ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED LOYK TSAVO TENTED CAMP HOTEL IN TSAVO EAST NATIONAL PARK, ON PLOT NO.9665/R NAIROBI-VOI ROAD, MAKUENI COUNTY.

PROJECT PROPONENT CYPRESS HOLDINGS LTD P.O. BOX 49265, NAIROBI

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January 2014.

Director General,
NEMA,
P.O. BOX 67839-00200
POPO ROAD,
NAIROBI.

Anne W Kagiri

RE: ENVIRONMENTAL IMPACT ASSESSMENT STUDY REPORT FOR THE PROPOSED LOYK TSAVO TENTED CAMPS HOTEL PROJECT, ON PLOT NO.9665/R, TSAVO EAST NATIONAL PARK, MAKUENI COUNTY.

Pursuant to the Environmental Management and Coordination Act (EMCA) No.8 of 1999, Section 58 (1) the Second Schedule and EIA Regulations, 2003. I am hereby pleased to submit an Environmental Impact Assessment Study report for the proposed Loyk Tsavo Tented Camps Hotel on Plot No. 9665/R at Tsavo East National Park.

The EIA report was conducted on January 22th and 23st, through site visit and observations, internet studies and interviews.

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Signature	Date
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For: Project Proponent	
Signature	Date

PROJECT COSTS SUMMARY

Activity	Estimate Costs (Ksh)
Development of grounds and gardens	200,000
Setting up of foundations and associated	1,000,000
super structure for the 20 camps	
Rehabilitation of Old tents	2,500,000
Restaurant and office area	2,500,000
Swimming pool and changing rooms	5,000,000
Tents for the 20 sites	5,000,000
Sanitary facilities and waste water	3,000,000
Treatment facilities	
Solar lights and electricity generating	700,000
system	
Workers quarters	2,000,000
Water supply infrastructure	7,000,000
Car park	1,000,000
Total	29,900,000.

EXECUTIVE SUMMARY

This Environmental Impact Assessment for Loyk Tsavo tented Camps hotel project has been carried out to ensure that the proposed developments do not impact negatively on the environment and to comply with the laid out Government Regulations.

The findings have been included in the report, and an Environmental Management Plan, which is going to be implemented by the proponent has been compiled and is included in this report.

The methodology used for data collection was site survey, observations, internet studies and questionnaires. The findings are included in this EIA report.

PROJECT CONCEPT









Some existing structures at the proposed tented camp site.

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LIST OF ACRONYMS

AIDS Acquired Immune Deficiency Syndrome

CFC Chloro Floro Carbons

CPP Consultative Public Participation

DEO District Environmental Officer

EA Environmental Audit

EIA Environnemental Impact Assessment

EMP Environmental Management Plan

EMCA Environmental Management and Co-Ordination Act

HIV Human Immune-Deficiency Virus

LA Local Authority

NEMA National Environmental Management Authority

STIs Sexually transmitted Infections

ToR Terms of Reference

CHAPTER ONE

INTRODUCTION

1.1 DESCRIPTION OF THE PROPOSED PROJECT

The proposed Loyk Tsavo Camp is the former Patterson's Safari Camp. The Patterson Safari camp was set up in 1999 when EMCA Act was not operational thus no EIA or EA has been carried out at the facility. The camp had been named after the Col J. A. Patterson, the engineer who constructed the railway bridge crossing at the Athi River, and killed the 2 man eating lions which had mauled over 127 Indian railway worker. The bridge was commissioned in the year 1898.

The current project therefore involves renovation of the old structures that are now dilapidated and setting up of 20 new tents.

The proposed project is aimed at address this demand especially on accommodation facilities within the Tsavo National Park to cater for tourist needs.

1.2 Nature of the Project.

The proposed tented camp site project will involve putting up of the following facilities.

- 1. 20 tents that will be self contained.
- 2. Restaurant complete with Kitchen and food stores
- 3. the reception area that will have the following facilities:- offices, a tuck shop, and the reception area
- 4. A swimming pool with changing rooms
- 5. Car park
- 6. Workers quarters that will be tented also.
- 7. water supply infrastructure
- 8. foul water discharge system

1.3. Purpose of EIA Study

The purpose of this study is to use the existing baseline information together with information collected during the consultative public participation to identify the potentially positive and negative environmental impacts. It is also intended to propose workable mitigation measures to address the negative impacts and finally to formulate an environmental monitoring plan articulating the mitigation measures, responsible persons, frequency of monitoring, required resources and time frame for its implementation.

1.4. Objectives of the EIA Study

The principal objective was to highlight the possible positive and negative environmental impacts expected during the establishment and operation of the proposed camping site the aim of proposing the possible mitigation measures. This is in line with ensuring that such a development do not impact negatively on the environment in terms of social, health, economic and physical (soil, water, plant and animals) state of the of the area. The study has identified the possible environmental impacts during the implementation and operational phases of the project.

The other objectives are:

- To predict and evaluate potential environmental impacts of the project, and propose workable mitigation measures for the significant negative impacts of the project on the environment,
- ii. To facilitate consultative public participation and incorporate views expressed into the study,
- iii. To prepare Environmental Management Plan (EMP) for the proposed project.

