

**ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR  
THE PROPOSED NGONG HILL ECO-LODGE  
Situating at Ngong Hills Forest**

**This Environmental Impact Assessment (EIA) Project Report is submitted to Kenya National Environmental Management Authority (NEMA) in conformity with the requirements of the Environmental Management and Co-ordination (Amendment) Act, 2015 and the Environmental (Impact Assessment and Audit) Regulations, 2003**


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## SUMMARY

The report is prepared in conformity with the requirements stipulated in the Environmental Management and Co-ordination (Amendment) Act, 2015 and the Environmental Impact Assessment and audit Regulations 2003, Regulation 7 (1).

Kenya Forest service based on the recommendation of Ngong Hills Forest Participatory Management Plan (2017 - 2021) has granted special use licence to Secure Homes Ltd, a limited company duly registered in republic of Kenya under certificate No. C116057. The license was issued following Secure Homes Limited successful bid for tender No. KFS/18/2016-17 for Development, Operation and Management of Ecotourism Facilities known as Ngong Hill Ecolodge within Ngong Hill forest station, Kajiado County. The license comprising 20 acres grant the following activities;

Accommodation facility for hosting not more than 25 overnight guests

- Restaurant
- Recreation facility for days visitors
- Environmental/ cultural educational centre.

Hospitality outlook 2016 edition report covering period 2017-2021 has motivated Secure Homes Ltd to start this new venture in hotel industry. The report gives a general picture that tourism industry continues to be one of the fastest-growing and most vibrant sectors of regional economy.

### **Overview of the project**

The facilities proposed to be available for the ecolodge include;

- i. A restaurant to serve resident guests and other guests
- ii. A Bar for both residents and other day guests
- iii. Visitor's rooms with maximum capacity to accommodate 25 guests.
- iv. Bandas in open ground to provide wilderness experience
- v. Fitness facilities like Gym, SPA to promote healthiness of the guests
- vi. Swimming pool
- vii. Amphitheatre for outdoor functions.
- viii. Nature walk in the island natural forest found in Ngong Hills forest
- ix. Sports facilities like hiking tracks, excursions within terrain using horses , physical fitness using bicycles in difficult terrain etc

### ***Design concept***

African traditional architecture with eco-friendly low impact materials and technology will be used. Due to cold weather, the chalet will be made of wood timber logs and mud with minimal cement use in the club houses and reinforcement for the wood gum

posts/poles supporting the structures. Due to structural requirement the main building will have normal stones and concrete. River stones will be used to wall kitchen and washrooms of the chalets with mazeras stones to cover the floor. To blend it with the environment, both interior and exterior painting will adopt African art with colours blending well with existing vegetation and terrain.

### *Landscaping*

Sustainable landscaping solutions will be used to reduce negative environmental impact by avoiding artificial landscaping. The landscape is intended to appear as natural as possible in order to blend with the surrounding forest. Care will be done during the landscape design and implementation to control:-

- degradation of the surrounding ecosystem;
- harm to human health especially in the case of degraded drinking water supplies;
- harm to flora and fauna and their habitats;
- sedimentation of surface waters caused by storm-water runoff;
- chemical pollutants in drinking water caused by pesticide runoff;
- air and noise pollution caused by landscape equipment;
- invasion of forest by non-native species and over-use of limited natural resources.

### *Cost of developing facility and funding*

To develop the facility a capital of 80 million will be required of which 70 million will be loans from bank while the balance will be generated from own capital. The construction of the facility will be in two phases; phase 1 will cover construction of restaurant, terrace, kitchen, conference room (capacity of 100 persons), toilets and offices. It also includes construction of tax shop and basic landscaping of open ground for events hosting. Phase 1 will cost approximately 40 million. The financing will be from bank loan Ksh 35 million and own funds Ksh 5 million. The lodge construction is expected to take one year and immediately will be opened for operation.

### *Marketing*

The ecolodge will be marketed as a unique ecotourism facility located on hill next to the city centre. The unique features of the ecolodge include; proximity to town centre, on a hill with cool environment, good security as its located in a protected area by Kenya Forest service, unique aesthetics mainly from KENGEN wind project, area viewpoint for Nairobi on the North eastern side and great rift valley on the South western side. In addition the visitors will have access for nature walks within the dense island of Ngong Hill forest and open bushland down slope facing rift valley. Facilities like bicycling and

horse riding will be available. The amphitheatre will provide a unique experience among corporate and groups. This type of facility is not available elsewhere in Nairobi and will have capacity of 2000 people and with options of partitioning to smaller units. It will also be available as open ground or covered with customized tents to reduce wind.

The targeted market will be middle and upper class community living in Nairobi and other parts of the country. This facility also target corporate bodies for team building and conferences. The ecolodge will be suitable for local and international athlete’s using Ngong Hill for high altitude training.

Environmental impact and mitigation

<b>Potential Negative Environmental impact</b>	<b>Mitigation Measures</b>
Clearing of natural vegetation leading to environmental degradation	<ul style="list-style-type: none"> <li>• Minimal clearing of vegetation is targeted through constructing building in non vegetated areas</li> <li>• The project proponent will rehabilitated all areas that have been cleared with appropriated indigenous tree species</li> <li>• The project proponent will also rehabilitate other existing degraded areas to improve conservation of the forest within licensed area and surrounding areas.</li> <li>• The project proponent will establish a tree nursery</li> </ul>
Occupational Health and Safety (OHS): During construction, there will be increased dust, noise and air pollution	<ul style="list-style-type: none"> <li>• The contractor should have workmen’s compensation cover</li> <li>• A first aid kit should be provided within the site</li> <li>• Adequate sanitary facilities will be provided and standard cleanliness maintained.</li> </ul>
Increased Water Demand: The proposed development may cause some strain to the existing water source since construction activities are known to be heavy water consumers	<ul style="list-style-type: none"> <li>• Install water meters at every department for monitoring monthly water consumption.</li> <li>• Roof catchments will be provided with rainwater harvesting systems to enhance collection and storage of rain water.</li> <li>• Encourage water reuse/recycling during both construction and operational phases.</li> <li>• Avoid wasting the water supplied to the site.</li> <li>•</li> </ul>
Construction Materials: Wrong construction materials could have	<ul style="list-style-type: none"> <li>• Quality should be thoroughly controlled through regular tests.</li> <li>• Only materials certified by KEBS should be used</li> </ul>



<b>Potential Negative Environmental impact</b>	<b>Mitigation Measures</b>
negative visual and ecological effect like bright iron sheets	<ul style="list-style-type: none"> <li>• for construction</li> <li>• Materials should be sourced from licensed dealers and suppliers</li> </ul>
Increased Power Demand increase demand of energy in the country which could increase of use on non renewable energy which has negative environmental impact	<ul style="list-style-type: none"> <li>• All electrical appliances should be switched off when not in use.</li> <li>• Put off all lights when not in use.</li> <li>• Use a design that is environmentally sound to avoid use of electricity for air conditioning</li> <li>• Use energy conserving electric lamps for general lighting.</li> <li>•</li> </ul>
Construction Waste: This could introduce non biodegradable material in forest area and sometimes unnecessary heaps of soil	<ul style="list-style-type: none"> <li>• The contractor or proponent should work hand in hand with private refuse handlers and the Narok County to facilitate waste handling and disposal from the site.</li> <li>• The waste materials should be properly segregated and separated to encourage recycling of some of them with the approval of the site engineer.</li> </ul>
Pollution and health Hazards - Dust and other construction waste - Noise generation from construction activities.	<ul style="list-style-type: none"> <li>• Minimal interference with existing physical features</li> <li>• systematic excavation of site without raising dust and placing unpleasant heap of soil</li> <li>• All loose soils will be compacted to avoid any wash off</li> <li>• Storm water and other drainage constructed to reduce incidences of ponding and landscaping done to maintain aesthetics</li> </ul>
<b>Noise pollution and excessive vibrations</b>	<ul style="list-style-type: none"> <li>• Comply with maximum permissible noise and vibration levels for constructions sites as per Second Schedule of the Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009</li> <li>• All construction works and delivery of materials shall be carried out during the day between 8:00 AM and 5:00 PM</li> <li>• Prescribe noise reduction measures appropriately e.g. restricted working hours, material transport hours and</li> </ul>

<b>Potential Negative Environmental impact</b>	<b>Mitigation Measures</b>
	<p>noise buffering.</p> <ul style="list-style-type: none"> <li>• Install portable barriers to shield compressors and other small stationary equipment where necessary and locate stationary noise sources as far from existing sensitive receptors as possible.</li> <li>• Minimize vehicle and machinery idling time by switching off engines when not in use.</li> </ul> <p>Ensure use of well serviced and maintained vehicles and equipment.</p>
<p>Traffic along access road: This could affect wildlife within the forest.</p>	<ul style="list-style-type: none"> <li>• Transportation hours during construction shall be restricted to the period between 8:30 a.m. and 3:30 p.m., Monday through Friday, unless approved otherwise.</li> <li>• Sensitize truck drivers to avoid unnecessary road obstruction</li> <li>• Cover all trucks hauling soil, sand and other loose materials to avoid spillage and dust emissions that may interfere with smooth motoring</li> <li>• Day facilities will operate from 7am to 7pm. Only residents and staff will be allowed after 7pm.</li> </ul>

**Recommendations'**

The results from EIA study show that the proposed ecolodge development project has minimal impacts on the environment. Implementation of an Environmental Management Plan will assist in dealing with environmental issues during the project cycle. There are also guidelines for addressing environmental health and safety. This project is recommendable for approval by the National Environment Management Authority (NEMA) for issuance of an EIA license subject to annual environmental audits after operating for one year. This will be in compliance with the Environmental Management and Coordination Act of 1999 and the Environmental Impact Assessment and Audit regulations, 2003

## ACRONYMS

CFA	Community Forest Association
CITES	Convention on International Trade in Endangered Species of wild Fauna and Flora (S)
E.I.A	Environmental Impact Assessment
EMCA	Environment Management and Coordination Act
EMP	Environmental Management Plan,
FAC	Focal Area Committee
KENGEN	Kenya Electricity Generation
KFS	Kenya Forest service
KPLC	Kenya Power and Lighting Company ()
NEMA	National Environment Management Authority
OSHA	Occupational Safety and Health
PFMP	Participatory Forest Management Plan
UNCED	United Nations Conference on Environment and Development
VAT	Value Added Tax
WRA	Water Resource Authority

## CHAPTER 1: INTRODUCTION

### **1.1 background**

Secure Homes Ltd (proponent) has identified an investment opportunity in Ngong Forest station. They intend to develop an Eco-lodge with accommodation facility for hosting not more than 25 overnight guests, Restaurant, Recreation facility for day's visitors, and Environmental/ cultural educational centre.

The sustainability of the ecosystem requires the balance between human settlement development and the natural ecosystem, which is a symbiotic relationship. This can be achieved through careful planning and the establishment of appropriate management systems. In modern times, the need to plan activities has become an essential component of the development process. Consequently a number of planning mechanisms have been put in place to ensure that minimum damage is caused to the environment. Environmental planning is also integrated with other planning processes such as physical planning, economic planning, and development planning. Environmental Impact Assessment (E.I.A) is considered part of environmental planning. EIAs are undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority. In Kenya, the competent authority is the National Environment Management Authority (NEMA).

As part of the EIA process, it is necessary to devise alternatives to avoid undesirable impacts. Besides the alternative, identification of impacts may also lead to the development of mitigation measures i.e. means of reducing the impacts. As a tool of environmental planning, E.I.A is therefore precautionary in nature. E.I.A is neither antidevelopment nor does it stop actions which impact the environment. It only requires that those impacts be considered. Most development activities impact the environment hence a "no impact"

In this development proposal, the proponent intends to develop an ecolodge in Ngong Hill Forest Block of Ngong Forest Station with ownership through a licence agreement with Kenya Forest Service, the owner of the land through gazette notice No. 90 of 1985. The license agreement is for a term of 25 years from the date of execution and may be renewed for such further terms upon mutual agreement of both parties.

It is under this premise that the proponent deemed it necessary to carry out an Environmental Impact Assessment (E.I.A) for the proposed project. Environmental Impact Assessment studies were carried out as per the provisions of the Environmental (Impact Assessment and Audit) Regulations, 2003 .This report will be used in various decision making platforms including consideration for issuance of an EIA license by the National Environment Management Authority (NEMA).

## **1.2 Project objectives**

The Kenya Forest Service has issued Secure Homes Limited with a license comprising 20 acres granting authority to develop and operationalize the following activities;

- Ecolodge with accommodation facility ( Ecolodge) for hosting not more than 25 overnight guests
- Restaurant for day visitors
- Recreation facility for days visitors
- E environmental/ cultural educational centre.

The license agreement is for a term of 25 years from the date of execution and may be renewed for such further terms upon mutual agreement of both parties

## **1.3 Project justification**

GDP

in its endeavour to increase ecotourism visitation to a number of forests areas and reserves and increase its revenue advertised for year 2017 prospectus tender for the development of Development, operation and management of Ngong Hills Ecolodge in Ngong Hills Forest station to competitive bidding process . Secure Home applied for the tender No. KFS/18/2016-17 and was successful. To ensure observation of good practices KFS has developed “Responsible tourism guidelines for ecotourism licensees” document that must be observed when developing the Site Specific plan and Community participation Plan.

The Eco-lodge will be developed on the said piece of land that the developer has leased from Kenya Forest Service. The Site management plan and community participation plan has been forwarded to Kenya forest service as per requirement of the license agreement. The Architectural plans have been submitted for approval by all the relevant authorities. Building & civil works plans have been submitted to Narok County for approval. For full implementation of the project, the following prerequisites will be met:

- Acquisition of funding to complement the developer’s contribution.
- Appointment of established competent and capable contractors and consultants to undertake the development
- Acquisition of approvals from the Narok County
- Acquisition of NEMA approval. After the pre-requisites are met the proponent will then commission the development as is planned.

## **1.4 Objective and Scope of Study**

The objective of the E.I.A Study report is to carry out an Environmental Impact Assessment (E.I.A) for the proposed project, to meet the environmental compliances laid down by the Ministry of Environment. The scope of report would be as per the E.I.A guidelines outlined by the National Environment Management Authority (NEMA), for new construction projects. Generally, essentially the purpose of this E.I.A is to inform the decision makers, regulatory agencies, required to authorize actions, and the public regarding the anticipated environmental impact of the proposed Eco-logs, and possible ways to mitigate them. The report includes a description of the project setting, a comprehensive evaluation of the site, baseline studies, predicted environmental impacts and governing legislations. An Environmental Management Plan (EMP) is prepared, which includes mitigation strategies, as well as measures and recommendations for the effective management of the impact of the project on the natural, social and economic environment.

## **1.5 overview of hospitality industry in Kenya**

The year 2016 edition of Hospitality Outlook covering the period 2017-2021, give a general picture that tourism industry continues to be one of the fastest-growing and most vibrant sectors of Africa's economy. The sector has significant potential to create jobs, uplift inclusive economic growth across the continent, and reduce poverty. The paper notes, despite unprecedented levels of political and economic uncertainty, tourism has proven to be resilient; there are opportunities for industry players to work with government to further grow the market. Kenya benefited from the lifting of travel advisories to that country and growth in domestic tourism in a strong economic environment, as well as a series of incentives introduced by the government.

The Kenyan Government introduced a series of incentives to make Kenya a more competitive destination for safari tourism. Kenya also hosted major global events, including the Tokyo International Conference on African Development, the United Nations Conference on Trade and Development, and the Africa Academy of Management Biennial Conference. Kenya's security sentiment has improved significantly with the capital city hosting major global events on trade and investment and hosting key global figures such as former US president Barrack Obama. Kenya was also named the ninth top destination in the world and the top destination in Africa by Rough Guides in the United Kingdom. Helped by these developments, foreign visits to Kenya rebounded from 2016. In 2017 Accommodation and food service activities sector grew by 14.7 per cent while tourism earnings increased by 20.3 per cent to KSh119.9 billion.

