

STRATEGIC ENVIRONMENTAL ASSESSMENT FOR

KENGEN ENERGY PARK IN OLKARIA GEOTHERMAL HUB, NAIVASHA SUB-COUNTY, NAKURU COUNTY, KENYA DRAFT REPORT





JULY 2023





QA/QC

Report Version	Reviewed By
Draft v01	Dar Consultants
Draft v02	KenGen Team
Draft v03	Internal Review
Draft v04	Internal Review
Draft v05	NEMA Review
Draft v06	Internal Review



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CERTIFICATION PAGE

This SEA report was commissioned by KenGen in fulfilment of requirements of the Environment Management and Coordination Act, 1999 and National SEA Guidelines, 2012.

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EXECUTIVE SUMMARY

INTRODUCTION

KenGen intends to establish an Energy Park in Olkaria Geothermal Hub in Naivasha Sub-County, Nakuru County, Kenya. The masterplan is aimed at leveraging from KenGen geothermal resources. In view of the proposed energy park, KenGen contracted the services of Dar Al-Handasah Consultants (Shair and Partners) to update the feasibility study that was conducted in 2016. As part of the feasibility study, Ecoscience and Engineering Limited was subcontracted to undertake SEA study for the proposed industrial park.

The main objective of SEA was to systematically integrate environmental considerations into the proposed KenGen Energy Park masterplan and decision-making processes, such that environmental information derived from the examination of the masterplan are used to support decision making. The specific objectives of SEA entailed;

- 1. Guiding the masterplan proposals to ensure compatibility with sustainable environmental planning and management;
- 2. Ensuring full consideration of alternative options, including the 'do-nothing' option, at an early time when the masterplan owner has greater flexibility;
- 3. Enhancing consistency of the masterplan across different sectors, and when relevant, make explicit the trade-offs or alignments made between different sectoral objectives;
- Recognizing and evaluating transboundary and regional environmental impacts of multisectoral developments over a specified time and broader geographical scales such as ecosystems and landscapes;
- 5. Guiding investment programmes that involve multiple sectoral policies;
- 6. Identifying environmental impacts and integrate mitigation measures during the masterplan formulation, and in the process, enhance Environmental Management;
- 7. Ensuring the cumulative, indirect, or secondary impacts of multiple diverse activities are considered, including their unintended consequences;
- 8. Providing a strategic assessment of issues and impacts;
- 9. Providing information to decision-makers by evaluating alternative options that meet proposal objectives based on the best practicable environmental options;



- 10. Ensuring environmental principles such as public participation, intergenerational and intragenerational equity, polluter pays, and the precautionary principles are integrated into the development, appraisal and selection of masterplan options;
- 11. Prioritising environmental considerations in decision-making alongside economic and social concerns, including trade-offs;
- 12. Providing an early opportunity to check whether or not a proposal is consistent with national and international environmental policies and ensure compliance with related legislative obligations;
- 13. Contributing to the establishment of contexts and baselines for future development proposals and Environmental Assessments; and
- 14. Providing transparent and accountable decision-making framework.

The SEA scope on the other hand entailed;

- 1. Analysing the environmental and socioeconomic baseline of the site and its surrounding provided in literature, GIS, and site walkover notes
 - Physical environment: e.g. air quality, climate, noise, hydrology, water resources and quality, topography, soil, geology, sources of pollutants emissions/discharges, sign of site contamination/environmental deterioration, vulnerability to natural disasters and climate change; natural resources;
 - Biological environment: e.g. habitats, flora and fauna with conservation values;
 - Socio-economic situations: e.g. land uses, infrastructure and facilities, economic and human activities, archaeology and cultural heritage; and
 - Institutional capacity and activities.
- 2. Identification of the environmental opportunities and constraints of the site (based on baseline findings);
- 3. Identification of legal framework applicable to the masterplan / site;
- 4. Identification and evaluation of alternatives (e.g. with/without the masterplan, different layout/proposed developments of the masterplan);
- 5. Evaluation if the objectives of the masterplan is compatible with SEA objectives;
- 6. Identification of environmental and socio-economic impacts of the proposed masterplan, and evaluation of impact significance;
- 7. Identification of measures to enhance positive impacts /opportunities; and mitigate adverse impacts; these proposed measures/recommendations may include but is not limited to:
 - Amendment to the masterplan;



- Further environmental study for specific projects on site;
- Regular field surveys or environmental monitoring; and
- Improvement of institutional capacity.
- 8. Development of an Environmental Management and Monitoring Plan (EM & MP) to ensure the proposed enhancement and mitigation measures/recommendations are implemented and effective; and
- Preparing of Draft SEA Report in accordance with the requirements/table of contents stipulated in Annex 6 of the National Guidelines for Strategic Environmental Assessment in Kenya (2012).

In undertaking SEA, below are the key experts that were constituted the study team;

- Philip Abuor: SEA Team Leader/NEMA Lead Expert;
- Dickens Onyango Odeny: Biodiversity, Wildlife Expert;
- Jamil E. Korban: Water Expert;
- Joy Wasirimba: Sociologist;
- Michelle Baracho: Lead Planner;
- Eva Illa: Environmentalist/SEA Coordinator; and
- Cyrus Kiambati: Environmentalist/NEMA Lead Expert.

The rationale behind subjecting the proposed plan is informed by Environmental Management and Coordination (Amendment) Act (EMCA), 2015. SEA study for the proposed plan was undertaken as guided by National SEA Guidelines, 2012.

The main objectives of KenGen Energy Park (KEP) are;

- 1. To update a feasibility study conducted in 2016 for the development of the KenGen Industrial Park.
- 2. To leverage KenGen geothermal power capacity at Olkaria to develop an industrial zone that can also serve as an additional source of revenue generation-from both the sale of power (and other derivatives such as steam/water, geothermal brine, condensate etc. as applicable), in addition from the lease of land to investors.

KENGEN ENERGY PARK MASTERPLAN DESCRIPTION

The specific objectives of KEP are;

- 1. Economic and Market Studies: Review of the market and economic context to identify sectors / activities with the highest opportunity for development at the Project Site, in addition to the scale and phasing of development.
- 2. Industrial Master planning: Review and validation of the site location taking into



consideration any revisions to the scale of development needed and development of a schematic masterplan.

- Infrastructure: Updating of infrastructure needs assessment, with consideration for how geothermal resources can be fully maximised, and assessment of the investment which may be needed / their associated cost;
- Financial: Conducting a financial analysis to test the implication to the Client of development of the park, notably in terms of identifying and quantifying revenue streams;
- Institutional: Review of the legal and regulatory framework and implication of this on:
 (i) requirements to achieve SEZ status; and (ii) potential development and operating models which may be considered;
- Implementation/Delivery: Supporting the Client in kickstarting implementation of the masterplan by providing recommendations on the most suitable delivery models, defining an investment attraction strategy and preparing initial documentation (including procurement documents and applications); and
- 7. Environmental: Conducting SEA to test the environmental impact of the proposed industrial park and initiating the approval process with NEMA.

Additionally, the scope of works of KEP Masterplan entailed;

The scope of works for KenGen Energy Park feasibility study included:

- a) Reviewing of the existing feasibility study;
- b) Carrying out detailed Market Demand Analysis and Industry Assessment to identify suitable products/services, or industries/sectors that would be suitable for investing at the KenGen Energy Park;
- c) Developing an updated feasibility study by incorporating the new ideas, government laws and regulations, and a review of the relevant legal and regulatory aspects;
- d) Evaluating and recommending Energy Park development models/procurement models suitable for KenGen and the Land Use Policy;
- e) Developing a schematic Master Plan and infrastructure assessment of the proposed Energy Park area;
- f) Developing a Financial Model for the energy Park and a revenue model for KenGen from the Energy Park;
- g) Carrying out Economic Impact Assessment;
- h) Recommending infrastructure requirements and cost estimates;



- Reviewing and recommending the selling prices and tariff structures for geothermal resources to be offered by KenGen including steam, brine, condensate, electricity, raw water and services charge;
- j) Reviewing and advising on the lease price for the land;
- k) Develop the term sheet for the energy Park;
- I) Carry out the cost and benefit analysis for the KenGen Energy Park;
- M) Advise on the viability of the various Energy Park model to KenGen and the potential investors;
- Advising on the procurement models/approaches for attracting investors suitable for KenGen Energy Park;
- o) Developing the Masterplan implementation roadmap, institutional framework and financing models;
- p) Developing marketing and business plans showing financial and economic analysis;
- Prepare a detailed feasibility study report covering the scope of the study as a minimum that meets the requirements set out in the Special Economic Zones Laws and Regulations;
- Peveloping procedures and templates for procurement of investors using the Specially Permitted Procurement Procedures;
- beveloping detailed and comprehensive Terms of Reference, complete with the evaluation criteria that would be used to procure Developers, Operators and Investors for the Energy Park;
- Providing all the required details and information and dully fill the application forms for application of the KenGen Energy Park for Registration/Gazettement as a Special Economic Zone;
- Identifying suitable and potential Energy Park Developers, Operators and Investors, and send out questionnaires or request for information as part of market sounding. Then, develop a summary report suitable for further market sounding and marketing;
- v) Conducting and preparing a Strategic Environmental Assessment (SEA) study report; and
- w) Assisting KenGen in acquiring the National Environmental Management Authority licence for the SEA.



Cost efficiency, flexibility, eco energy park-embed circular economy and industrial symbiosis, quality of life, environmentally sensitive and strong linkages were the guiding principles in undertaking KEP Masterplan.

The proposed industrial park is located within Olkaria Geothermal Hub, Naivasha Sub-County, Nakuru County of Kenya. The proposed site covers 1,824 Ha and is entirely located within KenGen land. The proposed masterplan is scheduled to be implemented in four (4) phases of 5 years each with the initial phase anticipated to kick on in the year 2025.

The proposed masterplan is constituted of the following;

- Fertilisers;
- Iron & Steel;
- Plastics & Packaging;
- Fabricated Metal products;
- Pulp & Paper;
- Wood & Wood Products;
- Textiles and Apparel (Steam Intensive Industry);
- Food & Beverages (Steam Intensive Industry);
- Textiles and Apparel (Light Industry);
- Food & Beverages (Steam Intensive Industry);
- Warehousing and Logistics;
- Supporting Light Industry.
- Proposed Utilities;
- Existing Utilities;
- Future Phases;
- Conservation Area;
- Open Space;
- Green Belt; and
- Roads.

In enabling efficient operation and management of the proposed industrial park, below is summary of the required resources and well as waste generated by the year 2035;

- Electricity (721.42 MVA);
- Bandwidth (22,461 Mbps);



- Water (20,100 m³/day);
- Waste water generated (18,800 m³/day);
- Industrial waste generated (1,305 T/day);
- Municipal solid waste (1,445.09 kg/day);
- Labour force required (59,000 persons; direct, indirect and induced).

BASELINE ENVIRONMENTAL CONDITIONS

An analysis of the proposed industrial park baseline environment was undertaken to enable understanding of various aspects of the area that were key in identification of key impacts of the proposed plan. Baseline environment analysis covered biological, physical and socio-economic environments. Baseline environment information was mainly gathered from secondary sources. Flora and fauna data was the only primary data that was gathered through a rapid biodiversity study that was carried out. See summary report in Appendix 11.

Under physical environment analysis, climate data, air and noise quality hydrology & water quality, topography and soils & geology were covered in details. Additionally, biological environment covered an analysis of plants species diversity, alien invasive plant species, mammal's species diversity, invertebrate species diversity, herpetofauna diversity and ecosystem services. This analysis was facilitated a biodiversity study that was undertaken.

Further, social-economic environment analysis included a detailed analysis of the population distribution in the proposed plan area, education levels in the area, employment status in the area as well as economic activities in the area. Additionally, water sources, methods of human waste disposal, energy sources, area community composition, area health status, infrastructure provision and urban areas in the area were presented.

LEGISLATIVE FRAMEWORK

In ensuring that the proposed masterplan is implemented within the local legal constraints, legal and policy review was carried out. This was aimed at guiding the proposed masterplan implementation team in ensuring environmental sustainability of the proposed industrial park. Notably regulations that were reviewed included;

- Constitutional Provisions;
- Vision 2030 Manufacturing Sector;
- Environmental Management and Coordination (Amendment) Act 2015;
- Occupational Safety and Health Act 2007;
- The Water Act 2012;



- Traffic Act, Cap 403;
- The Wildlife Conservation and Management Act, 2013 (No. 47 of 2013);
- Public Health Act Cap 242;
- County Government Act No. 17 of 2012;
- The Forest Act No 7, 2005;
- Kenya Roads Board Act 1999;
- Roads Act 2007;
- Public Procurement and Asset Disposal Act 2015;
- The Land Act, 2012;
- The Land Registration Act, 2012;
- Community Land Act, 2016;
- Public Finance Management Act, 2012;
- National Museums and Heritage Act, 2006;
- The Employment Act, 2007;
- Kenya Maritime Authority Act, 2006;
- Energy Act, 2019;
- Climate Change Act 2016; and
- Special Economic Zone Act 2015.

PUBLIC CONSULTATION

Public consultation was a critical part of SEA with the public views playing a major role. The main aim of public participation is to create awareness of proposed, policies, plans and programmes. This process allows all categories of stakeholders including the public, private sector, civil societies and any other relevant stakeholder of interest to give their views.

Public participation entailed community meeting as well key stakeholder consultations. Three community meetings were held at Rapland, Olomaiyana, Narasha settlements on 31st August, 2022, 1st September, 2022 and 2nd September, 2022 respectively. The three meetings had a total attendant of 203 persons.

Key stakeholders were also engaged through various methods that included a workshop, one-onone interviews and use of structured questionnaires. Notable key stakeholders that were engaged included;

Community Representatives;



- Naivasha Constituency Member of Parliament Representative;
- Naivasha Sub-County Physical Planner;
- Kenya Railways;
- Lake Naivasha Growers Association (L.N.G.A);
- Lake Naivasha Riparian Association (L.N.R.A);
- Naivasha Sub-County Water Officer;
- Energy and Petroleum Regulatory Authority (EPRA);
- County Government of Nakuru, Environmental Officer;
- KenGen;
- Ecoscience and Engineering (SEA Consultant) representatives;
- Kenya Marine and Fisheries Research Institute;
- Kenya Power and Lighting Company;
- Kenya Wildlife Service representatives;
- Kenya Forest Service representatives;
- Energy and Petroleum Regulatory Authority (EPRA);
- Naivasha Sub-County Assistant County Commissioner;
- Hell's Gate Location chief;
- Olkaria Sub-Location assistant chief;
- County Government, Naivasha Sub-County line departments (water, physical planning, environment, education, sub-county administrator, public health, education, Member of County Assembly);
- National Environment Management Authority; and
- Kenya National Chambers of Commerce-Nakuru.

IMPACTS ANALYSIS

Impact analysis entailed identification of impacts, classification of impacts into positive and negative and impacts ratings. Impacts identification was carried through field visits, literature reviews and stakeholders' input. Below is a summary of positive impacts anticipated from the proposed masterplan implementation;

- Employment opportunities;
- Revenue generation;
- Growth of foreign exchange reserves;
- Local infrastructure development;
- Increased land property values;



- Increased number of tourists visiting the area;
- Improved social amenities;
- Increased market for local agricultural produce;
- Vibrancy of area commercial/urban nodes;
- Improved network connectivity in the area;
- Increase of locally manufactured products;
- Improved public transportation;
- Increased Corporate Social Responsibilities (CSR) programmes in the area;
- Improved Quality of Life; and
- Exploitation of Geothermal Resources.

Additionally, below is a summary of the key impacts anticipated from the proposed masterplan implementation during the construction and implementation phase of the industrial park;

- Soil pollution;
- Barrier to movement of elephants and other animals across the landscape;
- Increased wildlife accidents;
- Diminished grazing land for livestock;
- Human-wildlife conflicts;
- Increased cases of poaching;
- Reduction in flora and fauna coverage;
- Introduction and spread of invasive species;
- Reduced population of fish in Lake Naivasha;
- Land scaring;
- Visual intrusion;
- Air pollution;
- Noise and vibration pollution;
- Surface and ground water pollution;
- Increased demand in water from Lake Naivasha;
- Alteration of drainage regime of the area;
- Increased soil erosion;
- Increased generation of solid waste;
- Flooding;
- Maasai community cultural erosion;
- Increased human traffic accidents;



- Increased occupational accidents and/or diseases;
- Outcrop of informal settlements;
- Increase in immoral behaviours;
- Increase in communicable diseases especially sexually transmitted diseases;
- Conflicts with the host community; and
- Gender issues.

MASTERPLAN ALTERNATIVES

In analysis of masterplan alternatives, four options were explored and included;

- Masterplan phasing alternatives;
- The 'no' plan alternative;
- Alternative sites; and
- Alternative water sources at the energy park.

Masterplan Phasing Alternatives

Masterplan phasing entailed Option 1, Option 2 and Option 3 and was analysed based on;

- Low capex and ease of development;
- Priority to attract new investors;
- Integration with the existing settlements and Naivasha Township;
- Allow for retaining some existing areas for geothermal investigation and expansion of geothermal infrastructure; and
- Environmental considerations.

Based on this analysis, Option 1 was the preferred option based on the following aspects;

- It will ensure minimal cost of new water and power distribution network;
- It will enable maximum use of existing infrastructure, such as roads and power lines from existing geothermal plants;
- It will minimise building new roads in early phases of the development;
- It will ease access for employees;
- It will provide a link to the ICD introduced in latter phases to minimize capex costs;
- It will have minimal air quality impact on the neighbouring communities notably Narasha, Rapland, Olomaiyana Kubwa and Turkana Camp since the predominant wind direction is South South-East to North North-West;
- The option will have minimal impacts on loss of flora based on the fact that the phases 1 and 2 will be located within exiting KenGen geothermal operations;



- The option will in addition enable ease of management of runoff as it is situated within exiting KenGen geothermal operations; and
- The option will have minimal impact on livestock grazing lands with the early phases situated within existing KenGen operations.

'No' Plan Alternative (No Development)

The 'No' Plan alternative implies maintenance of the status quo of the proposed Energy Park site. The KenGen Energy Park hence will not be implemented as proposed. This will in turn translate to maintenance of the ecosystem services provided by the proposed site that include but not limited to hunting and gathering land, source of biofuel, source of water resources, source of traditional medicine, recreation and tourisms site, natural disaster and control soil erosion and control among others. This alternative will ensure that the negative impacts anticipated from the masterplan implementation are avoided. However, the anticipated benefits to accrue from the proposed KenGen Energy Park implementation will not be actualised. These benefits include but are not limited to;

- Creation of employment opportunities;
- Provision of infrastructure that is currently not in place currently;
- Development of the proposed masterplan area;
- Increased National GDP; and
- Availability of locally manufactured goods due to influx of global industries in the proposed Energy Park; among others.

This alternative should therefore be considered with the proposed masterplan recommended for implementation.

Alternative Sites

Two sites, Site 1 and Site 2 were considered for implementation of the proposed masterplan. Based on the analysis carried out, Site 1 is the larger site and enables the development of an integrated industrial area in close proximity to the existing Olkaria Power Plants, with ease of access to the Naivasha ICD and the new residential settlement towards the South of the Site. It is, therefore, the preferred site.

This is as compared to Site 2 that is small in size; 145 has as compared to Site 1; 1824 ha. However, Site 2 also shows distinct strengths in terms of suitability for industrial development, with largely flat topography, and few on-site constraints. It also features easy accessibility to the existing settlements in Naivasha, allowing for good synergies with the existing township.



Alternative Water Sources at the Energy Park

The proposed industrial park is anticipated to have a daily water demand of 20,100m³. Based on this, a number of water sources have been considered for utilization in the industrial park as highlighted below.

Lake Naivasha

KenGen has a Water Resource Authority (WRA) water abstraction license for Lake Naivasha, whereby the currently authorized volume is not being fully utilized. In reference to this, KenGen can apply for an additional volume for obstruction for use in the proposed industrial park. This will enable KenGen to meet the proposed industrial park operations water demand. However, it is important to point out that Lake Naivasha is the main water source in within Naivasha and its environs; for domestic, commercial and industrial uses. It is further a designated Ramsar site and a critical source of fish in the area. In view of this, and in the spirit of the lake sustainability, KenGen should not consider to meet the energy park water demand from the lake in entirety.