1.5 T.O.R (Terms of Reference)

The terms of Reference for this Environmental Impact Assessment are based on the NEMA EIA/EA Regulations, dated June 2003, and the scope of work and specific tasks required of the consulting team by the community. These are to:

- Identify the possible environmental aspects of the proposed project, the
 resultant environmental impacts and what can be done to minimize the
 negative impacts and enhance the positive impacts;
- Take into account the environmental, social, cultural, economic and legal considerations and identify the anticipated environmental impacts of the project and the scale of the impacts;
- Propose mitigation measures to be taken during and after implementation of the project;
- Develop an environmental conservation and management plan with mechanisms for monitoring and evaluating the compliance and the environmental performance that include the cost of mitigation measures and the time frame of implementing the measures.

1.6 Scope

The scope of work conformed to the Terms of Reference (ToR) and included technical studies, internet studies, field investigations, consultative public participation, and identification of impacts, setting out of mitigation and preventive measures and a study of other proposed alternatives suggested in this report.

1.7 EIA Methodology

In carrying out of the Impact Assessment, the following methods were incorporated:

- Semi structured interview: this involves holding individual interviews with the project proponent using a pre- prepared questionnaire and Impact Assessment checklists and recording the feedback.
- ii. Literature review: this involves the review of all literature and data relevant to the project. The literature included legislations, data kept by the proponent, lead agencies, and government agencies and information available from the internet.
- iii. Site observation: this involves a walk within the proposed project site to get acquainted with the environment and also to cross check issues, which arise from the semi- structured interviews above.

1.8 Public Participation Process

Introduction

One of the guiding principles of the EIA Regulations and NEMA is to ensure the public is involved and aware of decisions taken with regard to identified activities before authorization. /exemption can be considered.

This is accomplished through the use of public participation questionnaires.

There is a potential danger and environmental risk associated with the above mentioned developments. The construction and operations of such a project can furthermore have substantial negative impact on the environment, in relations to its sensitivity.

1.9. The Significance tourism industry in Kenya

Tourism is the world's largest industry. It accounts for more than 10% of the total employment, 11% of global GDP, and total tourist trip is expected to increase to 1.6 billion by 2010. It is the leading economic sector in Kenya, providing 100,000+ jobs and lots of income to the country.

Kenya's natural endowment namely wildlife, beautiful scenery, sandy beaches, sporting activities, hotel facilities has made tourism one of the country's major economic

activities. The industry has witnessed a spectacular growth since independence in 1963. The growth is manifested in the country's National mixed economic development strategy, which encourages partnership between the private and public sectors. The first post-independence National Development plan recognized the great potential existing in the tourism sector. The country currently receives about 1 million tourists per year as compared to about 70,000 at the time of independence. Tourism has become one of the most vital sectors of Kenya's economy and a major foreign exchange earner as well as offering employment to well over 138,000 segments in direct employment and 360,000 in indirect employment.

Tented Camps attract more tourists than the convenctional hotels in that the create a feeling of 'closeness to nature' to the visitor.

1.9.1 Tourism and environment.

As with any type of economic development, tourism creates changes that threaten the quality of life. Changes in the host community's quality of life are influenced by two major factors: the tourist—host relationship and the development of the industry itself. Social and cultural changes to host societies include changes in value systems, traditional lifestyles, family relationships, individual behavior or community structure.

The general notion of tourism is that it promotes economic activity, boosts the local production of resources and helps in infrastructure development without paying attention to the negative socio-cultural impact

While tourism is bringing pleasure and income to millions, it is also putting more and more pressure on the already stressed ecosystem. It's social, economic and environmental effects are immense and complex and should not be ignored since tourism involves visits to areas of natural and cultural importance. People should not put short term earning before long term environmental health.

Sustainable tourism should reconcile economical and environmental concern and give a practical meaning to sustainable development. It should generate jobs and revenues providing an incentive for preserving natural areas in the process.

Inappropriate tourism developments can degrade habitats, deplete natural resources and generate waste and hence pollution.

- ✓ Preserve, protect and improve the quality of the environment;
- ✓ Protect human health; Ensure a prudent and rational use of natural resources;
- ✓ Promote measures at international level to deal with regional or worldwide environmental problems.

1.9.2 Description of Camps, and Camping sites.

The term camp comes from the Latin word campus, meaning "field". Therefore, a campsite consists typically of open pieces of ground where a camper can pitch a tent or park a camper. More specifically a campsite is a dedicated area set aside for camping and for which often a user fee is charged. Campsites typically feature a few (but sometimes no) improvements. Dedicated campsites usually have some amenities. Common amenities include, listed roughly in order from most to least common:

- Fireplaces or fire pits in which to build campfires (this can be a circle of rocks, a metal enclosure, a metal grate, a concrete spot, or even just a hole).
- Pit toilets (outhouses)
- Road access for vehicles
- Piped potable water
- Sinks and mirrors in the bathrooms, and flush toilets
- Utility hookups, such as gas, propane, water, electricity and sewer, primarily for the use of Travel trailers, Recreational vehicles, or similar
- A small convenience store
- Raised platforms on which to set up tents (Concrete, timber or another suitable base material).
- Shower facilities (with or without hot water)

- Marked spaces indicating a boundary for one camper or a group of campers
- Reservations to ensure there will be available space to camp
- Wood for free or for sale for use in cooking or for a campfire
- A gravel or concrete pad on which to park a vehicle
- Garbage cans or large rubbish bins in which to place refuse



The camping areas are usually established "zones", which have a predetermined maximum number of persons that are allowed to stay in the section per night. Strict regulations are imposed regarding food storage and resource protection. In most cases, open fires are not permitted and all cooking must be done with small portable stoves. Both commercial and governmental campgrounds typically charge a nominal fee for the privilege of camping there, to cover expenses, and in the case of an independent campground, to make a profit.