## **1.6 Impact of growth of national economy on tourism sector**

Kenya's domestic economy, which has been healthy in recent years, further improved with a 5.8% rise in real GDP, its largest increases since 2013. This increase contributed to a 33% rise in domestic tourism. Guest nights, which declined a cumulative 15% between 2011 and 2015, also rebounded with a 2.9% increase in 2016. The average room rate edged up 2.2% in 2016 and room revenue grew 4.9%.

Kenya's economy is expected to remain strong, growing at a 6.3% compound annual rate over the next five years, more than twice the expected growth in global GDP. Consumer price inflation, however, is accelerating. After averaging 6.4% over the past four years, inflation topped 11% in April 2017 and averaged 9.4% for the first four months of the year. In its efforts to boost tourism, the government eliminated 16% VAT on park entrance fees, and visa fees for children. The Kenya Wildlife Service park fees have also been reduced. The government also waived the landing fees for charter flights at the Mombasa and Malindi airports and authorized 4.5 billion Kenyan shillings (US\$44 million) in the national budget to promote tourism.

Helped by an increase in flights to Kenya, Hospitality outlook 2017-2021 predicts lower park fees, a stable economy, and ongoing growth in domestic tourism, we project guest nights to build on their recent momentum and rise at a 4.1% compound annual rate during the next five years. Occupancy rates will be expected to decline over the next two years before edging up from 2019. The hotel occupancy rate will rise to 57.4% in 2021, up from 52.9% in 2016. The number of available rooms projected to increase from 18 600 in 2016 to 21 000 in 2021, a 2.5% compound annual increase.

## **1.7 Ngong Hill Participatory Forest Management Plan**

The management plan was formulated through a consultative process initiated by KFS, Ngong Hills Metro CFA, KWS, University of Nairobi, and KENGEN. The purpose of Ngong Hills Forest Participatory Management plan is to provide a management framework/guideline on sustainable management and conservation of Ngong Hills Forest Reserve. This plan is implemented through KFS and CFA as the two principle implementing organizations with support from the other stakeholders and will culminate in a management agreement being signed between the two.

Nine Forest management programmes have been designed to improve the management of Ngong Hills forest so as to achieve the desired overall objective of the plan. Wildlife management and ecotourism development is one of the programmes. This programme aims at enhancing the ecotourism potential of Ngong Hills, to make it a world class recreational retreat for local, national and international tourists while at the same time ensuring that the natural habitat is conserved and protected. The development of Ngong Hills Ec lodge is based on these programme recommendations and is envisaged to provide a world class recreational facility and support livelihood of local community.

## 1.8 Nature of the Project

The International Ecotourism Guidelines book (Mehta et al, 2002) define an ecolodge as a 5-75 room low-impact nature based financially sustainable accommodation facility that helps protect sensitive neighboring areas; involves and helps benefits local communities; offers tourists an interpretative and interactive participatory experience; provides a spiritual communion with nature and culture and is planned, designed, constructed and operated in an environmentally and socially sensitive manner”.

This E.I.A Study report is based on information and consultations with the project proponent, the Architects drawings and details contained in the Drawings are attached at the Annex.

The licensed project area has two blocks separated by a small valley of less than 500m. Block A (3.44 ha) comprises of area earmarked for ecolodge while block B (4.26 ha) is earmarked for recreation facility;

**Proposed development of block A:** Construction and operationalization of eco-lodge with following facilities;

- Restaurants
- Kitchen (external and internal) and stores
- Lobby
- Massage saloon
- Guest rooms
- Toilets/ bathrooms
- Corteges
- Swimming pool
- Conference / boardrooms
- Fitness gym
- Parking

**Proposed development of block B:** Construction and operationalization of recreation facility for days’ visitors with the following facilities;

- Restaurants
- Amphitheatre
- Public toilets
- Zip line
- Staff houses
- Horse riding facilities
- Mountain bicycle riding facilities
- Small group camping
- Team building facilities
- Play field
- Environmental/ cultural educational centre.
- Community curio bandas



### **1.8.1 Terms of Reference**

The terms of reference for the preparation of an E.I.A study report were:

- A critical look into project objectives
- The proposed location of the project site
- Description of project objectives
- A concise description the national environmental legislative and regulatory framework, and any other relevant information related to the project
- Evaluation of the technology, procedures and processes to be used in the implementation of the project
- Evaluation of materials to be used in the construction and implementation of the project and their extended sources
- Description, evaluation and analysis of the foreseeable potential environmental effects of the project broadly classified into physical, ecological/biological and socioeconomic aspects which can be classified as direct, indirect, cumulative, irreversible, short term and long-term effects.
- Evaluation of the products, by-products and wastes to be generated by the project
- To propose/recommend a specific environmentally sound and affordable liquid and solid waste management system
- Evaluation and analysis of alternatives including the proposed project, project alternative, project site, design and technologies
- An Environmental Management Plan (EMP), proposing the measures for eliminating/minimizing or mitigating adverse impacts on the environment,
- Propose measures to prevent health and safety hazards and to ensure security in the working environment for the employees, residents and for the management in case of emergencies. This encompasses prevention and management of the foreseeable accidents and hazards during construction phase.

### **1.9 Scope of Report**

The Environmental Impact Assessment for the proposed eco-lodge include: -

- Provision of a comprehensive description of all components of the project and the work to be undertaken during the project.
- Overall assessment of the existing physical and biological environment of the proposed development area.
- Present a socio-economic and cultural evaluation of the proposed development area and its surroundings.
- Identification and assessment of potential impact of the project on the surrounding area, particularly as it relates to the cumulative impacts of this project on any existing developments.
- Assessment the drainage structure, particularly with respect to existing natural drainage channels, proposed man-made drainage/water features or any

proposed changes in topography. Potential impacts of increased surface runoff and sediment loading will also be addressed.

- Description of the construction methods to be employed during the proposed works. - Describe the mitigation measures to be employed during the proposed works.
- Recommendations on disposal of solid, liquid and any hazardous waste during the construction and operational phases. Determine the method, level and location of the sewage disposal facility and the potential impact of disposal on the environment.
- The timelines/scheduling for individual tasks to be undertaken. - Detail on environmental Monitoring and Management Plan.

## CHAPTER 2: METHODOLOGY

### **2.1 General Approach**

The EIA identifies potential environmental, social, and economic impacts of the proposed ecotourism facility. It identifies the positive and negative impacts of the proposed projects and proposes mitigation and enhancement measures. The studies in support of the preparation of the EIA have comprised discussions and consultations with the proponent and stakeholders; initial site reconnaissance; desk study and literature review; preparation of data collection instruments; field visits for consultations and observations; and report writing.

In order to conduct a broad based and inclusive study, the proponent and the consultant have from the onset ensured the exercise is participatory. As such, discussions have been held with community Forest Association members in the projects area and relevant stakeholders with the assistance and coordination of the proponent.

The methodology adopted for the environmental impact study consists of the following stages:

- 
- Identification of significant environmental components and assessment of their baseline (pre-project or existing) status within the study zone. This was carried out by site visits to study geographical/ topographical features followed by a study of environmental conditions at the site.
- Prediction of impacts on various identified and significant environmental parameters due to the proposed project. Data pertaining to the proposed construction activities, design capacity of the individual units, water consumption, “solid waste/sewage” generation, characteristics of disposal medium.
- Evaluation of most significant impacts and delineation of an Environmental Management Plan to mitigate adverse impacts (if any) on the quality of surrounding environment.

### **2.2 Reconnaissance Field Visits / Field Observations**

Field visits to the project areas were conducted between July and August 2017 in consultation with Forest manager Ngong Hills Forest and KFS Hqs staff. A focused field visit was undertaken to identify environmentally sensitive issues of the project areas, observations, interviews and preparation for public consultation meetings in collaboration with the KFS. During the field visits, the team took photographs of the project areas. A photograph gallery is attached as Appendix A of this report.

The last visit included the Project Architect, KFS Staff and staff from Secure Homes Ltd (project proponent) and focused on the details of the infrastructure to be developed and identification of strategies to mitigate the negative environmental impact.

### **2.3 Desk Study Review**

A desk study was conducted to establish the following:

- Outlook of hotel industry in Kenya in relation to the national economy: Several documents were perused including National Statistical abstracts, National economic survey, reports from Ministry of tourism and Hotels Outlook report.
- Forest conservation and development of ecotourism in gazzeted forest. Key documents perused included Participatory Forest management Plans, KFS strategic plan, Guidelines on development of ecotourism facilities in KFS document among others
- Review of legal instruments regulating development and management of eco-tourism facilities: This included review of Forest Management and Coordination Act 2016 among other legislations as described in chapter 5.
- Review of International Conventions Applicable in Kenya; and previous Environmental and Social Impact Assessment (ESIA) reports, Environmental Impacts Assessment (EIA) reports and Environmental Audit (EA) reports submitted to NEMA

### **2.4 Public consultation and participation**

The EIA experts have, in consultation with KFS sought the views of persons who may be affected by the proposed projects. The public consultations were preceded by the identification of stakeholders and project affected persons (PAPs). The consultation process was done in two stages

Stage 1: Consultation of Local leaders through meetings and key informant interviews of strategic stakeholders 2/8/17

Stage 2: Consultations with members of Ngong Hills Metro Community Forest Association and other leaders. 2/9/ 2017 and 6/1/2018 (minutes attached)

### **2.5 Key Stakeholder Consulted**

Consultation has been undertaken with the following key stakeholders:

- Kenya Forest Service, Survey Section
- Kenya Forest Service, Tourism development Section
- KFS, Ecosystem Conservator, Kajiado
- Forest Manager Ngong Hill Forest
- Gong Hills Community Forest Association
- KenGen Field office, Ngong Hills
- Project Architect
- Community leaving in adjacent areas to the forest
- Project Proponent (Secure Homes Ltd)

**MUTUAL AGREEMENT**

**THIS AGREEMENT** is made the 12<sup>th</sup> day of January, Two Thousand and eighteen **BETWEEN KIBIKO 'B' NALEP COMMUNITY** of P.O Box 1319..00208 NGONG HILLS in the aforesaid Republic of the one part and **KOMPASS HOTEL** of P.O Box 52317...00500 NAIROBI of the other part.

**WHEREAS: -**

1. KIBIKO B AND NALEPO COMMUNITY are Residents of Ngong Hills area.
2. KOMPASS HOTEL shall set up hotel business in the designated area of Ngong Hills in Kajiado County.

**NOW THIS AGREEMENT WITNESSETH** as follows: -

1. That the hotel in its operation in the area shall
  - a) Empower the locals by offering 1<sup>st</sup> priority employment i.e professionals, labourers, security guards etc.
  - b) Provide space for curio shops to be sold by the locals
  - c) Offer stalls space for locals
  - d) The hotel will specifically pump its water from Lekuruki Bore Hole up to the hill and the locals will benefit from the water through gravity from the hill.
  - e) 1<sup>st</sup> priority General supplies of hotel commodities shall also be given to the locals

Others to be considered later:-

The hotel shall offer Community social responsibility project e.g sponsorship for schools, fencing and others to be agreed upon

Signed by the said

	<i>NAME</i>	<i>ID. NO.</i>	<i>Sign</i>
Community rep	1. <u>Simeon Muthila</u>	<u>28337923</u>	<u>[Signature]</u>
	2. <u>Joseph Kiaraka</u>	<u>2715501</u>	<u>[Signature]</u>
	3. <u>JAMBI R. SIKU</u>	<u>268327</u>	<u>[Signature]</u>
Kompass Hotel	<u>JOSEPH KAMAU MUKHINA</u>		<u>[Signature]</u>
Witness	<u>PHILIP KISHA</u>		<u>[Signature]</u>
	<u>JIMMY GITTHIGA</u>		<u>[Signature]</u>
ADVOCATE.....			

**O. H. OYUGI**  
Advocate  
P. O. Box 6218 GPO  
NAIROBI



### **3.2 Project Specifications**

The project site is located in Ngong Hill Forest where main activity is forest conservation.

An experienced consultant has made the final design of the project and the construction will follow details as given by the engineer on site

- The structures will be founded on solid ground using reinforced concrete strips laid on concrete blinding. The laying of the foundation will follow details as given by the structural engineers on site
- The developments will be constructed using local undresses stones, bound by mortar of concrete and sand
- Drainage channels will be provided leading from surface run-off generation areas such as car parking and all paved areas into natural drainage located on the lower side
- Water supply will be connected to the developments from boreholes and water tanks
- Waste water will be channeled to a waste water treatment plant which will be constructed on site

More/ fine details for the development and specifications for the features of the proposed project have been given in the copies of the architectural and site drawings attached in the Annex.

### **3.3 Basic Infrastructure Requirements**

The project will be constructed based on applicable standards of Kenya and any other standards which may be incorporated. The constructions will as well incorporate environmental guidelines, health and safety measures. The following are the main infrastructural requirements:

#### **3.3.1. Construction Material**

The major materials required for construction of the proposed project will be stones, cement, flooring tiles/stones, wooden poles, timber, sanitary and hardware items, electrical fittings, water and roof materials. All the items to be used in the proposed project will be as per the National Building Code specifications.

- Construction machines will include machinery such as trucks, concrete mixers and other relevant construction equipment. These will be used for the transportation of materials, mixing of materials and clearing of the vegetation and resulting construction debris. Most of the machinery will use petroleum products to provide energy.
- Most construction materials will be sourced locally but where the contractor deems necessary will import from other authorized countries especially the finishes.
- A construction labour force of both skilled and non-skilled workers will be involved.

### **3.3.2 Water**

During the construction stage, water will be sourced from existing boreholes in the forest. The Boreholes are owned by community and KENGEN and a contract agreement will be negotiated and signed on use and compensation. To supply the anticipated demand during operations, water tanks for water storage will be constructed/ installed.

### **3.3.3 Power**

Kenya Power and Lighting Company (KPLC) lines supply this area and there is adequate capacity to meet the demands of the facility, as well as any future expansions. Power will be supplied via a 24 kV Primary connected to the national grid. It is proposed that a back-up power supply of Diesel Generator will be installed to power critical loads only, in the event of any emergency. It is highly recommended that, these generators shall be silent sets housed in approved acoustic enclosures, so as to control the noise pollution required levels.

### **3.3.4 Parking Provisions**

There will be adequate parking provisions consisting of 3 parking bays with a corresponding capacity of 50, 100, and 150 making a total of three hundred (300) parking spaces. During construction, parking will be availed around the project site. This is crucial to accommodate vehicles and machinery delivering construction materials.

### **3.3.5 Roads and Street Lighting**

The project location is accessed through murram road passing through the forest servicing in installations found in the forest. The road is well graveled making the area accessible in all seasons. Only a small section (approximately 400m) that will be graded and murram placed on the surface. After the construction phase the Eco-lodge will have driveways for efficient movement within. There will be adequate street lighting within the project location.

## **Environmental Requirements**

### **3.4.1 Sewage System**

The proposed site lacks an existing sewer line. During construction, a temporary toilet is proposed to dispose waste from the workers. The site will have an elaborate sewer system based on the requirements of NEMA.

All required kinds of works will be done by registered expertise. The project will begin after the National Environmental Management Authority (NEMA) issues an approval to the proposed project and funds are released by the financiers. It is estimated to take approximately 4 months to complete and will be done in phases.



### **3.4.2 By Products and Disposal Methods**

In all construction projects, some waste or by products are usually produced on the project site. These wastes include; broken glasses, pieces of broken tiles, nails, pieces of broken wood and pieces of roofing materials. The contractor will emphasize on efficiency to minimize construction wastes. The removal and disposal of such refuse and other related wastes comes in handy. The contractor will work hand in hand with private refuse handlers to facilitate waste handling and disposal from the site. The wastes will be disposed off into the approved dumpsites.

## CHAPTER FOUR: BASELINE INFORMATION

### 4.1 Physical Environment

This chapter has information on the location, bio- physical, socio and economic aspects of the project area. These are elaborately discussed in order to identify areas likely to be affected as a result of project activities. This study therefore considered the physical location, climatic data, geology, drainage, infrastructure, demography and socioeconomic information of the site.

