Acacia nigrescens	244454.6	312957.8	*Euclea divinorum 5*	244455.3	312957.9
Acacia nilotica	244455.3	312957.9	*Euclea natalensis*	244455.3	312957.9
Combretum hereroense 4	244455.3	312957.9	*Acacia nigrescens 2*	244454.5	312958.1
Bolusanthus speciosus 2	244454.5	312958.1	*Combretum hereroense*	244454.5	312958.1
Euclea divinorum 3	244454.5	312958.1	*Spirostachys africana 3*	244455.3	312958.0
Spirostachys africana 2	244454.5	312958.1	*Euclea divinorum 2*	244455.3	312958.0
Combretum hereroense 4	244455.3	312958.0	*Euclea divinorum 6*	244455.3	312958.1
Spirostachys africana 4	244455.3	312958.1	*Acacia nilotica 2*	244455.3	312958.1
Combretum hereroense 4	244455.3	312958.1	*Spirostachys africana 2*	244455.1	312958.1
Spirostachys africana	244454.7	312958.3	*Spirostachys africana 3*	244454.5	312958.1
Spirostachys africana 6	244454.5	312958.1	*Combretum hereroense 2*	244454.5	312958.1
Euclea divinorum 3	244454.5	312958.1	*Spirostachys africana 2*	244455.2	312958.3
Peltophorum africanum	244455.2	312958.3	*Combretum hereroense 2*	244455.2	312958.3
Euclea divinorum	244455.2	312958.3	*Euclea divinorum*	244455.1	312958.5
Combretum hereroense 2	244455.1	312958.5	*Ziziphus mucronata*	244454.7	312958.7
Spirostachys	244455.1	312958.5	*Euclea*	244454.7	312958.7

'Alternative' 2	Co-ordinates (S)	Co-ordinates (E)	Species	Co-ordinates (S)	Co-ordinates (E)
africana 4			*divinorum 7*		
Spirostachys africana 3	244454.7	312958.7	*Spirostachys africana 3*	244455.0	312958.6
Combretum hereroense 3	244454.7	312958.7	*Euclea divinorum 13*	244454.5	312958.9
Gymnosporia senegalensis	244455.0	312958.6	*Spirostachys africana 3*	244454.5	312958.9
Gymnosporia senegalensis 2	244454.5	312958.9	*Peltophorum africanum*	244455.0	312958.9
Euclea divinorum 7	244455.0	312958.9	*Spirostachys africana 3*	244455.0	312958.9
Pappea capensis 2	244455.0	312958.9	*Spirostachys africana 12*	244454.4	312958.9
Gymnosporia senegalensis 3	244455.0	312958.9	*Combretum hereroense 2*	244454.4	312958.9
Gymnosporia buxifolia 3	244454.4	312958.9	*Combretum hereroense 2*	244455.3	312959.0
Spirostachys africana 3	244455.3	312959.0	*Euclea divinorum 2*	244455.3	312959.0
Ziziphus mucronata	244455.3	312959.0	*Spirostachys africana 35*	244454.2	312959.2
Spirostachys africana	244455.3	312959.0	*Spirostachys africana 2*	244454.9	312959.9
Acacia nigrescens	244454.2	312959.2	*Pappea capensis*	244454.9	312959.9
Euclea divinorum	244454.9	312959.9	*Spirostachys africana*	244454.7	312959.4
Gymnosporia senegalensis	244454.7	312959.4	*Combretum imberbe 2*	244455.3	312959.5
Combretum hereroense	244455.3	312959.5	*Terminalia sericea 8*	244455.8	312959.7
Terminalia sericea 3	244455.3	312959.5	*Combretum imberbe 2*	244455.8	312959.7
Combretum imberbe	244455.8	312959.7	*Combretum hereroense*	244455.6	312959.2
Combretum hereroense	244455.8	312959.7	*Combretum hereroense*	244455.6	312959.2
Euclea divinorum 6	244455.6	312959.2	*Euclea natalensis*	244455.6	312959.2
Combretum imberbe	244455.6	312959.2	*Terminalia sericea 3*	244456.2	312959.2
Gymnosporia senegalensis 7	244456.2	312959.2	*Combretum hereroense 2*	244455.8	312959.2
Combretum imberbe 2	244456.2	312959.2	*Euclea divinorum 4*	244456.0	312959.0
Euclea divinorum	244455.8	312959.2	*Euclea natalensis*	244456.0	312959.0
Combretum apiculatum	244456.0	312959.0	*Euclea divinorum 27*	244456.2	312959.0
Euclea	244456.0	312959.0	*Euclea*	244455.7	312958.9

'Alternative' 2	Co-ordinates (S)	Co-ordinates (E)	Species	Co-ordinates (S)	Co-ordinates (E)
divinorum			*divinorum 17*		
Acacia nigrescens	244456.2	312959.0	*Combretum hereroense 2*	244455.7	312958.9
Spirostachys africana 4	244455.7	312958.9	*Ziziphus mucronata*	244456.0	312959.0
Euclea natalensis	244455.7	312958.9	*Euclea natalensis*	244456.2	312958.7
Euclea divinorum 15	244456.2	312958.7	*Euclea divinorum*	244455.7	312958.6
Gymnosporia natalensis	244455.7	312958.6	*Euclea divinorum 12*	244456.3	312958.4
Combretum hereroense	244455.7	312958.6	*Ziziphus mucronata*	244456.3	312958.4
Acacia gerrardii	244456.3	312958.4	*Spirostachys africana 3*	244455.7	312958.3
Combretum hereroense	244456.3	312958.4	*Euclea divinorum 4*	244455.7	312958.3
Ormocarpum trichocarpum	244455.7	312958.3	*Combretum hereroense*	244456.3	312958.1
Euclea divinorum 13	244456.3	312958.1	*Flueggea virosa 7*	244456.3	312958.1
Ziziphus mucronata	244456.3	312958.1	*Euclea divinorum 7*	244455.7	312958.1
Combretum hereroense 5	244455.7	312958.1	*Peltophorum africanum*	244455.7	312958.1
Euclea divinorum 2	244455.7	312958.1	*Pappea capensis*	244455.7	312958.1
Acacia nilotica	244455.7	312958.1	*Acacia nilotica*	244456.4	312957.7
Combretum hereroense 5	244456.4	312957.7	*Euclea divinorum 4*	244456.0	312957.5
Euclea divinorum 6	244456.4	312957.7	*Combretum apiculatum*	244456.0	312957.5
Combretum hereroense	244456.0	312957.5	*Spirostachys africana 27*	244455.0	312957.5
Combretum hereroense	244456.0	312957.5	*Euclea divinorum 3*	244455.0	312957.5
Ziziphus mucronata	244455.0	312957.5	*Acacia nigrescens*	244456.0	312957.5
Combretum hereroense 4	244455.0	312957.5	*Acacia nigrescens*	244456.0	312957.5
Euclea divinorum	244456.0	312957.5	*Euclea natalensis 4*	244456.6	312957.4
Euclea natalensis	244456.0	312957.5	*Combretum hereroense 3*	244456.6	312957.4
Euclea divinorum	244456.6	312957.4	*Acacia gerrardii*	244456.6	312957.0
Combretum apiculatum	244456.6	312957.4	*Acacia nilotica*	244456.6	312957.0
Combretum	244456.6	312957.0	*Euclea*	244455.6	312957.3

'Alternative' 2	Co-ordinates (S)	Co-ordinates (E)	Species	Co-ordinates (S)	Co-ordinates (E)
hereroense			*divinorum 9*		
Spirostachys africana 16	244455.6	312957.3	*Combretum hereroense 2*	244455.6	312957.3
Combretum imberbe	244455.6	312957.3	*Euclea divinorum*	244456.4	312956.8
Combretum hereroense	244456.4	312956.8	*Euclea natalensis 2*	244456.4	312956.8
Spirostachys africana 5	244456.4	312956.8	*Combretum hereroense*	244456.4	312956.8
Rhus gueinzii	244456.4	312956.8	*Spirostachys africana 21*	244455.7	312956.9
Acacia nilotica	244456.1	312956.7	*Acacia nilotica*	244455.7	312956.9
Ziziphus mucronata 3	244455.7	312956.9	*Euclea divinorum*	244456.1	312956.7
Spirostachys africana 3	244456.1	312956.7	*Combretum hereroense*	244455.7	312956.6
Spirostachys africana 13	244455.7	312956.6	*Combretum imberbe*	244456.1	312956.5
Euclea divinorum	244456.1	312956.5	*Combretum hereroense*	244456.1	312956.5
Ziziphus mucronata	244456.1	312956.5			

Parameter	Index or Number	Ranking 3 lodge sites
Shannon Diversity Index	1.371	3
Number of protected tree species	1 + 1 = 2	3
Number of individuals of protected tree species	12 (Cb) + 591 (Sa) = 603	1
Grass species	High quality associated with bottomlands and sodic sites.	

General Comments:
This site is an example of a typical granitic bottomland and associated vegetation which is widespread throughout the Sabi Sand Wildtuin. In terms of the three woody parameters measured this site would be the site on which to build a lodge as it ranks lowest. There are however large numbers (the highest of all three sites) of the protected *Spirostachys africana* which would make lodge planning tricky as this species occurs in thick clumps on the site. In addition to this the site is located adjacent to a relatively large sodic area which would become waterlogged during the rainy season making access difficult and requiring extensive mitigation and/or an entrance from the top of the catena. Subjectively speaking, while still aesthetically pleasing in terms of the drainage line located at the base of the slope I feel it inferior when compared to 'Alternative' lodge site 1 and the 'Preferred' site. There are good examples and significant numbers of trees such as *Spirostachys Africana* (as stated), *Pappea capensis, Combretum imberbe, Peltophorum africanum* and *Acacia nigrescens.* The site has significantly lower tree diversity than 'Alternative' site 1 and the 'Preferred' site. I consider this the least suitable for the proposed lodge.

Table 5 Woody species recorded on the 'Preferred' lodge site (national protected species in yellow and Mpumalanga in green)..