Ground Water

A ground water survey undertaken in the proposed industrial park site indicated that the area has an aquifer with a volume of 16,964,640 m³. The report however, proposed for a comprehensive study to be carried to determine area ground water potential. The estimated aquifer volume is not adequate to cover the estimated daily water demand for the industrial park.

Rain Water Harvesting

The area rainfall ranges between 500-1,100 mm. Further, there a number of drainage channels located within the proposed site that can be key in facilitating rain water harvesting. Water harvesting will be enabled through a number of water detention ponds proposed in the industrial park for storm water management. However, based on the amount of rainfall received in the areas as well as the detention ponds sizing, the water harvested cannot be adequate in meeting the energy park daily water demand.

Mixed Water Sources

Lake Naivasha, ground water, rain water harvesting and brine from geothermal operations are the main water sources in the proposed plan area. As such, KenGen should consider having a hybrid of the four water sources in meeting the industrial park daily water demand.



Environmental Management and Monitoring Plan

The main aim of this SEA report was to guide the proposed industrial park team to headed by KenGen in mitigating against the proposed plan potential negative impacts. In doing so, the proposed plan will ensure that the anticipated negative impacts of the proposed plan are actualised or enhanced. Towards this, the SEA study team prepared a comprehensive environmental and social management and monitoring plan in guiding plan implementation team to mitigate the potential negative impacts of the proposed plan. Further, this will guide the masterplan implementation team to effectively monitor the identified potential impacts of the plan.

Effective implementation of the identified negative impacts of the proposed industrial park is a team effort. This will include but not limited to;

- KenGen environmental experts and other departments;
- KWS- Hell's Gate National Park;
- Water Resource Authority (WRA) and area Lake Naivasha water users' associations;
- Naivasha Sub-County line departments;
- Environmental experts;
- Ecologists;
- Biodiversity expert;
- Landscape experts;
- Air quality monitoring experts;
- Noise and vibration experts;
- Water resource and management experts;
- Special Economic Zones Authority (SEZA);
- Kenya Railways;
- Kenya Rural Roads Authority (KeRRA);
- Waste management experts;
- Occupational safety and health experts;
- Community liaison officers;
- Social development experts; and
- Civil, structural and water engineers among others.

Further, in managing disputes or complaints relating to the proposed industrial park, SEA proposed formulation of a grievance redress mechanism committee. Further, a grievance/complaint form has been prepared in guiding those lunching grievances or complaints.



Finally, a grievance redress process has been proposed in ensuring effective management pf complaints/grievances related to the proposed industrial park implementation.

KEP SEA was undertaken as guided by the National SEA Guidelines, 2012. Further, SEA was undertaken in compliance with various legal provisions in the country. The assessment captured various aspects that included a description of various aspects of the proposed Energy Park masterplan. Additionally, the baseline conditions of the proposed Energy Park site were identified which provided an insight on how the proposed Energy Park will interact with its environs. Public participation also formed a key aspect of the SEA assessment whereby various stakeholders initially identified were engaged with an aim of informing them of the proposed masterplan as well as to gather their inputs.

Ultimately, through SEA, the proposed masterplan impacts were identified whereby mitigation measures were provided to mitigate against the negative impacts that might accrue from the implementation of the Energy Park. Additionally, a monitoring plan that detailed institutional requirement and capacity requirement in ensuring that the proposed mitigation measures are implemented. As part of monitoring plan, early preparation of various plans proposed has been recommended.

In summary, based on the SEA study, the proposed masterplan is located in an ecologically sensitive area based on its proximity to Hells Gate National Park. Further, the proposed masterplan will involve exploitation of sensitive local resources notably water from Lake Naivasha, a designated Ramsar site. However, despite these aspects, among others environmental and social considerations, the mitigation measures provided can be deemed adequate in enabling implementation of the Energy Park in an environmentally sustainable and socially acceptable manner.

Based on the SEA study, below are some of the recommendations that will ensure effective implementation of KenGen Energy Park.

- 1. The proposed masterplan/KenGen to build institutional capacity in ensuring effective implementation of the Energy Park.
- 2. KenGen to ensure that all infrastructure developments and industrial developments are subjected to EIA.
- 3. Respective industries to be implemented in the Energy Park to undertake air and noise dispersion models.



- 4. KenGen to formulate a masterplan implementation team that will be key is disputes resolution.
- 5. The proposed masterplan implementation team/KenGen to ensure that all the designated wildlife migration corridors and dispersal areas are not interfered with through the implementation of the Energy Park.
- 6. The proposed masterplan implementation team/KenGen to ensure that all the key stakeholders in the masterplan area are continuously engaged.
- 7. All industries that will be established in the Energy Park to be compelled to have a rain water harvesting system.



LIST OF ACRONYMS

AEWA	Agreement on the Conservation of Migratory Water birds in Africa
AIPS	Alien Invasive Plant Species
bgl	Below Ground Level
CD	Conservation Dependent
CITES	Convention on International Trade on Endangered Species
CMS	Convention on the Conservation of Migratory Species
CR	Critically Endangered
CSR	Community Social Responsibility
dB	Decibel
EIA	Environmental Impact Assessment
EM & MP	Environmental Management and Monitoring Plan
EMCA	Environmental Management and Coordination Act
EN	Endangered
EPRA	Energy and Petroleum Regulatory Authority
ERC	Energy Regulatory Commission
ESMF	Environmental and Social Management Framework
FGD's	Focused Group Discussions
Gbps	Giga Bites per Second
GDC	Geothermal Development Company
GDP	Gross Domestic Product
GoK	Government of Kenya
GRM	Grievance Redress Mechanisms

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H ₂ S	Hydrogen Sulphide
Hg	Mercury
ICD	Inland Container Depot
ICT	Information, Communications and Technology
IP	Industrial Park
IUCN	International Union for Conservation of Nature
KAA	Kenya Airports Authority
KCAA	Kenya Civil Aviation Authority
KEFRI	Kenya Forestry Research Institute
KEMFRI	Kenya Marine and Fisheries Research Institute
KenGen	Kenya Electricity Generating Company PLC
KeNHA	Kenya National Roads Authority
KEP	KenGen Energy Park
KeRRA	Kenya Rural Roads Authority
KETRACO	Kenya Electricity Transmission Company Limited
KFS	Kenya Forest Service
KMA	Kenya Maritime Authority
KNBS	Kenya National Bureau of Statistics
KNSL	Kenya National Shipping Line
KPA	Kenya Ports Authority
KPRL	Kenya Petroleum Refineries Limited
KRC	Kenya Railways Corporation
KURA	Kenya Urban Roads Authority

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KURA	Kenya Urban Roads Authority
KWS	Kenya Wildlife Service
LANAWRUA	Lake Naivasha Water Resource Users Association
LPG	Liquid Petroleum Gas
m/s	Meter per Second
Mbps	Mega Bites per Second
mm	Millimeter
MOU	Memorandum of Understanding
MOWI	Ministry of Water and Irrigation
MTP	Medium Term Plan
NEAP	National Environment Action Plan Committee
NECC	National Environmental Complaints Committee
NET	National Environmental Tribunal
NO ₂	Nitrogen Dioxide
OGFDP	Olkaria Geothermal Field Development Programme
OSHA	Occupational Safety and Health Act
PCC	Public Complaints Committee
PM ₁₀	Inhalable Particulate Matter
PPP	Polluter Pays Principle
REA	Rural Electrification Authority
RMLF	Roads Maintenance Levy Fund
SERC	Standards and Enforcement Review Committee
SEZ	Special Economic Zone

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	KenGen
SEZA	Special Economic Zones Authority
SGR	Standard Railway Gauge
SO ₂	Sulphur Dioxide
TDS	Total Dissolved Solids
UNEP	United Nations Environment Program
WASREB	Water Services Regulatory Board
WHO	World Health Organization
WSTF	Water Services Trust Fund



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CHAPTER 1 : INTRODUCTION

1.1 Overview

KenGen intends to establish an Energy Park in Olkaria Geothermal Hub in Naivasha Sub-County, Nakuru County, Kenya. The masterplan is aimed at leveraging from KenGen geothermal resources. To ensure sustainable implementation of the KenGen Energy Park, Strategic Environmental Assessment (SEA) has been undertaken. SEA has additionally been undertaken in compliance to legal framework in the country, notably Environmental Management and Coordination (Amendment) Act (EMCA), 2015. SEA for the proposed masterplan has been undertaken as stipulated in the National SEA Guidelines, 2012.

1.2 Rationale of the SEA

EMCA under section 57A (1) stipulates that plans, programmes and policies for implementation should be subjected to SEA. The Act under section 57A (4) set the basis for establishment of National SEA Guidelines. As such, NEMA engaged various stakeholders in establishment of National SEA Guidelines that came to action in 2012. KenGen Energy Park Draft SEA Report 2022 has therefore been undertaken in line with National SEA Guidelines, 2012. SEA for the proposed Energy Park is aimed at incorporating environmental considerations into the KenGen Energy Park Master Plan. Upon issuance of a conditional license by NEMA, the masterplan proponent will seek approval of the Energy Park by Special Economic Zones Authority (SEZA) for gazettement of the proposed Energy Park as a special economic zone as stipulated by Special Economic Zones Act, 2015.

1.3 Objectives of SEA

The main objective of SEA is to systematically integrate environmental considerations into the proposed KenGen Energy Park masterplan and decision-making processes, such that environmental information derived from the examination of the masterplan are used to support decision making. The specific objectives of SEA entailed;

- 1. Guiding the masterplan proposals to ensure compatibility with sustainable environmental planning and management;
- 2. Ensuring full consideration of alternative options, including the 'do-nothing' option, at an early time when the plan owner has greater flexibility;
- 3. Enhancing consistency of the masterplan across different sectors, and when relevant,



make explicit the trade-offs or alignments made between different sectoral objectives;

- Recognizing and evaluating transboundary and regional environmental impacts of multisectoral developments over a specified time and broader geographical scales such as ecosystems and landscapes;
- 5. Guiding investment programmes that involve multiple sectoral policies;
- 6. Identifying environmental impacts and integrate mitigation measures during the masterplan formulation, and in the process, enhance Environmental Management;
- 7. Ensuring the cumulative, indirect, or secondary impacts of multiple diverse activities are considered, including their unintended consequences;
- 8. Providing a strategic assessment of issues and impacts;
- 9. Providing information to decision-makers by evaluating alternative options that meet proposal objectives based on the best practicable environmental options;
- 10. Ensuring environmental principles such as public participation, intergenerational and intra-generational equity, polluter pays, and the precautionary principles are integrated into the development, appraisal and selection of masterplan options;
- 11. Prioritising environmental considerations in decision-making alongside economic and social concerns, including trade-offs;
- 12. Providing an early opportunity to check whether or not a proposal is consistent with national and international environmental policies and ensure compliance with related legislative obligations;
- 13. Contributing to the establishment of contexts and baselines for future development proposals and Environmental Assessments; and
- 14. Providing transparent and accountable decision-making framework.

1.4 Scope of SEA

The scope of SEA entailed;

- 1. Analysing the environmental and socioeconomic baseline of the site and its surrounding provided in literature, GIS, and site walkover notes (no field surveys have been performed to collect quantitative data):
 - Physical environment: e.g. air quality, climate, noise, hydrology, water resources and quality, topography, soil, geology, sources of pollutants emissions / discharges, sign of site contamination/environmental deterioration, vulnerability to natural disasters and climate change; natural resources;
 - Biological environment: e.g. habitats, flora and fauna with conservation values;



- Socio-economic situations: e.g. land uses, infrastructure and facilities, economic and human activities, archaeology and cultural heritage; and
- Institutional capacity and activities.
- 2. Identification of the environmental opportunities and constraints of the site (based on baseline findings);
- 3. Identification of legal framework applicable to the masterplan / site;
- 4. Identification and evaluation of alternatives (e.g. with/without the masterplan, different layout/proposed developments of the masterplan);
- 5. Evaluation if the objectives of the masterplan is compatible with SEA objectives;
- 6. Identification of environmental and socio-economic impacts of the proposed masterplan, and evaluation of impact significance;
- 7. Identification of measures to enhance positive impacts /opportunities; and mitigate adverse impacts; these proposed measures/recommendations may include but is not limited to:
 - Amendment to the masterplan;
 - Further environmental study for specific projects on site;
 - Regular field surveys or environmental monitoring; and
 - Improvement of institutional capacity.
- 8. Development of an Environmental Management and Monitoring Plan (EM & MP) to ensure the proposed enhancement and mitigation measures/recommendations are implemented and effective; and
- Preparing of Draft SEA Report in accordance with the requirements/table of contents stipulated in Annex 6 of the National Guidelines for Strategic Environmental Assessment in Kenya (2012).

1.5 SEA Study Team

In enabling a comprehensive SEA Study was undertaken, the team consisted of;

- Philip Abuor: SEA Team Leader/NEMA Lead Expert;
- Dickens Onyango Odeny: Biodiversity, Wildlife Expert;
- Jamil E. Korban: Water Expert;
- Joy Wasirimba: Sociologist;
- Michelle Baracho: Lead Planner;
- Eva Illa: Environmentalist/SEA Coordinator; and
- Cyrus Kiambati: Environmentalist/NEMA Lead Expert.

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1.6 Methodology of Undertaking SEA

1.5.1. Overview

The SEA was carried out as stipulated by National SEA Guidelines, 2012 that details the SEA process as illustrated in **Figure 1-1** below. The Consultant adopted this process as well as the National SEA Guidelines, 2012 in formulating methodology for carrying out SEA.





Source: National SEA Guidelines, 2012



1.5.2. SEA Screening

Screening is the first stage of SEA as stipulated by SEA Guidelines, 2012. Screening is aimed at determining whether SEA is required for programmes, policies and plans. In view of this, the Consultant in consultation with the Proponent, prepared a masterplan brief which specified the location, spatial extent and the components proposed for the Energy Park. The masterplan brief, was then submitted to NEMA for approval with the NEMA acknowledgement and approval letters annexed in the report as Appendix 1 and Appendix 2, respectively.

1.5.3. SEA Scoping

Scoping is the second stage of the SEA process as provided by SEA Guidelines, 2012. Scoping was done to establish the focus and the content of the SEA and the relevant criteria for assessment. Key stakeholders were identified and involved in identifying significant issues associated with the proposed Master Plan. The proposed alternatives were assessed and objectives of the SEA considered. Scoping took into consideration the time, resource and existing data and literature on the key issues.

Three (3) public consultative meetings at Rapland (on 31st August, 2022), Olomaiyana (on 1st September, 2022) and Narasha (on 2nd September, 2022) were held for Master Plan disclosure to obtain community inputs in the SEA study. Key stakeholders meeting, involving government, private sector and interest groups was also held on 9th September, 2022 to disclose the Master Plan and obtain stakeholders inputs that could influence the SEA study and the Master Plan.

The views obtained from the meetings were included in the Scoping Report presented to NEMA for comments and approval. NEMA SEA Scoping report acknowledgement and approval letters are as annexed in the report as Appendix 3 and Appendix 4, respectively.

The Scoping Report detailed the following among others:

- 1. The level at which the SEA will take place;
- 2. The master plan boundaries and timelines;
- 3. The sectors which the masterplan will cover;
- 4. The masterplan objectives;
- 5. The possible effects of the masterplan on the environment;
- 6. The possible effects on people due to environmental changes;
- 7. The scope of the study in detail;
- 8. What stakeholders will be involved in the SEA;



- 9. Stakeholders meetings to be held to inform potentially affected stakeholders about the masterplan and obtain their views;
- 10. The consultation procedures that will be used and the engagement plan;
- 11. Policy and legal framework;
- 12. The SEA objectives with suitable indicators & criteria;
- 13. Data needs;
- 14. The reasonable alternatives that will be subject to detailed assessment; and
- 15. The TORs and the list of experts to be engaged.

1.5.4. Data Collection and Review

Secondary data was gathered from various sources that included but not limited to:

- KenGen Energy Park Environmental and Social Management Framework, 2016;
- Special Economic Zones Authority Strategic Environmental Assessment (SEA) Report for the Proposed Naivasha Special Economic Zone Master Plan, 2020;
- Strategic Environmental Assessment for the Olkaria Geothermal Field, 2015
- Kenya National Bureau of Statistics, 2019; Volume II, III and IV;
- Nakuru County Integrated Development Plan (2018-2022);
- Lake Naivasha Riparian Management Plan or Action plan;
- KenGen Water Quality Monitoring;
- Olkaria, I, II, IV and V air and noise dispersion model report.
- Geo-Tech Report (Soil Investigation Report). Document No: ZP00700-CGCE-ECG-RPT-0001;
- Hydrogeological and geophysical investigations in Olkaria domes area and around well pad OW-922 for the proposed Energy Park masterplan;
- Feasibility study of the proposed KenGen Energy Park in Naivasha Environmental and Social Management Framework (ESMF);
- Hell's Gate Mt. Longonot National Parks Ecosystem Management Plan, 2017-2027;
- Geotechnical investigation geological mapping and geophysical investigation report at Olkaria II power plant - Olkaria geothermal project Naivasha; and
- Legal framework in the country and well as international conventions; among others.

Further, flora and fauna data was the only primary data gathered in the proposed masterplan site and its surrounding. This data was aimed at understanding rich biodiversity of the area.

The secondary data reviewed and primary data gathered was instrumental in detailing the baseline environment of the proposed masterplan site surroundings. This aided in identification



of aspects that might be impacted on through the implementation of the masterplan.

1.5.5. Data Analysis

Various data gathered from secondary and primary sources was analysed through expert judgement and Microsoft Excel and has been presented in the report in form of charts, tables, maps and description.

1.5.6. Public Participation

National SEA Guidelines, 2012, SEA is designed in a manner to ensure comprehensive stakeholders' participation and engagement. As such the Consultant undertook comprehensive stakeholder methods to engage the identified stakeholders. Stakeholders were identified based on the proximity to the project area, those with regulatory roles / authority, academia, research institutions, civil societies, NGO's, among others. Various methodologies were used in engaging the stakeholders. These include:

- Public consultative meetings that targeted residents residing in the neighbourhood of the proposed masterplan site;
- Stakeholders workshop that targeted all the stakeholders identified whereby a presentation on the Scoping Report was presented to the stakeholders; and
- Structured questionnaires that targeted key stakeholders identified with a sample annexed in the report as Appendix 7.

In engaging the stakeholders, various strategies were taken in reaching out to the identified stakeholders. Notably, the following methods were used in reaching out / inviting the stakeholders:

- Invitation letters: The letters were sent to the target stakeholders inviting them for a stakeholder workshop. The invitation letters were delivered in person to respective stakeholders and sent via mail. Sample invitation letter is as annexed in the report as Appendix 5. Stakeholders then confirmed their attendance through calling of sending an email.
- Local administrators: The public meetings were organized through the area village elders, assistant chief as well as the chief whereby they invited the respective residents to the public meetings.
- In person delivery of structured questionnaires: The questionnaires were delivered to the respective stakeholders whereby interviews were held or questionnaires left with the respective stakeholders for their action.



Upon engagement of the various stakeholders identified, their feedback was captured through minuting the meetings proceedings and filling up of the structured questionnaires. Minutes for the respective meetings are annexed in the report as Appendix 6 (stakeholder workshop) and Appendix 8 (public meetings). Additionally, written comments from the engaged stakeholders are annexed in the report as Appendix 7.

Outputs from all the stakeholders were analysed, and were critical in detailing the proposed masterplan site baseline environment. Further, the output was further used in identification of the proposed masterplan impacts.

Stakeholder engagement is a continuous process and will continue throughout the SEA process and up to the masterplan monitoring.

1.5.7. Evaluation of Proposed Masterplan Impacts

Impacts evaluation is a key aspect of SEA. Impact evaluation entailed impacts identification, impact classification and impact magnitude rating. Impacts were identified through analysis of the proposed masterplan site baseline environmental conditions, various stakeholders' outputs, analysis of the proposed masterplan and through professional judgement. Impacts were then classified as either positive or negative based on the analysis. Further, the anticipated negative impacts of the proposed masterplan were then rated as either Negligible, Minor, Moderate or Major based on their magnitude and the level of receptor sensitivity.

Further, mitigation measures were provided based on the identified negative impacts of the proposed masterplan. The mitigation measures were aimed at ensuring that the identified negative impacts of the proposed masterplan are mitigated in ensuring sustainability of the masterplan. Further, a monitoring plan was also detailed in ensuring that the proposed mitigation measures will be adhered to during KEP implementation.