Ngong Hills block is surrounded by a wide range of both urban and pastoral areas. On the north side is the town centre of Kibiko, which is mostly a rural agricultural and pastoral area. On the North Eastern side are the town centres of Ngong, Embulbul and Veterinary. These are mostly urban centres characterized by numerous business holdings and residential housing units. On the Eastern side are the town centres of Enoomatasiani, Kiserian, Ngoroi and Ongata Rongai. On the southern side are the town centres of Olooseos, Olepolos and Kimuka. On the Western side are the town centre's of Olosho-Oibor, Saikeri and Kimuka. The Southern and Western side town centre's are mainly characterized by pastoral lifestyle which has dominated the area since time immemorial

#### 4.1.1 Topography

The general topography of Ngong is characterized by open rolling land, occasional volcanic hills and valleys. The Ngong hills forest lies between altitude 1961 and 2483 Metres a.s.l.

The geological formation in Ngong Hills Forest is mainly the Tertiary Volcanics. These give rise to rocks such as olivine basalts, phonolites, pyroclastics, volcanic ash, tuffs and trachytes. These rocks have been weathered for more than seventy million years and in some places the underlying rock formation is exposed. This weathering has resulted in formation of soils of various depth, colour, texture and drainage. These include, Leptosols, Luvisols, Andosols, Nitisols, Vertisols, Cambisols and Phaeozems. Leptosols are shallow and have low water holding capacity and hence low productivity potential. The other soils are relatively fertile and of medium to high productivity potential for both crops and livestock.

The Basement System occurs as you go southwards towards Kajiado Town. These comprise various gneises, schists, quartzites and crystalline limestones. These give rise to a variety of soils such as Ferralsols, Luvisols, Arenosols, Regosols, Leptosols, Lixisols, Cambisols and Vertisols. The Luvisols have a tendency to form a surface capping hence susceptible to soil erosion and high water run-off. The Cambisols and Leptosols are shallow to moderately deep and their main limitation for crops and vegetation growth is shallow depth and low water holding capacity. Ferralsols are deeply weathered and chemically weathered and are chemically poor; hence require high input levels to improve their soil fertility for crop production.

#### **4.1.2 Climate**

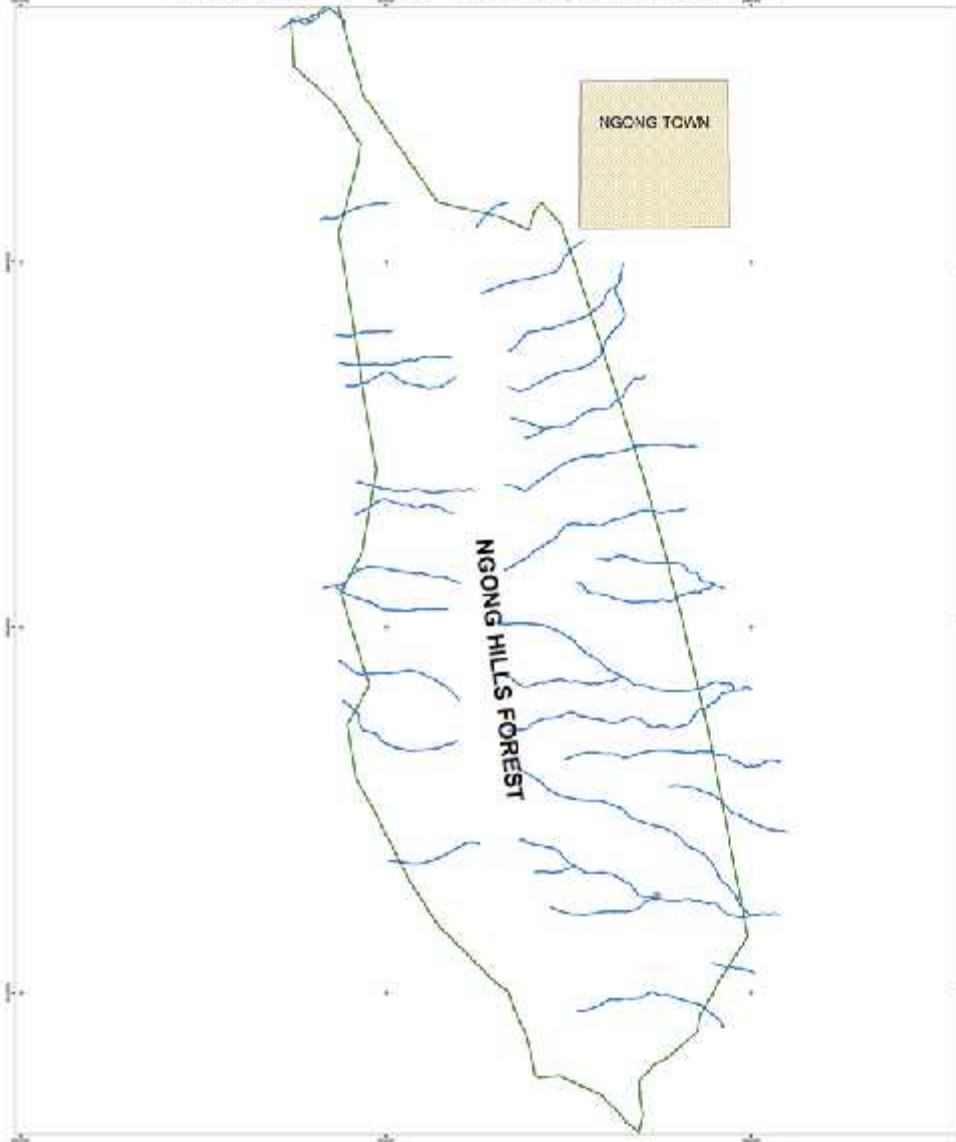
Ngong Hills Forest lies partly in the sub-humid and semi-arid climate with small pockets of humid climate around the Ngong hill. It has a bimodal rainfall pattern. The short rains fall between October and December, and the long rains fall between March and May. The annual rains are strongly influenced by altitude with the mean annual rainfall varying between 400mm and 1200mm per annum. Temperatures vary with altitude too with a range of between a mean minimum of 11<sup>0</sup>C and a mean maximum of 24<sup>0</sup>C. The average annual potential evaporation ranges from 500mm to 800mm, which means for greater parts of the year there is a moisture deficit.










The major aspects of climate that affect plant growth are the balance between rainfall and evaporation, and temperature. With regard to rainfall, the length and intensity of the rainy and dry season and their variations from year to year are of particular importance

#### **4.1.3 Drainage Pattern**

Due to the high evaporation in the area and the extent of catchments area, the perennial river flow is low. The major rivers and streams include, Mbagathi River which has its source in Embakasi/Kibiko forest block and it flows through Oloolua forest and join Athi River. Kiserian stream which has its source in Ngong hills forest and flow to Athi River. These two form what is commonly referred to the Upper Athi catchment.

# HYDROLOGY MAP -NGONG HILLS BLOCK



LEGEND	SCALE & DIRECTION	DATA SOURCE	PREPARED BY
<ul style="list-style-type: none"> <li> RIVERS</li> <li> WATER INTAKE</li> <li> WATER TANK</li> <li> KIBIKU WATER</li> <li> NGONG TOWN</li> <li> FOREST BOUNDARY</li> </ul>	<p>SCALE &amp; DIRECTION</p> <p style="text-align: center;">N</p>  <p style="text-align: center;">1:25,000</p>  <p style="text-align: center;">Meters</p>	<p>MANAGEMENT UNIT NGONG HILLS</p> <p>Boundary Plan</p> <p>WATER SUPPLY</p> <p>PROJECT/ANALYST</p> <p>DATE/REVISED</p> <p>MAP NUMBER</p>	<p>WATER RESOURCE</p> <p>WATER SUPPLY DIVISION</p> <p>1999/00</p> 

## 4.2 Biodiversity (wildlife and vegetation)

### 4.2.1 Flora

The vegetation of Ngong Hills Forest is mainly determined by altitude, soils type and human utilization of the land. Grazing, forest fires also determine the spatial variation in vegetation cover.

Table: Vegetation statement in Ngong Hill Forest

Vegetation Type	Area(Ha)	%
Natural forest	2417.4	56
Forest plantation	637.2	14.8
Open plains and Glades	1,257	29.2
Total	4311.6	100

The natural forest and the open plains and glades area are inclusive of the area under informal excision and the area under buildings and other infrastructure.

### 4.2.2 Fauna

The Forest is known to host a variety of animals which includes: buffaloes, wild pigs, porcupines, baboons, Colobus monkeys, hyenas, dik-diks, giraffes zebras, leopards and cheetahs. It also hosts a variety of reptiles and amphibians. These animals are residents of the forest and their movement is usually determined by factors such as drought, water availability and forage availability.

### 4.2.3 Avifauna

Common birds of Ngong hills forest includes Black kite, Augur Buzzard, Hedada ibis. African hawk eagle, Pied crow, Speckled mouse bird, Malachite kingfisher, White fronted bee eater, African pied wagtail, Common bulbul, Olive thrush, Cape robin chat, Black headed flycatcher, White eyed stary flycatcher, Black back puff buck, Shinning sunbird, Bronze manikin, Golden weaver, Speke wearer, Rufous sparrow, Superb startling, Mourning dove, Red eye dove among many others.

### 4.2.4 Interaction between flora and fauna

In the wide open savanna grasslands, the total plant biomass per hectare is about 40 tonnes, while the forest plant biomass is about 450 tonnes per hectare. Against this, the animal biomass of the savanna is much greater than that of the forest area. While there appears to be little threats facing the small game, the medium to large herbivores are the ones that are threatened by the current state of ecological conditions and human activities. These are usually found in the open savanna grasslands. The savanna consists of more or less unbroken grass cover mixed with scrub, bushes and the occasional tree. The grasses found in these areas are of the *Andropogon*, *Pennisetum* and *Panicum*

genera which are known for their rapid decrease in nutritive value as they grow tall towards the end of the rainy season. As a result, these herbivores tend to migrate towards the biomass rich forest areas when the grass resources in the savanna become unpalatable, and their preference switches from grass to browse resources. Many of these are ruminants, capable of breaking down and even enriching the low grade material they have to consume that include leaves, twigs, seeds and barks. The wildlife easily move around the reserve and as a result they have been able to adapt themselves to make use of the changing amount of available water and food resources. However, with the rapid human population increase in the adjacent communities has resulted in people making restrictive inroads into the wildlife's natural habitat.

### **4.3 Common forest uses in Ngong Hills**

Forests provide a wide range of economic and social benefits for instance through employment, value generated from the processing and trade of forest products, and investments in the forest sector. Benefits also include the hosting and protection of sites and landscapes of high cultural, spiritual, or recreational value. Economic benefits can usually be valued in monetary terms but the social functions of forests are more difficult to measure and can vary considerably among cultures, depending on their traditions and level of development. Maintaining and enhancing these functions is a part of sustainable forest management, hence information on status and trends in socio-economic benefits is essential.

The combined value of removals of wood and non-wood forest products is an indicator of the contribution of forests and woodlands to the Ngong Hills local economy in as far as they support various industries such as fuel wood, furniture, building and construction, etc. which in the long run provide employment activities.

Non-wood products contribute to poverty alleviation, as these products are mostly collected by relatively poor people living in rural areas. Plant product categories include food, medicinal and aromatic plants and exudates. For animal products, the survey indicated the value of removals of honey and beeswax.

The serene setting of Ngong Hills offer conducive sites for rest and relaxation.

#### **4.3.1 Traditional forest uses**

Ceremonies are an important part of Maasai life and take place for significant life cycle events such as naming and circumcision, as well as being used to fight disease, to combat infertility, for blessings and to settle disputes. The ceremonies can be short or long, sometimes lasting several weeks.

The Ngong Hills are called 'Oololaiser', meaning sacred place and has been traditionally been used by the locals for prayers. There are sacred trees used for these purposes. Others are used as preservatives, perfumes and medicines. Some wildlife were used as cultural prestige and their products used for clothing and in traditional ceremonies. Stones were also used as killing tools, beauty and other cultural uses.

#### **4.4 Eco-tourism and Recreation**

Due to its natural sceneries and peaks the forest is good for eco-tourism development. Ngong Hills is renowned worldwide for its spectacular and breath taking sceneries. However, its potential has not been fully exploited thus the gauntlet has been thrown to all stakeholders to explore all means to sustainably harness the eco-tourism sites to their full potential.

#### **4.5 Wind Energy**

The hilly sites of Ngong Hills Forest have been identified to be perfect areas for putting up wind mills and turbines. This would be a source of clean, renewable energy. KENGEN has taken a leading role in this endeavor and will collaborate with the KFS to harness this alternative form of energy. The long term benefit would be that the effects of global warming and climate change brought about by increase in greenhouse gases would be mitigated to some extent.



## **4.6 problem analysis**

Ngong Hills Forest, just like many urban forests faces many challenges, the main one being that it is not an “enclosed” forest. The blocks are fragmented due to villages, town centers, roads and other infrastructure that divide it into sections. The forest faces quite a number of problems, which if not checked will threaten the forest ecosystem as well as the livelihoods of the forest adjacent community and include;

### **Poor management coordination amongst stakeholders**

There has been lack of community and stakeholder involvement and poor institutional linkages that were caused by lack of policies that encourage community participation in forest management in the past, lack of community environment committees and a lack of an integrated management plan.

#### *(a) Encroachment by human settlement*

As land is getting scarce, the FAC is slowly but gradually encroaching on forest land. This is compounded by the fact that over the past ten years the cost of land in the Ngong Hills region has increased by a hundred percent. This is worsened by the lack of clearly marked forest boundaries.

#### *(b) Climate*

Unreliable rainfall is the greatest natural hazard to Ngong Hills Forest. Prolonged droughts are frequent and it affects both seedlings and grown trees. During the drought the seedlings become retarded while others dry. The older trees become susceptible to forest fires during these extended dry periods.

#### *(c) Overgrazing leading to soil erosion*

Since the area is considered arid and semi-arid, the livestock owners tend to prefer quantity over quality as a security against drought and animal diseases.

## **4.7 Eco tourism sites**

Ngong Hills Forest has an abundance of spectacular sites for recreational purposes. The Ngong Hills’ proximity to Nairobi, about 25 Km southwest of the city, makes it a very popular weekend destination for visitors from all over the country. Some come for walks while others picnic or worship on the hills. Professional and amateur runners will also be found in the morning jogging up and down the steep slopes.

From the hill top there are fantastic view of the Great Rift Valley and the City of Nairobi. The trail thin out and descend into a trough before you climb the next steep hill. The views all round are magnificent, making the effort worthwhile. On a lucky day, you are likely to encounter buffalos around the fourth hill, on account of the abundant bushes at these higher altitudes on the range. To your right is a fantastic view of the Great Rift Valley, while on the far left is a view of the City of Nairobi



## CHAPTER FIVE: POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

### 5.1 Guidelines for Development of Tourism Area Plans

The law has made provisions for the establishment of NEMA, which has the statutory mandate to supervise and co-ordinate all environmental activities in the country. The Environmental Management and Co-ordination (Amendment) Act, 2015, and the Environmental (Impact Assessment and Audit) Regulations, 2003, are the legislations that govern Environmental Impact Assessment (E.I.A) studies.