Species 'Preferred'	Co-ordinates (S)	Co-ordinates (E)	Species	Co-ordinates (S)	Co-ordinates (E)
Combretum imberbe	244506.8	312844.2	*Combretum imberbe*	244507.2	312843.9
Euclea divinorum	244507.2	312843.9	*Bolusanthus speciosus 3*	244507.5	312843.6
Combretum imberbe	244507.9	312843.6	*Gymnosporia buxifolia 3*	244507.9	312843.6
Combretum hereroense	244507.9	312843.6	*Combretum imberbe*	244508.0	312843.3
Euclea natalensis 4	244508.0	312843.3	*Bolusanthus speciosus*	244508.2	312843.3
Diospyros mespiliformis	244508.2	312843.3	*Flueggea virosa 5*	244508.2	312843.3
Combretum imberbe	244508.3	312843.0	*Euclea divinorum 3*	244508.3	312843.0
Euclea natalensis	244508.3	312843.0	*Bolusanthus speciosus*	244508.3	312843.0
Euclea divinorum	244508.5	312843.2	*Combretum hereroense*	244508.5	312843.2
Euclea divinorum 11	244508.5	312843.2	*Euclea natalensis*	244508.5	312843.2
Combretum imberbe	244508.5	312843.2	*Combretum hereroense*	244508.7	312843.1
Combretum hereroense	244509.0	312842.9	*Combretum imberbe*	244509.0	312842.9
Euclea divinorum	244509.4	312842.6	*Combretum hereroense*	244509.4	312842.6
Gymnosporia buxifolia 2	244509.4	312842.6	*Diospyros mespiliformis*	244509.4	312842.6
Diospyros mespiliformis	244511.2	312840.3	*Combretum imberbe*	244511.2	312840.3
Spirostachys africana x12	244511.2	312840.3	*Combretum imberbe*	244510.9	312840.6
Diospyros mespiliformis 4	244510.9	312840.6	*Spirostachys africana*	244510.9	312840.6
Euclea divinorum 8	244510.7	312840.6	*Spirostachys africana 10*	244510.7	312840.6
Euclea	244510.7	312840.6	*Spirostachys*	244510.9	312840.8

Species 'Preferred'	Co-ordinates (S)	Co-ordinates (E)	Species	Co-ordinates (S)	Co-ordinates (E)
natalensis 2			*africana*		
Euclea natalensis 3	244510.9	312840.8	*Peltophorum africana 2*	244510.9	312840.8
Spirostachys africana	244510.9	312840.8	*Euclea divinorum*	244510.9	312840.8
Spirostachys africana 2	244510.8	312841.0	*Euclea natalensis 8*	244510.5	312840.9
Gymnosporia senegalensis	244510.5	312840.9	*Combretum hereroense*	244510.5	312840.9
Spirostachys africana 9	244510.6	312841.4	*Euclea divinorum*	244510.2	312841.3
Spirostachys africana	244510.2	312841.3	*Euclea divinorum 3*	244510.2	312841.3
Combretum hereroense	244510.2	312841.3	*Spirostachys africana 2*	244510.3	312841.6
Combretum imberbe	244510.3	312841.6	*Peltophorum africana*	244510.2	312841.7
Spirostachys africana	244510.2	312841.7	*Euclea divinorum 8*	244510.2	312841.7
Euclea divinorum 4	244510.2	312841.7	*Peltophorum africanum*	244510.1	312841.6
Gymnosporia senegalensis	244510.1	312841.6	*Diospyros mespiliformis*	244510.1	312841.6
Gymnosporia senegalensis 8	244510.0	312841.7	*Peltophorum africanum*	244510.0	312841.7
Euclea divinorum 5	244510.0	312841.7	*Combretum imberbe*	244510.0	312841.7
Diospyros mespiliformis	244511.8	312841.9	*Diospyros mespiliformis*	244512.2	312842.0
Combretum hereroense	244512.2	312842.0	*Combretum imberbe*	244512.4	312842.2
Gymnosporia buxifolia 2	244512.4	312842.2	*Combretum hereroense*	244512.4	312842.2
Philenoptera violaceae	244512.4	312842.2	*Combretum hereroense*	244512.5	312841.7
Gymnosporia buxifolia 7	244512.5	312841.7	*Spirostachys africana 3*	244512.5	312841.7
Peltophorum	244512.2	312841.7	*Euclea divinorum 10*	244512.9	312842.1

Species 'Preferred'	Co-ordinates (S)	Co-ordinates (E)	Species	Co-ordinates (S)	Co-ordinates (E)
africana 4					
Acacia gerrardii	244512.9	312842.1	*Ziziphus mucronata*	244512.9	312842.1
Euclea divinorum 4	244512.9	312842.1	*Spirostachys africana 6*	244512.9	312841.6
Combretum hereroense 5	244512.9	312841.6	*Spirostachys africana 10*	244512.9	312841.6
Euclea divinorum 5	244512.9	312841.6	*Combretum hereroense 6*	244513.1	312842.0
Gymnosporia buxifolia 2	244513.1	312842.0	*Euclea divinorum 3*	244513.1	312842.0
Combretum hereroense	244513.3	312842.1	*Combretum hereroense*	244513.3	312842.1
Combretum hereroense	244513.6	312842.2	*Diospyros mespiliformis*	244513.6	312842.2
Euclea divinorum 2	244513.6	312842.2	*Gymnosporia senegalensis*	244513.7	312841.9
Euclea divinorum	244513.7	312841.9	*Combretum hereroense 4*	244513.7	312841.9
Combretum imberbe	244513.7	312841.9	*Euclea divinorum*	244513.8	312842.4
Euclea natalensis	244513.8	312842.4	*Peltophorum africana*	244513.8	312842.4
Euclea divinorum 13	244514.1	312842.0	*Combretum hereroense*	244514.1	312842.0
Diospyros mespiliformis	244514.1	312842.0	*Diospyros mespiliformis 4*	244514.0	312842.4
Combretum hereroense	244514.0	312842.4	*Diospyros mespiliformis 3*	244515.1	312842.2
Euclea divinorum	244515.1	312842.2	*Euclea divinorum 4*	244513.7	312843.5
Diospyros mespiliformis	244513.7	312843.5	*Spirostachys africana*	244513.7	312843.5
Gymnosporia senegalensis	244513.7	312843.5	*Diospyros mespiliformis*	244514.2	312843.0
Spirostachys africana 2	244514.2	312843.0	*Combretum hereroense*	244514.2	312843.0
Euclea divinorum 8	244514.2	312843.0	*Philenoptera violaceae*	244514.2	312843.0

Species 'Preferred'	Co-ordinates (S)	Co-ordinates (E)	Species	Co-ordinates (S)	Co-ordinates (E)
Combretum imberbe	244514.3	312843.4	*Combretum hereroense*	244514.3	312843.4
Diospyros mespiliformis	244514.3	312843.4	*Acacia robusta*	244514.3	312843.4
Pappea capensis 10	244514.3	312843.4	*Euclea natalensis*	244514.4	312843.5
Gymnosporia senegalensis	244514.4	312843.5	*Combretum imberbe*	244514.4	312843.7
Euclea divinorum 7	244514.4	312843.7	*Combretum imberbe*	244514.4	312843.7
Euclea divinorum	244514.7	312843.7	*Rhus spp.*	244514.7	312843.7
Combretum hereroense	244514.7	312843.7	*Euclea divinorum 8*	244514.7	312843.7
Gymnosporia senegalensis	244514.7	312843.7	*Combretum imberbe*	244514.8	312843.5
Euclea divinorum 10	244514.8	312843.5	*Gymnosporia senegalensis 10*	244514.8	312843.5
Combretum imberbe	244514.9	312843.9	*Euclea divinorum >10*	244514.8	312843.5
Combretum imberbe	244514.8	312844.0	*Euclea divinorum >10*	244514.8	312844.0
Combretum imberbe	244514.7	312844.4	*Combretum hereroense 2*	244514.7	312844.4
Euclea divinorum >3	244514.7	312844.4	*Combretum imberbe*	244515.0	312844.2
Rhus spp. 7	244515.0	312844.2	*Euclea divinorum>10*	244515.0	312844.2
Combretum imberbe	244515.4	312844.1	*Euclea divinorum>10*	244515.4	312844.1
Combretum imberbe	244515.5	312844.5	*Euclea divinorum>1*	244515.5	312844.5
Combretum imberbe	244515.3	312844.7	*Euclea divinorum>10*	244515.3	312844.7
Bolusanthus speciosus	244515.1	312844.9	*Combretum hereroense*	244515.1	312844.9
Combretum imberbe	244515.7	312844.8	*Combretum imberbe*	244515.8	312845.0
Gymnosporia senegalensis	244510.1	312842.1	*Euclea divinorum*	244510.0	312842.0
Schotia brachypetala	244510.0	312842.0	*Schotia brachypetala*	312840.4	244512.0
Spirostachys	312840.4	244512.0	*Diospyros*	312840.5	244512.2

Species 'Preferred'	Co-ordinates (S)	Co-ordinates (E)	Species	Co-ordinates (S)	Co-ordinates (E)
africana			*mespiliformis*		
Euclea natalensis	312840.5	244512.2	*Euclea divinorum 2*	312840.5	244512.2
Euclea divinorum 2	312840.8	244512.6	*Schotia brachypetala*	312840.8	244512.6
Combretum hereroense	312840.8	244512.6	*Euclea divinorum 3*	312840.8	244512.6
Spirostachys africana 4	312841.3	244512.4	*Acacia grandicornuta*	312841.3	244512.4
Diospyros mespiliformis	312841.1	244512.7	*Spirostachys africana*	312841.1	244512.7
Gymnosporia buxifolia	312841.3	244512.8	*Spirostachys africana*	312841.5	244513.5
Gymnosporia senegalensis	312841.5	244513.5	*Acacia grandicornuta*	312841.5	244513.5
Combretum hereroense	312841.5	244513.6	*Rhus spp.*	312841.5	244513.7
Combretum hereroense 2	312841.5	244513.7	*Euclea divinorum*	312841.7	244513.9
Acacia grand	312841.7	244513.9	*Euclea divinorum 2*	312841.8	244513.9
Combretum hereroense	312841.9	244513.9	*Rhus spp.*	312841.9	244513.9
Euclea natalensis 3	312841.9	244513.9	*Euclea divinorum 2*	312841.9	244513.9
Euclea divinorum 4	312841.8	244513.9	*Rhus spp.*	312841.8	244513.9
Peltophorum africanum	312841.3	244514.0	*Acacia grandicornuta*	244514.4	312842.6
Euclea divinorum 5	244514.5	312842.8	*Gymnosporia senegalensis*	244514.5	312842.8
Ziziphus mucronata	244514.5	312842.8	*Combretum imberbe*	244514.8	312843.0
Pappea capensis	244514.8	312843.0	*Gymnosporia senegalensis 3*	244514.8	312843.0
Euclea divinorum 4	244514.8	312843.0	*Euclea natalensis 2*	244514.8	312843.0
Rhus gueinzii	244514.8	312843.0	*Rhus spp. 2*	244514.9	312843.2
Rhus gueinzii	244514.9	312843.2	*Combretum imberbe*	244514.9	312843.2
Gymnosporia	244514.8	312843.3	*Euclea*	244514.9	312843.4