1.5.8. Evaluation of Proposed Masterplan Alternatives

SEA Guidelines, 2012 was key in evaluating the proposed masterplan alternatives. Analysis of the proposed masterplan alternatives was based on the masterplan options considered. This was in additional to the 'No' option alternative.

1.5.9. Rapid Biodiversity Assessment

After the literature reviews and reconnaissance, a rapid ecological survey was undertaken. The survey on the proposed Energy Park focused on conservation and management issues on the invertebrates, mammals, birds, reptiles and amphibians and plant taxa.



Biodiversity Sampling Framework

Preliminary field visit (reconnaissance) was conducted at the propose Olkaria Energy Park to determine biodiversity conservation issues in Naivasha and its environment. Detailed study of biodiversity for the area was conducted by desktop review and a rapid field survey. Interviews with selected local residents was used to improve knowledge on the distributions of fauna species that may not be possible to record within the study period. The resulting interview results regarding fauna distribution was validated using relevant guide books for each taxon. The study covered taxa of mammals, birds, invertebrates, fish, amphibians and reptiles in both terrestrial and aquatic habitats.

Field Reconnaissance

The first site reconnaissance was held on the 27th April, 2022 and it was attended by the Client team and the Feasibility Consultant team. Further site visits were held throughout the exercise. The SEA team site visits were mainly aimed at validating gathered secondary data, which was documented through the use of photographs, checklists, questionnaires among others. Key observations that were made included but are not limited to;

- Wildlife corridors: Presence of elephant families have been recorded in the recent;
- Prevention of human-wildlife conflicts that are however at minimum level at the moment;
- Species diversity and population for both flora and fauna;
- Species movements: Local migration patterns;
- Species of conservation importance; and
- The biodiversity conservation hotspots and critical water resources.

Field Study

- (i) Mammal Survey: the small and large mammal species was considered for the survey. Effective approaches for rapid assessments of this taxon was employed. These include physical (visual) survey and local accounts using photographs. Data extraction from online database was used to enrich the list.
- (ii) Herpetofaunal Sampling: Visual Encounter Survey protocol with time constrained searches (Heyer et al 1986) was used for systematic searches around major wetlands. Physical searches were involved checking on the tree trunks (bark) and turning stones.
- (iii) **Bird Sampling:** Bird surveys were conducted using Point Counts on selected locations. The survey was conducted in the morning in the site. Bird species was identified based on direct



observation and their unique calls. Opportunistic sampling of birds was also conducted throughout the day.

- (iv) Terrestrial Invertebrate Sampling: Three methods of sampling terrestrial invertebrates were used. These include; physical observation, sweep net sampling, litter sampling and beating. However, the most effective method for a rapid assessment is the sweep net sampling. Sweep nets were used to trap flying species, while physical observation was used on butterflies, bees, dragonflies. Crawling insects such as beetles' spiders was searched on trees and under litters and stones.
- (v) Plant Sampling: plotless method using random sampling was used to assess richness of plant on sites. The plot-less method was employed along the transects in sites. The identification was done with reference to the field guide books. Photographs was taken for representative tree species or vegetation formations occurring in the riverine system.
- (vi) Aquatic Macroinvertebrate Survey: Invertebrate considered for survey are species that can be retained by a 500 to 600-micron mesh screen. These species could include aquatic insects such mayfly, dragonfly and caddis fly larvae), aquatic worms, amphipods (scuds), leeches, clams and snails. Kick-sampling was used for three minutes kicking/sweeping water media using a standard 1 mm mesh pond (hand) net. Loose pebbles were turned to observe invertebrates hiding under stones. Observation of dragonflies and damselflies was performed along the main rivers and lakes within.
- (vii) Fish Diversity and Fisheries Survey: Fisheries species was surveyed from landings from Beach Management Unit locations. More information on fisheries species was sought from the Kenya Fisheries Service.
- (viii) **Local Accounts of Species:** Due to time limitation in the field, more species data was collected from interview with the local people with experience on species within the forest ecosystem. The information from the locals was verified and validated using literature distribution of species. The identification was done using the relevant guide books for each taxon.

Validation of Species of Conservation Importance

These are threatened species listed under IUCN red list, species endemic to the region, and species listed under CITES. Impact of the proposed Energy Park was analysed against the ecology of species of conservation importance.

a) Validation with IUCN Red Listed Species

Conservation status of species in checklist generated by desktop analysis, field observations and



local accounts was validated using IUCN red list of threatened species. There are different categories of conservation status of species and are described in the IUCN red list data. Based on the categories, species was assigned status:

- CRITICALLY ENDANGERED (CR) when it is facing an extremely high risk of extinction in the wild in the immediate future, as defined by any of the criteria (A to E in the IUCN Red List Categories);
- ENDANGERED (EN) when it is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future, as defined by any of the criteria (A to E in the IUCN Red List Categories);
- VULNERABLE (VU) when it is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium-term future, as defined by any of the criteria (A to E in the IUCN Red List Categories);
- LOWER RISK (LR) when it has been evaluated, does not satisfy the criteria for any of the categories Critically Endangered, Endangered or Vulnerable. Species included in the Lower Risk category are separated into three subcategories;
- Conservation Dependent (CD). Taxa which are the focus of a continuing taxon-specific or habitat-specific conservation programme targeted towards the taxon in question, the cessation of which would result in the taxon qualifying for one of the threatened categories above within a period of five years;
- Near Threatened (NT). Taxa which do not qualify for Conservation Dependent, but which are close to qualifying for Vulnerable;
- Least Concern (LC). Taxa which do not qualify for Conservation Dependent or Near Threatened;
- DATA DEFICIENT (DD) when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status, and;
- NOT EVALUATED (NE) when it has not been assessed against the IUCN criteria.

b) Validation with the Endemic Species list

The IUCN online database was used to validate species checklist generated from the field and literature search for status of endemicity. Other online database will also be used for verification.

c) Validation with the Convention on International Trade on Endangered Species (CITES)

Species checklist was run against list of CITES which is categorised into Appendices, according



to the degree of protection species require. For additional information see www.cites.org.

A biodiversity report was in addition prepared and is annexed in the report as Appendix 11.

1.5.10. Socio-Economic Assessment

In understanding the socio-economic characteristics of the proposed masterplan area, socioeconomic assessment was undertaken. The assessment was mainly guided by the secondary sources available as well as inputs from various stakeholders engaged. Notable secondary data that were review included 2019 Kenya population census Volumes II, III and IV.

CHAPTER 2: MASTERPLAN DESCRIPTION

2.1 Background

The Government of Kenya launched the Energy Transformation Programme in July 2015 that provided a framework for the country's industrialization process. A key component of this programme is the setting up of industrial zones and Parks. KenGen plans to develop an Energy Park (to be called KenGen Energy Park) at the Olkaria geothermal hub in Naivasha and requires the services of a consultant to conduct and update the feasibility study. KenGen intends to leverage its geothermal power capacity at Olkaria to develop an industrial zone that can also serve as an additional source of revenue generation from both the sale of power (and other derivatives such as steam/water, geothermal brine, condensate etc. as applicable), in addition from the lease of land to investors.

A feasibility study for establishment of the KenGen Energy Park was conducted and concluded in October 2016. Since then, there have been economic changes. The Laws and regulations governing Energy Parks have also changed. It is therefore necessary to update the Energy Park feasibility study to include the new ideas and take into account the regulatory changes that have taken place. It is for this reason that KenGen contracted Dar Al-Handasah Consultants (Shair and Partners) to update the feasibility study. KEP is part of the larger Olkaria Geothermal Field Development Programme, whereby a number of infrastructures has been put in place in leveraging from geothermal resources. KEP seeks to optimize on usage of geothermal resources.

This section presents a detailed description of the KEP draft feasibility study. In summary, the chapter present;

- Objective, Purpose and rationale of the masterplan;
- Alternative policy, options and strategies of the masterplan;
- Areas and sectors affected by the masterplan;
- Proposed activities for masterplans; and
- Implementation plan and time scale of the masterplan.

2.2 Objective, Purpose and Rationale of KEP Masterplan

The main objectives of KEP are;

3. To update a feasibility study conducted in 2016 for the development of the KenGen Industrial Park.



4. To leverage KenGen geothermal power capacity at Olkaria to develop an industrial zone that can also serve as an additional source of revenue generation, from both the sale of power (and other derivatives such as steam/water, geothermal brine, condensate etc. as applicable), in addition from the lease of land to investors.

The specific objectives of KEP are;

- 8. Economic and Market Studies: Review of the market and economic context to identify sectors / activities with the highest opportunity for development at the Project Site, in addition to the scale and phasing of development.
- Industrial Master planning: Review and validation of the site location taking into consideration any revisions to the scale of development needed and development of a schematic masterplan.
- 10. Infrastructure: Updating of infrastructure needs assessment, with consideration for how geothermal resources can be fully maximised, and assessment of the investment which may be needed/ their associated cost;
- 11. Financial: Conducting a financial analysis to test the implication to the Client of development of the park, notably in terms of identifying and quantifying revenue streams;
- 12. Institutional: Review of the legal and regulatory framework and implication of this on:(i) requirements to achieve SEZ status; and (ii) potential development and operating models which may be considered;
- 13. Implementation / Delivery: Supporting the Client in kickstarting implementation of the masterplan by providing recommendations on the most suitable delivery models, defining an investment attraction strategy and preparing initial documentation (including procurement documents and applications); and
- 14. Environmental: Conducting SEA to test the environmental impact of the proposed industrial park and initiating the approval process with NEMA.

The scope of works for KenGen Energy Park feasibility study included:

- a) Reviewing of the existing feasibility study.
- b) Carrying out detailed Market Demand Analysis and Industry Assessment to identify suitable products/services, or industries/sectors that would be suitable for investing at the KenGen Energy Park.
- c) Developing an updated feasibility study by incorporating the new ideas, government laws and regulations, and a review of the relevant legal and regulatory aspects.



- d) Evaluating and recommending Energy Park development models/procurement models suitable for KenGen and the Land Use Policy.
- e) Developing a schematic Master Plan and infrastructure assessment of the proposed Energy Park area.
- f) Developing a Financial Model for the energy Park and a revenue model for KenGen from the Energy Park.
- g) Carrying out Economic Impact Assessment.
- h) Recommending infrastructure requirements and cost estimates.
- Reviewing and recommending the selling prices and tariff structures for geothermal resources to be offered by KenGen including steam, brine, condensate, electricity, raw water and services charge.
- j) Reviewing and advising on the lease price for the land.
- k) Develop the term sheet for the energy Park.
- I) Carry out the cost and benefit analysis for the KenGen Energy Park.
- m) Advise on the viability of the various Energy Park model to KenGen and the potential investors.
- Advising on the procurement models/approaches for attracting investors suitable for KenGen Energy Park.
- o) Developing the Masterplan implementation roadmap, institutional framework and financing models.
- p) Developing marketing and business plans showing financial and economic analysis.
- q) Prepare a detailed feasibility study report covering the scope of the study as a minimum that meets the requirements set out in the Special Economic Zones Laws and Regulations.
- r) Developing procedures and templates for procurement of investors using the Specially Permitted Procurement Procedures.
- s) Developing detailed and comprehensive Terms of Reference, complete with the evaluation criteria that would be used to procure Developers, Operators and Investors for the Energy Park.
- t) Providing all the required details and information and dully fill the application forms for application of the KenGen Energy Park for Registration / Gazettement as a Special Economic Zone.
- u) Identifying suitable and potential Energy Park Developers, Operators and Investors, and send out questionnaires or request for information as part of market sounding.



Then, develop a summary report suitable for further market sounding and marketing.

- v) Conducting and preparing a Strategic Environmental Assessment (SEA) study report.
- w) Assisting KenGen in acquiring the National Environmental Management Authority licence for the SEA.

2.3 KEP Location Context

2.3.1. County Context

The proposed masterplan is located within in Nakuru County of Kenya. Neighbouring counties; as shown in the Figure 2-2 are;

- Bomet County to the West;
- Kericho County to the North West;
- Narok County to the South;
- Nyandarua County to the East;
- Laikipia County to the North East; and
- Baringo County to the North.

Emphasizing the significance of the proposed masterplan, it should be noted that the KEP land is situated exclusively within Nakuru County, while also being in close proximity to Kajiado and Narok counties. As a result, the implementation of this masterplan will have implications for residents of both Narok and Kajiado counties. To address this, we suggest ongoing consultation with representatives from Nakuru, Kajiado, and Narok counties by the plan implementation team.

Due to the masterplan's location near the boundary between Narok and Nakuru County, its implementation may lead to urban sprawl and development in predominantly rural areas of either county. This could give rise to several key issues, including:

- Conflicts related to land use planning in both counties. To avoid contradictions, it is advisable for the two counties to collaborate in preparing land use plans for the areas surrounding the proposed industrial park.
- Potential conflicts arising from revenue collection and the provision of infrastructure and services. Nakuru County is likely to be the major beneficiary of direct and indirect revenue collection, which might disadvantage Narok County residents in terms of infrastructure and service provision. Coordination between the two counties in land use planning around the industrial park is crucial to address this concern.
- Solid waste disposal challenges may arise. Although most solid waste generated from the industrial park will be managed at existing Naivasha disposal sites, the expanding



development beyond the industrial park site, including in Narok County, might pose effective solid waste management challenges. Collaboration between the two counties is necessary to manage waste beyond the industrial park site.

- Anticipated air and noise pollution due to various industries in the industrial park. The level and extent of pollution will be better understood once industries conduct air dispersion models. However, based on an existing dispersion model for KenGen geothermal operations, the pollution is projected to remain within Nakuru County.
- Traffic congestion will likely increase due to a proposed road connecting the industrial park to Suswa, impacting Kamandura-Mai Mahiu-Narok Road. This could lead to livestock accidents, particularly since a majority of residents along the proposed road corridor are nomadic livestock keepers.
- The proposed industrial park's location within a sensitive ecosystem, including Hell's Gate National Park, Mount Suswa Conservancy, and Mount Longonot National Park, may interfere with wildlife movements if adequate infrastructure is not put in place. It is essential that the Environmental Impact Assessments (EIA) for respective industrial park components ensure measures are taken to facilitate wildlife movement.

Addressing these issues requires a collaborative effort and careful planning between the counties involved, along with implementing appropriate mitigation measures to minimize the impacts of the industrial park on the surrounding environment and communities.



Figure 2-2: KEP County Location KEP County Location Context





2.3.2. Sub-County and Ward Context

The proposed masterplan is located within Naivasha Sub-County that neighbours Gilgil Sub-County as shown in Figure 2-3 below.



Figure 2-3: KEP Sub-County Context

Similarly, the proposed masterplan is located exclusively within Olkaria Ward as shown in Figure 2-3 and Figure 2-4 below. However, continuous consultation on industrial park operation and aspects, with respective Members of County Assembly from Maiella, Naivasha West and Mai Mahiu (Nakuru County) and Melili and Suswa wards (Kajiado County) are held in a structured manner.

Key issues that are anticipated to affect residents in the neighbourhoods of the industrial park include but not limited to and have been discussed in details in Chapter 6 of this report;

- Soil pollution;
- Barrier to movement of elephants and other animals across the landscape;
- Increased wildlife accidents;
- Diminished grazing land for livestock;
- Human-wildlife conflicts;



- Increased cases of poaching;
- Reduction in flora and fauna coverage;
- Introduction and spread of invasive species;
- Reduced population of fish in lake Naivasha;
- Land scaring and visual intrusion;
- Air pollution;
- Noise and vibration pollution;
- Surface and ground water pollution;
- Increased demand in water from lake Naivasha;
- Alteration of drainage regime of the area and soil erosion;
- Increased generation of solid waste;
- Maasai community cultural erosion;
- Increased human traffic accidents;
- Increased occupational accidents and/or diseases;
- Outcrop of informal settlements;
- Increase in immoral behaviours;
- Conflicts with the host community; and
- Gender issues.





2.4 Master Plan Guiding Principles

Key principles of KenGen Energy Park entail;

- **Cost Efficiency:** Create functional, convenient spaces with multi-functional usage to maximise the cost-benefit ratio.
- Flexibility: Create a framework that can adapt in response to future market trends.
- Eco Energy Park-embed Circular Economy and Industrial Symbiosis: Facilitate development that provides opportunities for synergies between industries for complementary resource and material requirements.
- Quality of life: Create an inviting, vibrant, and diverse work and living environment that fosters employee satisfaction.
- Environmentally Sensitive: Leverage on existing assets in a way that minimises impact on the neighbouring nature reserves as illustrated on Appendix 10.
- Strong linkages: Capitalise on proximity to the SGR Stations and the ICD to improve permeability and strong connections to the site and upgrade existing links to Naivasha settlement to advance the sites competitive stance.

2.5 Areas and Sectors Affected by the Masterplan

The proposed Energy Park site is located within the Olkaria area in Naivasha Sub-County, Nakuru County of Kenya as shown in **Figure 2-5** below. It is located in the neighbourhoods of Hells Gate National Park as shown in Figure 2-6 and Figure 2-7 below. The proposed site is 18,248,616m² i.e. 4509.3 Acres or 1824.9Ha and it is located within coordinates presented in **Table 2-1** below.

Number (Based on Figure 2-5 below)	Coordinates
1	0°53'41.89"S, 36°19'12.02"E
2	0°53'54.88"S, 36°21'27.19"E
3	0°54'41.25"S, 36°21'44.30"E
4	0°54'21.18"S, 0°54'21.18"S
5	0°54'54.90"S, 36°23'42.98"E
6	0°55'8.69"S, 36°23'28.00"E
7	0°55'8.73"S, 36°22'20.37"E
8	0°54'54.69"S, 36°22'19.37"E
9	0°54'54.15"S, 36°21'42.19"E
10	0°55'25.76"S, 36°21'36.69"E

() KenGen			
Number (Based on Figure 2-5 below)	Coordinates		
11	0°55'38.00"S, 36°19'25.67"E		
12	0°54'49.87"S, 36°19'2.72"E		

Figure 2-5: Masterplan Location





Figure 2-6: Key Environmental Features around the proposed Master Plan



Figure 2-7: Location of the Energy Park in reference to major features





2.6 Site Features

The proposed Energy Park is characterised by an undulating defined peaks and valleys. In summary,

- 59% of the site is developable (low to gentle slopes of less than 15%);
- 28% of the site is comprised of steep slopes more that 15%; and
- 13% of the site is covered by existing roads, pipes and other infrastructure.

Based on this, the developable land area is 1,082 Ha out of total land coverage of 1,824 Ha. In addition, Suswa, Mai Mahiu and Naivasha ICD stations are close to the site, though the site has a restricted road access at the moment hence new access roads will be required. Further, there is an existing settlement south of the site (Rapland), as shown in Figure 2-7 above, which can be expanded as staff accommodations. The site is also not easily accessible from the existing towns and villages. Based on this, the proposed Energy Park masterplan proposed two roads as shown in **Figure 2-8** below to facilitate connectivity as namely;

- KenGen Energy Park- Longonot Road connecting the Energy Park to Longonot; and
- KenGen Energy Park- Suswa Road connecting the Energy Park to Suswa SGR station.





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2.7 Proposed Masterplan Activities and their Details

2.9.1. Industries and Land uses

The proposed industries proposed at the Energy Park are;

- 1. Fertilisers;
- 2. Iron & Steel;
- 3. Plastics & Packaging;
- 4. Fabricated Metal products;
- 5. Pulp & Paper;
- 6. Wood & Wood Products;
- 7. Textiles and Apparel (Steam Intensive Industry);
- 8. Food & Beverages (Steam Intensive Industry);
- 9. Textiles and Apparel (Light Industry);
- 10. Food & Beverages (Steam Intensive Industry);
- 11. Warehousing and Logistics; and
- 12. Supporting Light Industry.

Other supporting infrastructure and land uses as presented in Appendix 10 are; shown below;

- Proposed Utilities;
- Existing Utilities;
- Future Phases;
- Conservation Area;
- Open Space;
- Green Belt; and
- Roads.

Additionally, **Table 2-2** and **Table 2-3** below presents the proposed land uses at the Energy Park and their acreage.