NEMA is the organ that has been established to exercise general supervision and coordination over all matters relating to the environment in Kenya. Furthermore, NEMA is the Government's principal instrument in the implementation of all policies relating to the environment. Policies and legislation highlighting the legal and administrative requirements pertinent to this project are presented below:-

The Guiding Principles for tourism development in the country are provided for in the Sessional Paper No. 1 of 2010 on Enhancing Sustainable Tourism in Kenya of November 2010 which is the Policy that guides Kenya's tourism development. They are as follows:-

- a) **Community Values:** Tourism should represent the past, present and future aspirations of Kenyans while respecting positive natural and cultural values.
- b) **Code of Practice:** A code of practice should be established for tourism at all levels benchmarked on internationally accepted standards.
- c) **Environmental Assessment:** Guidelines for tourism operations, impact assessment, monitoring of cumulative impacts and limits to acceptable change should be established.
- d) **Equitable Benefits:** Tourism is an economic and social development tool and must take into account equitable benefits to the host communities, visitors and investors.
- e) **Value for Visitors:** Tourism will be undertaken in a manner that it provides value for money, excellence, convenience and quality service to the visitors.
- f) **Sustainable Use:** Tourism will be undertaken in a manner that does not compromise the quality and value of the resource, or degrade the carrying capacity of supporting ecosystems.
- g) **Inter- and Intra-generational Equity:** Tourism management will be based on long term objectives where present generations make choices that will benefit

future generations. **Conservation:** A mutually beneficial alliance between tourism and conservation should be developed.

- h) **Public Participation:** A coordinated and participatory approach to tourism should be enhanced to ensure that the relevant government agencies, county governments, local authorities, private sector, civil society and communities are involved in planning, decision making and implementation processes.
- i) **The Principle of Subsidiarity:** Tourism management will be undertaken through decentralization and devolution of authority and responsibilities at the county level. .
- j) **The Precautionary Principle:** Where there are credible threats of serious or irreversible damage by tourism, lack of full scientific certainty will not be used as a reason for postponing cost-effective measures to prevent such damage.
- k) **The Polluter and User Pays Principle:** The polluter and users of natural heritage should bear the full environmental and social costs of their activities.
- l) **Capacity Building:** Community involvement, participation and collaboration with stakeholders should be continually encouraged to enhance local capacity.
- m) **International Cooperation:** Bilateral agreements as well as regional and multilateral instruments should be domesticated and implemented.

## **5.2 Legislation supporting eco-tourism development**

The constitution of Kenya 2010, offers guiding principles on the governance of land and the environment. Article 60 (1) (e) provides for sound conservation and protection of ecologically sensitive areas while Article 69 (1) has provisions with direct relevance to environment. The State is obliged to (a) Ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure equitable sharing of the accruing benefits; (b) Work to achieve and maintain a tree cover of at least 10% of the land area of Kenya; (d) Encourage public participation in the management, protection and conservation of the environment; (f) Establish systems of environmental impact assessment, environmental audit and monitoring of the environment; (g) Eliminate processes and activities that are likely to endanger the environment; and (h) Utilize the environment and natural resources for the benefit of the people of Kenya.

### **5.2.1 The Forest Conservation and Management Act 2016**

Forests Management and Conservation Act (2016) provide the legal framework for the management of forest resources in the country. The Forests Act provides for the establishment, development, sustainable management, utilization as well as conservation of forest resources for the socio-economic development of the country and environmental sustainability through the KFS. The Act (section 47 (1)) requires that all forest be managed through approved management plans and participation of stakeholders.

for the joint management of any forests for a period to be specified in the agreement. Section 42 (a) identifies recreation and tourism as one of the use of indigenous forests and woodlands in Kenya. Section 44(1) Where the Service is satisfied that utilization of a public forest can be done through the granting of a concession, the Service shall grant the concession subject to the provisions of the Constitution, this Act and any other relevant written law. Section 45 (1) The Service may advertise, receive applications from any person, institution or organization and through a competitive process, approve and enter into an appropriate management agreement for all or part of a public forest.

### **5.2.2 The Natural Resources Benefits Sharing Bill 2014**

This bill once signed into law will provide the legal guidelines on how revenues accrued from the exploitation of any natural resource (forests included), would be shared among the National Government, the County Governments and the local community surrounding these resources.

### **5.2.3 Wildlife Conservation and Management Act 2013**

The Wildlife Conservation and Management Act, 2013 provides for the protection, conservation, sustainable use and management of wildlife in Kenya and for connected purposes. The Act applies to all wildlife resources on public, community and private land, and Kenya territorial waters. The Act authorizes Kenya Wildlife Service (KWS) to enter into agreements with other competent Authorities for the protection of wildlife and their habitats.

### **5.2.4 The Water Act, 2012**

Part II, section 18, of the Water Act, 2012 provides for national monitoring and information systems on water resources. Following this, sub-section 3 allows the Water Resources Management Authority to demand from any person or institution, specified information, documents, samples or materials on water resources. Under these rules, specific records may require to be kept by a facility operator and the information thereof furnished to WRA.

Section 73 of the Act allows a person with license (licensee) to supply water to make regulations for purposes of protecting against degradation of water sources. Section 75 and sub-section 1 allows the licensee to construct and maintain drains, sewers and other works for intercepting, treating or disposing of any foul water arising or flowing upon land for preventing pollution of water sources within his/her jurisdiction.

The waste water regulation, 2006 states that; No person shall:-

- a) Discharge any effluent from sewerage treatment works, industry or other point sources into the aquatic environment without a valid effluent discharge license issued in accordance with the provisions of the Act. The proponent will not discharge any effluent into the environment as they plan to recycle the waste within the project.
- b) Abstract ground water or carry out any activity near any lakes, rivers, streams, springs and wells that are likely to have any adverse impact on the quality or quantity of the water without an E.I.A license issued. The proponent proposes to apply for water connection from Nairobi Water Company hence there will be neither underground nor surface water abstraction.

### **5.2.5 Building code 2000**

Section 194 requires that where sewer exists, the occupants of the nearby premises shall apply to the local Authority for a permit to connect to the sewer line and all the wastewater should be discharged into sewers. The code also prohibits construction of structures or buildings on sewer lines. The above site is in an area that has sewer and connection will be done to the same

### **5.2.6 The Occupational, Health and Safety Act, 2007**

The Act applies to All Workplaces where any person is at work, whether temporarily or permanently. The purpose of this Act is to: Secure the safety, health and welfare of persons at work; and Protect persons other than persons at work against risks to safety and health arising out of, or in connection with, the activities of persons at work.

### **5.2.7 The Physical Planning Act CAP 286**

The physical Planning Act has provisions to control development and use of land in particular areas, especially where a project may involve subdivisions or amalgamation of land parcels, or located in an area otherwise reserved for other uses. The proponent has already applied for a change of user from residential to offices and the same has been granted on the plot.

Sec. 36 states that a local authority may, if deemed necessary require a submission of E.I.A report together with development application if they feel the project has some injurious effects on the environment. The proponent will undertake an E.I.A report on the proposed project and has contracted qualified Experts to undertake the report.

### **5.2.8 Public Health Act (Revised 1986)**

Under this Act, every local authority or health authority is mandated to take all lawful, necessary and reasonable practicable measures to prevent all injurious conditions in premises, construction condition or manner of use of any trade premises. Nuisances under this Act include any noxious matter or waste water, flowing or discharged from any premises wherever situated, into any public street, or into the gutter or side channel of any street or watercourse, or any accumulation or deposit of refuse or other offensive

matter. Every municipal council and every urban area council may make by-laws as to buildings and sanitation.

### **5.3 National Environmental Legislative and Regulatory Framework**

This project report has been undertaken in accordance with the Environment (Impact Assessment and Audit) Regulations, 2003, operating under the Environmental Management and Co-ordination (Amendment) Act, 2015. The report is prepared in conformity with the requirements stipulated in the Environmental Management and Co-ordination (Amendment) Act, 2015 and the Environmental Impact Assessment and audit Regulations 2003, Regulation 7 (1) and the Second Schedule.

Part II of the said act states that every person is entitled to a clean and healthy environment and has the duty to safeguard the same. In order to achieve the goal of a clean environment for all, new projects listed under the second schedule of Section 58 of EMCA No. 8 of 1999 shall undergo an Environmental Impact Assessment. This includes development activities such as this housing development. In addition to the legal compliance above, the following legal aspects have also been taken into consideration or will be taken into consideration before commencement of construction:

The Environment Management and Coordination Act (EMCA), 1999 provides for the establishment of an umbrella legal and institutional framework under which the environment in general is to be managed. EMCA is implemented by the guiding principle that every person has a right to a clean and healthy environment and can seek redress through the High court if this right has been, is likely to be or is being contravened.

Pursuant to section 25 (4) of EMCA, National Environmental Management Authority (NEMA) is required to restore degraded environmental sites using the National Environmental Restoration Fund. Currently, the restoration fund consists of 0.1 % levied from industries and other project proponents through the EIA process. Section 58 of the Act makes it mandatory for an Environmental Impact Assessment study to be carried out by proponents intending to implement projects specified in the second schedule of the Act which are likely to have a significant impact on the environment. Similarly, section 68 of the same Act requires operators of existing projects or undertakings to carry out environmental audits in order to determine the level of conformance with statements made during the EIA study. The proponent is required to submit the EIA and environmental audit reports to NEMA for review and necessary action.

Section 72 of the Act prohibits discharging or applying poisonous, toxic, noxious or obstructing matter, radioactive or any other pollutants into aquatic environment. According to section 73 of the act, operators of projects which discharge effluent or other pollutants into the aquatic environment are required to submit to NEMA accurate information on the quantity and quality of the effluent. Section 76 provides that all

effluent generated from point sources are to be discharged only into the existing sewerage system upon issuance of prescribed permit from the local authorities.

Section 87 (1) makes it an offence for any person to discharge or dispose of any wastes, whether generated within or outside Kenya, in such a manner as to cause pollution to the environment or ill health to any person.

The proponent will have to ensure that environmental protection facilities or measures to prevent pollution and ecological deterioration such as sewerage connections, solid waste management plans, and landscaping and aesthetic improvement programme are implemented and maintained throughout the project cycle. As well the proponent will have to ensure that appropriate measures to prevent pollution of underground and surface water are implemented throughout the project cycle.

#### **5.4 The Environment (Impact Assessment and Audit) Regulations, 2003**

On June 13 the 2003, the Minister of Environment, Natural Resources and Wildlife promulgated the Environment (Impact Assessment and Audit) regulations 2003 (E.I.A/EA Regulations) under section 147 of the EMCA. These regulations provide the framework for carrying out E.I.As and E.As in Kenya.

#### **5.5 The Way Leave Act**

The areas zoned for communication lines, sewer lines, power lines, water pipes etc are known as way leaves. The way leave Act prohibits development of any kind in these designated areas. Thus any developer is bound by this Act to see to it that no development takes place in these areas. The proposed project will not encroach on any way leave and will leave the required space for such services.

#### **5.6 Waste Management**

Legal Notice No. 121: Section 4-6 *Part II* of the Environmental Management and Co-ordination (Waste Management) Regulations, 2006 states that:-

4. (1) no person shall dispose of any waste on a public highway, street, road, recreational area or in any public place except in a designated waste receptacle.

(2) Any person whose activities generate waste shall collect, segregate and dispose or cause to be disposed off such waste in the manner provided for under these Regulations.

(3) Without prejudice to the foregoing, any person whose activities generates waste has an obligation to ensure that such waste is transferred to a person who is licensed to transport and dispose of such waste in a designated waste disposal facility. In addition, the Regulations state that: 5. (1) a waste generator shall minimize the waste generated by adopting the following cleaner production methods

a). Improvement of production process through:-

i. Conserving raw materials and energy;

ii. Eliminating the use of toxic raw materials; and

iii. Reducing toxic emissions and wastes

- b). Monitoring the production cycle from beginning to end by:-
- i. Identifying and eliminating potential negative impacts of the product;
  - ii. Enabling the recovery and re-use of the product where possible;
  - iii. Reclamation and recycling

c). Incorporating environmental concerns in the design and disposal of a product.

6. A waste generator shall segregate waste by separating hazardous wastes from non hazardous waste and shall dispose of such wastes in such facility as shall be provided by the relevant local authority. No person shall engage in any activity likely to generate any hazardous waste without a valid Environmental Impact Assessment license issued by Authority under the provisions of the Act.

### **5.7 Occupational Safety and Health Act 2007 No. 15 of 2007 (OSHA), revised in 2010**

This Act provides for the safety, health and welfare of workers and all persons lawfully present at the workplace. It addresses the obligations of both the employer and the employee in terms of ensuring the workplace is free from any potential risks and hazards that would be detrimental to the well-being of all members of staff and visitors at any given time and at any given place within the confines of the workplace. This Act basically addresses employees' and visitors' safety whilst at Ngong Hills Forest.

### **5.8 The Employment Act 2007 and the Regulation of Wages and conditions of Employment act 2007**

These Acts make rules governing wages, leave and rest, health and safety, the special position of children and women and the termination of employment. The Act, in addition, sets up a process through which wages and conditions of employment can be regulated by the Minister.

This Act addresses employment of scouts and other employees by the Ngong Hills Metro CFA.

However, the Employment Act does not make any provisions for wages in general. The minimum wage is dealt with by the **Regulations of Wages and Conditions of Employment Act**.

### **5.9 The Work Injury Benefits Act 2015**

This Act provides for ways through which an employee who is injured when on duty may be compensated by the employer.

### **5.10 Other relevant Provisions**

The following are the relevant environmental treaties to which Kenya is signatory in order of ratification:

**Montreal Protocol on Substances that Deplete the Ozone Layer (1987) ratified 9 November 1988**

International treaty designed to protect the ozone layer by phasing out the production of a number of substances believed to be responsible for ozone depletion.

**United Nations Convention to Combat Desertification (1994), ratified 12 June 1994**

An agreement to combat desertification and mitigate the effects of drought through national action programs that incorporate long-term strategies supported by international cooperation and partnership arrangements.

**The Convention on International Trade in Endangered Species of wild Fauna and Flora (CITES)**

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) was established in response to concerns that many wildlife species were becoming endangered because of international trade. Kenya ratified the Convention on 13 December 1978. An inventory will need to be carried out to determine there are any endangered species on the CITES list currently found in Ngong Hills Forest. During the period of the plan any existing endangered trees species identified will be clearly designated for extra protection and increased planting.

**United Nations Framework Convention on Climate Change (1992), ratified 30 August 1994**

International environmental treaty produced at the United Nations Conference on Environment and Development (UNCED), informally known as the Earth Summit, held in Rio de Janeiro in 1992. The treaty is aimed at reducing emissions of greenhouse gas in order to combat global warming.

**Convention on Biological Diversity (1992), ratified 11 September 1994**

The International treaty was adopted at the Earth Summit in Rio de Janeiro in 1992. Its objective is to develop national strategies for the conservation and sustainable use of biological diversity. It is often seen as the key document regarding sustainable development.

**Kyoto Protocol (2004), ratified 25 February 2005**

An amendment to the international treaty on climate change, assigning mandatory emission limitations for the reduction of greenhouse gas emissions to the signatory nations.

## **5.11 Sustainable Development Goals**

These replaced the Millennium Development Goals which expired at the end of 2015. Formal debate on these goals began in Rio de Janeiro during the 2012 United Nations conference where development goals 2015-2030 were discussed. The conference outcome called for the goals to be integrated into the UN's post-2015 agenda, and there



was consensus on 17 proposed goals. The ones relevant to Ngong Hills Forest management include,

- End poverty in all its forms everywhere.
- End hunger, achieve food security and improved nutrition and promote sustainable agriculture.
- Ensure healthy lives and promote well-being for all at all ages.
- Achieve gender equality and empower all women and girls.
- Ensure availability and sustainable management of water and sanitation for all.
- Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.
- Make cities and human settlements inclusive, safe, resilient and sustainable.
- Ensure sustainable consumption and production patterns.
- Take urgent action to combat climate change and its impacts.
- Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.
- Strengthen the means of implementation and revitalize the global partnership for sustainable development.

## **5.12 Global Forest Principles**

The Non-legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of all Types of Forests, also known as the “Forest Principles” were adopted in 1992. They contain 15 articles providing guiding principles for the management, conservation and sustainable development of forests.

The participatory forest management plan will be in line with and further implement the Forest Principles, in particular with regard to:

- a) Sustainable forest management to meet the social, economic, ecological, cultural and spiritual needs of present and future generations;
- b) Promotion of opportunities for the participation of interested parties in the development, implementation and planning of forest policies;
- c) Positive and transparent action towards reforestation, afforestation and forest conservation;
- d) Support by international financial and technical cooperation, including through the private sector; and,
- e) Provision of alternative options to the urban poor who are economically and socially dependent on forest resources.