1.9.3 Tented Camp Hotels

These are hotels facilities that offer all the comforts of conventional hotels while utilizing the simplest form of housing and the attractions of tented structures. Tented Camps are popular and are usually in the highest 'niche' of hotel facilities visited by tourists. The structures are simple while offering the comfort and security of a conventional 5-star hotel.

CHAPTER TWO

PROJECT DESCRIPTION

2.1. Location of the Project

The proposed Loyk Tsavo Camp is the former Patterson's Safari Camp at the Tsavo East National Park 9 km off the Nairobi- Mombasa Highway. The road turn off to the camp is directly opposite the entrance to the Tsavo West national Park, near the "Man eaters" Lions Camp.

The proposed activites are the renovation of the Tented Camps that had been the "Patterson's Safari" Camp and expansion of the camp to include 20 more new tents. The site of the camp is appropriate due to the following factors:

- There is an already established road access to the site. This is the old road to
 Mtito Andei through the park.
- To set up 'hotel' facilities that are close to nature
- To set up facilities that are 'not out of line with the existing facilities' in nature.

 The tents blend into the existing environment in materials, shapes and colour.
- To have facilities that are close to the existing attractions in the park. These attractions at this facility are:
 - o Animals watering Point on the Athi River
 - o Scenic views of the Yatta Plateau and the River Athi
 - The railway bridge crossing on the Athi River
 - o The confluence of the Athi and the Tsavo River
 - Security for the visitors as entrance to the Park is controlled
 - o Shading and ambience provided by the riverine forests of Acacia trees

2.2 Construction Phase

2.1 Demolition of Existing Camps

2.1.1 Demolition works

There were several old tents that earmarked for demolition. These tents, including the drainage works, will be demolished. This will produce a lot of solid waste, which will be reused for other construction works or disposed of appropriately by a licensed waste disposal company as per the directive of the lead agencies including MCN and NEMA.. The solid waste that cannot be reuses is the tent 'cloth' material.

2.1.2 Dismantling of equipment and fixtures

All equipment including electrical installations, furniture, pipe-work, toilet seats and sinks including shower cubicles will be dismantled and removed from the site on decommissioning of the project. Priority will be given to reuse of this equipment in the setting up of workers quarters.

2.2 Description of the new construction

2.2.1 Tented Camps

The camps will be constructed using locally available materials, (Timber, stones and thatch) to make the super structure. The sides will be made of tent materials. Each tent will be self contained with its own shower and toilet facility. The water will be supplied through a pipe network.

The Kichen and restaurant will be made of simple timber structures, same as the currently existing structures in the pictures below.

2.2.2 Project design

In general, the design of the project will essentially optimize best use of available technology. This is so as to prevent or minimize potentially significant negative Environmental impacts associated with the project, to incorporate efficient operational controls through use of trained staff, and to ensure high level business and environmental performance.

2.2.3 Materials to be used

The main materials to be used will be timber. The timber will be used for walling, the support poles, and the roof. the materials will be used as follows;-

- o Structure Support- Timber poles
- Walls and rafters- Sisal frames
- o Roofing materials- thatch
- Ceiling materials- sisal gunnies
- Joinery -Sisal ropes and nails
- o Foundations and other concrete works- Cement, ballast, sand.

2.2.4 Sources of materials used in the Construction.

Most construction material is going to be sourced from Suppliers from Voi and Mtito Andei towns. Material like sand, ballast and construction stones will also be sourced from nearby Mtito. The skilled and unskilled labour will also be sourced from Mtito town and the nation at wide. The project proponent will be required to provide temporary housing for the laborers.

2.3 Other Infrastructure

The other infrastructure that must be available for the Camp Hotel to operate well include electricity, telephone services, and a good road network and availability of drinking water.

2.3.1 Energy

Most of the energy at the site if for Lighting, office use for powering computers, cooking and heating water for guest use.

Energy for lighting is from a diesel generator and from solar panels.

Energy for cooking is from gas, charcoal and wood fuel which is in abundance at the camp.

Energy for heating water is from also from wood or charcoal fuel.

2.3.2 Water Supply and Infrastructure

This area does not have piped water. The River water has a high sediment load and cannot be used for drinking directly. The camp gets water for utilities by purifying river water. Water for cooking and drinking is ferried in drums from the Manyani trading centre that has tapped water from the Mombasa City Supply.

2.3.3 Sewage Disposal Facilities

All foul water will be discharged into a individual water treatment tank (A 500 litres tank, is perforated at bottom) for treatment before disposal into the ground. Water quality in the river will be continually monitored by taking samples of water from the river, upstream and downstream.

2.3.4 Solid Waste

Solid waste infrastructure will entail proper disposal of garbage generated by the facility by sorting for reuse, and recycle. Waste that is not in either of the categories will be discharged at the Voi Municipal dump site and a processing fee will be paid.

2.4. Environmental Conditions

The environmental conditions referenced in this section are with regard to general information pertaining to the site and its surrounding environs according to the literature

review, field study and site personnel. No other environmental impact studies have been conducted on the subject property.