Land Classification	Land use	Total Area (m ²)	Site Total Land Use Proportion	
	Fertilisers		6.3%	
Medium/Heavy	Iron & Steel	1 152 625		
Industrial	Plastics & Packaging	1,152,055		
	Fabricated Metal products			
Steam Intensive	Pulp & Paper	112,362	0.6%	
Industrial	Wood & Wood Products	165,486	0.9%	

Table 2-2: Proposed Land Uses



Land Classification	Land use	Total Area (m ²)	Site Total Land Use Proportion
	Textiles and Apparel	700 646	1 20/
	Food & Beverages	790,040	4.570
	Textiles and Apparel	E10 02E	2.8%
	Food & Beverages	516,655	
Light muusthai	Warehousing and Logistics	E 4 7 1 E C	3.0%
	Supporting Light Industry	547,150	
Non-Industrial	Non-Industrial	131,210	0.7%
	Proposed Utilities	139,170	0.8%
Unsaleable Land	Existing Utilities	1,602,022	8.8%
	Future Phases	1,771,997	9.7%
	Conservation Area	1,829,649	10.0%
	Open Space	456,813	2.5%
	Green Belt	8,091,009	44.3%
	Road	939,626	5.1%
Total		18,248,616	100.0%

Non-industrial land components are as shown in **Table 2-3** below.

Land Use	Total Area (m ²)
Offices	24,391
Data Centre	16,235
R&D Centre	5,051
Hospitality & MICE	16,036
Visitor Experience Centre	2,496
Supporting Administrative & Commercial Uses	67,002
Total	131,210

Based on **Table 2-2** above, it is evident that green belt and conservation areas will account for the largest land area totalling to 9,920,658 m² which accounts to approximately 54.2% of the total Energy Park land. The **Figure 2-9** below presents a summary of the proposed land use plan to summarize the components presented in **Table 2-2** and **Table 2-3** above.



Source: Draft KenGen Energy Park Masterplan, 2022



2.9.2. Resources Demand and Waste Generation

To enable operationalization of the Energy Park, infrastructure development will be key. This will include but not limited to roads, telecommunication and power supply. Resource utilization is a key aspect of consideration. These resources will include water, energy, labour among others. Energy Park operations will in addition lead to waste water and solid waste requiring effective management to be put in place.

Power/Electricity Requirements

A total of 721.42 MVA will be required to enable effective operation of industries that will be installed in the Energy Park. This based on the masterplan estimates and is presented in **Table 2-4** below.

Phase	T.D.L AT Loop Level (MVA)
Phase-01	158.91
Phase-02	189.59
Phase-03	171.54
Phase-04	201.37
Total	721.42

Table 2-4: Electricity Requirement

Source: Draft KenGen Energy Park Masterplan, 2022

Telecommunications Requirements

Based on the masterplan calculations the total bandwidth requirement for the year 2045 is estimated to be 22.5 Gbps as shown in **Table 2-5** below.

Table 2-5: Bandwidth Requirement

Phase	Bandwidth Requirement (in Mbps)
Phase 1	4,971
Phase 2	10,876
Phase 3	15,955
Phase 4	22,461

Source: Draft KenGen Energy Park Masterplan, 2022

Water Requirement

Water is a key resource that will be required in the operation of the Energy Park. This will be used in various Energy and non-industrial operations in the Energy Park. The total water demand by



the final phase of the masterplan (year 2045) is estimated to be 20,100 m³ per day as illustrated

in Table 2-6 below.

Table 2-6: Water Demand

Phase	Average Waster Required (m ³ /d)
Phase 1	4,625
Phase 2	5,225
Phase 3	4,725
Phase 4	5,525
Total	20,100

Source: Draft KenGen Energy Park Masterplan, 2022

Waste Water Generation

Industrial activities in addition to other supportive operations will lead to waste water generations. The waste water will amount to an estimated generation of 18,800 m³/day by the final phase of the masterplan as shown in **Table 2-7** below.

Table	2-7:	Estimated	Waste	Water	Generation
I UNIC	~	Loumatoa	maoto	<i>i</i> racoi	Contraction

Phase	Average Waste Water Generated (m ³ /d)
Phase 1	4,325
Phase 2	4,885
Phase 3	4,425
Phase 4	5,165
Total	18,800

Source: Draft KenGen Energy Park Masterplan, 2022

Solid Waste Generation

Industrial solid waste will be the main source of solid waste generated in the proposed Energy Park. It will comprise mainly of waste from fertilisers, pulp & paper, iron & steel, wood & wood products, plastics & packaging, textiles and apparel, food & beverages, fabricated metal products, warehousing and logistics and supporting light industry. The estimated amount of industrial waste to be generated in Phase 4 of the masterplan is 1,305 T/day. This is as shown in **Table 2-8** below. The industrial solid waste will be stored at generation point for treatment / disposal at offsite municipality facilities.

Table 2-8: Industrial Waste Estimated	l Quantities	2011		
Phase	l	ndustrial Waste	e Quantities (T/d	1)
	Phase 1	Phase 2	Phase 3	Phase 4
Fertilisers	31	71	109	155
Pulp & Paper	1	3	5	7
Iron & Steel	11	28	45	62
Wood & Wood Products	24	48	64	97
Plastics & Packaging	2	7	10	16
Textiles and Apparel	13	21	26	31
Food & Beverages	120	269	402	563
Fabricated Metal products	64	153	242	346
Warehousing and Logistics	4	9	13	18
Supporting Light Industry	2	6	8	10
Total	272	615	924	1,305

Source: Draft KenGen Energy Park Masterplan, 2022

Additionally, municipal solid waste constituting of organics, paper/cardboard, LT & others, plastics and other/general waste is estimated to be 1,449.44 Kg/day by the final phase of the masterplan. This is as shown in **Table 2-9** below. The waste will be collected from the various land uses within the Energy Park and stored in a central storage area for consolidation before being transported offsite for treatment/disposal at offsite Municipality facilities (existing/planned facilities).

Estimated Quantities (Kg/d)	Units	Phase 1	Phase 2	Phase 3	Phase 4
MSW Estimated Quantities	Kg/day	326.88	701.06	1,045.14	1,449.44
Organics	Kg/day	191.22	410.12	611.41	847.92
	m ³ /day	0.63	1.34	2	2.78
Paper/Cardboard	Kg/day	36.94	79.22	118.1	163.79
	m ³ /day	0.34	0.72	1.07	1.49
LT & Others	Kg/day	25.5	54.68	81.52	113.06
	m ³ /day	0.42	0.91	1.36	1.88
Plastics	Kg/day	45.11	96.75	144.23	200.02
	m ³ /day	0.53	1.14	1.7	2.35
Other/General	Kg/day	27.13	58.19	86.75	120.3
	m ³ /day	0.11	0.23	0.35	0.48
TOTAL	Kg/day	325.9	698.96	1,042.01	1,445.09
	m ³ /day	2.03	4.35	6.48	8.99

Table 2-9: Munici	pal Solid Waste	Estimated Quantities

Source: Draft KenGen Energy Park Masterplan, 2022



Labour Force

The proposed Energy Park is anticipated to generate an estimated 59,000 employment opportunities; direct, indirect and induced. Based on the industries that are proposed in the masterplan, a total of 33,670 cumulative direct opportunities are projected to be generated by the year 2045 as shown in **Table 2-10** below. Food & Beverages, Fertilisers, Textiles & Apparels, Warehousing and Fabricated Metal Products industries are anticipated to be the main source of labour in the Energy Park. Further, a total of 10,125 cumulative indirect employment opportunities are projected by the year 2045 as shown in **Table 2-11** below. In addition, a total of 15,158 cumulative induced opportunities are projected by the year 2045 as shown in **Table 2-12** below.

Sector	Years					
	2025	2030	2035	2040	2045	
Fertilisers	180	1,240	2,280	3,490	5,020	
Pulp & Paper	50	290	520	740	1,000	
Iron & Steel	40	280	530	810	1,150	
Wood & Wood Products	50	310	560	830	1,150	
Plastics & Packaging	40	270	570	940	1,410	
Textiles & Apparels	250	1,270	1,810	2,290	2,730	
Food & Beverages	520	3,520	6,470	9,720	13,560	
Fabricated Metal Products	150	1,010	1,940	2,990	4,250	
Warehousing and Logistics	110	680	1,210	1,790	2,470	
Supporting Light Industry	40	260	460	680	930	
Total	1,430	9,130	16,350	24,280	33,670	

Table 2-10: Cumulative Direct Employment by Sector

Source: Draft KenGen Energy Park Masterplan, 2022

Table 2-11: Cumulative	Indirect Emp	ployment b	y Sector
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Sector	Years				
	2025	2030	2035	2040	2045
Fertilisers	22	149	274	419	602
Pulp & Paper	17	99	177	252	340
Iron & Steel	13	90	170	259	368
Wood & Wood Products	17	105	190	282	391
Plastics & Packaging	16	108	228	376	564
Textiles & Apparels	48	241	344	435	519



Sector	Years				
	2025	2030	2035	2040	2045
Food & Beverages	192	1,302	2,394	3,596	5,017
Fabricated Metal Products	48	323	621	957	1,360
Warehousing and Logistics	26	163	290	429	592
Supporting Light Industry	16	104	184	272	372
Total					10,125

Source: Draft KenGen Energy Park Masterplan, 2022

Table 2-12: Cumulative Induced Employment by Sector

Sector	Years					
	2025	2030	2035	2040	2045	
Fertilisers	29	198	365	558	803	
Pulp & Paper	24	136	244	348	470	
Iron & Steel	15	106	201	308	437	
Wood & Wood Products	24	146	263	390	541	
Plastics & Packaging	19	130	274	451	677	
Textiles & Apparels	113	572	815	1,031	1,229	
Food & Beverages	296	2,006	3,688	5,540	7,729	
Fabricated Metal Products	57	384	737	1,136	1,615	
Warehousing and Logistics	53	329	585	865	1,193	
Supporting Light Industry	20	130	230	339	464	
Total			·	•	15,158	

Source: Draft KenGen Energy Park Masterplan, 2022

2.8 Implementation Plan and Time Scale of the Masterplan

The Energy Park is anticipated to commence its operations in the year 2025 based on initial estimations. However, this timeline is based on approvals from various government agencies. The masterplan is planned to be implemented in twenty (20) years constituting four phases of five (5) years each.
CHAPTER 3: BASELINE ENVIRONMENTAL CONDITIONS

3.1 Overview

This chapter presents a discussion on the baseline environment of the proposed Energy Park. The scope of the baseline conditions has been limited to the sub-county as well as the masterplan site environs. This chapter aids identification of aspects of the masterplan area that might be impacted on through the implementation of the Energy Park. Baseline environment analysis covers biological, physical and socio-economic environments.

3.2 Physical Environment

3.2.1. Climate

Rainfall

The Nakuru County Integrated Development Plan (2018-2022) has indicated that the rainfall at the proposed masterplan area ranges between 500-1,100 mm. This area lies within Zone 1 and Zone 2 (Figure 3-10) of the Nakuru County Climatic Zones. The average monthly rainfall data gathered in Olkaria 1 and 2 in the years 2011-2013, 2007-2009 and 1995-2002 is averagely 584 mm. Chart 3-1 below presents the average rainfall obtained indicating that April, November, May, December and March experiences the highest rainfall levels.



Source: Olkaria 1 and 2 KenGen Rainfall Monitoring Data



Source: Nakuru County Integrated Development Plan (2018-2022)

Temperature

The mean minimum monthly temperature in the project area has been recorded to range from 15.9 - 17.8°C with a mean of 16.8°C. The mean monthly maximum temperatures range from 24.6 - 28.3°C and the month of July is the coldest month while the hottest month is February. (Feasibility Study report ESMF 2016).

The annual average temperature in the proposed masterplan area is 17.3°C ranging between 15-19°C (Cedar Lake Ventures Inc, 2022). The hottest months are between December and April as shown in **Chart 3-2** below.





Wind Direction

The predominant annual wind direction in the proposed masterplan area is from South-South East to North -North West. The average annual winds speeds range between 0.5m/s to 7.5m/s. The annual wind directions are presented by the wind rose shown in Figure 3-11 below.



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Additionally, **Figure 3-12** below presents seasonal wind roses, based on the data gathered from KenGen Olkaria II. The predominant seasonal directions are as summarized below;

- December to February Season: The predominant wind direction is from West to South East direction;
- March to May Season: The predominant wind direction is from South to North direction;
- June to August Season: The predominant wind direction is from South to North; and
- September to November Season: The predominant wind direction is from South to North direction.



Figure 3-12: Seasonal Wind Roses

Source: KenGen Olkaria II Monitoring



3.2.2. Air and Noise Quality

a) Air Quality

The proposed masterplan site is currently occupied by KenGen infrastructure. It further serves as grazing land for the local community. The site is situated within KenGen Olkaria operations. As such, KenGen operations serves as the main source of air pollution as illustrated in Figure 3-13 below. This is constituted of Hydrogen Sulphide Carbon Dioxide, Methane and Ammonia among other pollutants generated from geothermal operations.



Figure 3-13: KenGen Geothermal Operations Fugitive Emissions

There is no much data on the status of air quality on the masterplan area. A study undertaken by Akiira Geothermal development in 2015 indicate that the criteria pollutants i.e. Nitrogen Dioxide (NO_2) ; Inhalable Particulate Matter (PM_{10}) ; Sulphur Dioxide (SO_2) ; Hydrogen Sulphide (H_2S) ; and Mercury (Hg) were within Kenya Environmental Management and Co-ordination (Air Quality) Regulations, 2014. **Table 3-13** below details the obtained values and the Kenyan regulatory limits.

The concentration of these pollutants is anticipated to exacerbate through the implementation of the proposed masterplan if proper measures are not put in place.



Pollutant	Concentration (µg/m ³)	Kenya Regulations Limit (μg/m³)
PM ₁₀	33-45	150
NO ₂	0.88-3.1	100
SO ₂	0.32-2.08	125
H_2S	0.30-0.6	150
Hg	0.43-0.91	-

Source: Akiira One Geothermal Company Limited, Air Quality Assessment Report, 2015

Baseline air quality assessment done by 5 Capitals Environmental and Management Consulting, 2015 for H_2S gave concentration ranging from 0.176 - 1.093 µg/m³ which were within the Kenya Regulatory Limit of 150 µg/m³. Electricity generation using geothermal energy is cleaner in comparison with fossil fuel. Based on this, SO₂, NO₂, and PM concentrations in the atmosphere are non-degraded based on 5 Capitals Environmental and Management Consulting, 2015 report.

Additionally, Air Dispersion Modelling conducted within Olkaria I, II, IV and V for all existing convectional and wellhead geothermal power plants had predicted Hydrogen Sulphide distribution in the KenGen operations to be between 0.02-0.5 PPM as shown in **Figure 3-14**.







Source: KenGen H₂S Dispersion Modelling

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b) Noise Levels

With the proposed masterplan site currently occupied by KenGen infrastructure, KenGen operations serves as the main source of noise pollution. This is mainly constituted of noise generation from the geothermal power plants and related activities.

There is limited data on ambient noise at the proposed area however, measurements done by 5 Capitals Environmental and Management Consulting during a SEA study for the Olkaria Geothermal Field done in 2015 gave a figure ranging from 38.5 – 95.9 dB(A) with the highest noise source being well silencers.

Other measurements done at selected areas of Olkaria I and II in 2010 gave a range of 28.4 - 70.9dB (A) the lowest being at Lake View Estate and the highest at Olkaria I power station. **Table 3-14** below indicates the obtained baseline values.

Noise levels is anticipated to exacerbate through the implementation of the proposed masterplan.

	Noise Level dB (A)	Kenya Limits dB (A)	World Bank Limits dB (A)	WHO TLV dB (A)					
Olkaria II									
Olkaria II Power Station	68.5	85 ¹	70 ²	85 ³					
Office Block	39.8	85	70	85					
Hot Well Pit Unit 1	63.9	85	70	85					
Hot Well Pit Unit 2	64.0	85	70	85					
Cooling Tower	63.1	85	70	85					
Compressor Room	63.7	85	70	85					
Control Room	40.2	85	70	85					
	Olka	iria I							
Motor Vehicle Workshop	33.8	75	70	85					
Olkaria I Power Station	70.9	75	70	85					
Administration Block	50.0	85	70	85					
Olkaria Well-10	44.7	85	70	85					
Olkaria Well-22	34.7	85	70	85					
Stores	45.1	85	70	85					
KWS Olkaria Gate	32.1	60 ⁴	55 ⁵	45-50 ⁶					
Lakeview Estate	28.4	60	55	45-50					
Lakeside Estate	29.7	60	55	45-50					

Table 3-14: Noise Levels within Olkaria I and II Selected Areas

Source: Noise Emission Level Monitoring Around Olkaria Geothermal Power Project, 2010

¹The permissible noise action level, based on Kenya Factories and Other Places of Work (Noise Prevention and Control) Rules, 2005 is 85 dB(A).

²World Bank maximum permissible noise level for industrial/commercial areas is 70 dB(A).

³WHO maximum permissible noise level in workplaces assuming 8-hr shifts, 5-day weeks is 85 dB(A).



⁴Kenya EMC Air Quality Regulations, 2014 maximum permissible noise levels for constructions sites for residential areas (with measurement taken within the facility) is 60 dB(A).

⁵World Bank maximum permissible noise level for residential/institutional/educational areas are is 55 dB(A).

⁶WHO maximum permissible noise level in residential areas is 45-50 dB(A).

Furthermore, based on KenGen noise modelling conducted within Olkaria I, II, IV and V for all existing convectional and wellhead geothermal power plants, the predicted noise levels within KenGen operations areas ranges from 25 - 65dB(A) as shown in Figure 3-15.





Source: KenGen Noise Modelling within Olkaria I, II, IV and V



3.2.3. Hydrological Features and Water Quality

Lake Naivasha as shown in **Figure 3-16** below is the main water resource in the masterplan area. The lake has a surface area of 139km² at 1884m above sea level. Lake Naivasha is also a designated RAMSAR site. (No. 724, the second site listed by Kenya under the RAMSAR Convention) and an Important Bird Area (IBA KE048). The lake is a key hydrological feature in the area, a major source of water for domestic, institutional and industrial use in the area. Additionally, the lake is a key tourist attraction site a factor that is mainly contributed by the presence of flamingos and other birds. The lake is rich in fish resources providing a livelihood for a number of residents. The lake influences the area microclimate and serves as a major runoff outfall. Despite its significance, the lake faces numerous challenges including:

- Non-point source of pollution from markets and surface runoff;
- Riparian land encroachment;
- Lake flooding; and
- Siltation of the lake.

Water quality monitoring data done by KenGen in 2011 indicate that the water quality done on selected parameters; pH, Conductivity, Total Dissolved Solids (TDS) and Residual Chlorine are within Environmental Management and Coordination, (Water Quality) Regulations 2006 guideline limits. **Table 3-15** below depicts the obtained values in the monitoring session.

Table 3-13. Lake Walvasha Waler Quality Worldon by Data									
Parameter	Maximum Guideline	Olkaria I	Olkaria II	Lake Side	Lake View				
		11/0/2021							
		14/5/2021							
рН	6.5-8.5	7.95/23.2°C	7.61/21.2°C	7.38/22.3°C	6.79/21.9°C				
Conductivity	500 us/cm	0.28	0.38	0.4	0.4				
Total Dissolved	500 ppm	0.14	0.19	0.2	0.2				
Solids (TDS)									
Residual Chlorine	0.1-1ppm	0.11	0.95	0.34	0.05				
		17/9/2021							
рН	6.5-8.5	7.14/24.2°C	7.33/26.9°C	7.23/23.7°C	7.03/23°C				
Conductivity	500 us/cm	0.36	0.42	0.42	0.38				
Total Dissolved	500 ppm	0.18	0.21	0.21	0.19				
Solids (TDS)									
Residual Chlorine	0.1-1ppm	0.07	0.1	0.01	0.03				
• <u> </u>									

Table 3-15: Lake Naivasha Water Quality Monitoring Data

Source: KenGen Water Sampling reports, 2011

In addition, water monitoring undertaken by KenGen in 2021 was carried out on different dates between 21st September 2021 and 6th November 2021 whereby samples were drawn from Lake View and steam quality monitoring for treated water and Karagita Beach, Kamere Beach,



Geothermal Club Intake, Highlift and Lake Oloiden for raw water. The water monitoring result is appended in the report as Appendix 9. Based on the results, all the parameters monitored, pH, electrical conductivity, TDS, turbidity, and fluoride were within the standard limits for the respective parameters other than at Lake Oloiden whereby Fluoride was 4.8ppm against the required limit of 1.5ppm.

Hydrological Features

Drainage channels as well as water catchments and gorges are the main hydrological features as shown in Figure 3-16. There are no permanent rivers within the proposed masterplan area. These features are evident within the proposed masterplan site an indication that their blockage can inhibit efficient runoff management.