## CHAPTER SIX: DESCRIPTION OF THE EXISTING AND ANTICIPATED IMPACTS

### 6.1 Existing Impacts

There are hardly any negative environmental impacts on the site at the moment, except some little noise from vehicles plying the road passing through the forest.

### 6.2 Anticipated Impacts

Impacts can be positive or negative, direct or indirect. The magnitude of each impact is described in terms of being significant, minor or negligible, temporary or permanent, long-term or short term, specific/localized or widespread and reversible or irreversible.

#### 6.2.1 Positive Impacts of the Proposed Project

The proposed development will have positive impacts to the society and the general environment. Some of benefits include the following:

- Creation of market for goods and services and especially construction inputs which include raw materials, construction machinery and labour.
- Provision of employment during construction and operationalization stage
- Maximum utilization of the of the forest area
- Wealth creation for the proponent
- Provision of affordable high quality restaurant and accommodation
- Creation of employment for eco-lodge management, security services and other business to support the enterprise
- Economic-investment hence wealth creation for the proponent.

#### 6.2.2 Negative Impacts of the Proposed Project

Against the background of the above positive impacts, there are a few negative drawbacks that are anticipated mostly during the construction and occupation of the project. They include the following:

- Impact to soil (soil erosion and degradation) especially when laying the foundation
- Change in land use
- Destruction of habitat
- Noise pollution
- Increased use of energy
- Increased vehicular transport
- Increased waste generation (both solid and liquid).
- Some loss of vegetation on the site
- Air pollution as a result of dust particles emanating from construction activities.
- Exhausts from the involved machinery will lead to increased levels of noxious gases such as sulphur, carbon and nitrogen oxides

- The health and safety of workers and immediate residents/neighbours may be compromised due to accidents, pollution and disturbance
- Need for parking spaces
- Fire risk
- Increased water intake that may result to low pressure in the water system.

### **6.3 Anticipated Environmental Impacts**

On the basis of information gathered during the field study, potential impacts of the project are tabulated below. The effects of any form of impacts can be minimized by having an idea of the magnitude of each before the project is implemented. The magnitude of each impact is described in terms of being significant, minor or permanent, short-term or long term, specific (localized) or widespread, reversible or irreversible. Most of the impacts have been addressed in the proactive design of the project and other mitigations can only be guaranteed through active and responsible management committed to the propositions of the environmental management plan.

### **6.4 Social Impact Assessment**

People within the project site and its area of influence were informed of the proposed development. There was no objection to the proposed project by the residents and other stakeholders in the project area. Most residents welcomed the idea and also commented on some issues of concern. A summary of the residents comments are as follows:

- The proposed project will generally improve the value of the project site.
- The construction of the ecolodge will create employment opportunities for residents of the area.
- Forest destruction, construction noise, change in land use and high water intake during construction was raised as issues of environmental concern in general.

The residents who commented on this proposed for sound mitigation measures.

## CHAPTER SEVEN: ISSUES OF CONCERN AND MITIGATION MEASURES

### 7.1 Occupational Health and Safety (OHS)

During construction, there will be increased dust, noise and air pollution. The immediate neighbours and workforce involved would be more subjected to these environmental hazards. Food for the construction workforce is usually provided by mobile individuals who usually operate without licenses. This can compromise health of the workers especially if foodstuffs are prepared in unhygienic conditions.

#### Mitigation Measures

- The contractor should have workmen's compensation cover. It should comply with workmen's compensation Act, as well as ordinances, Regulations and Union Agreements.
- A first aid kit should be provided within the site. This should be fully equipped at all times and should be managed by qualified person.
- Adequate sanitary facilities will be provided and standard cleanliness maintained.
- Workers will be encouraged to eat at licensed hotels in the area where food is hygienically prepared.
- Workers to be trained on personal safety to avoid accidents.
- All workers should be provided with full protective gear. These include working boots, overalls, helmets, goggles, earmuffs, masks and gloves.

### 7.2 Increased Water Demand

Water is a major concern especially in construction sites. The proposed development may cause some strain to the existing water source since construction activities are known to be heavy water consumers. Occupation of the developments will bring about an increase in water consumption. The proponent will apply for connection with water supply serving KENGEN offices on the hill. In case of water shortage, the project proponent will apply for a borehole licence and dig at an appropriate site. There will be reserves at the storage tanks which will be constructed to store water.

#### Mitigation

- Install water meters at every department for monitoring monthly water consumption.
- There will be water tanks to take care of water shortages.
- Roof catchments will be provided with rainwater harvesting systems to enhance collection and storage of rain water. Such water can be used to water flower gardens and all kind of cleaning required on site.
- Encourage water reuse/recycling during both construction and operational phases.
- Avoid wasting the water supplied to the site.

- The contractors should use water trucks to bring in water for construction activities especially during periods of draught.
- Provision of notices and information signs within the project to notify on means and needs to conserve water resource.

## **7.4 Construction Waste**

In construction projects, there are usually some wastes on the site. Removal and disposal of such refuse and other related wastes comes in handy. The waste should be disposed into the approved dumpsites.

### **Mitigation Measures**

- The contractor or proponent should work hand in hand with private refuse handlers and the Narok County to facilitate waste handling and disposal from the site.
- The waste materials should be properly segregated and separated to encourage recycling of some of them with the approval of the site engineer.

## **7.5 Increased Power Demand**

There will be high power consumption especially during operation phase. The developments will connect to the existing power line and this might strain the resource. However the ecolodge management will be encouraged to conserve as much energy as possible and energy conserving appliances should be used. Energy conservation involves proper use of electrical appliances, lighting systems and other electrical gadgets used for different purposes.

### **Mitigation**

- All electrical appliances should be switched off when not in use.
- Put off all lights when not in use.
- Use a design that is environmentally sound to avoid use of electricity for air conditioning
- Use energy conserving electric lamps for general lighting.
- Utilize natural light inside buildings to avoid using electricity for lighting during the day.

## **7.6 Pollution**

The construction activities on the site will result to increased dust and gas emissions. Such dust and gases have direct negative impact to the quality of air and hence animal/human health. Hooting of the involved vehicles and workers will generate noise and vibrations which may have effect to the neighborhoods. Petroleum oils and grease as used in vehicles and construction machinery may spill or leak on/into the ground.

### **Mitigation Measures**

- Sound pollution control measures should be applied/ adapted
- Regular and prompt maintenance of construction machinery and equipment. This will minimize generation of hazardous gases and other suspended particulate matter.
- Areas generating dust particles should be regularly sprinkled with water to reduce dust blowing out over the area and should be enclosed where possible to mitigate the effects of wind on them.
- Maintenance should be carried out in a well-designed and protected area and where oil/grease is completely restrained from reaching the ground.
- All oils/grease and materials should be stored in a site's store which is usually located in the contractor's yard.

### **7.7 Soil Degradation**

This can occur during excavations for foundation laying. The excavated materials can be carried by water or water causing erosion.

### **Mitigation Measures**

- Excavated materials should be removed promptly from the site to avoid erosion
- Avoid unnecessary movement of soil materials from the site
- Control construction activities especially during rainy and windy conditions
- Sprinkling of water to reduce dust
- Landscaping after completion of the project and introduce appropriate vegetation.

Propel

### **7.8 Flora**

Clearing of woody vegetation is expected to be minimal since the allocated areas are mainly open and does not have trees. The area remained open and currently covered with grass and some areas thick bush as shown in figure 4 below.



Photo: First showing vegetation in area allocated for day visitors and second showing area allocated for ecolodge

The bushes on the site at the moment will be cleared to pave way for the ecolodge construction. There are no endangered species on the project site.

### **Mitigation Measures**

- New vegetation will be introduced and managed on completion of the development to restore or improve the appearance of the site and also reduce soil erosion.
- Cover trees or grass will be planted in excavated areas
- Landscaping should be done within the site to improve site appearance after project completion.
- The Ecolodge management will support tree planting in other areas within the forest as their contribution towards environmental conservation and rehabilitation of degraded areas.
- The ecolodge shall have a tree/ flower nursery

### **7.9 Fauna**

The Forest is known to host a variety of animals which includes: buffaloes, wild pigs, porcupines, baboons, Colobus monkeys, hyenas, dik-diks, giraffes zebras, leopards and cheetahs. It also hosts a variety of reptiles and amphibians. These animals are residents of the forest and their movement is usually determined by factors such as drought, water availability and forage availability. In general, construction activities might disturb fauna though in a small way. Such small animal/bird life will have to find new nesting homes.

## **Mitigation Measures**

- Ensure minimal disturbance of the environment
- Any destroyed vegetation will be restored after the completion of the project
- Landscaping and gardening will be done to restore aesthetic value as well as greening of the site.
- The Ecolodge management will support tree planting in other areas within the forest as their contribution towards rehabilitation of degraded areas and improving the habitat for fauna

## **7.10 Disturbance of the Public (Noise)**

Noise is unwanted/undesirable sound that can affect job performance, safety, and health. Psychological effects of noise include annoyance and disruption of concentration. Physical effects include loss of hearing, pain, nausea, and interference with communications when the exposure is severe.

Construction activities will be generating noise and hence affecting other operations in the neighbourhood. Such noise will mainly emanate from the construction machinery and equipment which include trucks and other vehicles accessing the site not forgetting noise that would emanate from the workers on site and from the demolition activities.

## **Mitigation Measures**

- Machineries should be maintained regularly to reduce noise resulting from friction.
- There should not be unnecessary honking of the involved machinery
- Construction works should be carried out only during the specified time

## **7.11 Air Quality**

The construction activities on the site will result to increased dust and gaseous emissions. Some construction machinery and trucks, including small vehicles generate hazardous exhaust fumes such as Carbon Oxides (CO<sub>x</sub>), Sulphur Oxides (SO<sub>x</sub>) and Nitrogen Oxides (NO<sub>x</sub>). Dust particles as caused by wind and vehicles suspends in the air mostly during dry spells. Such dust and gases have direct negative impact to the quality of air hence animal/ human health.

## **Mitigation**

- Provide personal protective equipments, materials and clothing such as nose masks and goggles to workers during demolition and construction phases.
- Regular and prompt maintenance of construction machinery and equipment. This will minimize generation of hazardous gases and other suspended particulate matter.
- Control over areas generating dust particles. Such areas should be regularly cleaned or sprinkled with water to reduce dust.



- Use environmentally friendly fuels such as unleaded gasoline.

### **7.12 Traffic Density**

The proposed project will come along with increased vehicle traffic along the connecting routes especially during the construction and operation phases. After completion there will be high traffic to and from the ecolodge.

#### **Mitigation Measures**

- It is important that warning/ informative signs should be erected at the site. The signs should be positioned in a way to be easily viewed by the public and mostly motorists.
- Drivers will be expected to observe strict traffic rules to reduce the risk of accidents or incidents.
- Provide enough parking spaces for the office occupants and for visitors.
- The traffic from the main road should be controlled especially during construction.

### **7.13 Solid waste.**

The proposed activities will generate related solid wastes which include stones, wood, broken glasses, containers, rods of metal, pieces of iron sheets, sharp objects (nails) etc. If solid waste is not removed promptly away from the generation points it accumulates in to large heaps harboring rats, flies etc. which transmits disease not to mention bad odors on decomposition.

#### **Mitigation**

- The contractor or the proponent should work hand in hand with private refuse handlers and the Narok County government to facilitate waste handling, and disposal from the site. The resulting debris will be collected, transported and disposed off at suitably approved dumpsites.
- Provision of dustbin cubicles at the gate as the central collection point.
- Waste receptacles will be placed at strategic points to discourage littering.
- The materials should be properly segregated and separated to encourage recycling of some of them.
- Adhere to zoning policy/ specifications as is required by Narok County government

### **7.14 High Population**

There will be a high number of visitors in the in the forest area, during construction as workers and visitors and office occupants, suppliers. This can encourage idling and pose a security.

#### **Mitigation**

- Profiling all workers especially during construction for easier identification and to distinguish the idlers
- Erect a security wall and a gate for security purposes.
- Construction works to be done during daytime
- Private security firm to be contracted to provide security.
- Collaborate with KFS to record all visitors to the Eco-lodge at the entrance gates to the forest.

## **7.15 Accident/Disaster Prevention**

The following rules will be observed to avoid accidents both during construction and operationalization of the ecolodge.

### **Mitigation**

- Ensure that the operational manuals are available and accessible for every equipment / machinery
- Properly maintain all machinery and equipment to prevent premature failure or possible accidents
- Provide accessible and clear escape routes that are marked
- Install enough firefighting equipments within reach
- Fire assembly point will be clearly marked
- Buildings will be roofed with dekla type of roof that is not easy to catch fire.
- Train workers and office caretakers on fire fighting and first Aid and personal safety
- Carry out fire and emergency drills to assess disaster preparedness
- Provide personal protection equipment during construction
- All electrical equipment and machinery shall be properly grounded
- Only properly trained employees to operate equipment or machinery and proper instructions in their safe operation shall be provided.

## **7.16 Security**

Security of the site and those working and living within is of utmost significance. The visitors within the facility must be assured of their security at all times. The security of the area is good since the site is located in a well fenced forest and there are Forest rangers on duty at any one time.

### **Mitigation**

- Strategic installation of lighting as well as security alarms and backup systems
- Will collaborate with KFS Forest rangers on duty.
- The Ecolodge will have security guards within the property who provide security in a 24-hour basis.
- The site shall be fenced.

## **7.17 Project Completion**

Completion phase will involve; notification of intent to all relevant agencies and liaising with the project Consultants that is engineers, architects and environmentalists in a bid to ascertain guidelines on possible impacts and mitigation measures. On completing the construction works on the site, everything will be left in good order. To achieve this, the following should be accomplished:-

- Landscaping of open areas should be done. Such areas should be sealed from trenches and other depressions and vegetation introduced.
- All waste materials such as wood, glass, stones, sand and scrap metals should be removed from the site and be disposed appropriately.
- General rehabilitation of any excavated areas should be done and quality vegetation introduced to add aesthetic value to the site.
- All construction equipments should be removed after completion of the work.
- Bill boards erected on site will be removed to signify project completion.

## CHAPTER EIGHT: ALTERNATIVES AND PROPOSED ACTION

### **8.1 Alternatives**

The consideration of alternatives to a proposal is a requirement of many E.I.A systems. It lies at the heart of the E.I.A process and methodology. A comparison of alternatives will help to determine the best method of achieving project objectives while minimizing environmental impacts or, more creatively, indicate the most environmentally friendly or best practicable environmental option.

### **8.2 The Proposed Development Alternative**

In this development proposal, the proponent will develop the Ecolodge as planned after receiving the E.I.A Licence from the Authority. The project will be implemented thereby, realizing the proponent's goal of provision of hospitality facility. However, the development has to ensure that all environmental measures are complied with during the implementation and operation period. The proposed development alternative is composed of the proponent's final proposal, with the inclusion of the NEMA guidelines and regulations and procedures as stipulated in the Environmental Management and Co-ordination Act (EMCA) of 1999 (amended 2013).

### **8.3 Alternative Site**

There is no alternative site for the proposed project. The proponent did identify the site earlier through the advert from KFS identified eco-tourism sites and upon winning the tender and has invested many resources in terms of consultancy fees for the architect and other construction consultants. Also, the project proponent would spend long periods of time which would call for cost; already incurred in the proposed development i.e. whatever has been done and paid to date would be counted as a loss to the proponent.

### **8.4 The No Action Alternative**

If the proposal fails to receive the anticipated approval from NEMA, the project will not be implemented and thus the developments will not commence. Provision of jobs for skilled and non-skilled workers will not be realized and there will be no generation of income for KFS as anticipated in their annual estimates. The project proponent has invested on the site and used resources for payment of lease and performance bond.