2.5 About Tsavo National Park.

Tsavo East National Park is one of the oldest and largest parks in Kenya at 13,747 square kilometres. Situated in a semi-arid area previously known as the Taru Desert it opened in April 1948, it is located near the town of Voi in the Taita-Taveta District of Coast Province. The park is divided into east and west sections by the A109 road and a railway. Named for the Tsavo River, which flows west to east through the national park, it borders the Chyulu Hills National Park, and the Mkomazi Game Reserve in Tanzania.

2.6 Tsavo Conservation Area

Composed of <u>Tsavo East</u>, <u>Tsavo West</u>, and the <u>Chyulu Hills</u> in Southeastern Kenya, and the surrounding communities, **The Tsavo Conservation Area** covers 60,000 square kilometers.

The Conservation Area:

- Is the largest protected area in Kenya
- Holds the largest elephant population in the country
- Is one of the largest contiguous protected areas in Africa
- Occupies about 52% of the total protected areas in Kenya, and about 4% of Kenya's surface area

Due to its massive size, harsh environment and frequent drought, the land inside the protected areas provide the best possible habitat for wildlife.





The tented camp hotel is set along the banks of River Athi.





The camps' tents have been set in such a way as to cause minimum disturbance to the environment.





CHAPTER THREE

POLICY, LEGAL AND REGULATORY FRAMEWORK

3.1 Policy framework

The Kenya Governments environmental policy aims at integrating environmental aspects into national development plans. The broad objectives of the national policy include:

- Optimal use of Natural land and water resources in improving the quality of human environment
- Sustainable use of natural resources to meet the needs of the present generations, while preserving their ability to meet the needs of future generations
- ❖ Integration of environmental conservation and economic activities into the process of sustainable development
- Meeting national goals and international obligations by conserving biodiversity, arresting desertification, mitigation effects of disasters, protecting the ozone layer and maintaining an ecological balance on the earth.

3.2 Legal framework

3.2.1 Environmental Management and Coordination Act (EMCA), 1999.

The environment management and coordination act (EMCA) 1999 is an act of parliament to provide for the establishment of an appropriate legal and institutional framework for the management of the environment and for related matters.

The main objectives of the act are to:

- Provide guidelines for the establishment of an appropriate legal and institutional framework for the management of the environment in Kenya.
- Provide a framework legislation for the over 77 statutes in Kenya that contain environmental provisions

 Provide guidelines for environmental impact assessment, environmental audit and monitoring, environmental quality standards and environmental protection orders.

The act empowers the National Environmental Management Authority (NEMA) to exercise general supervision and coordination over all matters relating to the environment and to be principal instrument of government in the implantation of all policies related to the environment.

The Second schedule to the act specifies the projects for which an EIA of EA must be carried out. According to the act, section 58, all projects listed in the second schedule of the act must submit a project report to NEMA.

3.2.2 The Registered Land Act Cap. 300

In accordance with section 33, the Title deeds or certificate of leases shall be filed in the registry of the Registrar and shall be produced on the registration of any dealing with the land or lease to which it relates.

3.2.3 Employment Act Cap. 226

Section 6(1): Wages

It provides that any provident fund or superannuation scheme or any other scheme approved by the labour commissioner shall receive deduction from wages of employees with their consent.

Section 7(1-4): Leave

It stipulates that; Leave with full pay after every twelve consecutive months of service, an employee is entitled to a 21 working days of leave with full pay. A woman is entitled to two month's maternity leave with full pay and shall forfeit her annual leave in that year. Every two consecutive months of service, an employee shall be entitled to sick leave of seven days with half pay in each period of twelve consecutive months of service, subject to production of a certificate of incapacity to work signed by a duly qualified medical practitioner behalf in charge of a dispensary or medical aid centre.

Section 10: Water

Every employer shall provide a sufficient supply of wholesome water for the use of his employees at the place of employment and as the case may be, within a reasonable distance of any housing accommodation provided for them by him.

Section 11: Food

Every employer shall, where the provision of food has been expressly agreed to in or at the time of entering into a contract of service, ensure that every employee is properly fed and supplied with sufficient and proper cooking utensils and means of cooking at the employer's expense.

Section 12: Medical Attention

Every employer shall ensure the provision for his employees of proper medicines during illness, and shall take reasonable steps to ensure that the illness is brought to his notice as soon as reasonably practicable after the first occurrence thereof.

3.2.4 The Local Government Act Cap 265.

The Act requires that every City Council, every town council and every urban council shall have powers –

To establish and maintain sanitary services for the removal and destruction of, or otherwise dealing with, all kinds of refuse and effluent and, where any such services is established, to compel the use of such service by persons to whom the service by persons to whom the service is available.

To establish and maintain one or more fire brigades and to take all necessary steps for the prevention and extinguishing of fires and to compensate the owners of property demolished or damaged for the purpose of preventing or extinguishing fire; Section 171 of the Act provides that City Council may establish and maintain any such sewerage forms or sewerage disposal works either within or without its area.

3.2.7 Occupational Safety and Health Act, 2007

This is an Act of Parliament to provide for the safety, health and welfare of the workers and all persons lawfully present at workplaces, to provide for the establishment of the National council for Occupational safety and health and also for connected purposes. It

applies to all workplaces where any person is at work, whether temporary of permanently. During all the phases the project management must adhere to the requirements of this act.

3.3 INTERNATIONAL LEGAL FRAMEWORK

International environmental legislations of which Kenya is a signatory and may be applicable to manufacturing and industries include;

3.3.1 UN Framework Convention on Climate Change (1992) article 2

Requires that all Parties "stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system...within a timeframe sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner".