Species 'Preferred'	Co-ordinates (S)	Co-ordinates (E)	Species	Co-ordinates (S)	Co-ordinates (E)
senegalensis			*divinorum 3*		
Combretum imberbe	244514.9	312843.4	*Euclea divinorum 2*	244515.0	312843.3
Diospyros mespiliformis	244515.0	312843.3	*Combretum hereroense*	244515.0	312843.4
Combretum apiculatum	244515.0	312843.4	*Gymnosporia senegalensis*	244515.0	312843.4
Acacia nilotica	244516.2	312843.5	*Gymnosporia senegalensis 3*	244515.3	312843.5
Gymnosporia senegalensis 4	244515.3	312843.4	*Euclea divinorum 3*	244515.3	312843.5
Combretum imberbe	244507.0	312843.0	*Euclea divinorum*	244507.2	312843.2
Combretum hereroense	244508.0	312843.0	*Euclea divinorum*	244508.0	312843.0
Euclea natalensis	244508.0	312843.0	*Combretum imberbe*	244508.1	312842.9
Acacia nilotica	244508.1	312842.9	*Euclea divinorum*	244508.3	312842.8
Euclea divinorum	244508.4	312842.6	*Combretum imberbe*	244508.4	312842.6
Combretum hereroense	244508.5	312842.7	*Combretum imberbe 2*	244508.5	312842.6
Euclea divinorum 3	244509.1	312842.4	*Diospyros mespiliformis*	244509.1	312842.4
Combretum imberbe	244509.1	312842.4	*Combretum hereroense*	244509.1	312842.5
Euclea natalensis	244509.1	312842.5	*Euclea divinorum 3*	244509.5	312842.4
Diospyros mespiliformis 3	244509.5	312842.4	*Schotia brachypetala 2*	244509.7	312842.3
Gymnosporia senegalensis 5	244509.7	312842.3	*Berchemia zeyheri*	244509.8	312842.3
Euclea divinorum 2	244509.8	312842.3	*Euclea natalensis*	244509.8	312842.3
Schotia brachypetala	244509.8	312842.3	*Combretum imberbe*	244509.8	312842.3
Peltophorum africana	244509.8	312842.3	*Combretum imberbe*	244509.7	312842.1
Euclea	244509.7	312842.1	*Euclea*	244509.7	312842.1

Species 'Preferred'	Co-ordinates (S)	Co-ordinates (E)	Species	Co-ordinates (S)	Co-ordinates (E)
divinorum 5			*natalensis*		
Combretum imberbe	244509.7	312842.1	*Gymnosporia senegalensis 5*	244509.8	312842.0
Philenoptera violaceae	244509.8	312842.0	*Combretum hereroense*	244510.0	312842.3
Philenoptera violaceae	244510.1	312842.2	*Combretum imberbe*	244510.1	312842.2
Dichrostachys cinerea	244510.1	312842.2	*Euclea divinorum 5*	244510.1	312842.2
Spirostachys africana 6	244510.1	312842.2	*Combretum imberbe 2*	244510.1	312842.2
Flueggea virosa	244510.1	312842.2	*Diospyros mespiliformis 2*	244510.1	312842.2
Euclea divinorum 3	244510.1	312842.1	*Combretum imberbe*	244510.1	312842.1
Spirostachys africana	244510.1	312842.1	*Combretum hereroense 4*	244510.1	312842.1

Parameter	Index or Number	Ranking 3 lodge sites
Shannon Diversity Index	2.2	1
Number of protected tree species	2 + 1 = 3	1
Number of individuals of protected tree species	42 (Ci) + 4 (Pv) + 76 (Sa) = 122	2
Grass species	High quality associated with bottomlands.	

Comments:
The 'Preferred' lodge site ranks highest in terms of the objectively measured tree parameters indicating that careful consideration be given to building a lodge on this site as it is the most likely site to impact on the diverse as well as protected tree component. Subjectively speaking the site has many impressive large trees including *Acacia grandicornuta, Combretum imberbe, Diospyros mespiliformis, Pappea capensis, Peltophorum africanum, Philenoptera violaceae, Schotia brachypetala, Spirostachys africana* and *Ziziphus mucronata*. A smaller drainage line (the Mzieme River) flows into the Manyeleti River which along with the healthy grass and in particular outstanding tree component contributes to an aesthetically pleasing site for a lodge. If sensitively developed (for example there are no plans to develop any infrastructure to the north of road that runs through the site) and taking into account the aesthetically pleasing natural attributes this site would be the preferred site in this instance. Should the lodge be sited here care should also be taken to preserve as far as possible the wide diversity of trees and the relatively dense bush clumps as a refuge for the various forms of wildlife associated with it. The site has significantly higher diversity of trees than 'Alternative' site 2. The only downside of this site is the noise caused by air traffic from the nearby airfield. As this strip is not heavily utilised this should be of minor concern.

c) Other Vertebrate Fauna

Appendix C and Appendix D indicate species that are known to occur/have occurred in the SSW (Rautenbach 1982; Skinner & Smithers 1999). The following species fall in the 'Threatened' IUCN category (Baillie & Groombridge 1996):
Critically endangered – Black rhinoceros (*Diceros bicornis*); Endangered – African elephant (*Loxodonta africana*) and Wild dog (*Lycaon pictus*); Vulnerable – Cheetah (*Acinonyx jubatus*) and Lion (*Panthera leo*). In terms of reptiles, the Nile crocodile (*Crocodylis niloticus*) and the African Rock Python (*Python sebae natalensis*) are considered vulnerable. Other species of reptiles and amphibians in the 'Threatened' category may be present but were not observed during the survey

6) DISCUSSION

From an ecological viewpoint, the results indicate that the 'Preferred' lodge site has the same diversity according to the Shannon Index as 'Alternative' site 1, the highest number of protected species (along with 'Alternative' site 1) and the lowest number of individual trees within the protected species category. Objectively speaking therefore this makes the latter sites most sensitive to impact in terms of biodiversity. 'Alternative' site 2 has the lowest diversity index and the lowest number of protected species making it the least sensitive to impact in those terms. I consider this site the least aesthetically pleasing for the construction of a lodge.The large number of *Spirostachys africana* trees and the fact that this site is adjacent to a sodic area would further complicate construction.

Notwithstanding the above results, the 'Preferred' location and 'Alternative' site 1 provide the most aesthetically pleasing sites and with sensitive development either would provide an excellent tourist destination. While highly suitable as a lodge site there were objections from neighbours during initial construction at 'Alternative' site 1. It is therefore unlikely that the lodge would be be built at this location. 'Preferred' site given its proximity to the Manyeleti River, the high levels of vegetation diversity providing excellent grazing (in the form of desirable grazing species) and browsing and attracting associated herbivores and predators, this area if sensitively developed would be eminently suitable for the development of a lodge.

7) REFERENCES AND OTHER READING

Acocks J.P.H. 1975. Veld types of South Africa. Memoirs of the botanical survey of South Africa. No 40.

Baillie J & Groombridge B. 1996. 1996 IUCN Red List of Threatened Species. IUCN, Gland, Switzerland.

Du Plessis S.F. 1969. The past and present distribution of the Perissodactyla and Artiodactyla in Southern Africa. M. Sc. Thesis, University of Pretoria.

Gertenbach W. 1983. Landscapes of the Kruger National Park. *Koedoe* 26, 9−121.

Government Gazette 35648. 2012. NOTICE OF THE LIST OF PROTECTED TREE SPECIES UNDER THE NATIONAL FOREST ACT, 1998. (ACT NO. 84 OF 1998) .

Low A.B. & Rebelo A.G. (Eds) 1996. Vegetation of South Africa, Lesotho and Swaziland. Dept. Environmental Affairs & Tourism, Pretoria.

Mucina L. & Rutherford M.C. 2006. The vegetation of South Africa, Lesotho and Swaziland. *Strelitzia* 19: 348-437.

MPUMALANGA NATURE CONSERVATION ACT: NO. 10 OF 1998.

Peel M.J.S., Kruger, J.M. & MacFadyen, S. 2007. Woody vegetation changes of a mosaic of protected areas adjacent to the Kruger National Park, South Africa. *Journal of Vegetation Science* 18, 807−814.

Pienaar U. de V., Rautenbach, I.L. & de Graaff, G. 1980. The small mammals of the Kruger National Park. Pretoria. National Parks Board of South Africa.

Rautenbach I.L. 1982. Mammals of the Transvaal. Ecoplan Monograph No. 1.

Skinner J.D. & R.H.N Smithers. 1999. The Mammals of the Southern African Subregion. University of Pretoria.

Walraven F. 1989. The geology of the Pilgrims Rest area. Geological Survey, Pretoria.

Appendix A

Expanded list of grass species found within the study area.

SPECIES	
Aristida spp.	Heteropogon contortus
Andropogon spp.	Melinis repens
Bothriochloa radicans	Michrochloa caffra
Brachiaria deflexa	Oropetium sp.
Brachiaria nigropedata	Panicum coloratum
Brachiaria xantholeuca	Panicum maxim
Chloris virgata	Perotis patens
Enneapogon scoparius	Pogonarthria squarrosa
Cymbopogon plurinodis	Schmidtia pappophoroides
Cynodon dactylon	Setaria sagittifolia
Dactyloctenium aegyptium	Setaria sphacelata
Dactyloctenium geminatum	Setaria ustilata
Digitaria eriantha	Sporobolus fimbriatus
Diheteropogon amplectens	Sporobolus ioclades
Enneapogon spp.	Sporobolus nitens
Enteropogon monostachys	Sporobolus panicoides
Cenchrus ciliaris	Sporobolus pyramidalis
Eragrostis gummiflua	Themeda triandra
Eragrostis cylindriflora	Tragus berteronianus
Eragrostis lehmanniana	Tricholaene monachne
Eragrostis heteromera	Trichoneuris grandiglumis
Eragrostis rigidior	Urochloa mossambicensis
Eragrostis superba	Urochloa panicoides
Eragrostis trichophora	
Eustachys paspaloides	
Fingeruthia africanum	
Forbs	

Appendix B

Expanded list of woody species that may be found within the study area (yellow background protected under the National Forest Act, 1998; Green background protected under the Mpumalanga nature Conservation Act, 1998) .

Species		
Acacia borleae	Cassine transvaalensis	Manilkara mochisia
Acacia burkei	Combretum apiculatum	Maytenus undata
Acacia erubescens	Combretum collinum	Mundulea sericea
Acacia exuvialis	Combretum hereroense	Ormocarpum trichocarpum
Acacia gerrardii	Combretum imberbe	Ozoroa paniculosa
Acacia grandicornuta	Combretum molle	Pappea capensis
Acacia nigrescens	Combretum mossambicense	Peltophorum africanum
Acacia nilotica	Combretum zeyheri	Protoasparagus
Acacia robusta	Commiphora africana	Ptaeroxylon obliquum
Acacia Senegal	Commiphora harveyi	Pterocarpus angolensis
Acacia tortilis	Commiphora mollis	Pterocarpus rotundifolius
Catunaregam spinosa	Commiphora schimperi	Rhoicissus tridentata
Cissus cornifolia	Cordia grandicalyx	Rhus chirindensis
Euclea crispa	Dalbergia melanoxylon	Rhus dentata
Euclea divinorum	Dichrostachys cinerea	Rhus gueinzii
Euclea natalensis	Diospyros mespiliformis	Rhus pentheri
Gardenia spatuifolia	Dombeya rotundifolia	Rhus pyroides
Gardenia volkensii	Ehretia amoena	Schotia brachypetala
Philenoptera violaceae	Ehretia rigida	Sclerocarya birrea
Strychnos madagascariensis	Flueggea virosa	Senna petersiana
Strychnos spinosa	Grewia bicolor	Spirostachys africana
Albizia harveyi	Grewia caffra	Sterculia rogersii
Balanites maughamii	Grewia flava	Terminalia prunioides
Berchemia zeyheri	Grewia flavescens	Terminalia sericea
Bolusanthus speciosus	Grewia hexamita	Vangueria infausta
Boscia albitrunca	Grewia monticola	Vepris carringtoniana
Boscia foetida	Grewia villosa	Xanthocercis zambesiaca
Canthium inerme	Gymnosporia buxifolia	Ximenia americana
Carissa bispinosa	Gymnosporia senegalensis	Ximenia caffra
Cassia abbreviata	Lannea schweinfurthii	Ziziphus mucronata

Appendix C

A list of mammal species known to occur/have occurred in the Sabi Sand Wildtuin.