### **8.5 The Comparison of Alternatives**

Under the proposed Development Alternative, the project will provide short term jobs for the workers during construction and ensure maximum utilization of the site. There would be more benefits from the site and the anticipated negative environmental impacts will be minimal. Provided the Environmental Impact mitigation measures are implemented as well as adaptation of sound construction management practices, negative effects on the environment would not be expected.

## CHAPTER NINE: ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

The environmental management plan involves risk management strategies that should be undertaken by the project proponent and the project manager to mitigate environmental degeneration. They are approaches to monitor, control, reclaim and restore the environment back to its appropriate state. EMPs for projects thus provide logical frameworks within which the identified issues of environmental concern can be mitigated, monitored and evaluated. Environmental monitoring involves measurement of relevant parameters, at a level of details accurate enough, to distinguish the anticipated changes. Monitoring aims at determining the effectiveness of actions to improve environmental quality.

The environmental management and monitoring plans have been developed and outlined to bring home the key findings of the Environmental Impact Assessment of the project in mention, recommending necessary mitigation actions, defining roles, monitor able indicators and the estimated cost.

The EMPs outlined in tables hereafter address the potential negative impacts and mitigation measures as well as roles, costs and monitor able indicators that can help to determine the effectiveness of actions to upgrade the quality of environment; as regards the proposed project. The EMPs have considered both construction and occupation phases.

### **9.1 Environmental, Health and Safety Management and Monitoring Plan**

Environmental monitoring and evaluation are essential in the project lifespan as they are conducted to establish if the project implementation has complied with the set environmental management standards as articulated in the Environmental Management and Coordination Act (EMCA) No. 8 of 1999, and its attendant Environmental (Impact Assessment and Audit) Regulations, 2003.

In the context of the proposed project, design has made provisions for an elaborate operational monitoring framework for the following among others:

- Disruption of natural environment and modification of microclimate
- Air and noise pollution
- Proliferation of kiosks
- Workers accidents and health infections during construction process
- Proliferation of uncollected wastes

## 9.2: Environmental management Plan (EMP)

The table below gives a summary of the environmental health and safety impacts that the project has on the proposed site and the possible mitigation measures monitoring actions required ensuring minimal damage of the environment.

Expected Impacts	Negative	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
<b>1. Minimize extraction site impacts and ensure efficient use of raw materials in construction</b>					
<b>High demand of materials</b>		Ensure accurate bill of quantities (BOQ).	Contractor	Throughout	5,000
		Use at least 5%-10% recycled, refurbished or salvaged materials to reduce the use of raw materials and divert material from landfills.	Contractor	Throughout	0
<b>2. Minimize vegetation and grass disturbance at and or around construction site</b>					
<b>Vegetation/ Grass disturbance</b>		Ensure proper demarcation and delineation of the project area to be affected by construction works.	Contractor	1 month	0
		Specify locations for trailers and equipment, and areas of the site which should be kept free of traffic, equipment, and storage.	Site engineer	1 month	0
		Designate access routes and parking within the site.	Site engineer	1 month	5000
		Preserve of some individual trees within the site.	Contractor	One-off	0
		Design and implement an appropriate landscaping programme to help in re-vegetation of part of the project area after construction.	Proponent	2 months	10,000
	Conduct tree planting in open areas to increase woody e vegetation cover to above 30% within the hotel environment	Contractor	3 months	100,000	
<b>3. Reduce storm-water, runoff from parking bay and soil erosion</b>					

Expected Impacts	Negative	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
Increase storm water runoff and soil erosion		Apply soil erosion control measures such as levelling of the project site to reduce run-off velocity and increase infiltration of storm water into the soil.	Contractor	1 months	-
		Ensure that construction vehicles are restricted to existing graded roads to avoid soil compaction within the project site.		Throughout	
		Ensure that any compacted areas are ripped to reduce run-off. Concrete slabs must have spaces between to allow infiltration			
		Open drains all interconnected will be provided on site.			
<b>4. Minimize solid waste generation and ensure efficient solid waste management during construction</b>					
Increased solid waste generation		Use of an integrated solid waste management system i.e. through, recycling, reuse, Combustion.	Contractor	Throughout construction period	20,000
		Comprehensive BOQ	Contractor	One-off	0
		Ensure that construction materials left over at the end of construction will be used in other projects rather than being disposed of.	Site engineer & Contractor		
		Ensure that damaged or wasted construction materials including cabinets, doors, plumbing and lighting fixtures, marbles and glass will be recovered for refurbishing and use in other projects	Site engineer & Contractor		

Expected Impacts	Negative	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
		Provide facilities for proper handling and storage of construction materials to reduce the amount of waste caused by damage or exposure to the elements	Site engineer & Contractor	One-off	-
		Purchase of perishable construction materials such as paints should be done incrementally to ensure reduced spoilage of unused materials	Site engineer & Contractor	Throughout construction period	0
		Use building materials that have minimal or no packaging to avoid the generation of excessive packaging waste	Site engineer	Throughout construction period	0
		Waste collection bins to be provided at designated points on site			20,000
		Private waste disposal company to be contracted to transport and dispose the solid waste from site			
<b>5. Reduce dust emissions</b>					
		Ensure strict enforcement of on-site speed limit regulations	Site engineer & Contractor	Throughout construction period	-
		Avoid excavation works in extremely dry weathers			5,000 per month
		Sprinkle water on graded access routes when necessary to reduce dust generation by construction vehicles			
		Personal Protective equipment to be worn			
<b>6. Minimization of exhaust emissions</b>					
<b>Exhaust emission</b>		1. Vehicle idling time shall be minimized	Site engineer & Contractor	Throughout construction period	0



Expected Impacts	Negative	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
		Equipment shall be properly tuned and maintained	Site engineer & Contractor	Throughout construction period	0
		Sensitize truck drivers to avoid unnecessary racing of vehicle engines at loading/offloading points and parking areas, and to switch off or keep vehicle engines at these points			
<b>7. Minimization of Noise and Vibration</b>					
<b>Noise and vibration</b>		Sensitize construction vehicle drivers and machinery operators to switch off engines of vehicles or machinery not being used, to avoid gunning of vehicle engines or hooting especially when passing through sensitive areas such as churches, residential areas and hospitals	Site engineer & Contractor	Throughout construction period	-
		Ensure that construction machinery are kept in good condition to reduce noise generation	Site engineer & Contractor	Throughout construction period	5,000
		Ensure that all generators and heavy duty equipment are insulated or placed in enclosures to minimize ambient noise levels.	Site engineer & Contractor	Throughout construction period	5,000
		Trees around the site will provide some buffer against noise propagation	-	Throughout construction period	0
		The noisy construction works will entirely be planned to be during day time when most of the neighbours will be at work.	Site engineer & all site foremen	Throughout construction period	0
<b>8 Minimization of Energy Consumption</b>					

Expected Impacts	Negative	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
<b>Increased energy consumption</b>		Ensure electrical equipment, appliances and lights are switched off when not being used	Site engineer & Contractor	Throughout construction period	0
		Install energy saving fluorescent tubes at all lighting points instead of bulbs which consume higher electric energy	Site engineer & Contractor	Throughout construction period	5,000
		Ensure planning of transportation of materials to ensure that fossil fuels (diesel, petrol) are not consumed in excessive amounts	Contractor	Throughout construction period	6,000
		Monitor energy use during construction and set targets for reduction of energy use.	Contractor	Throughout construction period	-
<b>9. Minimize water consumption and ensure more efficient and safe water use</b>					
Increased water demand		Promote recycling and reuse of water as much as possible	Site engineer & Contractor	Throughout construction period	0
		Promptly detect and repair of water pipe and tank leaks	Site engineer & Contractor		1,000 per month
		Ensure taps are not running when not in use			0
<b>10. Minimize release of liquid effluent</b>					
<b>Generation of wastewater</b>		Provide means for handling sewage generated by construction workers	Site engineer	One-off	20,000
		Conduct regular checks for sewage pipe blockages or damages since such vices can lead to release of the effluent into the land and water bodies		Throughout construction period	0
<b>11. Minimize occupational health and safety risks</b>					

Expected Impacts	Negative	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
Approval of building plans		Ensure that all building plans are approved by the Local Authority and the local Occupational Health and Safety Office	Nairobi City Council	One-off	-
Registration of the premises		Registration of the premises under the Factories and Other Places of Work Act Cap 514, Laws of Kenya is mandatory	DOHSS	One-off	5,000
General register		A general register should be kept within the facility as stipulated in Sec 62 (1) of the Factories and Other Places of Work Act.	Site engineer & Contractor	One-off	1,000
Factories and other places of work abstract		The abstract of the Factories and Other Places of Work Act must be displayed at prominent places within the site	Site engineer & Contractor	One-off	2,000
Incidents, accidents and dangerous occurrences.		Ensure that provisions for reporting incidents, accidents and dangerous occurrences during construction using prescribed forms obtainable from the local Occupational Health and Safety Office (OHSO) are in place.	Site engineer, DOHSS & Contractor	Continuous	500/month
		Enforcing adherence to safety procedures and preparing contingency plan for accident response in addition safety education and training shall be emphasized.	The Contractor, Site engineer & Site Safety Officer	Continuous	50,000
Insurance		Ensure that the premises are insured as per statutory requirements (third party and workman's compensation)	NCC	Annually	-
Safety, health and environment (SHE) policy		Develop, document and display prominently an appropriate SHE policy for construction works	Site engineer, DOHSS & Contractor	One-off	1,000

Expected Impacts	Negative	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
Sanitary conveniences		Suitable, efficient, clean, well-lit and adequate sanitary conveniences should be provided for construction workers	Site engineer	One-off	5,000
		Provision of clean drinking water, toilets and changing rooms.	Site engineer	Throughout construction period	15,000
Machinery/equipment safety		Ensure that machinery, equipment, personal protective equipment, appliances and hand tools used in construction do comply with the prescribed safety and health standards and be appropriately installed maintained and safeguarded	Site engineer	One-off	—
Storage of materials		Ensure that materials are stored or stacked in such manner as to ensure their stability and prevent any fall or collapse	Site engineer	Continuous	10,000
Safe means of access and safe place of employment		All floors, steps, stairs and passages of the premises must be of sound construction and properly maintained	Contractor	Continuous	—
Emergency preparedness and evacuation procedures		Design suitable documented emergency preparedness and evacuation procedures to be used during any emergency	Contractor	One-off	1,000
First Aid		Well stocked first aid box which is easily available and accessible should be provided within the premises	Contractor	One-off	5,000
		Provision must be made for persons to be trained in first aid, with a certificate issued by a recognized body.	Contractor	One-off	10,000

Expected Impacts	Negative	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
<b>Fire protection</b>		Firefighting equipment such as fire extinguishers and hydrant systems should be provided at strategic locations such as stores and construction areas.	Site engineer & Contractor	One-off	30,000
		Regular inspection and servicing of the equipment must be undertaken by a reputable service provider and records of such inspections maintained	Site engineer & Contractor	Every 3 months	5,000
		Signs such as "NO SMOKING" must be prominently displayed within the site, especially in parts where inflammable materials are stored	Site engineer & Contractor	One-off	—
<b>Ventilation</b>		Enough space must be provided within the premises to allow for adequate natural ventilation through circulation of fresh air	Contractor	One-off	—
<b>Lighting</b>		There must be adequate provision for artificial or natural lighting in all parts the premises in which persons are working or passing	Contractor	One-off	—
<b>Electrical Safety</b>		Circuits must not be overloaded	Contractor	Continuous	—
		Distribution board switches must be clearly marked to indicate respective circuits and pumps	Contractor	One-off	—
		There should be no live exposed connections	Site engineer	Continuous	—
		All electrical equipment must be earthed	Site engineer	One-off	—
<b>11. Vector Borne and Water Borne Disease Incidence</b>		Complete refuse collection and handling service to be provided	Contractor	Continuous	5,000
<b>12. Insecurity</b>		Appoint security personnel operating 24 hours	Security guard	Continuous	50,000
		Security alarms should be installed		Continuous	

<b>13. Air Pollution</b>	Suitable wet suppression techniques need to be utilized in all exposed areas	Site manager	Continuous	-
	All unnecessary traffic must be strictly limited on site speed controls are to be enforced	Site manager	Continuous	
<b>OPERATION PHASE</b>				
<b>Guests and Workers Health and Safety</b>				
<b>Food safety</b>	Ensure perishable/short-life food products are preserved and their quality maintained	Food and Beverage department	Continuous	50,000
	Product display should be well thought out to prevent contamination of foodstuff			
	There should be a procedure for handling contaminated or expired products which is available to responsible staff			
	All contaminated products unfit for consumption should be disposed off in a manner such that it would not be used for food			
	Ensure products bear the Kenya Bureau of Standards (KEBS) logo where applicable			
	Avoid product expiry by controlling the purchase of short-life products			
	Conduct regular checks for product expiry or contamination			
<b>Safety concerns</b>	Provide appropriate personal protective clothing to the hotel staff			
	Train staff on first aid and firefighting.			
	Follow proper work guidelines			
	Hiring of competent staff with			
	Induction courses for new staff.			

	Health and safety communication to all staff through meetings, bulletins, audio-visuals, posters, newsletters.			
	Accidents investigation by top management in the hotel			
	Proper safety planning, rules and work procedures.			
	Periodic training programmes.			
	Emergency plan should be communicated and well understood by all.			
	Forming partnerships with the local authorities the body charged with the responsibility of taking care of the local communities.			
	Health and safety committee- Provisions are needed for the formation of a Health and Safety Committee, in which the employer and the workers are represented			
<b>Emergency plan</b>	Develop Emergency Response plan incorporating external agencies	Management	Immediately	100,000
<b>Fire Risk</b>	Form special firefighting team Conduct fire drills Label fire assembly point	Management	Continuous	20,000
<b>2. Noise</b>				
<b>Noise generation</b>	All machinery including air conditioners should be kept in good working condition through regular repairs, servicing and maintenance to reduce noise levels within the premises and surrounding areas Regular servicing of the vehicles Use unleaded fuel for the vehicles	Management	Continuous	50,000
<b>3. Waste management</b>				

<b>Expected Impacts</b>	<b>Negative</b>	<b>Recommended Mitigation Measures</b>	<b>Responsible Party</b>	<b>Time Frame</b>	<b>Cost (Ksh)</b>
Solid Waste		Segregating solid waste generated and arrange for recycling	Management	Continuous	50,000
Waste water		Monitor quality of effluent released to environment			
<b>oil spillage</b>		Proper handling of oil. The company that services the machines should ensure proper disposal of used oil.			
<b>General</b>					
<b>Policies</b>		Develop; Environmental, Health safety policies. Fire Emergency Action Plan A summarized SHE policy statement should be displayed prominently within the premises	Management	Immediately	150,000
<b>Records</b>		Maintain waste disposal records Maintain power consumption records Maintain workers' health records Maintain fuel oil usage records Maintain records of accidents Maintain records of regular servicing of the vehicles.	Management	Continuous	10,000



## CHAPTER TEN: DECOMMISSIONING

### 10.1 Introduction

Decommissioning is an important phase in the project cycle and comes last to wind up the operational activities of a particular project. It refers to the final disposal of the project and associated materials at the expiry of the project lifespan. If such a stage is reached, the proponent needs to remove all materials resulting from the demolition/ decommissioning from the site. The following should be undertaken to restore the environment.

- Remove all underground facilities from the site
- The site should be well landscaped by flattening the mounds of soil and
- Planting indigenous trees and flowers
- All the equipment should be removed from the site
- Fence and signpost unsafe areas until natural stabilization occurs
- Backfill surface openings if practical

The table below shows the proposed decommissioning plan:

## CHAPTER ELEVEN : CONCLUSION AND RECOMMENDATIONS

From the foregoing analysis, the social and economic rating for this project is highly positive. Evaluation of alternatives has already shown that options are limited and costly. Already the proponent has sunk a substantial amount of money in the project up to the design stage.

Further delay of the project is denying all stakeholders the anticipated benefits of the investment; while, redesigning or relocation will lead to loss of time and money that is already tied in the preliminary costs of the project

The project does not pose any serious and negative environmental impacts. Adequate mitigation measures have been proposed to address any of the negative impacts arising from the project.