3.3.2 The Kyoto protocol, 1997

However, the Kyoto protocol makes general references to promoting new and renewable energy. The closest reference to renewable energy is made under Article 2 of the protocol:

"Each Party included in Annex I ... shall: (iv) Research on, and promotion, development and increased use of, new and renewable forms of energy, of carbon dioxide sequestration technologies and of advanced and innovative environmentally sound technologies".

Article 2, (v) of the protocol encourages Reducing market barriers requires that Annex 1 Parties demonstrate the "progressive reduction or phasing out of market imperfections, fiscal incentives, tax and duty exemptions and subsidies in all greenhouse gas emitting

sectors that run counter to the objective of the Convention and apply market instruments".

Further, Article 10 Para c - Requires that all Parties "cooperate in the promotion of effective modalities for the development, application and diffusion of, and take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies, know-how, practices and processes pertinent to climate change, in particular to developing countries, including the formulation of policies and programmes for the effective transfer of environmentally sound technologies that are publically-owned or in the public domain and the creation of an enabling environment for the private sector, to promote and enhance the transfer of, and access to, environmentally sound technologies".

CHAPTER FOUR

POSSIBLE SOCIAL ECONOMIC IMPACT OF THE PROPOSED CAMPS SITE

4.0 Project Options

4.0.1 Site options and technology options.

The proposed Loyk Tsavo Camp is the former Patterson's Safari Camp at the Tsavo East National Park 9 km off the Nairobi- Mombasa Highway. The road turn off to the camp is directly opposite the entrance to the Tsavo West national Park, near the "Man eaters" Lions Camp.

The proposed activites are the renovation of the Tented Camps that had been the "Patterson's Safari" Camp and expansion of the camp to include 20 more new tents. The site of the camp is appropriate due to the following factors:

- There is an already established road access to the site. This is the old road to Mtito Andei through the park.
- To set up 'hotel' facilities that are close to nature
- To set up facilities that are 'not out of line with the existing facilities' in nature.

 The tents blend into the existing environment in materials, shapes and colour.
- To have facilities that are close to the existing attractions in the park. These attractions at this facility are:
 - o Animals watering Point on the Athi River
 - o Scenic views of the Yatta Plateau and the River Athi
 - o The railway bridge crossing on the Athi River
 - The confluence of the Athi and the Tsavo River
 - Security for the visitors as entrance to the Park is controlled
 - Shading and ambience provided by the riverine forests of Acacia trees

4.0.2 No development Option

The Patterson's Safari Camp has been in existence since 1998. The camp has generated income for the country and kept alive the memories of Col. J.A. Pattersons and the history associated with the construction of the Kenya- Uganda railway. If the camp is let to decay and run down, there will be shortage of accommodation within the Tsavo East National Park, and the Camp set up to honour the Colonel will be lost.

4.1 Positive Impacts

4.1.1 Employment creation.

During construction phase, there will be employment of the local community in various activities of the project. This will in turn raise the economic status of the local community. After completion of the project there will be employment in forms of campsite staffs, security workers, cooks and other support staff.

4.1.2 Enhanced ecotourism activities

There is a great potential of ecotourism in the area. Building the campsite will enhance tourist activities in the area.

4.1.3 Improved trade.

During construction and operation of the proposed campsite, workers and tourists will stimulate local business in the project area. The beneficiary community lives in Voi and Mtito Andei town.

4.1.4 Enhanced economic growth.

The proposed project will improve income/economic status of the country. It will also be a source of foreign exchange since the proposed project will attract more international tourists into the Tsavo East National Park.

4.1.5 Protection of natural resources of the area.

The proposed project will support natural resource conservation in the area. Some of the funds generated will be used to support conservation programs in the park area.

Tourist/visitors touring the campsite will be requested to support conservation programs.

4.2 Negative impacts on the environment and mitigation measures

4.2.1 Impacts on soils

Impacts on soils may be of several kinds. Soil removal and relocation is due mainly to the introduction of on-site facilities or site management, and can in effect "sterilize" land by burying its surface under buildings or car parks.

Soil compaction is caused mainly by trampling. Consequences of compaction include impeded drainage (which leads to increased run-off and erosion), decreased water and air availability to plant roots and soil organisms (causing alteration in soil organism populations and plant death), and decreased abundance of larger pore spaces (leading in turn to a decline in the populations of larger soil organisms).

Mitigation measures.

- At least 90% of the camp site area surface will not covered with asphalt/cement or other sealing materials, which hinder proper drainage and airing of the soil.
- The number of paths around the vegetated area will be minimized.
- ➤ Movement of visitor during camping will be monitored to ensure that they do not go beyond designated areas.
- The number of vehicles into the site should be kept at a minimum.
- > The soil excavated will be placed in areas where it does not bury the fertile upper layer or disposed off safely.

4.2.2 Impacts on water resources

The adverse effects of sewage and waste-water disposal from the campsite may occur if open pit latrines are used. These wastes may seep underground and pollute the underground water. This campsite will use water treatment plant to safely discharge foul water into the ground. The campsite just next to the river Tsavo, thus there is possibility of river water pollution.

Soil erosion from the bare ground may carry water pollutant from the ground and pollute surface water. In this campsite, all open ground will be grassed and any area where trees may be removed replanted with others to avoid incidences of soil erosion.