Species	
Black rhinoceros - *Diceros bicornis*	Nyala - *Tragelaphus angasii*
Blue wildebeest - *Connochaetes taurinus*	Roan antelope - *Hippotragus equinus*
Buffalo - *Syncerus caffer*	Sable antelope - *Hippotragus niger*
Bushbuck - *Tragelaphus scriptus*	Southern (common) reedbuck - *Redunca arindinum*
Bushpig - *Potamochoerus porcus*	Steenbuck - *Raphicerus campestris*
Eland - *Taurotragus oryx*	Tsessebe – *Damaliscus lunatus*
Elephant – *Loxodonta africana*	Warthog - *Phacochoerus aethiopicus*
Giraffe – *Giraffa camelopardalis*	Waterbuck - *Kobus ellipsiprymnus*
Grey duiker - *Sylvicapra grimmia*	White rhinoceros – *Ceratotherum simum*
Hippopotamus - *Hippopotamus amphibius*	Zebra - *Equus burchelli*
Impala - *Aepyceros melampus*	Nyala - *Tragelaphus angasii*
Klipspringer - *Oreotragus oreotragus*	

Critically endangered; Endangered;

Appendix D

Carnivores and other small mammals recorded in the SSW.

Species	
Aardwolf – *Proteles cristatus*	Leopard – *Panthera pardus*
African wild cat – *Felis lybica*	Lion – *Panthera leo*
Antbear – *Orycteropis afer*	Lesser bushbaby – *Galago moholi*
Banded mongoose – *Mungos mungo*	Pangolin – *Manis temminckii*
Bat-eared fox – *Otocyon megalotis*	Porcupine – *Hystrix africaeaustralis*
Black-backed jackal – *Canis mesomelas*	Rock dassie – *Procavia capensis*
Brown hyaena – *Hyaena brunnea*	Serval – *Felis serval*
Cape clawless otter – *Aonyx capensis*	Sharpe's grysbok – *Raphicerus sharpei*
Cape fox – *Vulpes chama ?*	Scrub hare – *Lepus saxatilis*
Caracal – *Felis caracal*	Side-striped jackal – *Canis adustus*
Chacma baboon – *Papio ursinus*	Slender mongoose – *Gallerella sanguinea*
Cheetah – *Acinonyx jubatus*	Small-spotted genet – *Genetta genetta*
Civet – *Civettictis civetta*	Spotted hyaena – *Crocuta crocuta*
Dwarf mongoose – *Helogale parvula*	Spring hare – *Pedetes capensis*
Greater cane rat – *Thryonomys swinderianus*	Striped polecat – *Ictonyx striatus*
Hedgehog – *Atelerix frontalis ?*	Striped weasel – *Poecilogale albinucha*
Honey badger – *Mellivora capensis*	Thick-tailed bushbaby – *Otolemur crassicaudatus*
Jameson's red rock rabbit – *Pronolagus randensis*	Tree squirrel – *Paraxerus cepapi*
Large grey mongoose – *Herpestes ichneumon*	Vervet monkey – *Cercopithecus aethiops*
Large-spotted genet – *Genetta tigrina*	Water mongoose – *Atilax paludinosus*
Large white-tailed mongoose – *Ichneumia albicauda*	Wild dog - *Lycaon pictus*
Meller's mongoose – *Rhynchogale melleri*	Yellow-spotted rock dassie – *Heterohyrax brucei*

Endangered; Vulnerable

VISUAL IMPACT REPORT

TERMS OF REFERENCE: VISUAL IMPACT ASSESSMENT.

1. Project Description

Chitwa Tented (Pty) Ltd. wishes to apply for an environmental authorisation for a 12 bed tented camp within the Sabi Sand Game Reserve. As part of the assessment, a visual impact assessment is required.

Three alternative sites have been identified for assessment for the proposed development. All three sites are on the remainder portion of the farm Arathusa 241KU.
Preferred site: 24º45'09.55''S 31º28'42.83''E Note, this site extends across the small river.
Alternative site 1: 24º45'50.41''S 31º28'42.83''E (previously authorised site)
Alternative site 2: 24º44'52.23''S 31º29'56.52''E
Approximate site areas are provided in the accompanying map.
Concept drawings and elevations are included in appendix 1.

2. Visual Assessment

These terms of reference for visual impact assessment are based on the "Guidelines of Involving Visual and Aesthetic Specialists in EIA Processes" (Provincial Government of the Western Cape: Department of Environmental Affairs and Development Planning). (http://www.westerncape.gov.za/eng/pubs/guides/G/103381).

The Visual Impact Specialist is consider the footprint of one hectare around each site. The following must be included in the reporting:

- Assess issues relating to visual, aesthetic and scenic raised throughout the basic assessment process;
- Define assumptions and limitations;
- Describe the visual baseline and assess visual impact of the proposed development for the three sites;
- Identify sensitive receptors (other residences, camps, roads etc.);
- Conduct a view-shed assessment for the three sites;
- Determine the relative visibility or visual impact of the proposed camp for the three alternative sites in worst case scenario;
- Indicate potential visual impacts for:
  - Potential light impacts at night;
  - Potential impacts during the day.
- Describe alternatives, mitigation measures and monitoring programmes.

3. Mapping

All mapping to be done by Emross Consulting.

Mapping data can be provided in a spreadsheet format

4. Quotation

- The quotation must include all travel, S & T, analysis and other disbursements.
- A time line for all deliverables
- Details of any additional information required

5. Deliverables

- An electronic copy of the Visual Impact Assessment Report in MS word and pdf formats.
- All GPS points to be provided in WGS84 format.
- Original signed Specialist Declaration.
- Brief CV outlining expertise and experience.
- Be available to answer any visual issues brought forward by I & AP's.
- Be available to provide answers to any comments on your report

VIEWSHED ASSESSMENT FOR THE PROPOSED LODGE AT CHITWA SABI SAND.

Final Report

APRIL 2013

EMROSS Consulting Pty Ltd
P O Box 507, White River, 1240

Introduction

EMROSS were contracted to undertake the Environmental Impact Assessment (EIA) for the proposed new lodge for Chitwa in the Sabi Sand Game Reserve.

As part of the assessment, the visual impact needs to be considered, particularly as this is an area that offers high quality nature-tourism.

Methodology

There are a number of ways to assess visual impact. Some use a series of photographs from different distances and vantage points etc. These however tend to be rather subjective and are heavily influenced by the existing vegetation (condition and extent).

A method of calculating the total area from where the site could be seen from was employed. This method uses existing GIS data to generate a model. This model generally ignores vegetation, rocks and inter contour micro topography as it is based on natural ground. The model therefore presents a worst case scenario, which is unlikely. The validity of such a model may be questioned, but it is felt that this is a consistent and reliable method that provides data that is comparable between sites and is not influenced by season or subjectivity.

This model is used with the 2m contour data supplied by SSW to create a Triangular Interpolation Network (TIN)[1] for a 5km area surrounding the proposed lodge sites. Individual viewsheds were generated using the TIN and a 5 m elevated level of the proposed development sites. The viewshed source was considered a point (being the highest point of the main building) and the receptor being close to ground level. The resultant viewsheds were clipped to a 5km radius of each proposed development site and the area of visibility calculated for each site. A 5km radius was used as a cut off distance as it was felt that at this distance the effect of visibility impact would be negligible. This is subjective and we have tried to err on the conservative side

1 . TIN = Triangular interpolated (or irregular) network. The TIN model represents a surface as a set of contiguous, non-overlapping triangles. Within each triangle the surface is represented by a plane. The triangles are made from a set of points called mass points. (http://www.ianko.com/resources/triangulated_irregular_network.htm)

Using the height of 5 meters for the building and naked lights, and ignoring vegetative screening provides a “worse case” scenario for the viewshed. Building colours, vegetation and the maintenance and importance of trees on the sites is not taken into account. In addition, the lighting will all be shielded (no naked lights). Finally, aspects such as pixel size, line widths etc. all play a role in the presentation of the data. Again we have tried to err on the conservative side.

Results

Lodge sites:

Lodge site 1, is located at the confluence of Manyeleti and Mzieme non-perennial streams. It has views of the higher ground on the north, south and north-east of the site and of the convergence of the two streams (*Image 1*). The convergence of the streams and the expansive views are the main assets of this site.

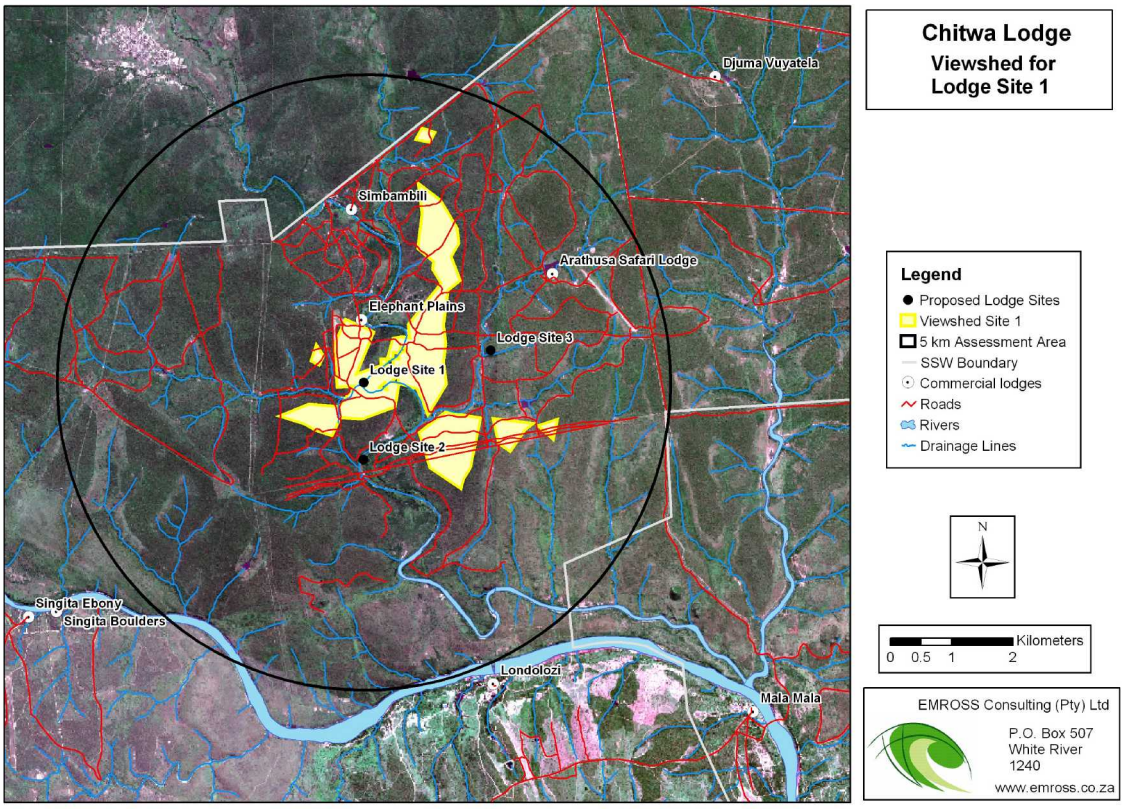


Image 1 on next page: Viewshed of Lodge Site 1.