Figure 3-16: Hydrological Features



Source: KEP Draft Masterplan, 2022

The hydrogeological and geophysical investigations undertaken for the Olkaria Domes in April 2016, indicated that the area is constituted of shallow and deep aquifers with the area considered to be having moderate groundwater potential. This is characterised by favourable geophysical and



structural set-up of the area. Based on the study, the proposed site ground water potential is estimated to be 16,964,640 m³ however the actual estimates will be confirmed once the exploratory wells are drilled.

3.2.4. Topography

The topography of the area is defined by an undulating terrain masterplan site elevation range between 1676-2272 m as shown in Figure 3-17 below. Notable topographical features within the masterplan area includes a number of hills and gorges. These features are key tourist attraction sites, conservation sites among other ecosystems services they offer.





Source: KEP Draft Masterplan, 2022



The masterplan area is characterised by steep slopes greater than 15% which accounts for 28% of the total Energy Park land. These areas will have high costs of site grading if industries are to be developed here. Figure 3-18 below presents the slope of the area.

Figure 3-18: Topographical Analysis for the slope



Note: The dark purple colour are areas with steep slopes (approximately 15% of the masterplan site). **Source:** KEP Draft Masterplan, 2022

3.2.5. Soils and Geology

Geology

The area is located within Eburru region that is part of the larger Mau escarpment. The area geological composition is mainly constituted of soft volcanic ashes and tuffs that are characteristically highly vulnerable to erosion as a result of their soft characteristics. Eburru region is also known for its high concentration of surface geothermal activities explaining the reason for high geothermal exploration in the area. Further, pumice deposits are mainly common within Mount Longonot and its vicinity that includes the proposed masterplan site. The geological composition of Naivasha region is as presented in **Figure 2-19** below.



Source: Draft Lake Naivasha Basin Integrated Management Plan (2012-2022)

A geotechnical investigation carried out within Olkaria V indicated that Pyroclastics is found between 0-75m below ground level in most of the wells surveyed. Pyroclastics is constituted of pumice, volcanic ash and rock fragments and therefore explains the weak nature of the area rocks observed within outlining environmental sensitivity of the site based on the geological aspect.

Table 3-16 below provides a summarised stratigraphy of Olkaria domes field. This is furtherillustrated on Figure 3-21 that provides a 3-D visualisation of some of the wells sampled duringthe study as illustrated on Figure 3-22.



Depth (m bgl)	Formation
0 – 75	Pyroclastics
75 - 350	Rhyolites
350 - 550	Trachytes, Tuffs
550 – 660	Basalts and minor tuffs
660 – 810	Lower trachytes
810 – 1600	Trachytes, tuffs and basalts
1600 – 3000	Lower trachytes, and intrusives

Source: KenGen Geoscientists Team, January 2017









Source: KenGen Geoscientists Team, January 2017



Source: KenGen Geoscientists Team, January 2017





The proposed masterplan area seismicity sensitivity is low based on the electromagnetic data gathered as illustrated in Magnetotelluric Resistivity Maps shown in **Figure 3-23**, **Figure 3-24** and **Figure 3-25** below. This is based on the assessments there were carried out 1m and 2715m below the ground level. Seismic activities within Olkaria Geothermal area epicentres mainly follow liner fault zones epicentres. Notable faults include Ololbutot fault zone and two sub-parallel NW–SE (Simiyu, S. M., & Keller, G., 2000).













Soils

The proposed masterplan site is situated within great rift floor that is mainly dominated by lacustrine sediments according to Kenya Wildlife Service & World Wide Fund for Nature draft report on Lake Naivasha Basin Integrated Management Plan (2012-2022). These sediments are mainly constituted of volcanic ash and pyroclastic deposits and is mainly attributed to the surface geological composition of the area.

3.3 Biological Conditions

3.3.1. Plant Species Diversity

A total of 65 plant species records have been published within 10 km buffer. Few data publications observed from database indicate little studies have been carried out within the proposed Energy Park location. However, there are several plant species envisaged to occur within the 10 km buffer. This can be attributed to objective of the study that could have discriminated overall plant diversity in the area. Out of the 65 plant species, 11 % of the species have been recorded within the project footprint including the 2 km buffer from the project centroid. Most of these occur in the Hell's Gate National Park. Records of plant studies mostly occur far away from the project area (> 8 km). Common species according to the database are *Acacia drepanolobium*, *Dicranopteris linearis*, *Farsetia undulicarpa*, and *Polygonum senegalense*.

There is an estimated number of 57 plant species distributed within the proposed Olkaria KenGen Energy Park site. The site is dominated by *Tarchonanthus camphoratus*. The species occur on the hilly areas (on slopes) with undergrowth species dominated by Lemon grass (*Cymbopogon sp.*), *Sida sp.*, *Hypoestes sp.*, and *Ocimum sp.* The *Acacia drepanolobium* occur among *T. camphoratus*; however, its distribution is scanty in most parts of the project area. Its distribution is apparently affected by *T. camphoratus* cover dominance, herbivory by wildlife and livestock, and target felling by residents. Vernonia species grows as shrub in the area and has considerable distribution within the *T. camphoratus* mosaic.

The diversity of plant is relatively high towards and within the valleys. The valleys host plant species that are rarely observed on the hills and slopes in Olkaria. These include species such as *Olea sp. Lippia*, *Dodonea viscosa*. Vegetation is disturbed by livestock grazing that has causes destruction of undergrowth plant species especially during dry seasons.

Based on the survey, there were no plant species that were identified to be of significance with regard to conservation status. Notable plant species are as shown **Figure 3-26** below.



Figure 3-26: A Sample of Plants Observed within the site



Tarchonanthus comphoratus



Cymbopogon citratus



Acacia drepanolobium



Cyphostema

3.3.2. Alien Invasive Plant Species (AIPS)

There are four AIPS within the project footprint; these include *Nicotiana glauca*, *Cirsium vulgare*, *Datura stramonium* and *Lantana camara*. The most common AIPS is the *Nicotiana glauca* occurring along the network features such as roads, steam pipeline and near geothermal power plants. It is dispersed by seeds and runoffs that distribute its seeds along the drainage along the road. The species presents high risk of invasiveness due to its high seed production, formation of soil seed bank, ability to withstand drought and flooding, high ability to re-sprout and high germination rate. *Cirsium vulgare* is common on disturbed areas such as along the road and steam pipeline.

The species (*Cirsium vulgare*) grows rapidly, it out-competes and shades many grass and herbaceous species. The seeds have high dispersal rates caused by wind and they can remain viable in the soil for up to 10 years. The distribution of *Lantana camara* is very scanty only observed near villages. It reproduces by seeds which dispersed by birds and other animals (e.g., rodents) that eat the fruits. It can also reproduce asexually through suckers or branches getting in contact with the soil. *Datura stramonium* occur on road side near villages where deposition of





Datura stramonium





Nicotiana glauca

3.3.3. Mammal Species Diversity

A total of 32 mammal species have been observed within the 10 km buffer from the centroid of the proposed KenGen Olkaria Energy Park. Most studies have been conducted within 4 km buffer distance with high distribution occurring in Hell's Gate National Park. Approximately, 22 mammal species have been recorded within 4 km buffer distance. The proposed project location which is within 4 – 6 km buffer has previously received considerable attention on mammal studies. The location apparently is a dispersal area for wildlife animals from Hell's Gate National Park, Longonot National Park and Mau Forest Complex.

The 10 km buffer analysis of species distribution shows some species are commonly distributed on the landscape occurring in all buffer distance band; while limited distribution also observed where species is observed in one band of distance buffer. Species that are widely distributed within 10 km buffer distance are the Warthog, Spotted Hyena, Olive baboon, Giraffes and Vervet monkey. Species which are limitedly occur within the 10 km buffer distance are African bush



elephant, Lion, Cape buffalo, Black-backed jackal, and others as detailed in the Biodiversity Study Report annexed in the report as Appendix 11.

During rapid assessment, about 19 species were observed through direct observation, droppings, tracks and local accounts. The distribution of most mammal species was associated with the landforms and vegetation habitats. Grasslands were common with Thomson gazelles, Impalas, Grant gazelles, Hartebeests, and Zebras. Bushlands (opened and dense) occurring in the hilly and sloppy areas were associated with Giraffes, Warthogs. Buffaloes were observed in the bushed-grassland on hilly, sloppy and valleys and their occurrence on open grassland is mostly in Hell's Gate National Park. The Olive baboons and Warthogs utilizes all vegetation habitats and landforms within the proposed KenGen Olkaria Energy Park area as shown in Figure 3-28 below.

There are signs of tracks and droppings (pellets) of Common Duiker in the area towards the valleys that provide cover for the animal. The valleys forms hiding and foraging places for buffaloes within the project areas; however, the species graze in the open grassland areas in Hell's Gate National Park. Hippos are visitors to the established lagoons in the geothermal power plants zone. They traverse the landscape from Lake Naivasha crossing the road to look for temporary foraging sites. The African Hare are found all over the place foraging in open areas in the bushland within the KEP area. Activities of Aardvark and Spring Hare (mainly excavations) were observed in bushland on the hilly and sloppy areas.

Figure 3-28: A Sample of Mammals Observed



Olive Baboon



Warthog







Hyena (Crocuta Crocuta) track

Giraffe droppings

Based on biodiversity assessment, **Table 3-17** below presents a summary of mammal species with their conservation requiring attention. Detailed analysis of the mammal species in the area are provided in the biodiversity report annexed in the report as Appendix 9..

No.	Common Name	Scientific Name	IUCN Status	Dist	tance	e buff	ier (km)
				2	4	6	8	10
1.	Plains Zebra	Equus quagga	NT					\checkmark
2.	Burchell's zebra	Equus quagga burchellii	NT					
3.	Red-fronted gazelle	Eudorcas rufifrons	VU					
4.	Giraffe	Giraffa camelopardalis	VU					
5.	Masai giraffe	Giraffa tippelskirchi	EN					
6.	Нірро	Hippopotamus amphibius	VU					\checkmark
7.	African bush elephant	Loxodonta africana	CR					
8.	Lion	Panthera leo	VU					
9.		Panthera leo melanochaita	VU					\checkmark
10.	Leopard	Panthera pardus	VU					
11.	African buffalo	Syncerus caffer	NT					

 Table 3-17: Mammal Species with their Conservation Status Requiring Attention

Animals Migratory Routes

The Energy Park site is a key wildlife dispersal area between Hell's Gate National Park, Mount Suswa Conservancy and Mount Longonot National Park. **Figure 6-29 and Figure 3-30** below illustrates that a section of the proposed masterplan site serves as wildlife routes highlighting its significance. (Kenya Vision 2030 Flagship Project, 2017).



Source: Kenya Vision 2030 Flagship Project. (2017)



Figure 3-30: Existing Wildlife Migration routes







3.3.4. Bird Species Diversity

A total of 336 bird species have been recorded within the 10 km buffer distance of the proposed KenGen Olkaria Energy Park. The proposed IP area has few records of birds; which could be attributed to few studies that have been conducted in the area. About 5% of bird species recorded in database within the 10 km buffer have recorded within the proposed IP. Hell's Gate National Park and areas around Lake Naivasha (2 – 10 km) has more records of birds are common within the 2 – 4 km buffer, 8 species are common within 2 – 6 km buffer. Some of this species have been recorded throughout the 10 km buffer distance: these include the Common buzzard, Pied crow, Red-throated tit, Kenya sparrow.

An estimated 51 bird species were recorded during rapid survey within the proposed KenGen Olkaria Energy Park. The distribution of bird in the location is associated by the vegetation habitats in the area. Most of these birds are associated with the type of bush habitat; that within the area consist of *Tarchonanthus* bushes with few open areas. These species can be distinguished by their feeding behaviours within the *Tarchonanthus* bushland. Group of species observed feeding on the ground consisted of Arrow-marked Babbler, Ring-necked Dove, White-browed Scrub Robin. Other group of species perches on trees and feed on insect on crawling and flying insects such as the Black-back Puffback, African Dusky Flycatcher, Northern Anteater Chat etc. Some group were feeding on flying insects such as the Swallows (e.g. Sand Martin). Sunbird species were observed in areas with flowering plants such as the Nicotiana glauca (an invasive species). Wetland birds are dependent on wetland habitats where they forage on invertebrates, tadpoles and frogs. These group included the Hammerkop, Hadada Ibis, Egyptian Geese, and Cattle Egret. Notable birds observed are as provided in Figure 3-31 below.





Black-back Puffback



Northern Anteater Chat





Ring-necked Dove

Cattle Egret

Based on biodiversity studies, below presents a summary of bird species with their conservation status requiring attention.

Femily	Spacing Scientific Name	Common Nama		Distance (km)				
ranny Species Scientific Name Common Name		IUCN Status	2	4	6	8	10	
Accipitridae	Aquila nipalensis	Steppe eagle	EN				\checkmark	\checkmark
Accipitridae	Gyps africanus	White-backed vulture	EN		\checkmark	\checkmark	\checkmark	
Accipitridae	Neophron percnopterus	Egyptian vulture	EN					
Accipitridae	Circus macrourus	Pallid harrier	NT					\checkmark
Accipitridae	Gypaetus barbatus	Bearded vulture	NT					
Accipitridae	Chelictinia riocourii	Scissor-tailed kite	VU					
Accipitridae	Torgos tracheliotos	Lappet-faced vulture	VU		\checkmark			
Bucorvidae	Bucorvus leadbeateri	Southern ground hornbill	VU					
Otididae	Ardeotis kori	Kori bustard	NT					

 Table 3-18: Birds Species that Requires Attention

3.3.5. Invertebrate Species Diversity

Few records of invertebrate species occurring within the 10 km buffer of the proposed KenGen Olkaria Energy Park were retrieved from database. From these records, about 21 species of invertebrates have been published in the database; with most data distribution occurring in Hell's Gate National Park (< 4km buffer). Besides this area, most studies on invertebrates have been conducted around Lake Naivasha. The number invertebrate species published in the databases is however not a reflection of the diversity on the landscape but an indication of limited studies in the areas. A total of 6 invertebrate species has been published in database for the proposed project location. These include the *Tetraponera penzigi* commonly found on the *Acacia drepanolobium*, flies (*Ceratitis cristata*), and stalk-eyed flies such as Sphyracephala, *Diasemopsis*, and *Diopsis* etc.



An estimated 24 species of invertebrate species were recorded within the proposed KenGen Olkaria Energy Park area. Among these species, most were observed on flowers and animal droppings that are their main source of food. for forage. Bees were associated with the flowering plants and plants that produces wax for production of honey (reserve food) and storage structure (e.g honey comb). Common bee species are the Honeybees (Apis mellifera) that produces honey; while others included the Common carpenter bee (*Xylocopa spp.*) and ground nesting bees. Butterflies recorded in the field were observed foraging on flowers and droppings of animals. Other large butterflies such as Citrus Swallow tail butterfly (*Papilio demodocus*) were observed on active flights. The most common butterfly species is the African emigrant *Catopsila florella* while some spectacular ones include the Diadem *Hypolimnas misippus*, and the Yellow Pansy *Junonia hierta*.

Flowering plants during the time of the rapid field survey within the proposed project area were the invasive plant species *Nicotiana glauca* which is depended on by nectar foraging species. More flowering plants are expected to emerge during rainy season. Other invertebrate species were associated with water habitats (or points) for foraging, breeding and collection of building materials. Few dragonflies were observed around the water resources (lagoons) and streams; these include *Trithemis kirbyi* – busking on stones with dropping wings, *Anax imperator* – dragonfly with powerful flight, the Globe Skimmer (Wandering glider) *Pantala flavascens* – always on flight in day light.

Two wasp species were observed; the Large mud-dauber wasp – collecting mud for buidingits nest, and the spider-hunting wasp observed carrying butterfly larva (caterpillar) in the Tarchonanthus bushlands. the *Acacia drepanolobium* draws attention with presence of different ant species; the Cocktail acacia ants (*Crematogaster spp.*), Skinny black acacia ant (*Tetraponera penzigi*), Singing ant (*Pachycondyla spp.*), and the Polyrachis ant (*Polyrachis spp.*). The distribution of dung beetles is associated with the distribution of livestock and/or wildlife droppings. Most of observation were on areas with presence of dungs from cattle or buffaloes. Notable invertebrates observed are as provided in Figure 3-32 below.





Figure 3-32: A Sample of Invertebrates Observed



Junonia hierta





Scarabaeus satyrus



Pantala flavascens

3.3.6. Herpetofauna Diversity

Trithemis kirbyi

Herpetofauna species are poorly studied within the 10 km buffer of the proposed KenGen Olkaria Energy Park location. Records in the database shows limited publication of herpetofauna species data within the proposed project location. Only three herpetofauna species have been published from the proposed project location. These are amphibians; *Amietophrynus kerinyagae*, *Kassina senegalensis*, *Tomopterna cryptotis*.

Herpetofauna species were rarely observed on the landscape within the proposed project area. About 2 species of amphibians and 4 reptiles were observed during the rapid field assessment. About 6 reptile species (snakes) were recorded by an account from the local community. These included the African Rock Python, Puff Adder, Black Mamba, Spitting Cobra, and the Green Mamba that are occasionally seen in the fields. Most the snakes occur in the valleys where they forage, and areas with rocks or stones that forms their habitats. Tadpoles were observed in some lagoons or water points indicating presence of frogs in areas with streams and water points. Notable Herpetofauna observed are as shown in Figure 3-33 below.



Figure 3-33: A Sample of Observed Herpetofauna





Kirk's Rock Agama (Agama kirkii)

Tadpoles crowded in a water pool

3.3.7. Ecosystem Services

The rich biodiversity in the proposed masterplan site as well as its vicinity have serves various ecosystems based on a biodiversity study. These services are provided in detailed in the biodiversity report annexed in the report as Annex XI. These ecosystem services entail;

- Agriculture (crop farming);
- Hunting and gathering;
- Construction materials;
- Provision of biofuel;
- Water resources;
- Farming (animal keeping);
- Traditional medicine;
- Bee keeping;
- Cultural services;
- Recreation and tourism;
- Natural disaster and Control;
- Soil erosion and control;
- Pollination;
- Climate change and regulation; and
- Disease and pest control.

3.4 Social-Economic Conditions and Human Health

3.4.1. Population Distribution

The proposed Energy Park is located in Olkaria Sub-Location, Hell's Gate Location, Naivasha Sub-County, Nakuru County of Kenya. Hell's Gate Location has a total population of 85,110 out



of which 43,105 and 42,003 are male and female respectively. Table 3-19 and Chart 3-3 below

depicts the national, county, sub-county, location and sub-location population data.

			Sex		Households			Lan	Density
Area	Total	Male	Female	Interse x	Total	Convention al	Group Quarters	d Area (Sq. Km)	(Perso ns Per Sq. Km)
	47,564,29							580,8	
Kenya	6	23,548,056	24,014,716	1,524	12,143,913	12,043,016	100,897	95	82
Nakuru	2,162,202	1,077,272	1,084,835	-	616,046	598,237	17,809	7,505	288
Naivasha	355,383	179,222	176,132	-	117,633	111,493	6,140	1,958	181
Hells Gate Location	85,110	43,105	42,002	-	29,866	29,626	240	425	200
Olkaria Sub-									
Location	23,909	12,195	11,712	-	8,865	8,745	120	273	88

Source: 2019 Kenya Population and Housing Census: Volume II



Chart 3-3: Gender Distribution

Household size in the propose masterplan area (3 persons in Naivasha Sub-County, 2.8 persons in Hell's Gate Location and 2.7 persons in Olkaria Sub-Location) is lower that the county (3.5 persons) and national (3.9 persons) values respectively as shown in Chart 3-4below. This can partly be attributed to persons residing in the proposed masterplan area living far from their households. Using the Naivasha Sub-County household size and the proposed number of persons anticipated to be employed at the industrial park (approximately 59,000), the plan is anticipated to contribute to an increase in population by 177, 000 persons by the year 2035.



In reference to the population distribution based on age, the proposed masterplan area; Naivasha Sub-County depicts a very youthful population with persons below the age below 34 years accounting to 74% of the sub-county population. This is comparable to the Nakuru County distribution of 74.7%. The youthful population distribution in the proposed masterplan area is contrary to the national proportion of 37.91%. This is as illustrated in Chart 3-5, Chart 3-6 and Chart 3-7 below. The high proportion of a youthful population can be attributed to young people relocating to the area in search of employment opportunities.