Mitigation measures

- At least 90% of the camp site area surface will not covered with asphalt/cement or other sealing materials, which hinder proper drainage and airing of the soil. This will ensure surface run-off is minimized thereby reducing pollution of nearby surface water resource.
- The cleaning of cars shall be permitted only in areas, which are specially outfitted to collect the water and detergents used and convoy them to the sewage system.
- ➤ The car park and all pavements will be finished with stone pebbles that allow water to seep through.
- ➤ Use of water treating septic tanks to dispose off waste water which eliminates surface flow of effluents and avoid ground water and surface water pollution.

4.2.3 Impacts on vegetation

The impacts on vegetation would arise during construction due to removal and destruction of vegetation in the area to be cleared for camping site sanitary facilities and camp store.

Camping activities can have an immediate, direct impact on the species composition of vegetation. This is especially true of ground layer vegetation, and particularly as a result of trampling. Uses of wood fuel in the campsite have a great effect of reducing vegetation

density in the area. Strict measures to avoid these effects should be put in place. Use of alternative source of energy e.g. gas and electricity should be explored. The trees along the river are not cleared. The Tents are constructed in between trees. Only the undergrowth is cleared.

Mitigation measures.

- ✓ There should be no clearance of vegetation from the site.
- ✓ Re-vegetation of all disturbed areas with common grass, shrubs and trees to restore the site back to its original condition and prevent soil erosion and growth of opportunistic species.
- ✓ The camp site shall provide information to the guests on its environmental policy, including safety aspects. Information shall be actively given to the guests at the reception, together with a questionnaire covering their views about the environmental aspects of the camp site. Notices inviting guests to support the environmental objectives shall be visible to the guests.

4.2.4 Impacts on wildlife and ecosystems

Disturbance to wildlife may be caused more by the equipment people use in association with recreational activities, than by the people themselves. Noise can be extremely alarming for animals. And various forms of pleasure craft can affect bird life merely by their presence.

Mitigation measures.

✓ Put regulations to control the amount of noise from the camping activities.

4.2.5 Impacts on sanitation systems

The litter and human waste left behind by tourists create a sanitation problem in many protected areas, which can affect local populations. Garbage seriously affects the sanitation aspects of natural bodies of water (both surface and subterranean), as well as soil, vegetation, cultivation, and the air we breathe.

It is important to separate organic from inorganic waste. Organic waste may be processed and turned into compost (an excellent fertilizer for parks and gardens). As regards inorganic waste, it is important to warn tourists against throwing away film and cigarette wrappings, beer cans, plastic cups and other containers, etc.

The only way to truly avoid environmental harm from waste is to prevent its generation. Pollution prevention means changing the way activities are conducted and eliminating the source of the problem. It does not mean doing without, but doing differently. Preventing waste pollution from litter caused by disposable beverage containers does not mean doing without beverages; it just means using refillable bottles.

Waste prevention leads to thinking about materials in terms of **reduce**, **reuse and recycle**. The best way to prevent pollution is not to use materials that become waste problems. When such materials must be used, they should be reused on site. Materials that cannot be directly reused should be recycled.

Mitigation measures to minimize the effects of wastes to sanitation

Following, the appropriate actions are proposed to be taken into consideration from the camp site manager:

- ✓ Promote separate collection of waste at source, so as to allow recycling and appropriate disposal;
- ✓ Ensure proper disposal of hazardous waste;
- ✓ Maximize recycling and appropriate disposal;
- ✓ Ensure that waste shall be transported to the appropriate disposal sites;
- ✓ Avoid unnecessary production of waste;
- ✓ Reduce the production of organic waste;
- ✓ Reduce voluminous waste.

The following waste prevention strategies should be generally applied:

• Use products that minimize waste and are nontoxic

- Compost or anaerobically digest biodegradable wastes
- Reuse materials on site or collect suitable materials for offsite recycling
- Ideally, nothing should be brought into an ecotourism development that is not either durable, biodegradable, or recyclable
- Materials should be purchased locally whenever possible (locally produced goods need less transport and less storage and should have less packaging waste)
- Efficient recycling requires sorting of materials; convenient bins should be provided at the facility for the materials being recycled

4.2.6 Aesthetic impacts on the landscape

Irresponsible and/or uncontrolled tourism activity can have serious negative aesthetic impacts on the landscape that will undoubtedly mar the experience of the nature-loving tourist. The most common of these impacts are due to litter, particularly along roads or trails. Bottles, tin cans, paper and plastic bags, and excess food — all dropped by careless tourists — endanger the park's wildlife, and detract from the enjoyment of other, more thoughtful visitors.

4.2.7 Safety aspects impacts in camp site.

4.2.7.1 Fire accidents

It is important for a camp site to develop and maintain a comprehensive fire safety and prevention program, because often buildings are flammable, built of frame construction, used only seasonally, and in rural, unprotected locations, often also in protected areas and highly endangered woodlands. Fire prevention and safety therefore become a top priority. Fire can be external (fire from the national park) or fire can be internally generated.

Mitigating fire incidences

The campsite design and construction should include emergency fire-fighting equipment (availability of extinguishers, their location, accessibility and maintenance, etc.), the presence and characteristics of an acoustic alarm system, the provision for alerting the emergency services, training of staff in emergency procedures (instruction and training exercises).