Lodge Site 2 is located at the confluence of Manyeleti and a small unnamed non-perennial stream. It has more limited views of the higher ground surrounding the site on all sides and of the convergence of the two streams (*Image 2*). The convergence of the streams and the more limited views are the main assets of this site.

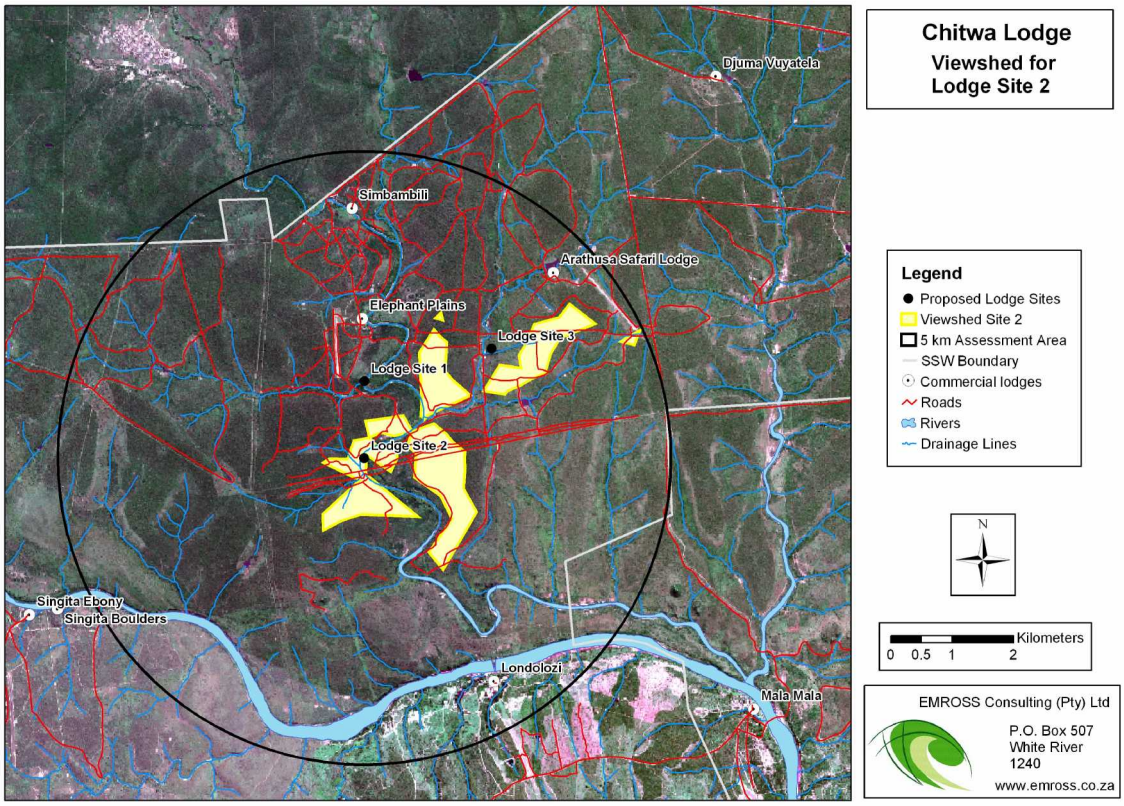


Image 2 on next page: Viewshed of Lodge site 2.

Lodge Site 3 is located on the western slopes of a ridge above the convergence of two small unnamed non-perennial streams. The view of the slopes to the west and south and the view of the streams are the main assets of the site. The visibility is largely from other elevated positions.

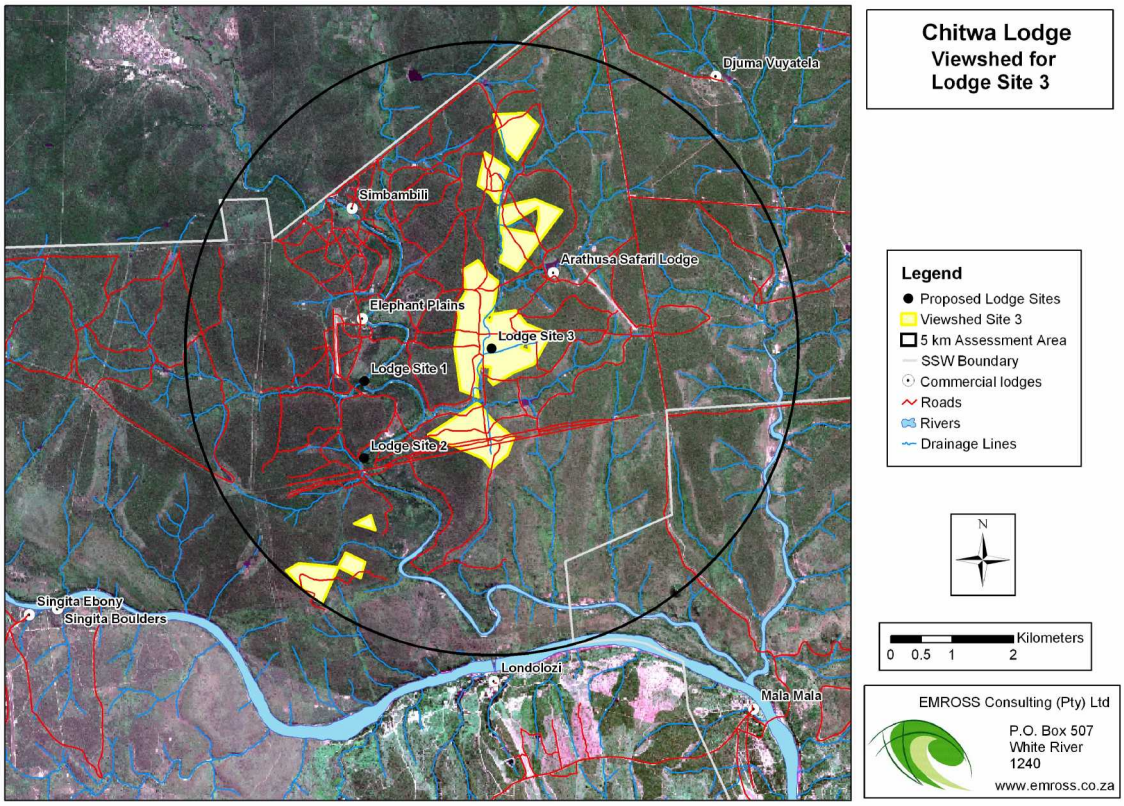


Image 3 on next page: Viewshed of Lodge site 3.

Comparing the 3 lodge sites in terms of the area from which a 5 meter high building and naked light could possibly be observed is summarised in Table 1 below.

Table 1: Lodge viewshed analysis.

Site	Viewshed 5m high buidlings (ha)	Viewshed area percentage of total assessed area	Existing lodges Infrastructure within VS	Length of roads within VS (km)	Percentage road length within VS	Airstrips within VS
Site 1	426	5.4	1	16.6	9.9	1
Site 2	383	4.9	0	13.6	8.1	1
Site 3	404	5.1	0	16.4	9.7	0

The lodge sites that could potentially 'see' site 1 is an existing Chitwa lodges to the north.

Site 2 was the least visible within a 5km radius of the site, visible from about 4.9% of the assessed area within SSW, and was also the least visible from surrounding roads (13.6km).

Site 1 was the most visible, although the difference is negligible being only 0.5% and that all sites are less than 5.5% of the total area assessed. Site 1 is partly visible from Elephants Plains Game Lodge and also from one of the airstrips. The actual extent of the proposed sites visibility from Elephants Plains Game Lodge will be dependant on the exact position of the proposed lodge, the elevation of the buildings and the cover provided by the natural vegetation. Site 1 was also the most visible from the existing road network, being visible from 3km (1.8%) more road network than Site 2. All sites will impact less than 10% of the road network within 5km of the proposed lodge developments. Again the actual difference between the various sites is extremely small with the actual extent being reduced by the natural vegetation in the area.

Mitigation measures.

Even though this is the worst case scenario model, it points to some useful mitigation measures that can be implemented.

- All external lights must be shielded with no naked external lights allowed
- Skylights on angled roofs must be avoided to reduce light pollution
- Surrounding vegetation must be maintained and protected against fire and elephant damage
- Care must be exercised on the use of colours and roof material.
- Use of indigenous evergreen trees in areas of received light pollution risk.

Conclusion and recommendations.

For the lodge sites, the site with the lowest viewshed and thus visible impact is Site 2.

Although Site 2 had the least visual impact the overall difference between all the sites was relatively small to negligible except for the possible impact of Site 1 on the existing Elephant Plains Lodge. Although Site 2 may be the site with the lowest visibility it may not be selected as the recommended site due to other criteria. If this is the case, mitigations must be implemented at the recommended site as these will reduce and negate much of the difference. The viewshed analysis highlights the need for mitigation measures to prevent negative influences.

ENVIRONMENTAL MANAGEMENT PROGRAM

ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE CONSTRUCTION OF A 12 BED TENTED LODGE

CHITWA SABI SAND.

Ref.No. 17/2/3/E-187

May 2013

EMROSS Consulting Pty Ltd

P.O. Box 507, White River 1240

Tel 013 750 2782

Fax 086 675 4320

E-mail: andrew@emross.co.za

PROJECT TEAM

Applicant.

Chitwa Tented (Pty) Ltd.

PO Box 26291

STEILTES

1213

Tel: 013 744 0876

Fax: 013 744 3748

E-mail: chitwa@iafrica.com

Contact Person: Charl Brink

Consultants.

EMROSS Consulting Pty Ltd
P.O. Box 507
WHITE RIVER
240
Tel: 013 750 2782
Fax: 086 675 4320
Cell: 082 3399 627
Responsible EAP: Andrew Rossaak
E-mail: andrew@emross.co.za

Lead authority.

Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET).
Private Bag X 11219
NELSPRUIT
1200
Responsible Officer: Ms Robyn Luyt

INDEX

1 SCOPE

The Environmental Management Programme provides guidance and proposes viable and suitable mitigation measures for assessed impacts.

The document is a 'living' document in order that it can be adapted to specific environmental concerns and issues as they arise. Changes to the EMP must be in accordance with the conditions stipulated in the ROD.

The EMP must be finalised only after the ROD has been issues so that it can take into account any particular requirements of the ROD.

Copies of the EMP document, the ROD and all ECO and audit reports must be available on site at all times.