Chart 3-5: Kenya Population Pyramid




Source: 2019 Kenya Population and Housing Census: Volume III





Source: 2019 Kenya Population and Housing Census: Volume III





Source: 2019 Kenya Population and Housing Census: Volume III

3.4.2. Education Levels

Based on 2019 Kenya Population and Housing Census: Volume IV, Nakuru County and Naivasha Sub-County has a comparable level of education as shown in **Chart 3-8** below. A majority of residents in Nakuru County (79.1%) and in Naivasha Sub-County (79.9%) have primary and secondary education as their highest level of education. This is an indication of high literacy levels in the project vicinity.

Further, only 11.5% in Nakuru County and 11.2% in Naivasha Sub-County residents had attained collage/university level of education, according to 2019 Kenya Population and Housing Census: Volume IV. This implies that the sub-county and the county as whole has a limitation on sources of skilled workers.



Source: 2019 Kenya Population and Housing Census: Volume IV

There two primary schools in the vicinity of the proposed masterplan namely Olkaria Primary School and Narasha Primary School. This is according to the Naivasha Sub-County Department of Education.

3.4.3. Employment Status & Economic Activities

Based on 2019 Kenya Population and Housing Census: Volume IV, a majority of residents in Nakuru within the working age; 18 years to 64 years are working as represented by 90.6%. This implies that the unemployment rate in Nakuru County is 9.4%. Further, Naivasha Sub-County within which the proposed masterplan is situated, the working population is represented by 89.0% of the population. This is an indication that the unemployment rate in Naivasha Sub-County stands at 11%. This is as represented in **Chart 3-9** below. The implementation of the proposed masterplan is therefore anticipated to create employment opportunities to Naivasha Sub-County residents.

Key economic activities within the proposed masterplan area includes employment in various sectors including KenGen, farms, hospitality sector, commercial establishments, government institutions among others. Other economic activities include small-scale farming, trade and commerce, fishing, livestock keeping among others.



Source: 2019 Kenya Population and Housing Census: Volume IV

3.4.4. House Ownership

A majority of Naivasha Sub-County, where the proposed masterplan is situated resides in rented houses comprising of about 70% of the population. **Chart 3-10** below presents the house ownership in Naivasha Sub-County.





Source: 2019 Kenya Population and Housing Census: Volume IV

A majority of rental houses in Niavasha Sub-County are mainly provided by individuals and private companies comprising of 84.8% and 11.2% respectively as illustrated in the **Chart 3-11** below. This is an indication that the private sector will have major role in provision of residential housing to Energy Park workforce.



Source: 2019 Kenya Population and Housing Census: Volume IV

3.4.5. Water Sources

The sources of water in the county are mainly from water vendors, borehole/tube well, rain/ harvested water, piped to yard/ plot and Public tap/ Standpipe as shown in **Table 3-20** below.

Table 3-20: Water Sources		
Water Source	Nakuru County (%)	Naivasha Sub-County (%)
Pond	0.3	0.1
Unprotected Well	1	0.2
Unprotected Spring	1.6	0.5
Protected Spring	1.4	0.9
Stream/ River	12	1.3
Dam/Lake	1.3	1.6
Protected Well	6.7	1.7
Piped into dwelling	9.4	4.6
Bottled water	3.6	8.6
Public tap/Standpipe	8.6	9.2
Piped to yard/ Plot	18.1	12.9
Rain/Harvested water	13.4	14.2
Borehole/Tube well	10.4	14.6
Water Vendor	12.3	29.5

Source: 2019 Kenya Population and Housing Census: Volume IV

3.4.6. Human Waste

Pit latrines are the main human waste disposal method in Naivasha Sub-County ascribing to about 80% of the population. The high reliance on pit latrine can be attributed to low coverage of the sewer line in the area. **Chart 3-12** below indicates the human waste disposal methods used in the area.



Source: 2019 Kenya Population and Housing Census: Volume IV

3.4.7. Agriculture

Agriculture is the key source of income in Naivasha Sub-County. The main agricultural activities include farming, crop production, livestock production, aquaculture, fishing and irrigation for subsistence farming.

The main crops grown in Naivasha Sub-County includes maize, sorghum, potatoes, beans, cassava, sweet potatoes, wheat, green grams, bananas, cabbages, tomatoes, onions, millet, watermelons, kales and sugarcane. Additionally, the main livestock kept in Naivasha Sub-County are exotic cattle (dairy and beef), indigenous cattle, sheep, goats, camels, donkeys, pigs, indigenous chicken, exotic chicken (layers and broilers), bees, rabbits and fish.

Large scale agriculture is also undertaken at specific areas including:

- Karagita Flower Farm;
- Flamingo Flower Farm;
- Kedong Ranch;
- Wildfire Flowers (Figure 3-35 below);
- Kingfisher Flower Farm; and



Oserian Flower Farm.

Figure 3-35 below indicated the agricultural areas.

Figure 3-34: Agricultural Land in the area



Source: Olkaria Geothermal SEA 2015



Wildfire Flowers farm



Sher Karuturi Greenhouses

3.4.8. House Wall Material

Stones, concrete blocks and iron sheets are the main sources of wall building materials in Naivasha Sub-County (2019 Census). The building stones are mainly sourced locally an indication that this will also serve as key source of building stones in the Energy Park. **Figure 3-36 and Chart 3-13** below depict the house wall materials used in the area.



Chart 3-13: House Wall Materials

Source: 2019 Kenya Population and Housing Census: Volume IV

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 Figure 3-36: Sample Residential Houses Observed in the Masterplan Area



Semi permanents



Manyatta





3.4.9. Cooking Energy Sources

The main source of energy used within the households is LPG accounting for 45.7% of the residents (2019 Census). Wood fuel accounts for 43.7% of the sub-county's source of energy for cooking as shown in **Chart 3-14** below.



Chart 3-14: Cooking Energy Sources



Mains electricity is the main source of lighting energy in the sub-county as represented by 77.1% of the residents. This is as shown in **Chart 3-145** below. This high uptake of mains energy as a source of energy can mainly be attributed to high urbanization in the sub-county.



Chart 3-15: Lighting Energy

Source: 2019 Kenya Population and Housing Census: Volume IV



3.4.10. Health Facilities

In promoting the health wellbeing around Naivasha Sub-County, there are a number of existing health facilities namely:

- Olkaria Dispensary;
- Maiella Health Centre;
- Ngonoi Dispensary;
- Moindabi Health Centre;
- Kipkonyo Dispensary; and
- Ndabibi Dispensary.

According to Naivasha Sub-County department of health, the main illnesses within the Sub-County are; Diarrhoea, Pneumonia, Upper & Lower respiratory infections, Skin infection, Eye conditions, Mental Health conditions and musculoskeletal conditions. These diseases are mainly attributed to the sources of livelihood as well as sources of water in the area. The implementation of the proposed masterplan is anticipated to aggravate the prevalence of these diseases if appropriate measures are not put in place.

3.4.11. Infrastructure Provision

Notable infrastructure in the masterplan area includes roads, power lines, water pipes and railway line. These are critical infrastructure in support of the proposed Energy Park. Notable infrastructure located within the proposed Energy Park site as shown in the **Figure 3-37 and Figure 3-38** below are:

- KenGen 57 geothermal wells;
- KenGen Olkaria IV and V power stations;
- KenGen Olkaria IV steam pipes;
- Power transmission lines; and
- A tarmac road connecting Olkaria IV and V to Moi South Lake Road.

The proposed masterplan site is in close proximity to Nairobi-Nakuru Highway, Mai Mahiu-Naivasha Road as well as Standard Railway Gauge (SGR) Suswa Station. Connectivity from the proposed Energy Park to Suswa SGR Station is lacking. Currently, the proposed masterplan site connectivity to Mai Mahiu-Naivasha Road is through the exiting tarmac road via the Moi South Lake Road. Moi South Lake Road experiences reasonably high traffic from public transportation, trucks transporting farm produce from various large-scale farms in the area notably Oserian Farm,



Karagita Flower Farm, Flamingo Flower Farm, Kedong Ranch, Kingfisher Flower Farm and Oserian Flower Farm among others.

Additionally, the area has numerous tourist attraction sites including Hell's Gate National Park, Mt. Longonot National Park, Lake Naivasha, private conservancies as well as numerous hospitality facilities including Enashipai Resort, Matteo's Italian Restaurant and Bar, South Lake Villas, Sawela Lodge, Lake Naivasha Sopo Resort, Lake Naivasha Simba Lodge and Lake Naivasha YMCA Camp. These facilities also attract a high number of tourists hence accumulated traffic. The KNBS economic survey indicated that the tourists visiting Hell's Gate National Park between the years 2017-2021 were averagely 129,340.

The proposed development will attract more traffic and more so heavy traffic from trucks transporting construction materials, raw materials as well as finished products from activities arising from operation of the Energy Park. Increased traffic will therefore degrade the existing roads as well as lead to traffic build up in Naivasha Township.

Figure 3-37: Notable Infrastructure in the Masterplan Area



High Voltage Transmission Line



Water & Steam Pipes the Existing Tarmac Road





KenGen Geothermal Exploration





In addition, a number of developments are in place or proposed within Naivasha area. Notable developments include but not limited to;

- Standard Railway Gauge (SGR) and Naivasha Inland Container Depot (ICD). These are key projects and infrastructure that will play an important role in supporting the industrial park mainly in terms of logistics and transportation. There are plans to extend the SGR to Malaba which will significantly benefit KEP. However, the two projects are implemented within the larger Hell's Gate National Park, Mount Suswa Conservancy and Mount Longonot National Park ecological zones, wildlife movement might be affected if appropriate measures are not in place.
- Naivasha Industrial Park: This is located within Naivasha area and is currently under implementation. The industrial park is a key development in the area and to KEP with housing provision for KEP employees proposed at Naivasha Industrial Park. However, with the two industrial parks are anticipated to source water mainly from Lake Naivasha, a key source of water and ecosystem in the area. Alternative water sources for usage in the industrial parks; notably ground water should be considered.
- Oserian Development Company Limited Industrial Park: This is in the latter stages of implementation. The development is proposed in close proximity to KEP site. As such resource sharing is anticipated. This is in addition to any negative impacts that might result from their implementation notably air pollution, Lake Naivasha water pollution and water exhaustion, wildlife movement interference and increased traffic in the area among others.
- Proposed expansion of Old Naivasha Road: The road is proposed for expansion to accommodate more traffic and reduce congestion. The project once implemented will improve transport in Naivasha area, notably KEP. This will be supported by Moi South Lake Road that was recently rehabilitated. The proposed road is located a distance from KEP, hence might not have direct impact that are interlinked.



Source: KenGen Energy Park Draft Masterplan, 2022



3.4.12. Community Composition

Naivasha Sub-County is generally a cosmopolitan area based on high population non-locals working in various places of work. However, in the neighbourhood of the proposed masterplan site, the Maasai Community are the majority. They are an indigenous community who were the original land owners of the proposed Energy Park site. The Maasai community are known for their rich cultural heritage as illustrated in Figure 3-39 below. There are three Maasai communities situated in the neighbourhood of the proposed masterplan site namely Narasha (situated on the western side of the proposed site). Olomaiyana Kubwa (situated on the western side of the proposed site), Rapland (situated on the southern side of the proposed site) and Kambi Turkana (situated on the southern side of the proposed site). These settlements are as presented in Figure 3-40 below.







Source: KenGen Generations, 2022



() KenGen

3.4.13. Urban Areas in the Proposed Masterplan Neighbourhood

There are a number of urban centres in the proposed masterplan neighbourhood. These are key commercial nodes that supports Naivasha Sub-County residents. They host various trade and commerce activities as well as serve as residential establishments. They will therefore be instrumental areas to the proposed Energy Park in service delivery as well as providing residential establishments. These areas are as listed below.

- Naivasha Municipality;
- Karagita;
- Hell's Gate Shopping Centre;
- Kasarani Shopping Centre;
- DCK Centre;
- Kwa Muhia Centre as shown in Figure 3-42 below;
- Kamere Centre;
- Kengen Junction; and
- Kongoni Centre as show in Figure 3-41 below.

The proposed masterplan is located approximately 110km from Nairobi and approximately 90km from Nakuru City. These are key urban areas that will be instrumental in the development of the proposed Energy Park.





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CHAPTER 4: LEGISLATIVE FRAMEWORK

4.1 Overview

This chapter presents an analysis on national policy framework, national legal framework, institutional framework, and compliance to existing plans, international conventions and treaties, international standards that relates to the proposed masterplan. This analysis is aimed at ensuring that the masterplan is implemented within the existing legal framework. The analysis will in addition ensure that the masterplan is implemented in an environmentally sustainable and a socially acceptable manner.

4.2 The Legal, Regulatory and Policy Framework

4.2.1. Constitutional Provisions

Kenya has a new Supreme law in form of the New Constitution, which was promulgated on the 27th of August 2010. The constitution takes supremacy over all aspects of life and activity in the country. With regard to environment, Article 42 of the Constitution states as follows:

According to Articles 69 and 70, the Constitution has inter alia identified National Obligations in respect of the environment and enforcement of Environmental Rights respectively as follows:

Section 69 (1): The State shall

Ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits; and Work to achieve and maintain a tree cover of at least ten per cent of the land. Every person has the right to a clean and healthy environment, which includes the right -

- a) To have the environment protected for the benefit of present and future generations through legislative and other measures, particularly those contemplated in Article 69; and
- b) To have obligations relating to the environment fulfilled under Article 70 KIP Environmental and Social Management Framework – ESMF October 2016.

4.2.2. Vision 2030 - Manufacturing Sector

The role of the manufacturing sector in Vision 2030 is to create employment and wealth. The sector's overall goal in the Medium-Term Plan (MTP) is to increase its contribution to the GDP

by at least 10% per annum as envisaged in the Vision 2030.

A number of interventions are proposed in Vision 2030 which will make Kenya to be globally competitive and prosperous. The objectives to be pursued are:

- To strengthen the capacity and local content of domestically manufactured goods;
- To increase the generation and utilization of Research and Development results; and
- To raise the share of products in the regional market from 7% to 15%.

As such, implementation of the Master Plan will contribute immensely towards the achievement of key flagship vision 2030 projects captured under the economic and social pillars of the blue print.

4.2.3. Environmental Management and Coordination (Amendment) Act 2015

This is an Act of Parliament providing for the establishment of an appropriate legal and institutional framework for the management of the environment and for matters connected therewith and incidental thereto. This Act is divided into 13 Parts, covering main areas of environmental concern as follows: Preliminary (I); General Principles (II);Administration (III); Environmental Planning (IV); Protection and Conservation of the Environment (V), Environmental Impact Assessments (EIA), Audits and Monitoring (VI); Environmental Audit and Monitoring (VII); Environmental Quality Standards (VIII); Environmental Restoration Orders, Environmental Easements (IX); Inspection, Analysis and Records (IX); Inspection Analysis and Records (X); International Treaties, Conventions and Agreements (XI) National Environment Tribunal (XII); Environmental Offences (XIII). The Act provides for the setting up of the various ESIA Regulations and Guidelines which are discussed below:

Environmental (Impact Assessment and Audit) Regulations 2003

The Environmental (Impact Assessment and Audit) Regulations 2003 provides in Regulation 3 that "the Regulations should apply to all policies, plans, programmes, projects and activities specified in Part III and V of the Regulations". It basically outlines the guidelines for undertaking ESIA study from preparation of the report to submission and approval by NEMA.

The proposed Project will have to abide by these regulations in dealing with waste management especially when it comes to handling of industrial, hazardous and toxic wastes which may be generated during their operations.

Environmental Management and Coordination, (Water Quality) Regulations 2006

These are described in Legal Notice No. 120 of the Kenya Gazette Supplement No. 68 of September 2006. These Regulations apply to drinking water, water used for agricultural purposes, water used for recreational purposes, water used for fisheries and wildlife and water



Protection of sources of water for domestic use;

- Water for industrial use and effluent discharge; and
- Water for agricultural use.

Environmental Management and Coordination, Conservation of Biological Diversity (BD) Regulations 2006

These regulations are described in Legal Notice No. 160 of the Kenya Gazette Supplement No. 84 of December 2006. The Regulations apply to conservation of biodiversity, which includes Conservation of threatened species, Inventory and monitoring of BD and protection of environmentally significant areas, access to genetic resources, benefit sharing and offences and penalties.

Environmental Management and Coordination (Controlled Substances) Regulations 2007

These regulations are described in Legal Notice No. 73 of 2007. The Government of Kenya banned the importation of Chlorofluorocarbons (CFCs) with effect from 1 January 2009, to ensure that Kenya is compliant with the provisions of the Montreal Protocol on Substances that Deplete the Ozone Layer. The Master Plan will incorporate the controlled substances regulations to ensure the safety of all stakeholders.

Environmental Management and Coordination (Wetlands, Riverbanks, Lake Shores and Sea Shore Management) Regulations 2009

The regulation applies to all wetlands in Kenya, whether occurring in private or public land. It contains provisions for the utilization of wetland resources in a sustainable manner, compatible with the continued presence of the wetlands and their hydrological, ecological, social and economic functions and services.

Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009

These regulations prohibit making or causing any loud, unreasonable, unnecessary or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment. It also prohibits excessive vibrations which annoy, disturb, injure or endanger the comfort, repose, health or safety of others and the environment or excessive vibrations which exceed 0.5 centimetres per second beyond any source property boundary or 30 metres from any moving source. Under the regulation the, implementation of KIP will be required to take into consideration, daily monitoring of the noise levels within the Project area during construction period to ensure compliance. The Master Plan will be guided by these regulations to ensure that all changes and developments envisioned in the Master Plan execution comply with the provisions of the regulations.

4.2.4. Occupational Safety and Health Act 2007

This is an Act of Parliament which provides for the safety, health and welfare of all workers and all persons lawfully present at workplaces and it also provides for the establishment of the National Council for Occupational Safety and Health and for connected purposes. It applies to all workplaces where any person is at work, whether temporarily or permanently and therefore will apply to the project both during construction and operation phases.

The Occupational Safety and Health Act (OSHA) 2007 repealed the Factories and Other Places of Work Act. Anything done under the provisions of the Factories and Other Places of Work Act including subsidiary legislation issued before the commencement of the OSHA 2007 shall be deemed to have been done under the provisions of this Act.

These regulations include:

- The Factories (Cellulose Solutions) Rules 1957;
- The Factories (Wood Working Machinery) Rules 1959;
- The Factories (Dock) Rules 1962;
- The Factories (Eye Protection) Rules 1978;
- The Factories (Electric Power) (Special) Rules 1978;
- The Factories (Building Operations and Works of Engineering Construction) Rules 1984;
- The Factories and Other Places of Work (Health & Safety Committees) Rules 2004;
- The Factories and Other Places of Work (Medical Examination) Rules 2005;
- The Factories and Other Places of Work (Noise Prevention and Control) Rules 2005;
- The Factories and Other Places of Work (Fire Risk Reduction) Rules 2007; and
- The Factories and Other Places of Work (Hazardous Substances) Rules 2007.

4.2.5. The Water Act 2012

The Government, subject to any right of the user, legally acquired, owns water in Kenya. The Minister administering the Act exercises the control and right to use water, and such use can only be acquired under the provisions of the Act. The Minister is also vested with the duty to promote investigations, conserve and properly use water throughout Kenya. Water permits may be acquired for a range of purposes, including the provision and employment of water for the development of power and other uses. The following are the regulations developed under Water Act 2012 relevant to the Project. These regulations will relate to abstraction and use of water from rivers, lakes and ground water, among other sources of water. The Master Plan will be guided by these regulations to ensure that all developments envisioned in the Master Plan execution comply with the provisions of the regulations. Below is a list of rules that applies

to the proposed masterplan.

- The Water Resources Management Rules (2007);
- Water (Water Quality Analysis) (Fees) Rules, 2009;
- Lake Naivasha Catchment Area Protection Order, 2012;
- Water (Services Regulatory) Rules, 2012; and
- Lake Naivasha Groundwater Conservation Area Order, 2012.

4.2.6. Traffic Act, Cap 403

This Act specifies that motor vehicles use proper fuel. The Traffic Regulations promulgated under the Act specifies that every vehicle is required to be well constructed, maintained and used so as not to emit any smoke or visible vapour. The vehicles to be used during construction phase should be serviced and be in good condition to prevent them from emitting any hazardous emissions.