4.2.7.2 Security to the visitors.

Security of the camp property, staffs and visitors will be of utmost significance. The tourist within the campsite must be assured of their security all the time. The proponent needs to employ security guards from a reputable security firm who should guard the camp around the clock. The project management should liaise with police for any security reinforcement if need be.

4.2.7.3 Danger from Wild Animals

Usually wild animals will not venture into the area frequented by humans. However this cis located across river from an elephant water drinking point. The Athi river is also home to crocodiles and hippos which we also observed during this EIA.

Visitors are not allowed to take unaccompanied walks along the river or into the park.

4.2.7.4 Risk of Athi River Floods.

The floods from the river have overrun this camp only 2 times during its existence, and the two times the flooding was a national phenomenum caused by El-nino rains. During such occurrences the camp is closed up entirely.

4.3. Human/ Wildlife Conflicts in the Tsavo.

There are no recorded cases of human/ wildlife conflicts in this region of the Tsavo, mostly due that there are no human communities living here. However the presence of the camp may cause congregation of wildlife especially monkeys and hyenas near the permanent tented camp and dumpsites due to presence of food stuffs and food wastes. This may cause poisoning of animals by litter.

To mitigate this impact:-

- Food stuff should be kept in well protected stores.
- They foodstuff waste should be dumped in well protected, fenced dumpsites or where possible buried.

4.4 Camp decommissioning

In case the facility proponent will wish to wind up the Tented Campsite, the following procedure will be used.

- a. Notification to the affected parties and provision of recommendations

 A prior notification to all the affected parties including customers, suppliers and the workers among others shall be made early enough. It is suggested that a notice of not less than six months be given.
- b. All permanent structures should be pulled down and the materials sorted out into reusable materials and recyclable materials and non recyclables.
- c. The pebble works should be carefully removed and vegetation allowed to grow back.

CHAPTER FIVE

ENVIRONMENTAL MANAGEMENT PLAN AND MONITORING PLAN (EMP)

Environmental management plan (EMP) involves protection, conservation and sustainable use of various components of the environment. The EMP for the proposed project provides all the details of the project activities, impacts, mitigation measures, time frame, cost, responsibility and commitments proposed to minimize the environment impacts of the camping activities.

Table 6.0 environmental management and monitoring plan for minimizing socioeconomic and environmental effects during and after implementation of the camping site.

Environmental and	Possible impacts	Proposed mitigation	Responsibility	Time frame	Cost
social issue		measures			(Ksh)
Soils removal during	Soils erosion	➤ At least 90% of the	Project	During	10,000
excavation and	Burying the productive	camp site area surface	proponent	construction	
compaction during	top layer	will not covered with			
the setting up of the	Destruction of	asphalt/cement or	contractor		
camps structures	vegetation at the site.	other sealing			
foundations.		materials, which			
		hinder proper drainage			
		and airing of the soil.			

➤ The number of paths
around the vegetated
area will be
minimized.
➤ Movement of visitor
during camping will
be monitored to ensure
that they do not go
beyond designated
areas.
> The no of vehicles into
the site should be kept
at a minimum and
parked in the
designated areas.
➤ The soil excavated
will be placed in areas
where it does not bury
the fertile upper layer

			or disposed off safely.			
Water resources	Pollution of nearby Athi	>	At least 90% of the	Project	During	100,000
degradation	River from waste water		camp site area surface	proponent	construction	
	from the sanitary		will not covered with			
	facilities and surface		asphalt/cement or	contractor		
	run-off.		other sealing			
	Water borne diseases to		materials, which			
	communities living		hinder proper drainage			
	downstream of the camp,		and airing of the soil.			
	and the wildlife residents		This will ensure			
	of the river eco system.		surface run-off is			
			minimized thereby			
			reducing pollution of			
			nearby surface water			
			resource.			
		>	The cleaning of cars			
			shall be permitted only			
			in areas, which are			
			specially outfitted to			
			collect the water and			

		>	detergents used and convoy them to the foul water disposal system. Use of septic tanks to dispose off waste			
			water which eliminates surface flow of effluents and avoid ground water and surface water pollution.			
Destruction of Vegetation	 Destruction of vegetation during construction phase. Compaction of soil layer making emergence of vegetation difficult. Use of wood fuel reducing the plant 	✓	There should be minimal controlled clearance of vegetation from the site. Re-vegetation of all disturbed areas with common grass,	Project proponent contractor	During construction	5,000

population in the area.	shrubs and trees to
Growth of opportunistic	restore the site back to
species. (Such species	its original condition
can be observed along	and prevent soil
the murram road into the	erosion and growth of
Camp.	opportunistic species.
	✓ Provide information to
	the guests on its
	environmental policy
	and call on them to
	support environmental
	conservation.
	✓ Discourage guests
	from feeding animals
	especially the
	monkeys so that not to
	create animal
	dependency on
	humans.