2 AGREEMENT

It is important to note that the acceptance of the EMP by the relevant environmental authority and the client are governed by legislation and are to be read as a contract between the implementing agent (Contractor), the Client and the environmental authority (MDEDET). It is therefore crucial that the contractor, sub-contractor and developer adhere to its requirements, failure to do so can lead to penalties levied against the contractor, sub-contractor and the developer.

The project manager must institute contractual measurements to ensure that the contractors and sub-contractors adhere to the environmental obligations agreed upon.

3 RESPONSIBLE PERSON

A responsible person/ Environmental Control Officer (ECO) shall be appointed, to ensure full compliance with the requirements of the Environmental Management Programme through a regular audit process. The ECO should familiarise themselves with the contents of this document. The ECO will advise contractors on all environmental issues that are unclear and shall further be responsible for the environmental auditing required for the duration of the projects. A site inspection should be carried out by the ECO regularly during the project to monitor compliance and progress. From this site inspection a compliance report should be submitted to the Client and the MDEDET for control and comment purposes. It is recommended that an Environmental Management Inspection Officer (EMI) from MDEDET be appointed to monitor the implementation of this EMP.

The ECO may at any time instruct a contractor/subcontractor to leave the site due to non-compliance to the conditions of the EMP.

The ECO will further be responsible for the training of contractor and sub-contractor staff in terms of conveying the contents of this EMP to them through an induction process where after the contractors will sign acceptance and understanding of conditions.

4 INCIDENT REGISTERS AND REPORTING

An incident register must be kept on site at all times. This register must be maintained and any environmental incidents must be recorded in this register. The register must be made available for audits. The contractor will be responsible to ensure that the register is kept up to date. All environmental incidents must be reported to the responsible person (ECO), and the responsible contractor will sign the logging of the incident, to ensure that the information contained in the register is correct. The register must contain the date, time and place of the incident that took place. Remedial measure taken must also be mentioned in the register.

The ECO will audit the construction site, at a frequency not less than that indicated in the RoD and will submit a monthly report to the project management team and lead environmental authority.

A complaints register is to be maintained, in the event of the public wishing to comment or complain regarding any construction activity.

5 AUDIT PROCESS

Upon the contractor induction, an audit check-list will be established using this EMP, the RoD and any issues identified in the environmental assessment, as a guideline and will be signed by the relevant contractor to indicate understanding of the requirements.

Audits will be conducted with the contractor (or his/her representative) present and the completed audit will be signed by both the auditor and contractor (or representative).

Audit times should be arranged by agreement with not less than 24hours notice.

6 SITE IMPACTS AND MITIGATION

6.1 VEHICLE ACCESS

Vehicle access to the site will be through the reserve entrance gate and from there via the approved site access. New or alternative site access roads are not to be constructed by the contractor. On site the contractor must use only the existing or planned roadways. There must be no driving off road.

The access roads should be closely monitored for signs of potential degradation during the course of the construction. The ECO will advise as to appropriate measures that may need to be taken to mitigate any road degradation should it be required.

All vehicles used by contractors and sub-contractors are to comply with the South African traffic ordinance. All drivers and vehicles shall be licensed and shall be in a road worthy condition and shall be well maintained. Vehicles are to be insured against accidents and third party liability. All vehicles shall undergo regular checks to ensure they are roadworthy and free of oil or other lubricant leaks. The ECO may at any time request the road worthy certificate of a vehicle, or for leaks to be repaired..

Contractors and sub-contractor drivers are to be courteous in all dealings with the public and shall adhere to all roadway signage and speed limits.

6.2 SITE SETUP

The location of the site office, storage areas, ablutions etc. will be indicated by the ECO in conjunction with The Project Manager, it will be attempted to include these within current infrastructure or a previously disturbed site near the development area without creating new impacts. It will be necessary for the contractors to travel to and from the development site on a daily basis. There will be no housing of contractors on site.

Availability of ablution facilities will be assessed by the ECO, if current facilities can be used this would be ideal, if not the most appropriate form of portable toilets will be erected on site at a ratio of 1 toilet per 15 persons. The ECO will monitor the standard of hygiene and maintenance of the facilities throughout the duration of the contract. It will be the contractor's responsibility to keep these facilities clean. Toilet paper is to be provided by the contractor. No pit latrines or septic tanks / soak aways are permitted on the site. The use of the eco-loo dehydration toilet is permitted.

6.3 PROTECTION OF FAUNA AND FLORA

Protected tree species cannot easily be transplanted and have therefore been incorporated in the development design. Contractors have no right to trim, damage or destroy fauna and flora without the consent of the ECO and project manager. During site layout, shrubs that may be removed will be marked and only these, will be removed. No removal of any other trees or shrubs will be permitted.

If a listed tree (Act 84 of 1998) needs to be trimmed or impacted in any way, the ECO must be notified immediately so that the appropriate applications can be made to the relevant authorities (DoF). Only upon a letter of authorisation from the authority can the identified action take place.

No foreign materials may be nailed or attached to any trees.

No firewood or any other plant material or animal may be collected, killed or removed from the site. The contractor will be held responsible for any illegal action by any of his staff members e.g. poaching, setting of snares, fishing etc.

6.4 SOCIAL, HERITAGE AND ECONOMIC

Should excavation or large scale earth moving activities reveal any human skeletal remains, broken pieces of pottery, large quantities of sub-surface charcoal or any material that can be associated with previous occupation, a qualified archaeologist should be notified immediately. This may temporarily halt such activities in the particular area until the archaeologist has assessed the situation.

Construction supervisors and contractors should be trained to recognise archaeological or cultural historical 'chance finds' during construction and such finds:

- Must not be disturbed, damaged or moved; and
- Will immediately be brought to the attention of the Environmental Control Officer and an archaeologist.

The construction will utilise local resources and provide upliftment opportunities for members of the associated communities. The newly constructed developments will increase the employment prospects for the local community.

6.5 POLLUTION POTENTIAL

Cement has a high pH of 13 and cement wash and powder can destroy soil seed banks and aquatic life before it cures.

Noise pollution is likely to be a consideration during construction.

Dust pollution is likely to be associated with the construction.

Light pollution is not likely to be a impact during construction. The building designs should take cognisance of the impact of light pollution and designs should eliminate unshielded lights.

Mitigation:

No **cement** mixing should be allowed on the bare ground. Cement must be mixed on an impervious surface such as a concrete slab or metal or wood sheet. If a cement mixer is used this should be placed on a plastic liner or similar in order to catch potential spills and overflow. Where possible, cement mixing should be undertaken in an area within the building or road footprint. Storm water contamination from cement mixing must be prevented (i.e. no storm water washing into or out of a cement mixing area).

Waste water emanating from the cleaning of tools used for cement mixing and application should be contained and prevented from entering any storm water or river system. A suitable approach would be to store this waste water in drums, or similar suitable container, and use it for mixing cement and for re-wetting cement works. In the situation where wet or raw cement has come into contact with bare ground, the affected earth should be removed to a depth of 50mm and disposed of in either a registered land fill, or used as foundation fill in new construction sites. Topsoil which is removed from within the footprint of a new unit should be used to fill the scraping in again.

A thorough clean-up operation should be instituted to remove all the building debris fro all areas of the constructed units. The clean-up should only be considered complete after an inspection by the ECO and MDALA Department officers. All material from this clean-op should be disposed of in a registered land fill site. No construction teams should be allowed to build until they have undergone an environmental induction and have signed an Environmental Management Program contract that will ensure the building sites are maintained in an environmentally sensitive condition.

Noisy machinery (pumps and generators) should have sound levels of less than 45dB or sound proofed through the use of structures such as buildings or berm walls.

Dust should be monitored and roadways should be wetted with water or a dust suppressant. Wetting of roads should not be to the extent that it causes erosion or runoff.

6.6 SERVICES

Electricity is required to be laid to the building sites. The cables for this will be placed underground. The trenching process can impact the surrounding vegetation.

Water is to be sourced from the existing lodge supply. The pipes for this will be placed underground. The trenching process can impact the surrounding vegetation.

Roads can become eroded and dangerous.

Solid waste will be produced during construction.

Sewage is to be led to the existing sewage treatment plant at the existing lodge. The pipes for this will be placed underground. The trenching process can impact the surrounding vegetation.

Mitigation:

Electricity and other services should be buried where possible. The trenching should be conducted by a mini trench digger or a small narrow bucket TLB to minimise the impact on the vegetation. During trenching the top soil must be kept separate from overburden so that these can be replaced correctly in the trench.

Water, sewage and electricity may be combined in one trench where possible to reduce environmental footprint and impacts. Water should be buried at a minimum of one metre, if possible, to avoid elephant damage.

Contractors are to ensure that the cable and/or pipes to be installed in a trench are available on site before excavating the trench. Trenching should only be done for the length of services which can be installed in one day, no trenches should not be left open over night.

Water: The contractor will be responsible for making sure sufficient potable water is available for the workers. The ECO is to train contractors as to correct and safe water usage practises.

Hose pipes must be entire and are to be fitted with nozzles or taps at the discharge end to improve water saving. Watering should be strictly managed by the contractor, to ensure that hose pipes are not left unattended while delivering water.

Roads should have appropriate mitre drains and be maintained regularly.

A **solid waste** collection system should be in place and all waste which is collected should be disposed of in the existing lodge waste disposal system. All bins must be scavenger proof and no waste is to be left

on site over night. Plastic refuse liners in the waste bins will assist in the removal of waste. There must be no littering; all refuse must be gathered for disposal. No waste should be buried or burnt on site as the risk of contamination and pollution over time would be high.

Sewage: is pre processed on site and then led to the existing sewage treatment plant at the existing lodge.

6.7 VISUAL IMPACT

Visual impact of the site will need to be controlled during construction.

Mitigation: All construction buildings should be shielded or clad with shade cloth, or painted to blend into the environment. The construction site should be shielded from any public road and access to the site restricted.

6.8 VEHICLE AND EQUIPMENT FUELLING AND MAINTENANCE

All vehicle fuelling and maintenance is to occur off-site in areas specifically maintained for these activities e.g. workshops and fuelling stations.

In the case of 'on-site' equipment, these may be fuelled on-site with the condition that the fuelling will take place over a suitable concrete or other impervious surface such as a spill tray to prevent fuel spillage onto the soil.

The servicing and repair of equipment is to take place in a workshop 'off site' specifically designed for this. In the event of an on-site emergency repair, the contractor will ensure that all work is conducted over an impervious layer preventing spillage of oils and fuels into the environment.

Sufficient absorbent materials and spill kits must be available to assist with clean-up operations.

6.9 SOIL PROTECTION, CONTAMINATION AND RESPONSE

In all processes where the soil is to be disturbed, it is essential that topsoil is separated from Overburden. In most cases the topsoil is clearly defined from the overburden by a colour change. If in doubt, the top 100mm may be considered as topsoil.

Topsoil removed can be stored in stockpiles not higher than 1.5 meters. This is to prevent anoxic conditions from occurring near the centre. The stock piles should be wetted occasionally, particularly during periods of no rain in order to maintain the micro-organisms.

The topsoil should be used as a primary rehabilitation measure as it contains the seedbank and micro-organisms related to the site. The topsoil, in rehabilitation, should be at least 50mm deep and careful watering as well as physical weed control should be implemented.