The project will create employment and improve income earnings. The project will boost the hotel industry.

The proposed project design has integrated mitigation measures with a view to ensuring compliance with all the applicable laws and procedures. The proposed project will be implemented after approvals by among others, the County Government of Kajiado, Physical Planning Department and NEMA. During project implementation and occupation, Sustainable Environmental Management (SEM) will be ensured through avoiding inadequate/inappropriate use of natural resources, conserving nature sensitively and guaranteeing a respectful and fair treatment of all people working on the project, general public at the vicinity and inhabitants of the project.

In relation to the proposed mitigation measures that will be incorporated during construction phase, the development's input to the society; and cognition that the project is economically and environmentally sound, establishments are considered beneficial and important. It is our considerable opinion that the proposed development is a timely venture that will subscribe to proponent's timely investment.

It is thus our recommendation that the project be allowed to go ahead with the implementation provided the outlined mitigation measures are adhered to. Major concerns should nevertheless be focused towards minimizing the occurrence of impacts that would degrade the general environment. This will however be overcome through close follow-up and implementation of the recommended Environmental Management and Monitoring Plans (EMPs).

Recommendations for the prevention and mitigation of adverse impacts are as follows:

- The proponent should therefore follow the guidelines as set by the relevant departments to safeguard and envisage environmental management principles during construction and operation/occupation phases of the proposed project.
- It is important that warning/ informative sign (bill boards) be erected at the site. These should indicate the operation hours and when works are likely to be

started and completed. The signs should be positioned in a way to be easily viewed by the public and mostly motorists.

- All solid waste materials and debris resulting from construction activities should be disposed off at approved dumpsites.
- All construction materials e.g. pipes, pipe fittings, sand just to mention a few should be sourced/procured from bonafide / legalized dealers.
- During construction all loose soils should be compacted to prevent any erosion. Other appropriate soil erosion control measures can be adapted. Any stockpiles of earth should be enclosed, covered or sprinkled with water during dry or windy conditions to minimize generation of dust particles into the air.
- Once earthworks have been done, restoration of the worked areas should be carried out immediately by backfilling, landscaping/ leveling and planting of suitable tree species.
- Proper and regular maintenance of construction machinery and equipment will reduce emission of hazardous fumes and noise resulting from friction of metal bodies.

A fully equipped first aid kit should be provided within the site.

- Workers should get food that is hygienically prepared. The source of such food should be legalized or closely controlled.
- The contractor should have workmen's compensation cover and is required to comply with workmen's compensation Act as well as other relevant ordinances, regulations and Union Agreements.
- The contractor should provide adequate security during the construction period.

## APPEDIXES

### **Appendix 1: references**

1. GoK (2000): Kenya gazette supplement Acts 2000, Environmental Management and Coordination Act Number 8 of 1999. Government printer, Nairobi
2. GoK (2000) Kenya gazette supplement Acts Building Code 2000 by government printer, Nairobi
3. GoK (2000)Kenya gazette supplement Acts Land Planning Act (Cap. 303) government printer, Nairobi
4. GoK (2000)Kenya gazette supplement Acts Local Authority Act (Cap. 265) government printer, Nairobi
5. GoK (2000)Kenya gazette supplement Acts Physical Planning Act, 1999 government printer, Nairobi
6. GoK (2000) Kenya gazette supplement Acts Public Health Act (Cap. 242) government printer, Nairobi
7. GoK (2003): Kenya gazette supplement number 56. Environmental Impact Assessment and Audit Regulations 2003. Government printer, Nairobi.
8. KFS (2017) Ngong Hills Participatory Forest Management Plan
9. Sombroek W. G., Braun H. M. M. and Van der Pouw B. J. A., 1982, Exploratory Soil Map and Agro-Climate Zone Map of Kenya, Nairobi

Appendix 2: Public consultation report

21/8/17

NGONG HILLS ECO-LODGE

COMMUNITY / STAKEHOLDERS MEETING

Present

Name	Tel.	Signature
1. Kija M. Wamichwe	0722-863364	
D. M BURU / Forester	0723270540	
Paul Kapits <del>Asst</del> chief	0711362065	- Asst. Ch
Daniel Ngosol elder	0720 396161	
Daniel Tiwa	0722 448757	
Emmanuel Kenge	0710 440 684	
Jeremiah Moko	0925771370	
Stephen Punsalian	0712002112	
Joseph Pertel	0722960497	- Chief.

PROPOSED NSONG HILLS ECO-LODGE 2/9/17  
 COMMUNITY LEADERS CONSULTATION MEETING  
 AT FOREST MANAGER NSONG HILLS FOREST  
 STATION OFFICE

Present

<u>NAME</u>	<u>TEL</u>	<u>Signature</u>
1. KEFA M WAMICHWE	0722 863364	
2 Joseph Rorket	- 0722 960497	
3 Paul Kapais	- 0711 362 065	
4 Daniel Tiwa	0722 445787	
5 David Ngussu	0720 396161	
6 Joseph Kurukol	0724 402111	
7 Emmanuel Kereye	0710 440684	
8 Stephen (parula)	0712 002 112	
9 Bernard Kamola	0723 489391	
10 JOSEPH K. MULHINA	0722 516298	
11. Philup-K. Kosor	0720 766661	

MINUTE OF A MEETING HELD ON 6<sup>th</sup>/1/2018 BETWEEN KIBIKO 'B', NALEPO COMMUNITY AND COMPASS HOTEL IN NGONGHILLS.

Agendas

1. Elders to understand benefits of the kompass hotel to communities
2. To agree on those benefits and write an agreement
3. Signing the agreement

Present.

1. Mr. Wasane .....county commissioner kjd
2. Keffa maura.....consultant
3. James karuki.....chief kibiko location
4. Partet .....senior chief lekuruki
5. Kapalito.....ass.chief lekuruki
6. Philip Kosgei.....forester
7. Joseph kirinkol.....cfa chairman
8. Daniel tiuwa....FCC rep
9. Bishop sululu
10. Bishop wuala
11. Rev.tunda
12. Rev Solomon supeyo
13. John kirae village elder kibiko 'b'
14. Daniel ngusur...village elder nalepo
15. James sululu
16. Mr Muchina.....kompass hotel director
17. Micheal njoroge hotel manager
18. Lawrence runda
19. Stephen kiranti
20. Jeremia moiko
21. Samuel manga
22. John supeyo
23. Emmanuel kerenge
24. Joseph nkiliyai
25. Daniel mpuki
26. Peter nteyer
27. Stephen nteyer
28. Ruben njoki
29. Simon mure
30. Daniel koitee
31. Benson sitonik

**Min. preliminaries**

The meeting was started by a word of prayer from Rev. Tunda and thereafter the meeting was called to order by chief Partet who was chairing the meeting.

6. DANIEL TIUWA.
7. REV. S. TUNDA
8. REV. S.SUPEYO
9. REV. S.KORE
10. BSHP S .SULULU
11. BSHP J. WUALA
12. JOHN KIRAE
13. DANIEL NGUSUR

- 14. JOHN SUPEYO
- 15. SAMUEL KOISEGER
- 16. NAOMI SAITAGA
- 17. CHARITY KOITEE
- 18. RUBEN NCHOKI
- 19. MOSES MUARE

**Min.5.Signing the agreement.**

Having agreed the benefit by the two parties, it was therefore agreed that the community representatives will meet the larger community and explain to them this the agreement. This will then lead to the signing of an agreement between the community and the Kompas hotel.

**A.O.B**

- The county commissioner who was present expressed his satisfaction towards the relationship that is being built between the community and the Kompas hotel. He said many projects have been done in Kajiado County and has benefited the locals and he believes the Kompas is one of them. He advised the community to elect a spearheading community to oversee the project.
- Joseph Kirrinkol was chosen to keep as a point person between the community and the Kompas hotel.
- Kompas hotel were ask not to fence the whole area given by kfs as it has been grazing area for the community livestock, but as the hotel picks, it will be fenced at some point.

**Adjournment.**

Having no any other thing to discuss, the meeting was called off by a word of prayer from Bishop Joseph wuala.

**Approved by;**

**Name**.....

**Signature**.....

**Seconded by;**

**name**.....

  
**signature**.....



## MUTUAL AGREEMENT

**THIS AGREEMENT** is made the 12<sup>th</sup> day of January Two Thousand and eighteen **BETWEEN KIBIKO 'B' NALEP COMMUNITY** of P.O Box 1319..00208 NGONG HILLS in the aforesaid Republic of the one part and **KOMPASS HOTEL** of P.O Box 52317...00500 NAIROBI of the other part.

### WHEREAS: -

1. KIBIKO B AND NALEPO COMMUNITY are Residents of Ngong Hills area.
2. KOMPASS HOTEL shall set up hotel business in the designated area of Ngong Hills in Kajiado County.

### NOW THIS AGREEMENT WITNESSETH as follows: -

1. That the hotel in its operation in the area shall
  - a) Empower the locals by offering 1<sup>st</sup> priority employment i.e professionals, labourers, security guards etc.
  - b) Provide space for curio shops to be sold by the locals
  - c) Offer stalls space for locals
  - d) The hotel will specifically pump its water from Lekuruki Bore Hole up to the hill and the locals will benefit from the water through gravity from the hill.
  - e) 1<sup>st</sup> priority General supplies of hotel commodities shall also be given to the locals

Others to be considered later:-

The hotel shall offer Community social responsibility project e.g sponsorship for schools, fencing and others to be agreed upon

Signed by the said



	<u>NAME</u>	<u>ID. NO.</u>	<u>Sign</u>
Community rep	1. <u>Simon Muchina</u>	<u>28337943</u>	
	2. <u>Joseph Kamau Muchina</u>	<u>2415501</u>	
	3. <u>Jamboi R. Sulu</u>	<u>268324</u>	
Kompass Hotel	<u>JOSEPH KAMAU MUCHINA</u>		
Witness	<u>Philip Kisho</u>		
	<u>JIMMY GITTHIA</u>		

ADVOCATE.....

**O. H. OYUGI**  
Advocate  
P. O. Box 6218 GPO  
NAIROBI

# Appendix 3: Detailed design drawings and approval

**COUNTY GOVERNMENT OF KAJIADO**



**COUNTY PHYSICAL PLANNING DEPARTMENT**  
P.O. BOX 11-01100  
KAJIADO

**FIFTH SCHEDULE**

**FORM P.P.A. 2** **{S.33 (1) (A)}**

**Registered No. Application P/329/2017**

**NOTIFICATION OF APPROVAL OF DEVELOPMENT PERMISSION**

**TO:**


**SECURE HOMES LTD,  
P O BOX 55465-00200,  
NAIROBI**

Your application numbered as above, submitted on 18/12/2017 for permission to build Eco-Lodge (Hotel) on plot L.R. No. Ngong Hills situated in Ngong hills, off ngong road Rd has been approved on 19/12/2017 subject to the following/appendix condition(s):

1. Construction works should be carried out as per the approved drawing (building plan).
2. Construction works must be supervised by a registered Contractor, Architect and/or Engineer.
3. Construction must commence within 12 months from the date of approval and be completed within 24 months otherwise plans be re-submitted for approval
4. Development should conform to conservation regulation to minimize conflicts
5. Development should blend with nature
6. Tree cover and vegetable should be 85% of the buildup area.
7. The design should complement the land scape.
8. Elective excavation and trenching should avoided.
9. Recreational usage should enlist safety measures and life guards.
10. Use of offensive, reflective and hazardous materials should be avoided.
11. The County Government shall not be held liable for any professional oversight that may undermine stability of the structure.
12. The County Government is indemnified against damages or risks that may result from negligence and poor workmanship during and after construction.
13. Satisfy all other relevant requirements of your proposal.

Dated 14 DEC 2017 at NAIROBI Signed HARAHMBA

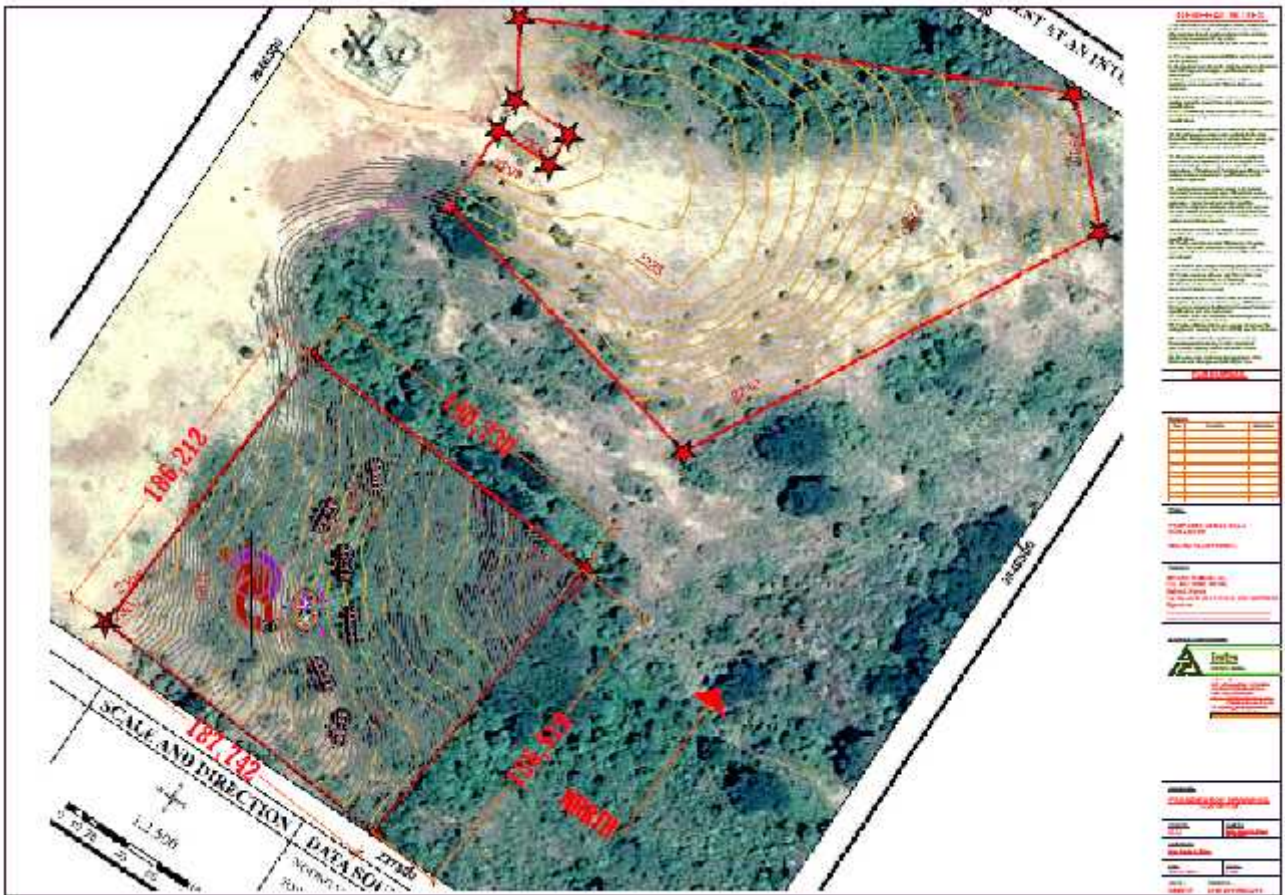
**County Director of Physical Planning**