Solid waste.	Change of aesthetic	✓ Promote separate Project During 200	00 per
	beauty of the landscape.	collection of waste at proponent operation of mo	onth
	Pollution of surface	source, so as to allow campsite for	•
	water resource.	recycling and Camp gar	rbage
	Diseases to the residents	appropriate disposal; manager col	llection
	• Foul smell	✓ Ensure proper disposal ser	rvices
		of hazardous waste;	
		✓ Maximize recycling	
		and appropriate	
		disposal;	
		✓ Ensure that waste shall	
		be transported to the	
		appropriate disposal	
		sites;	
		✓ Avoid unnecessary	
		production of waste;	
		✓ Reduce the production	
		of organic waste;	

			✓	Reduce voluminous waste.			
Hazare 1. 2. 3.	Fire accidents in the camping site	 Loss of property. Injury /loss of life to staffs and visitors Loss of biodiversity. 	\[\lambda \]	Create a fire proof buffer zone around the camp periphery and keep clear of all flammable materials. Equip the camp with emergency fire fighting equipments. Provide alarms for emergency services. Train the staffs on emergency procedure in incidence of fire. Employ security guards.	Project proponent	During construction During operation of camp site	500,000
			✓	Liaise with police for			

			security backup			
Wild life	Migration of animals	✓	Put regulations to	Project	During	No cost
	from this part of the		control the amount of	proponent	construction	
	National park due to		noise from the			
	noise from campsite.		camping activities.	contractor		
	Injuries to human who	✓	Walks and drives into			
	venture into wildlife		the wildlife viewing			
	zones		areas should be guided			
	Congregation of wildlife		and guarded.			
	especially monkeys and	✓	Food stuff should be			
	hyenas near the		kept in well protected			
	permanent tented camp		stores			
	and dumpsites due to	✓	They foodstuff waste			
	presence of food stuffs		should be dumped in			
	and food wastes,		well protected, fenced			
	poisoning of animals by		dumpsites or where			
	litter.		possible buried			
		٠				
		✓	Litter should be			

	carried until it is safety		
	disposed of in a		
	designated place at the		
	camp.		

CHAPTER SIX

COMPLIANCE

Environmental standards and regulations law and policies that the proponent must comply with during the construction and operation of the Loyk Tsavo Tented Camp Project.

Parameter	Statutory	Statutory regulator	Actions/Findings	Comments
	provision			
Site location	The Physical	- KFS/ KWS	- Proposed project is on an	The proposed campsite is suitably
	Planning Act cap	- Ministry of local	ideal land for camping	located.
	286	Government	within the Tsavo National	
		- NEMA	Park.	
Operation licenses	Local Authorities	- Ministry of local	- Proponent is liaising with	
	By-laws	government	the licensing authority.	
		- Ministry of		
		Tourism		

		- Registrar of		
		companies		
		- NEMA		
Health and Safety	- The Public	- Ministry of Labour	- Certificate of compliance	
regulations	Health Act Cap	-	to be issued	
	242 and	- Ministry of health	- Workers protected using	
	- Work Place	- NEMA	protective clothing and	
	Injuries and		shoes.	
	benefits Act,			
	2007			
VAT, Income Tax	- Kenya Revenue	- Kenya Revenue	All necessary taxes will be	Every year the Company should pay
and Excise Duty	Authority Act	Authority	paid	for all the necessary licences
payment	- Customs and	- Kenya Ports		
	Exercise Duty Act	Authority		
	Cap 427	- NEMA		
	- Value added			
	Tax Cap 476			
Wages and Salary	Employment Act	Ministry of Labour	Wages and salaries should be	Consult with Ministry of Tourism
payment	Cap 226		within the minimum wages	
			guidelines	

Workmen's	Workmen's	-	Ministry of labour	A provision should be made	
compensation during	compensation Act	-	NEMA	during the campsites	
accidents	Cap 236			operations	
	Work Injury and				
	Benefits Act				
	2007				
Annual maternity	Employment Act	-	Ministry of labour	A provision should be made	
leave, weekly rest,	Cap 226	-	NEMA	during the campsite's	
provident fund or				operations	
super annulations					
scheme					
Housing	Employment Act	-	Ministry of labour	The employment to provide	- Provision for housing during the
	Cap 226 section 9	-	NEMA	housing or provides housing	construction period and during
				allowance	operation period.
					- Clean water to be provided.
Medical attention	Employment Act	-	Ministry of Labour	First aid facilities to be	
	Cap 226	-	NEMA	available during installation	
				and during the operation of	

				the hotel	
Records of	Employment Act	-	Ministry of Labour	Records to be kept by	To be observed
employees and casual	Cap 226 section 38	-	NEMA	employer for inspection by	
labourers				authorized persons	

Storm water drainage	- The Malaria prevention Act Cap 426 - EMCA 1999	Ministry of HealthMunicipal CouncilNEMA	Proper drains to be excavated.	-
River floods flow	- The Public Health Act Cap	- NEMA - Ministry Of	River flow gauging Information on upstream	-
	242 and	Environment and	rainfall.	
	Work Place	natural Resources		
	Injuries and			
	benefits Act, 2007			

Sanitary Services and refuse Handling	Local Government Act Cap 265	-	MCN NEMA	- Dustbins to be provided into the compound for collection of any waste generated - Waste to be separated in the following categories: Vegetative waste - Glass and broken bottles - Metal and plastic waste
Safety precaution against falls, fires and accidents	The Work Place Injury Benefits Act,	-	Ministry of labour MCN NEMA	- Minimal provision for fire escape and extinguishing to be placed in the offices, and restaurants - Finish floors with non slippery material -Guests should be strictly prohibited from smoking in

			the tents.
- Security	- Bill of right as	- Ministry of labour	- Provide clean drinking
- Laundry facilities	provided for in	- NEMA	water
should be provided.	the constitution "		- Employ guards and
- Provision for first	Right to be		watchmen
aid Box	protected by the		- Provide first aid kits for
	state"		every tent and room.
	The		
	Work Place Injury		
	Benefits Act,.		

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The Camps History.