4.2.7. The Wildlife Conservation and Management Act, 2013 (No. 47 of 2013)

The Wildlife and Conservation Act deals with the conservation and management of wildlife in Kenya. The Act provides that wildlife should be conserved so as to yield optimum returns in terms of the interrelationship between wildlife conservation and land use. The Act controls activities within the national Parks, which may lead to the disturbance of wild animals. Unauthorized entry, residence, burning, damage to objects of scientific interest, introduction of plants and animals and damage to structure are prohibited under this law. The development envisioned in the Master Plan will interact with wildlife areas hence the proponents will need to ensure the provisions of this act are implemented.

4.2.8. Public Health Act Cap 242

The Public Health Act provides for the protection of human health through prevention and guarding against introduction of infectious diseases into Kenya from outside, to promote public health and the prevention, limitation or suppression of infectious, communicable or preventable diseases within Kenya, to advice and direct local authorities in regard to matters affecting the public health to promote or carry out researches and investigations in connection with the prevention or treatment of human diseases. This Act provides the impetus for a healthy environment and gives regulations to waste management, pollution and human health.

This Act controls the activities of the project with regard to human health and ensures that the health of the surrounding community is not jeopardized by the activities of the project such as water development. The Master Plan will incorporate the Act to guide its execution as regards to public health.

4.2.9. County Government Act No. 17 of 2012

This is an Act of parliament to give effect to Chapter Eleven of the Kenyan Constitution; to provide for County government's powers, functions and responsibilities to deliver services and for connected purposes. The Act lays emphasis on the need for a consultative and participatory approach where the principles of planning and development facilitation in a county serve as a basis for engagement between the county government and the citizens and other stakeholders. The county government of Nakuru County will play an important role during the execution of the Master Plan.

4.2.10. The Forest Act No 7, 2005

This law was enacted by Parliament in 2005 to provide for the establishment, development and sustainable management including conservation and rational utilization of forest resources for the socioeconomic development of the country. Parts of the proposed Master Plan land uses will interact with forests albeit artificial. Section 8 of the Act requires all woodlands to be managed on a sustainable basis for the purposes of conservation of water, soil and biodiversity, riparian and shoreline protection, sustainable production of wood and non-wood products. Community participation as provided for under Section 46 of the Act should be encouraged. The most appropriate would be the initiation of participatory forest management so that the local community and organization can have significant input with Kenya Forest Service (KFS) office playing a coordination role. The Master Plan will be guided by these regulations to ensure that all changes and developments envisioned in the Master Plan execution comply with the provisions of the regulations

4.2.11. Kenya Roads Board Act 1999

The Kenya Roads Board was established in July 2000 by the Kenya Roads Board Act, Act No. 7 of 1999. The main object for which the Board was established is to oversee the road network in Kenya and thereby co-ordinate its development, rehabilitation and maintenance and to be the principal adviser to the Government of the Republic of Kenya on all matters related thereto. The Board has the responsibility of managing revenues arising from the Roads Maintenance Levy Fund (RMLF).

4.2.12. Roads Act 2007

This is an Act of Parliament that provided for the establishment of Kenya Road Agencies i.e. Kenya National Roads Authority (KeNHA), the Kenya Urban Roads Authority (KURA) and the Kenya Rural Roads Authority (KeRRA) and provided powers and functions of the authorities.

KeNHA is mandated to manage, develop, rehabilitate and maintain all national roads. Other



function vested to this authority relevant to the proposed project are: controlling national roads and road reserves and access to roadside developments; implementing road policies in relation to national roads; ensuring adherence to the rules and guidelines on axle load control prescribed under the Traffic Act (Cap. 403) and under any regulations under this Act; ensuring that the quality of road works is in accordance with such standards; in collaboration with the Ministry responsible for Transport and the Police Department, overseeing the management of traffic and road safety on national roads; collecting and collating all such data related to the use of national roads as may be necessary for efficient forward planning under this Act; monitoring and evaluating the use of national roads; planning the development and maintenance of national roads and liaising and coordinating with other road authorities in planning and on operations in respect of roads.

4.2.13. Public Procurement and Asset Disposal Act 2015

The Act provides guiding principles for Public Procurement and Asset Disposal for State organs and public entities. The Principles are based on values and principles of the Constitution with the following objectives:

- a) maximize economy and efficiency in public procurement;
- b) promote economic development through public procurement;
- c) obtain value for money in public procurement;
- d) promote integrity and engender public confidence in the public procurement process;
- e) foster transparency in the public procurement process; and
- f) encourage participation in public procurement.

4.2.14. The Land Act, 2012

This is an Act of Parliament to give effect to Article 68 of the Constitution, to revise, consolidate and rationalize land laws; to provide for the sustainable administration and management of land and land-based resources, and for connected purposes. Part VIII of this Act provides procedures for compulsory acquisition of interests in land. Section 111 (1) States that if land is acquired compulsorily under this Act, just compensation shall be paid promptly in full to all persons whose interests in the land have been determined. The Act also provides for settlement programmes. Any dispute arising out of any matter provided for under this Act may be referred to the Land and Environment Court for determination. The proponent will acquire land/ensure due diligence for the proposed development envisioned by the masterplan in accordance with this Act.

4.2.15. The Land Registration Act, 2012

This is an Act of Parliament that revises, consolidates and rationalizes the registration of titles



to land, to give effect to the principles and objects of devolved government in land registration, and for connected purposes. The Act requires that there is proper marking and maintenance of boundaries. An interested person who has made an application to the Registrar for his/her boundaries to be ascertained, the Registrar shall give notice to the owners and occupiers of the land adjoining the boundaries in question of the intention to ascertain and fix the boundaries. With regard to the maintenance of boundaries, the Act requires every proprietor of land to maintain in good order the fences, hedges, stones, pillars, beacons, walls and other features that demarcate the boundaries, pursuant to the requirements of any written law.

4.2.16, Land Control Act, 2012 (CAP 302)

This law provides for the control of transactions in agricultural land, especially the machinery of the Land Control Boards. However, of interest in this report is the consideration in granting or refusal of consent by the Board based on the impact the transaction is likely to have on the maintenance or improvement of standards of good husbandry within the specific agricultural area. Government land is land owned by the government of Kenya under the Government Lands Act (Cap. 280). This includes, for example, forests, gazetted National Parks and Reserves. Trust land is land held and administered by various local government authorities as trustees under the constitution of Kenya and the Trust Land Act (Cap. 288). National Reserves and local sanctuaries as well as county council forest reserves, are in this category. Private land is land owned by private individuals under the Registered Land Act (Cap. 300). On registration as the landowner, an individual acquires absolute ownership on a freehold basis.

4.2.17. Community Land Act, 2016

The constitution vests all land which is not registered under any act of parliament under the ownership of local authorities as trust land. Section 117 of the Constitution of Kenya provides that the Act may empower a county council to set apart an area of trust land vested in that county council for use and occupation by a public body or authority for public purposes, or by any person for a purpose likely to benefit the persons. The Act states that while considering the rights and obligations of landowners, there shall be compensation whenever a material site, diversion or realignment results into relocation of settlement or any change of user whatsoever of privately-owned land parcels.

4.2.18. Public Finance Management Act, 2012

This is an Act of Parliament to provide for the regulation and oversight of the national budget process and the establishment of a parliamentary budget office for the oversight of the national budget process and for connected purposes. The relevant committee shall examine all reports relating to fiscal and economic performance tabled in the National Assembly by the Minister,



including the budget policy statement, annual estimates of expenditure and the various compliance reports and report to the Assembly what improvements of form or substance, if any, should be made to those reports so as to achieve optimum value for the money foregone, received or spent on the target objectives of public entities. In the performance of its functions under this section, the relevant committee shall be assisted by the Budget Office, which shall also serve as its secretariat.

4.2.19. National Museums and Heritage Act, 2006

This Act aims to preserve Kenya's national heritage. Both the National Museums of Kenya and the Kenya Cultural Centre have been established in part to discharge this Act.

4.2.20. The Employment Act, 2007

The Act is enacted to consolidate the law relating to trade unions and trade disputes, to provide for the registration, regulation, management and democratization of trade unions and employers organizations and federations. The purpose of the Act is to promote sound labour relations through freedom of association, the encouragement of effective collective bargaining and promotion of orderly and expeditious dispute for the protection and promotion of settlements conducive to social justice and economic development for connected purposes. This Act is important since it provides for an employer and employee relationship that is important for the execution of the project Master Plan.

4.2.21. Kenya Maritime Authority Act, 2006

The Kenya Maritime Authority (KMA) was established by the GoK in 2004 for the purpose of strengthening Maritime Administration in Kenya. The State Corporations Act, KMA Act. 2006, Merchant Shipping Act (1967), EMCA,1999 and Maritime Security Regulations provide the necessary legal framework within which KMA operates. The setting up of KMA transferred the responsibility of shipping concerns from Kenya Ports Authority (KPA) to KMA. The mandate of KMA as provided for in KMA Act 2006 is to coordinate and oversee maritime affairs in the country which includes ensuring safety of life at sea, security of ships and port facilities and the protection of marine environment for the socio-economic benefit of stakeholders. KMA operations are currently largely funded by the GoK since avenues for generating its own revenue are limited. The plan will seek to address the concerns as highlighted in the ACT above.

4.2.22. Persons with Disability Act, 2003 Chapter 133

This act protects the rights of people with disabilities ensuring they are not marginalized and that they enjoy all the necessities of life without discrimination. The act guarantees that:



(1) No person shall deny a person with a disability access to opportunities for suitable employment.

(2) A qualified employee with a disability shall be subject to the same terms and conditions of employment and the same compensation, privileges, benefits, fringe benefits, incentives or allowances as qualified able-bodied employees.

(3) An employee with a disability shall be entitled to exemption from tax on all income accruing from his employment. A person with disability is entitled to exemptions which apply with respect to exemptions and deductions as described in Schedule 42 subsection 2 of the Act, among other provisions within this Act that should be complied with all parties involved. The plan will ensure that the guidelines set out are taken into consideration when effecting the plan.

4.2.23. Energy Act, 2019

This is an Act of Parliament to amend and consolidate the law relating to energy, to provide for the establishment, powers and functions of the Energy Regulatory Commission and the Rural Electrification Authority, and for connected purposes. The provisions apply to every person or body of persons importing, exporting, generating, transmitting, distributing, supplying or using electrical energy; porting, exporting, transporting, refining, storing and selling petroleum or petroleum products; producing, transporting, distributing and supplying of any other form of energy, and to all works or apparatus for any of these purposes. The proposed development will involve the development of infrastructure for electricity transmission and petroleum supply hence this Act will be incorporated in the Master Plan to ensure all the provisions are adhered to. With the community residing in the vicinity of the proposed masterplan site, Narasha, Rapland and Olemaiyana among others living in communally owned land, this act is any form or plan beyond the proposed site might lead to these community lands. The proposed industrial park should ensure that the guidelines set out are taken into consideration when effecting the plan.

4.2.24. Climate Change Act 2016

This Act provides a framework for promoting climate resilient low carbon economic development. It aims to (Art 3-2):

- a) Mainstream climate change responses into development planning, decision making and implementation;
- b) Build resilience and enhance adaptive capacity to the impacts of climate change;
- c) Formulate programmes and plans to enhance the resilience and adaptive



capacity of human and ecological systems to the impacts of climate change;

- d) Mainstream and reinforce climate change disaster risk reduction in strategies and actions of public and private entities;
- e) Mainstream intergenerational and gender equity in all aspects of climate change responses;
- f) Provide incentives and obligations for private sector contributions to achieving low carbon climate resilient development;
- g) Promote low carbon technologies to improve efficiency and reduce emissions intensity by facilitating approaches and uptake of technologies that support low carbon, and climate resilient development.

The plan will ensure that the guidelines set out are taken into consideration.

4.2.25. Special Economic Zone Act 2015

These Regulations implement provisions of the Special Economic Zones Act and concern the designation and administration of special economic zones. They also provide with respect to environmental impact assessment, land use planning, sustainable development and prohibition and monitoring of activities within designated zone that have an impact on the environment. Any person to the Special Economic Zones Authority may submit a proposal for the designation of an area as a special economic zone. It must include strategic environmental and social-impact assessment in made accordance with these regulations. The Authority shall monitor or prohibit certain activities affecting the environment. In addition, the National Environment Management Authority is involved in permits, waivers, monitoring, inspections, audits and enforcement. The National Environment Management Authority or the Authority shall issue environmental permits to authorize certain activities under the Act and may publish a list of activities that do not require special economic zone environmental permits. The plan seeks to engage this act in guiding the implementation of the project.

4.3 Relevant Sector Policies and Reforms

National Energy Policy, 2018 Kenya has set in action a number of policies in the past to address energy issues in support of its development challenges. The National Energy Policy broad objective is to ensure sustainable, adequate, affordable, competitive, secure and reliable supply of energy at the least cost geared to meet national and county needs while protecting and conserving the environment. The specific objectives of the policy are to:

- 1) Utilize energy as a tool to accelerate economic empowerment for the National and County Governments as well as urban and rural development.
- 2) Improve access to affordable, competitive, and reliable energy services.



- 3) Provide an environment conducive for the development and provision of energy services.
- 4) Prioritise and promote development of indigenous primary and secondary energy resources.
- 5) Prioritise and promote the development of local technologies in energy development and delivery.
- 6) Promote energy efficiency and conservation.
- 7) Ensure that prudent environmental, social, health and safety considerations, as well as issues of climate change are factored in energy and petroleum sector developments.
- 8) Ensure that a comprehensive, integrated and well-informed energy sector plan is put in place for effective development.
- 9) Foster international co-operation in energy trade, investments and development.
- 10) Promote capacity building in the sector through research, development and training. Also promote local manufacture of plant, equipment, appliances and materials.
- 11) Promote appropriate standards, codes of practice and specifications for equipment, systems and processes in the sector.
- 12) Promote diversification of energy supply sources to ensure security of supply.
- 13) Promote cost effective and equitable pricing of energy products.
- 14) Protect investor, producer, supplier, consumer and other stakeholder interests.
- 15) Provide incentives for local and international investments in the energy sector.
- 16) Ensure that investors and operators in energy sector comply with local content requirements.
- 17) Promote and develop government owned agencies in the development of energy resources.
- 18) Promote an elaborate response strategy in the management of energy related disasters.
- 19) Encourage generation of electricity from renewable resources, build and maintain the necessary distribution and transmission infrastructure.
- 20) Provide for the efficient and optimal distribution of functions between the National and County Governments in the sector while fostering cooperation with relevant public institutions.

The Proposed Energy Park should therefore be in line with this policy in ensuing affordable, reliable and environmentally sustainable energy provision.

4.3.1. Integrated National Transport Policy 2012

The main objective of this policy is *"To develop, operate and maintain an efficient, cost effective, safe, secure and integrated transport system that links the transport policy with other sectoral policies, in order to achieve national and international development objectives in a socially, economically and environmentally sustainable manner".*



- 2) Establishing appropriate institutional systems;
- 3) Developing and maintaining an integrated and coordinated transport system;
- 4) Developing appropriate funding/financing mechanisms;
- 5) Integrating transport and land use planning and management systems;
- 6) Delivering efficient and effective sector operations;
- 7) Enhancing investments in the transport sector;
- 8) ICT application in the transport system; and
- 9) Incorporating environmental protection and resource conservation issues in transport sector activities.

The proposed Industrial Park should align to this policy in ensuring efficient connectivity of the industrial park to exiting local and regional transportation modes. The transportation infrastructure to be provided in support of the industrial park should also ensure environmental protection.

4.3.2. National Environment Policy, 2013

Currently, a far-reaching initiative towards an elaborate national environmental policy is contained in the Sessional Paper No. 6 of 1999 on Environment and Development. It advocates for the integration of environmental concerns into the national planning and management processes and provides guidelines for environmental and sustainable development. The challenge of the document and guidelines is to critically link the implementation framework with statutory bodies namely, the National Environmental Management Authority (NEMA), Kenya Wildlife Service (KWS), Kenya Forestry Service (KFS); the Public Complaints Committee (PCC) and the National Environmental Tribunal (NET).

Kenya environmental Sanitation and Hygiene Policy 2016-2030 The National Environmental Sanitation and Hygiene Policy is devoted to environmental sanitation and hygiene in Kenya as a major contribution to the dignity, health, welfare, social well-being and prosperity of all Kenyan residents. The policy recognizes that healthy and hygienic behaviour and practices begin with the individual. The implementation of the policy will greatly increase the demand for sanitation, hygiene, food safety, improved housing, use of safe drinking water, waste management, and vector control at the household level, and encourage communities to take responsibility for improving the sanitary conditions of their immediate environment. The objectives of the policy are;



1. To scale up rural and urban sanitation towards an Open Defecation Free (ODF) Kenya and universal access to improved sanitation by 2030.

2. To assure a clean and healthy environment for all Kenyans through appropriate technology choices for waste management and pollution control.

3. To foster strong private sector participation and investment in creating sanitation demand and increasing uptake of appropriate products and services.

4. To establish an enabling legal and regulatory environment for sanitation at both national and county levels.

5. To strengthen institutional and human resource capacity of the environmental sanitation sector for efficient and effective provision of sanitation and hygiene services.

6. To ensure sustainable financing for sanitation through public and private investment.

7. To establish an effective research and development framework for sanitation to improve appropriate technology choices and promote evidence-informed sector decision-making.

8. To establish a functionally effective monitoring and evaluation framework for the sanitation sector to ensure maximum accountability in policy implementation at all levels.

The proposed Industrial Park should therefore put in place appropriate measures in ensuring effective sanitation provision during all phases of its implementation.

4.3.3. Forest Policy 2014

The overall goal of this policy is sustainable development, management, utilization and conservation of forest resources and equitable sharing of accrued benefits for the present and future generations of the people of Kenya. The objectives of this policy area to;

- a) Increase and maintain tree and forest cover of at least ten percent of the land area of Kenya. 5 2022014 National Forest Policy, 2014;
- b) Establish an enabling legislative and institutional framework for development of the forest sector;
- c) Support forestry research, education, training, information generation and dissemination, and technology transfer for sustainable development;
- d) Promote public, private and community participation and partnership in forest sector development;
- e) Promote investment in commercial tree growing, forest industry and trade; and
- f) Enhance management of forest resources for conservation of soil, water biodiversity and environmental stability.



The proposed Masterplan will therefore be required to be consistent with the Kenya's Forest Policy. Where clearance of forests or sections of forests are envisaged, it would be important to put in place appropriate mitigation measures such as those specified in the preliminary environmental management and monitoring plan of this SEA report.

National Oceans and Fisheries Policy, 2008, the overall objective of this policy is to: "Create an enabling environment for a vibrant fishing industry based on sustainable resource exploitation providing optimal and sustainable benefits, alleviating poverty, and creating wealth, taking into consideration gender equity." The specific objectives of this policy are to:

- Promote responsible and sustainable utilization of fishery resources taking into account environmental concerns;
- Promote development of responsible and sustainable aquaculture, recreational and ornamental fisheries; and
- Ensure that Kenya has a fair access to, and benefit from, the country's shared fishery resources.

4.3.4. Sessional Paper No. 01 of 2020 on Wildlife Policy Wildlife Policy 2011 – Draft

The main aim of this policy document was to create an enabling environment for conservation and sustainable management of wildlife. The overall objective of the policy is 'to provide a framework that is dynamic and innovative for re-engineering the wildlife sector'. The specific objectives of the policy are to;

- a) Conserve in perpetuity, Kenya's wildlife resources, as a national heritage;
- b) Increase access, incentives and sustainable use of wildlife resources, while ensuring equitable sharing of benefits;
- c) Promote partnerships and incentives for wildlife-based enterprises;
- d) Facilitate collaboration for effective governance and financing of the wildlife sector between communities, private conservancies, counties, national government and international partners; and
- e) Promote management of viable wildlife populations and their habitats in Kenya.

The wildlife policy is aimed at promoting protection and conservation of wildlife in Kenya, both in protected and non-protected areas. The policy is implemented by the Kenya Wildlife Service (KWS). The proposed Master Plan will need to be consistent with this policy. Where wild animals will be disturbed during the Masterplan implementation phase appropriate mitigation measures must be implemented to minimize disturbance to wildlife.

4.3.5. Sessional Paper No.12 of 2014 On National Wetlands Conservation and Management Policy

The development of this Policy is in cognizance of the importance of wetlands nationally and Kenya's obligation under the Ramsar Convention. The policy takes into consideration the broader national environmental frameworks, particularly the Environment Management and Coordination Act (EMCA) 1999, the country's premier framework environmental law, the Water Act 2012, the Water Policy 2021 and the Forest Policy 2015.