Should any soil contamination occur during construction, such contamination is to be reported to the ECO, immediately. The soil shall be removed and stored in an area determined by the ECO and shall be labelled as to the form of contamination to prevent its future use. After consultation with the project manager, the contaminated soil will be disposed of, in the manner determined by legislation.

6.10 PROVISION OF STORAGE FACILITIES FOR TOXIC MATERIALS

It is not anticipated that any such materials will be used for this development, but should the need arise materials must be stored as indicated on the label. The ECO will ensure that hazardous substances are stored in a way that ensures that potential spills will be contained and not generate any increased hazard. Paints, solvents and similar materials should be stored in bunds and within a secure building.

6.11 PROVISION OF STORAGE FOR CONSTRUCTION MATERIAL

The contractor will be responsible for the storage of construction material at a site determined in conjunction with the ECO and project management. Cement must be stored off the ground on pallets and under shelter from rain.

6.12 BORROW PITS AND QUARRIES

It is not anticipated that the use of borrow pits and quarries for the sourcing of materials will be necessary. No new borrow pits or quarries are to be created without obtaining the necessary permits from the Department of Minerals and Energy (DME).

6.13 SPOIL MATERIAL

All spoil material shall be disposed of in accordance with legislation. No spoil material will be left on site at completion of the project and the potential reuse of any material (excess crushed stone, sand etc) should be investigated.

6.14 STORMWATER MANAGEMENT

No obstructions of any stormwater system will be allowed and the dumping of water used for the cleaning of equipment will also not be permissible.

Only level areas are to be used for stockpile zones and care is to be taken to prevent the stockpiling of materials in drainage lines. The ECO will assist in determining these areas.

6.15 GROUNDWATER MANAGEMENT

No impact or management requirements are anticipated in terms of groundwater.

6.16 LITTERING

In terms of the Environmental Conservation Act, No 73 of 1989, no littering by the contractors or sub-contractors shall be allowed. The ECO shall monitor the neatness of the work-site for the duration of the project.

6.17 COMMUNICATION

It is essential that communication channels between the contractor, ECO, site manager and client be maintained in good order. It is proposed that fortnightly meetings be had between the relevant parties for the duration of the project.

6.18 SIGNAGE

A single signboard is to be erected on the development site by the relevant lead contractor indicating the details of the project and the contact details of the contractor as well as emergency telephone numbers. This will be required for emergency and control reasons as well as management assistance in cases where problems need to be reported by staff or public not directly involved with the project.

The detail regarding the style, size and information on this sign will be given to the contractor by the ECO in conjunction with the consultant.

6.19 REHABILITATION OF THE DEVELOPMENT

On completion of construction, the development will be rehabilitated, by the contractor, through the removal of all construction facilities introduced, removal of waste and any other feature constructed or established during the use of the site.

6.20 DISASTER MANAGEMENT PROCEDURES

Disasters are a constant treat when working on construction sites.

Fire

No open fires will be allowed on the construction site or in the veld under any circumstances. Any cooking that is to be done on site is to take place on a gas cooker supplied by the contractor at a suitable point close to the site office.

It will be expected by all contractors to indicate their ability to fight accidental fires, through having serviced and fully functional equipment on site in the event of accidental fires. The ECO will determine the level of equipment and training required by the contractors.

Medical disaster

The site is in proximity to medical care for injuries on duty or evacuation in the case of serious illness. The contractor should never the less develop and maintain a medical disaster management procedure that will be communicated to all staff. These procedures will, as a minimum, have evacuation protocols, medical attention detail and a list of necessary contact numbers included. This procedure is to be displayed in the site office and a copy is to be handed to the ECO for inclusion in the audit results. Contractors will be required to have a first aid kit available on site at all times.

ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE REHABILITATION OF LODGE SITE CHITWA SABI SAND.

July 2013

EMROSS Consulting Pty Ltd

P.O. Box 507, White River 1240

Tel 013 750 2782

Fax 086 675 4320

E-mail: andrew@emross.co.za

PROJECT TEAM

Applicant.

Chitwa Tented (Pty) Ltd.
PO Box 26291
STEILTES
1213
Tel: 013 744 0876
Fax: 013 744 3748
E-mail: chitwa@iafrica.com
Contact Person: Charl Brink

Consultants.

EMROSS Consulting Pty Ltd
P.O. Box 507
WHITE RIVER
240
Tel: 013 750 2782
Fax: 086 675 4320
Cell: 082 3399 627
Responsible EAP: Andrew Rossaak
E-mail: andrew@emross.co.za

Lead authority.

Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET).
Private Bag X 11219
NELSPRUIT
1200
Responsible Officer: Ms Robyn Luyt

Acting Management Authority.

Sabi Sand Game Reserve Management

Tel: 013 735 5102

Contact Person: Andrew Parker

INDEX

1 SCOPE

This Environmental Management Programme (EMP) is intended to provide guidance for the rehabilitation of the terminated lodge construction site on the remainder portion of farm Arathusa 241KU, Sabi Sand Game Reserve, co-ordinates 24º45'50.41"S 31º28'42.83"

The construction of foundations for a tented lodge was commenced on the above mentioned site under Environmental Authorisation 17/2/1/1(d)MP-11 issued on 2nd March 2009. The construction was voluntarily halted following a neighbour request. The constructed foundations require removal and rehabilitation.

The foundations are to be removed and all building materials reused to the extent possible. The site should be landscaped to original ground levels. Topsoil shall be applied to denuded and severely impacted areas at a minimum of 50mm thickness, in order to facilitate natural regrowth of vegetation. The site must be monitored for invasive alien plant regrowth and erosion until the vegetation is well established. This may be up to 3 years.

The document is a 'living' document in order that it can be adapted to specific environmental concerns and issues as they arise. Changes to the EMP must be in accordance with the conditions stipulated in the Environmental Authorisation (EA) as applicable.

2 AGREEMENT

It is important to note that the acceptance of the EMP by the relevant authorities and the client are governed by legislation and are to be read as a contract between the implementing agent (Contractor), the Client and the authorities (see project team). It is therefore crucial that the contractor, sub-

contractor and developer adhere to its requirements, failure to do so can lead to penalties levied against the contractor, sub-contractor and the developer.

The project manager must institute contractual measurements to ensure that the contractors and sub-contractors adhere to the environmental obligations agreed upon.

3 RESPONSIBLE PERSON

In connection with the lodge building on the new site a responsible person/ Environmental Control Officer (ECO) shall be appointed, to ensure full compliance with the requirements of the Environmental Management Programme and Environmental Authorisation through a regular audit process. The ECO will also advise contractors on all environmental issues that are unclear. This ECO should at least once, inspect the rehabilitation progress of this site. From this site inspection a compliance report should be submitted to the Client and the Authorities for control and comment purposes.

4 SITE IMPACTS AND MITIGATION

Photos 1 and 2 showing some of the construction to be rehabilitated.

4.1 VEHICLE ACCESS

Vehicle access to the site will be through the reserve entrance gate and from there via the approved site access. New or alternative site access roads are not to be constructed by the contractor. On site the contractor must use only the existing or planned roadways. There must be no driving off road.

The access roads should be closely monitored for signs of potential degradation during the course of the rehabilitation. The ECO will advise as to appropriate measures that may need to be taken to mitigate any road degradation should it be required.

All vehicles used by contractors and sub-contractors are to comply with the South African traffic ordinance. All drivers and vehicles shall be licensed and shall be in a road worthy condition and shall be well maintained. Vehicles are to be insured against accidents and third party liability. All vehicles shall undergo regular checks to ensure they are roadworthy and free of oil or other lubricant leaks. The ECO may at any time request the road worthy certificate of a vehicle, or for leaks to be repaired.

Contractors and sub-contractor drivers are to be courteous in all dealings with the public and shall adhere to all roadway signage and speed limits.

4.2 PROTECTION OF FAUNA AND FLORA

The existing tree species on site are an important part of the rehabilitation. Contractors have no right to trim, damage or destroy fauna and flora in connection with the rehabilitation, unless otherwise instructed by the ECO.

No firewood or any other plant material or animal may be collected, killed or removed from the site. The contractor will be held responsible for any illegal action by any of his staff members e.g. poaching, setting of snares, fishing etc.

4.3 POLLUTION POTENTIAL

Noise pollution may be a consideration during rehabilitation.

Dust pollution may be associated with the rehabilitation.

Pollution by **Wastes** may be a result of the rehabilitation.

Mitigation:

Noisy machinery (pumps and generators) should have sound levels of less than 45dB or sound proofed through the use of structures such as buildings or berm walls.

Dust should be monitored and roadways should be wetted with water or a dust suppressant. Wetting of roads should not be to the extent that it causes erosion or runoff.

A thorough clean-up operation should be instituted to remove all the building and domestic wastes from the entire rehabilitated area. The clean-up should only be considered complete after an inspection by the ECO. All material from this clean-op should be disposed of in a registered land fill site.

4.4 SERVICES

Any services installed on site should be removed and rehabilitated.

4.5 VEHICLE AND EQUIPMENT FUELLING AND MAINTENANCE

All vehicle fuelling and maintenance is to occur off-site in areas specifically maintained for these activities e.g. workshops and fuelling stations.

4.6 SOIL PROTECTION, CONTAMINATION AND RESPONSE

In all processes where the soil is to be disturbed, it is essential that topsoil is separated from Overburden. In most cases the topsoil is clearly defined from the overburden by a colour change. If in doubt, the top 100mm may be considered as topsoil.

Topsoil removed should have been stored in stockpiles. Once rehabilitation of the foundations and stockpile sites has been completed the stock piled topsoil should be returned.

This topsoil is the primary rehabilitation measure as it contains the seedbank and micro- organisms related to the site. The topsoil, in rehabilitation, should be at least 50mm deep and careful watering as well as physical weed control should be implemented.