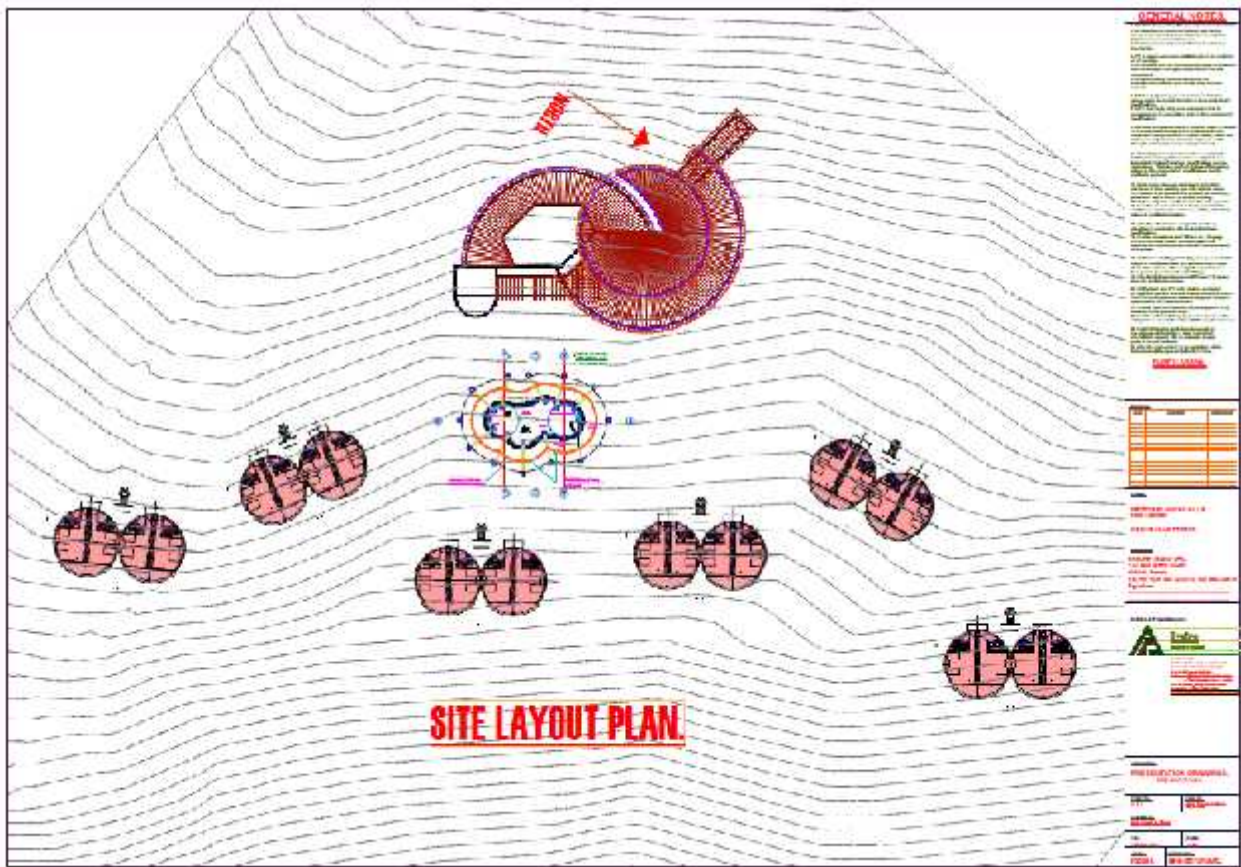
**NOTE: Non-adherence to the above conditions shall lead to automatic nullification of this approval and shall attract a fine of KSH. 100,000 or 5 years imprisonment or both.**







General site plan and layout





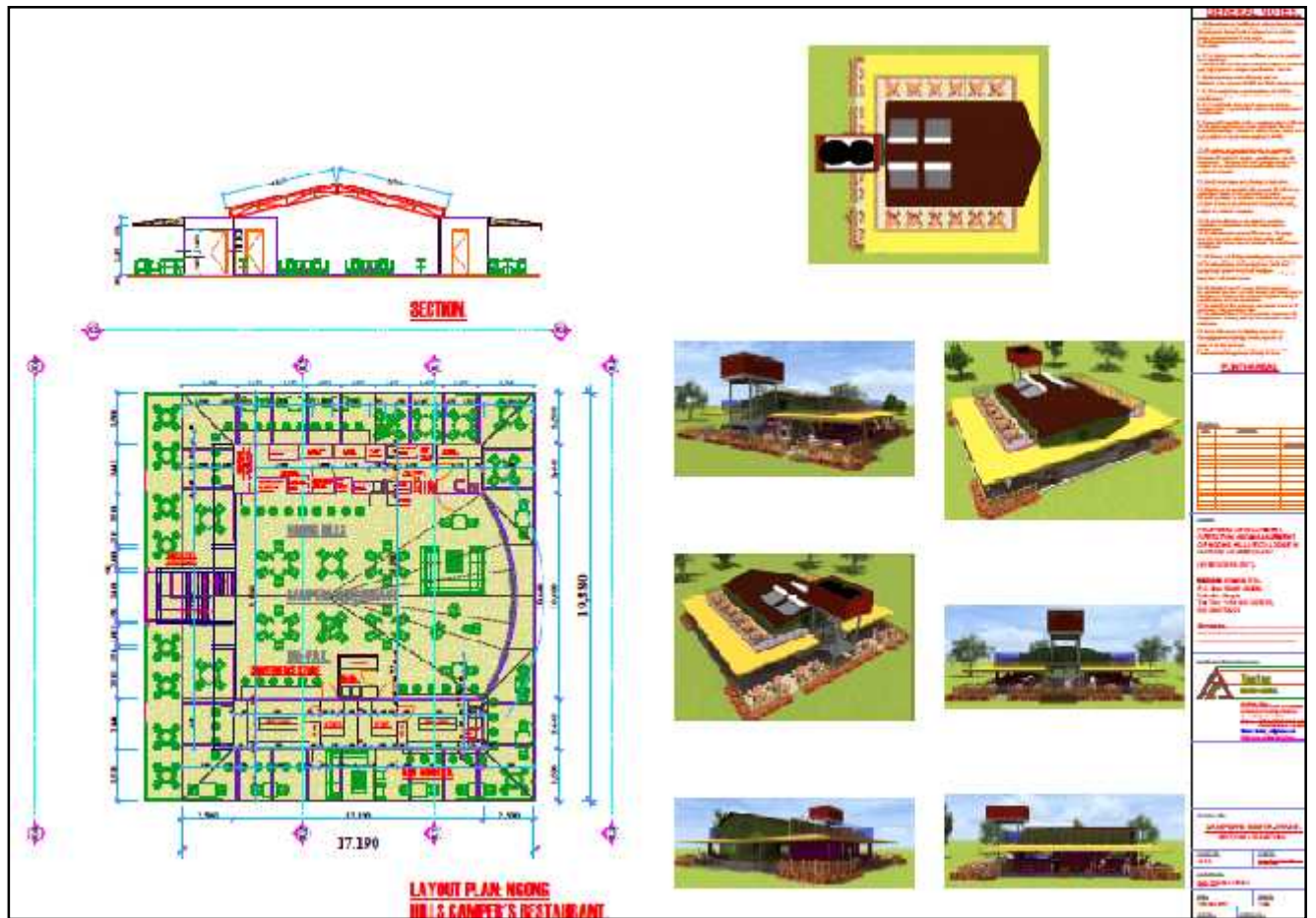












General plan of restaurant



vb

*Proposed Zip line*



*Photo showing Kengen Wind panes*



*Photo showing the restaurant design*



*Design 1 for executive rooms*

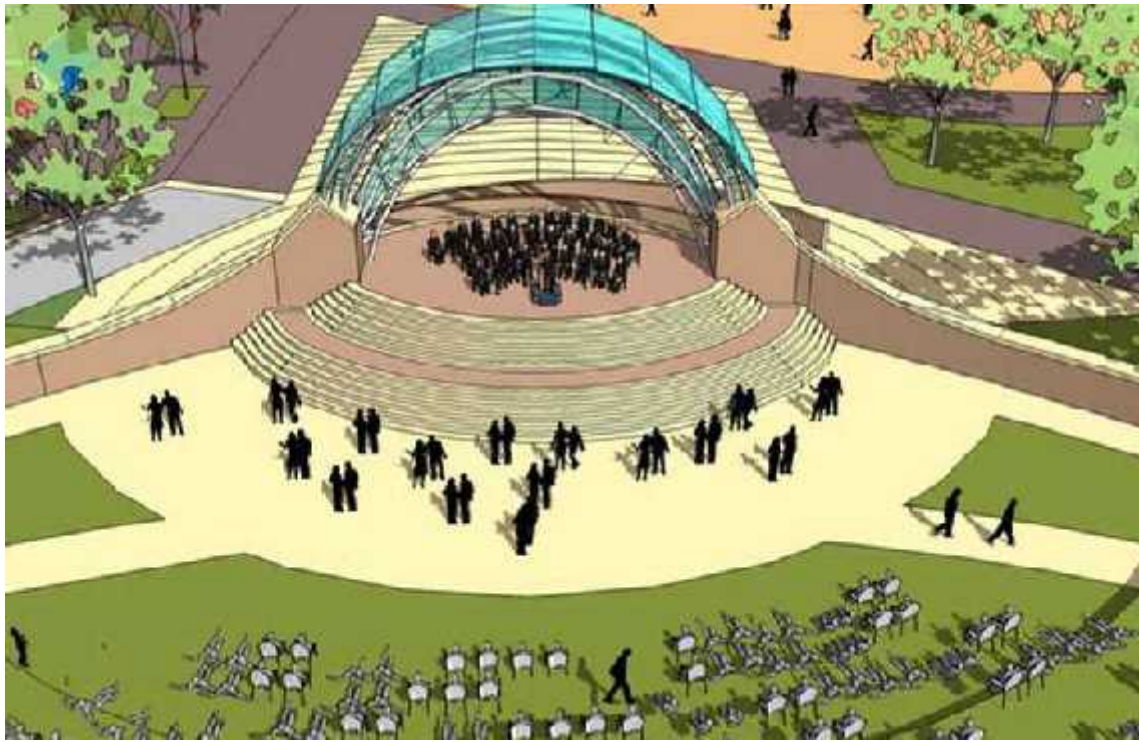




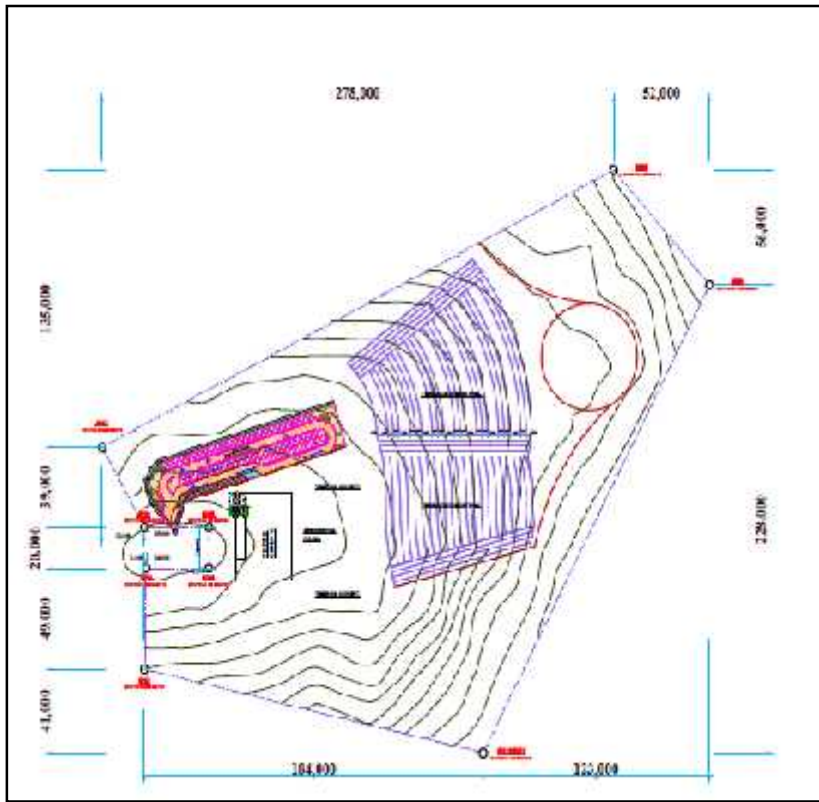
*Design 2: Double rooms*



*Design 3: Double rooms*



*Drawing for amphitheatre*



*General outlay of the amphitheatre*



**NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)  
THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT  
CERTIFICATE OF REGISTRATION AS AN ENVIRONMENTAL IMPACT ASSESSMENT/  
AUDIT EXPERT**

Certificate No: NEMA/EIA/RC/2772


Application Reference No: NEMA/EIA/ER/6029

This is to certify M/s **Kefa Mwaura Wamicwe** of  
 P.O. Box 76826-00620, NAIROBI (Address) has been registered as an Environmental  
 Impact Assessment Expert in accordance with the provisions of the Environmental Management and  
 Coordination Act Cap 387 and is authorized to practice in the capacity of a Lead Expert/Associate  
 Expert/Firm of Experts (Type) **Lead Expert**

Expert Registration No: **9438**

Issued Date: **8/22/2017**

Signature  
  
 (Seal)

 Director-General  
 The National Environmental Management Authority





Cert No. 1,000-1006



## *Certificate of Membership*

*This is to certify that*

***Kefa Mwaura Wamicwe***

*Is a Lead Member of Environment Institute of Kenya  
An institute founded in the year 2014 to extend and disseminate  
Environmental knowledge and promote the  
Practical application for public good.*



*Herbert Tavares Mwachiro*  
Chairman

*2019/2017*  
Date

This certificate remains property of Environment Institute of Kenya. Membership is subject to annual renewal

FORM 7

(r.15(2))



**nema**  
natingira yitu | uhali weto | wajibu weto

**NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)  
THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT**

**ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EA) PRACTICING LICENSE**

License No : NEMA/EIA/ERPL/7733

Application Reference No: NEMA/EIA/EL/10746

**M/S Kefa Mwaura Wamicwe**  
(individual or firm) of address

P O Box 76826-00620, Nairobi

is licensed to practice in the

capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Lead Expert**  
registration number **9438**

in accordance with the provision of the Environmental Management and Coordination Act Cap 387.

Issued Date: **3/23/2018**

Expiry Date: **12/31/2018**

Signature.....

(Seal)

**Director General**  
**The National Environment Management**  
**Authority**

P.T.O.



ISO 9001: 2008 Certified



**ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED NGONG HILL  
ECO-LODGE  
Situated at Ngong Hills Forest**

Date \_\_\_\_\_

**Community participation and consultation questionnaire**

**Introduction**

Kenya Forest service has granted special use license to Secure Homes Limited, a limited company duly registered in republic of Kenya. The license was issued following Secure Homes Limited successful bid for tender No. KFS/18/2016-17 for Development, Operation and Management of Ecotourism Facilities known as Ngong Hill Ecolodge within Ngong Hill forest station, Kajiado County. The license comprising of the following activities;

- Accommodation facility for hosting not more than 25 overnight guests
- Restaurant
- Recreation facility for days visitors
- Environmental/ cultural educational centre.

The Environmental Management and Co-ordination Act, 1999, and the Environmental (Impact Assessment and Audit) Regulations, 2003, require E.I.A study for such development through community consultation and participation. This questionnaire is seeking the community views and areas of concern.

***1. General Information***

Sub-location		Location	
Name of Adjacent Forest Block		Date	
Name of Respondent		Telephone No.	

2. What are activities will be impacted negatively by the establishment of an eco-lodge?

- Community grazing rights
- Access to water
- Access to herbal medicines
- Access to other non wood forest products
- Access to cultural and religious sites
- Others (specify) \_\_\_\_\_

3. What are the likely benefits of an operational ecolodge?

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4. What are the likely negative impacts of an operational ecolodge?

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5. Which areas do you think the owner of the ecolodge can support the community?

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6. What is your overall assessment of impact of the establishment of an eco-lodge?

- Positive impacts
- Negative impact
- No impact at all

7. What mitigation measures would you recommend to counter negative impact?

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8. Which eco-tourism activities should be left out for the community?

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*Wish to thank you for your time and contribution.*

Questionnaire administered by \_\_\_\_\_ Tel \_\_\_\_\_

Date \_\_\_\_\_ i      Signature \_\_\_\_\_

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