4.7 SPOIL MATERIAL

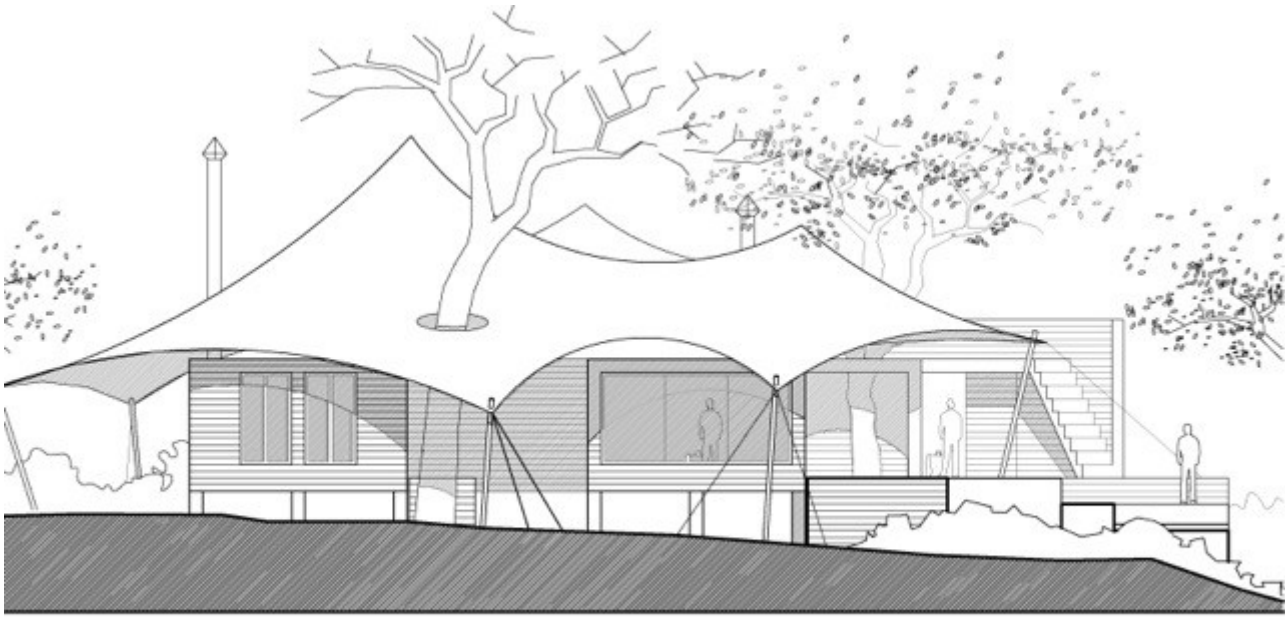
All spoil material shall be disposed of in accordance with legislation. No spoil material will be left on site at completion of the project and the potential reuse of any material (excess crushed stone, sand etc) should be investigated.

4.8 STORMWATER MANAGEMENT

No obstructions of any stormwater system will be allowed and the dumping of water used for the cleaning of equipment will also not be permissible.

The rehabilitated site should be carefully contoured in order to avoid potential erosion caused by stormwater. Any high risk areas must be secured with velocity breakers such as stones, branches or similar natural barriers.

CHITWA TENTED **LAYOUT DRAWING** **APPENDIX 6**



TENTED SINGLE ROOM CONCEPT
TYPICAL (IDEAL EAST) ELEVATION

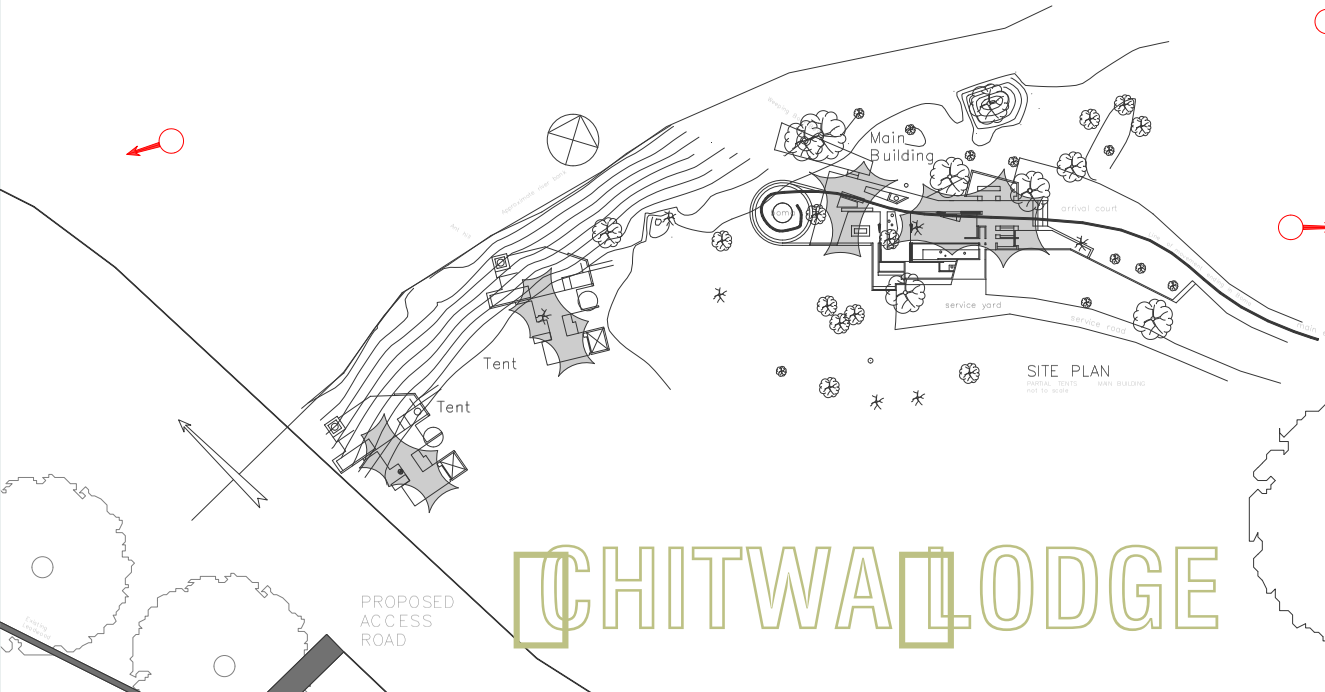
TENTED SINGLE ROOM CONCEPT
TYPICAL (IDEAL NORTH) ELEVATION

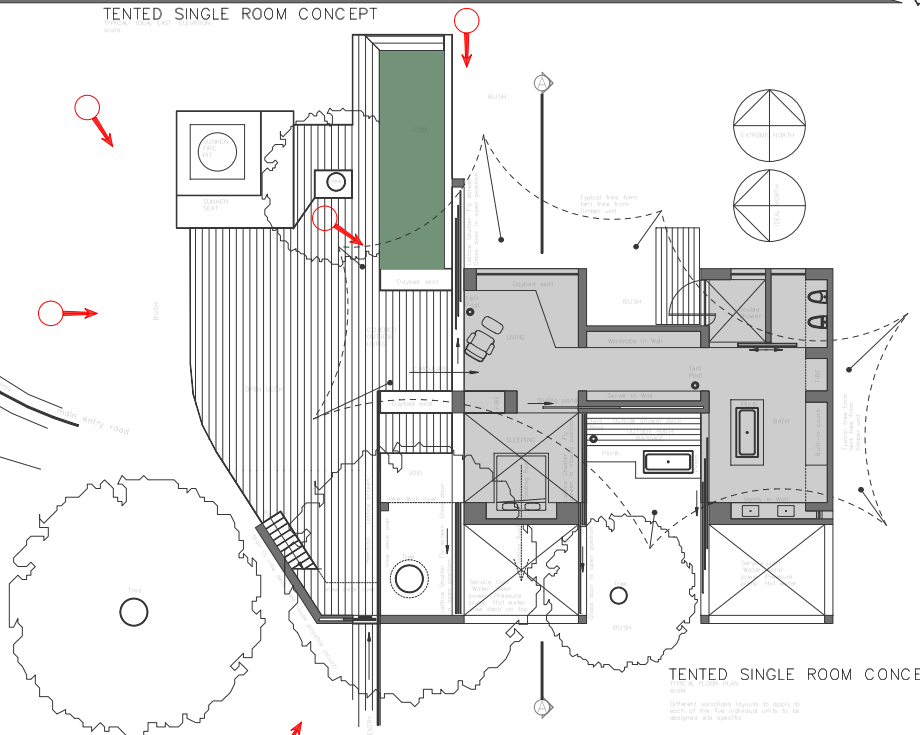
TENTED SINGLE ROOM CONCEPT

TENTED SINGLE ROOM CONCEPT

TENTED SINGLE ROOM CONCEPT

EXTERNAL TIMBER CLASS CCA TREATED NO MAINTANANCE SAPINE





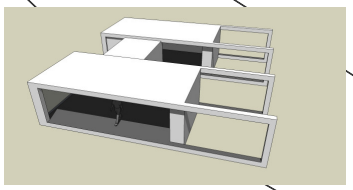
TENTED SINGLE ROOM CONCEPT

CHITWA LODGE

PROPOSED ACCESS ROAD

CONCEPT

Timber boxes and free form tents are applied as two separate elements. The tent is used to define the function of the spaces below it and around the functionality of the timber box. Both are placed as required formally or randomly. Support posts for the tents may pierce the box. Trees on the site may pierce the tent. Exact position decided on site.



SYSTEM

Elevated timber construction boxes of flexible size, shape, function. Boxes connected with passages, enclosed timber or glass, or open timber walkways. Structure can extend as required to receive sliding components or services add-ons like solar panel platforms. Timber wall cladding inside and outside matches floor, standard decking, as uniform material. External timber clt SAPine treated H4 CCA with no finish and no maintenance. An alternative is creosote. In time timber will weather to soft grey hues blending into the natural winter landscape of the site. Internal timber treatment is non toxic boron.

TENT

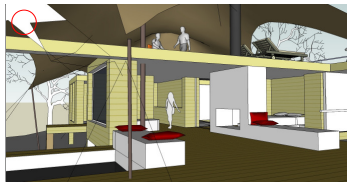
Free form tent structures span completely free over the timber units. Support posts for the tents may pierce the box. Trees on the site may pierce the tent. Each unit gets its own character. Boxes can be exposed or concealed as required or determined by the tent is free shape and placing over the timber unit as per topography, sun, trees, client, designer, function, privacy, elements, views.

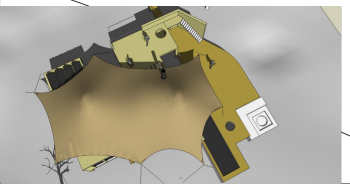
ROOF

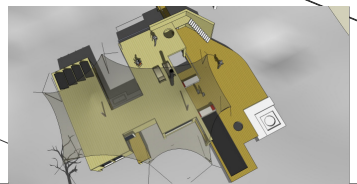
Although the tent is waterproof, it is not a direct required function to the timber box. The timber box roof is a minimum slanted waterproofed decking sheet with level timber floor deck as cover. Thus completing the timber cube concept in all three dimensions and allowing access onto the box for use as elevated view deck and shaded free spaces under the tents.

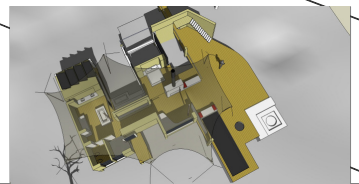
CONSTRUCTION

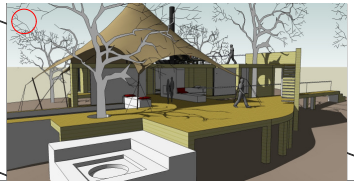
Construction impacts minimal on site. Timber components get manufactured off-site in a workshop. Totally dry assembly of the boxes and erection of the tents take place in a short period on site using minimum work force.

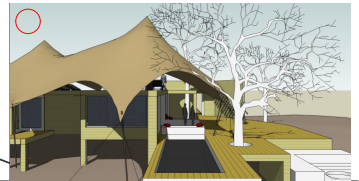












Chitwa Lodge

Layout Preferred Site

Legend

- Drainage Lines
- 2m Contours
- Lodge Layout

N

Meters

0 25 50 100 150

EMROSS Consulting (Pty) Ltd

P.O. Box 507
White River
1240

www.emross.co.za