The objectives of this policy are to:

- Enhance and maintain functions and values derived from wetlands in order to maintain ecosystem goods and services, protect biological diversity and improve livelihood of Kenyans;
- 2) Promote innovative planning and integrated ecosystem management approaches towards wetlands conservation and management in Kenya;
- 3) Strengthen institutional capacity on conservation and management of wetlands;
- 4) Promote communication, education and public awareness among stakeholders;
- 5) Improve scientific information and knowledge base on Kenyan wetland ecosystems;
- 6) Establish an effective and efficient legal and institutional framework for integrated management and wise use of wetlands;
- Promote partnership and cooperation at county, national, regional and international levels for the management of transboundary wetlands and migratory species.

Sessional Paper No.13 of 2014 On Integrated Coastal Zone Management (ICZM) Policy. The vision of this policy is to ensure a clean and healthy marine and coastal environment that provides sustainable benefits for present and future generations. The goal is to "To guide the sustainable management and equitable use of coastal and marine resources in Kenya". Specific objectives are;

- To ensure that ecological values of the coastal zone are fully integrated into coastal resource use planning and management;
- Link the use and management of coastal zone into resource and land use policies and programmes, including those related to economic development; and
- Ensure that adequate information on coastal zone values is available to the local communities, general public, and other resource users.

4.4 Sector Reforms



4.4.1. Transport Sector

The sector has been implementing key reforms aimed at enhancing efficiency and effectiveness in service delivery. In the roads sub-sector following the enactment of the Roads Act 2007, the Government has operationalized the three Road Authorities namely; the Kenya National Highways Authority (KeNHA), the Kenya Rural Roads Authority (KeRRA) and Kenya Urban Roads Authority (KURA).

4.4.2. Housing Sector

The Government is implementing the Housing policy through implementation of key subprogrammes namely, the housing development and estates management with various projects. The Proposed Master Plan will be subjected to the provisions of this policy in order to ensure proper utilization of the available land.

4.4.3. Energy Sub-Sector

In the Energy sub-sector, the Government has consolidated the Electric Power Act and the Petroleum Act through the Energy Act, 2006. The Rural Electrification Authority (REA), the energy Regulatory Commission (ERC) and the Energy Tribunal have been established. In addition, a state-owned Geothermal Development Company (GDC) has been established to be in charge of geothermal resource assessments and sale of steam to future independent power producers (IPPs) and KenGen for electricity generation; GDC will also sell low enthalpy geothermal fluids to other users. Further,

Kenya Electricity Transmission Company (KETRACO), which is 100% government owned, has been established to be responsible for construction and maintenance of new power transmission lines. Kenya Power Company (KPC) is responsible for distribution and will keep its current stock of existing 132 kV and 220 kV transmission lines. The Proposed Master Plan will be subjected to the provisions of this land use policy in order to ensure proper utilization of the available land.

4.4.4. Water Sector

Kenya's water sector reforms are intended to formalize service provision to all citizens and fulfil their human right to water and sanitation. Discrimination of the urban poor should end, and they should enjoy the same benefits of service provision as people in the middle and high income brackets. Proposed Master Plan should therefore ensure its objectives are aligned with the key water policy objectives stipulated below;

a) Preserve, conserve and protect all available water resources and allocate it in a sustainable, rational and economical way; and



b) Supply of water of good quality and in enough quantities to meet the various water needs including poverty alleviation, while ensuring safe disposal of wastewater and environmental protection.

Relevant Environmental Institutions

4.4.5. Environmental Assessment Administrative/Institutional framework

There are over 20 institutions and departments, which deal with environmental issues in Kenya. Some of the key institutions include the Ministry of Environment and Natural Resources (MENR), Kenya Forest Services (KFS), Kenya Wildlife Service (KWS), National Museums of Kenya (NMK), National Environment Management Authority (NEMA), Ministry of Water and Irrigation (MOWI), Water Resources Management Authority (WRMA) and the public universities, among other organizations. There are also local and international NGOs involved in environmental issues in Kenya. In 2001, the Government established specific administrative structures to implement the EMCA. The main administrative structures are described in the following sections.

4.4.6. The National Environment Council

The National Environment Council (the Council) is responsible for policy formulation and directions for the purposes of the Act. The Council also sets national goals and objectives, and determines policies and priorities for the protection of the environment.

4.4.7. The National Environment Management Authority

The responsibility of NEMA is to exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of Government in the implementation of all policies relating to the environment.

The Act also provides for the establishment and enforcement of environmental quality standards to be set by a technical committee known as the Standards and Enforcement Review Committee (SERC) which will govern the discharge limits to the environment by the proposed project.

4.4.8. County Environmental Committees

The County Environmental Committees also contribute to decentralized environmental management and enable the participation of local communities. These environmental committees are to be constituted by the governor and are responsible for the proper management of the environment within the county for which it is appointed.


4.4.9. National Environmental Complaints Committee

The National Environmental Complaints Committee (NECC) is established under Section 31 of EMCA. The NECC is concerned with the investigation of complaints relating to environmental damage and degradation generally. The NECC has powers to investigate complaints against any person or even against NEMA or on its own motion.

Investigate any suspected case of environmental degradation. The NECC is required by law to submit reports of its findings and recommendations to NEMA.

4.4.10. Standards and Enforcement Review Committee

The Standards and Enforcement Review Committee (SERC) is a committee of NEMA established under Section 70 of EMCA. This is a technical Committee responsible for formulation of environmental standards, methods of analysis, inspection, monitoring and technical advice on necessary mitigation measures. The Permanent Secretary under the Minister is the Chairman of the Standard and Enforcement Review Committee.

The members of the SERC are set out in the third schedule to EMCA. They consist of representatives of various relevant government ministries and parastatals that are Lead Agencies as well as those responsible for matters such as economic planning and national development, finance, labour, public works, law and law enforcement, etc. Other members are drawn from public universities, and other government institutions.

4.4.11. National Environmental Tribunal (NET)

The NET is established under Section 125 of EMCA for the purpose of hearing appeals from administrative decisions by organs responsible for enforcement of environmental standards. An appeal may be lodged by a project proponent upon denial of an EIA license or by a local community upon the grant of an EIA license to a project proponent.

NEMA may also refer any matter that involves a point of law or is of unusual importance or complexity to NET for direction. The proceedings of NET are not as stringent as those in a court of law and NET shall not be bound by the rules of evidence as set out in the Evidence Act. Upon the making of an award, NET's mandate ends there as it does not have the power to enforce its awards. EMCA provides that any person aggrieved by a decision or award of NET may within 30 days appeal to the High Court.

4.4.12. National Environment Action Plan Committee (NEAP)

The National Environment Action Plan Committee (NEAP) is established under Section 37 of EMCA. This cross-sectoral committee is responsible inter alia, for the development of a fiveyear national environment action plan. The national environment action plan shall contain



among other aspects analysis of the natural resources of Kenya and their distribution, quantity and various uses. It shall also recommend legal and fiscal incentives for business that incorporate environmental requirements into their planning and operational processes as well set out guidelines for the planning and management of the environment and natural resources. The plan will ensure that the guidelines set out are taken into consideration when effecting the plan.

4.4.13. Strategic Environmental Assessment (SEA)

Strategic Environmental Assessment (SEA) refers to a range of analytical and participatory approaches that aims to integrate environmental consideration into policies, plans and programmes and evaluate the interlinkages with economic and social considerations. SEA is a family of approaches, which use a variety of tools, rather than a single, fixed and prescriptive approach. SEA for the larger Olkaria Geothermal Field Development Programme (OGFDP) was done in 2014 and approved in 2015. It provides an environmental scrutiny of the policy objectives to ensure that adequate safeguards are in place for the short- and long term cumulative/ overall environmental and social impacts as a result of the accelerated infrastructural improvements in the programme location area. The results of SEA further assist in planning the developments in such a way that they are complementary and that no development of any project component within Olkaria Geothermal Field Development Field Development Programme (OGFDP) is disadvantaged.

4.4.14. Roads Sub-Sector

Between 2006 and 2008 through the Roads Act 2006 and Energy Act 2006, six SAGAs were created as part of the reform agenda for the sector.

- The Kenya National Highways Authority (KeNHA): is responsible for the development and maintenance of class A, B and C roads. KeNHA also advises the Minister responsible for Roads on technical issues such as standards, axle load and research development. In addition, KeNHA creates regions of operations countrywide;
- The Kenya Rural Roads Authority (KeRRA): is responsible for all rural and small town roads of Class D and below including Forest Roads, Special Purpose Roads and Unclassified Roads currently under county councils and town councils. KeRRA will also manage funds allocated to Constituencies;
- Kenya Urban Roads Authority (KURA): is responsible for management and maintenance of all roads within cities and major municipalities. Local Authorities will remain major stakeholders in prioritizing road works to be implemented by KURA;



- The Kenya Wildlife Service (KWS) is a roads agency responsible for roads in National Parks and Game Reserves as well as access roads allocated to KWS by Ministry of Roads; and
- The Kenya Roads Board established by Kenya Roads Board Act 1999: is responsible for funding maintenance of all roads including approval of maintenance work programmes, technical and financial audits of works funded by the Board.

4.4.15. Transport Sub-Sector

- Kenya Civil Aviation Authority (KCAA) is responsible for regulation of the aviation industry and ensuring air safety navigation in the country.
- Kenya Airports Authority (KAA) manages the most important and fastest transport link to the outside world. The Authority ensures that there are adequate efficient and safe airports in Kenya;
- Kenya Ports Authority (KPA) manages the ports, along the coastline that provide the expansive hinterland of mainland Kenya, Rwanda, Burundi, Sudan and Uganda with cheap transport links to the outside world;
- Kenya National Shipping Line (KNSL) was established with the objective of transportation of bulky cargo as a recommendation adopted at an international forum on shipping development;
- Kenya Railways Corporation (KRC) provides rail services that are essential for transportation of commodities to and from the port of Mombasa in addition to providing commuter and passenger services; and
- Kenya Maritime Authority (KMA) is responsible to regulate and co-ordinate activities in the Maritime industry.

4.4.16. Energy Sub-Sector

- Kenya Power Company Limited (KPC) is responsible for electricity transmission and distribution.
- Energy Regulatory Commission (ERC) regulates the entire energy sector and protects interest of stakeholders.
- Rural Electrification Authority (REA) is responsible for accelerating rural electrification at a pace consistent with government policy;
- Energy Tribunal arbitrates disputes between ERC and aggrieved stakeholders in the energy sub-sector;
- Kenya Pipeline Company (KPC): operates the oil pipeline system for the

transportation and storage of petroleum products.

- National Oil Corporation of Kenya (National Oil): is responsible for petroleum exploration and fuel marketing.
- Kenya Electricity Generating Company (KenGen) is the main electricity generating company, accounting for about 72% of the total installed capacity.
- Kenya Petroleum Refineries Ltd (KPRL) is responsible for crude oil refining in the country;
- Geothermal Development Company (GDC) is responsible for development of geothermal resources; and
- Kenya Electricity Transmission Company (KETRACO) is responsible for construction and operation of power transmission lines.

4.4.17. Water Sub-Sector

Water Resources Authority (WRA)

The Water Resources Authority (WRMA) was formed as one of the water sector bodies under the water sector reforms; the body was established under the Water Act 2002. The overall mandate of WRMA is to protect and conserve water resources, which include lakes, ponds, swamps, streams, marshes, watercourses or anybody of flowing or standing water both below and above the ground.

There are currently six established regional offices in Kenya these are Athi catchment area in Machakos, Tana catchment area in Embu, Rift Valley catchment area in Nakuru, Lake Victoria South catchment area in Kisumu, Lake Victoria North catchment area in Kakamega and Ewaso Nyiro North catchment area in Nanyuki. WRMA responsibilities extend to the management of water catchments. The Water Act establishes the Catchment Area Advisory Committees whose principal functions are to advise WRMA on water resources conservation, use and apportionment at the catchment levels.

4.4.18. Water Services Regulatory Board (WASREB)

WASREB is established under the Water Act and was operationalized in March 2003. The functions of the WASREB include the issuance of licences to Water Service Boards and to approve service provision agreements concluded between Water Service Boards and Water Service Providers. The Water Service Providers are the agencies that directly provide water and sanitation services to consumers. The WASREB is responsible for ensuring that water services and supply are efficient and meet expectations of consumers through regulation and monitoring of Water Service Boards and Water Service Providers. To standardize service provision, the Board has the responsibility of developing among others, tariff guidelines.

4.4.19. Water Services Trust Fund (WSTF)

The Government of Kenya, through the Ministry of Water and Irrigation established the Water Services Trust Fund (WSTF) under the Water Act 2002 to channel funding for its long-term objectives of developing water and sanitation services in areas of Kenya without adequate water. The main objective of the WSTF is to assist in financing capital costs of providing services to communities without adequate water and sanitation services. The WSTF focuses on reaching those areas that are underserved or not served at all such as informal settlements, the priority being given to poor and disadvantaged groups. The projects are funded through direct allocation by the Government and donations and grants that may be received from bilateral and multilateral development partners, organizations and individuals.

4.4.20. Water Appeals Board

The Water Appeals Board is established under the Water Act to adjudicate disputes within the water sector. The Appeals Board is made up of three persons, one appointed by the President on advice of the Chief Justice and two others appointed by the Minister for Water and Irrigation. The Water Appeals Board can hear and determine appeals arising from the decision of the Minster of Water and Irrigation, the WASREB and WRMA with respect to the issuance of permits or licensees under the Water Act.

4.4.21. Lake Naivasha Basin Integrated Management Plan

The aim of the Plan is to enhance the quality and quantity of water resources within the Lake Naivasha basin while protecting ecosystem services, ensuring equitable access, improving livelihoods and promoting participatory resource management.

4.5 International Environmental and Social Management Requirements

4.5.1. Bonn Convention on Migratory Species of Wild Animals (1983)

This global convention created in 1979 by the United Nations Environment Program (UNEP) is an agreement for the conservation of migratory species of wild animals. Two appendices list migratory species that require conservation measures. Appendix 1 includes species threatened with extinction, and Appendix 2 lists migratory species whose conservation status requires an international agreement of cooperation. Under the Bonn Convention Kenya has signed several agreements including the Agreement on the Conservation of Migratory Water birds in Africa - (AEWA) that requires the Parties to investigate problems that arise due to human activities and endeavour to implement remedial measures including restoration and habitat rehabilitation and compensatory measures for loss of habitat. The conventions include among others:



- United Nations Convention on Biodiversity;
- United Nations Convention on Combating Desertification;
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal;
- Convention of the Protection of the Ozone Layer (Montreal Protocol);
- United Nations Convention on the Law the Sea;
- Convention on the Conservation of Migratory Species (CMS);
- International Convention on Oil Pollution Preparedness, Responses and Cooperation;
- Africa Convention on Conservation of Nature and Natural Resources;
- International Convention for the Prevention of Pollution from Ships;
- Convention of the High Seas;
- Convention on Facilitation of International Maritime Traffic;
- Convention on International Trade in Endangered Species of Wild Fauna and Flora; and
- International Convention for the Prevention of Pollution of the Sea by Oil.

4.6 Linkage of the Masterplan to other Plans, Programmes and Policies

A number of plans, policies and programmes (PPP) are in place in the country, county and in the planed area neighbourhoods. These PPP have a direct or indirect linkage with KEP as illustrated below.

4.6.1. Kenya National Spatial Plan 2015- 2045

This is a national plan with the following objectives;

- 1. To create a spatial planning context that enhances economic efficiency and strengthens Kenya's global competitiveness.
- 2. To promote balanced regional development for national integration and cohesion.
- 3. To optimize utilization of land and natural resources for sustainable development.
- 4. To create liveable and functional human settlements in both urban and rural areas.
- 5. To secure the natural environment for high quality of life.
- 6. To establish an integrated national transportation network and infrastructure system.

KEP is in line with the National plan as it aims at leveraging KenGen available land and geothermal resources, major natural resources in the region. This will enable provision of affordable energy. This will incentivise investment in the industrial from major manufacturing industries; locally and globally through provision of affordable energy. This will not only enhance increased industrialization but will also enhance Kenya global competitiveness. KEP in addition will thrive to create a regional balance through development of industries outside



Similarly, KEP proposes putting up integrated transportation system in ensuring connectivity of the industrial park to major roads and urban areas. Implementation of KEP will further improve the livelihoods of industrial park neighbourhood; both in urban areas and rural areas. The benefits will mainly be in the form of employment, infrastructure provision and increased visitors in the area. Environmental considerations have also been put into consideration in development of the masterplan ensuring synchrony with sensitive ecosystems in the area.

4.6.2. Hell's Gate-Mt. Longonot National Parks Ecosystem Management Plan (HGLNPE), 2017-2027.

The main objectives of the HGLNPE, 2017-2027 are:

- 1. Conservation and restoration HGLNPE habitats;
- 2. Management and enhancement of wildlife species; and
- 3. Enhancement and improvement of ecological monitoring.

KEP masterplan has prepared with considerations of all sensitive ecosystems in the area. These includes but not limited to Hell's Gate National Park, Lake Naivasha among others. The plan has been designed in a manner that it will exist in harmony with these ecosystems. This include but not limited to setting aside green zones where wildlife can graze in a safe manner. This is in addition to employment of competent persons in ensuring efficient management of the ecosystems in collaboration with lead agencies notably Kenya Wildlife Service (KWS), Wildlife Research and Training Institute (WRTI) and Water Resource Authority (WRA).

4.6.3. Nakuru County Integrated Development Plan (CIDP)

The plan objectives include;

- 1. To enhance service delivery;
- 2. To develop, maintain and rehabilitate road network, transport facilities and government buildings;
- 3. To enhance the level of fire safety and response to disaster within Nakuru County;
- 4. To promote effective and efficient service delivery;
- 5. To promote digital literacy among County citizens;
- 6. To enhance e-Government services through automation;
- 7. To implement and enact evidence-based policies that relates to resource mobilization, planning and strengthening health care;
- 8. To reduce disease burden associated with environmental health risk factors and unhealthy lifestyle;



- 10. To provide access to quality Early Childhood Development and Education and Vocational Training;
- 11. To promote co-operative development and management;
- 12. To enhance growth and development of enterprises;
- 13. To promote local tourism and market Nakuru County as a destination of choice;
- 14. To increase water coverage and expand sewerage systems;
- 15. To protect environment and enhance conservation of natural resources;
- 16. To promote effective and efficient running of County affairs;
- 17. To provide supervision and coordination services to all County Executive entities;
- 18. To ensure effective and efficient running of the County Assembly;
- 19. To enact laws and formulate policies;
- 20. To provide a framework for the formulation, analysis and management of economic plans and policies;
- 21. To improve HR practices for an enhanced service delivery by promoting the implementation of HR policies and guidelines;
- 22. To promote civic education, public participation in governance, policy formulation and implementation;
- 23. To develop and promote socio cultural diversity, socio-economic empowerment and responsible gaming; and
- 24. To provide quality youth training and empowerment services.

KEP masterplan is being implemented in Nakuru County. As such, its implementation will support Nakuru County development and financial needs.

4.6.4. Naivasha Special Economic Zone

The plan is already under implementation and is situated in Naivasha Sub-County. The plan main objectives are;

- 1. To attract both local and foreign investments;
- 2. To expand and diversify production of goods and services for domestic and export markets
- 3. To promote value addition;
- 4. To promote local entrepreneurship through Small and Medium Enterprises (SMEs);
- 5. To enhance technology development and innovation; and
- 6. To promote rural and regional industrialization by exploiting comparative advantage of local resources.



The proximity of Naivasha Special Economic Zone (NSEZ) to KEP is an indication that the two plans are complementary. Notably, NSEZ will play a significant role in residential housing to the KEP residents.

4.6.5. KenGen Olkaria Geothermal Power Project

The plan is located within the Olkaria area and is currently under implementation. The main objectives of the plan were;

- 1. Diversify sources of energy in order to minimize the over reliance on hydro and thermal sources of energy;
- 2. Mitigate against climate change via reduction of greenhouse gas emissions;
- Reduce import bill in the long term by saving on money used to import expensive fossil fuels;
- 4. Earn revenue for the company and the government;
- 5. Create employment opportunities;
- 6. Promote direct uses of geothermal heat; and
- 7. Generate least cost power that will make Kenyan economy competitive.

With the main aim of the plan being exploitation of geothermal resources, KEP will play an even major role in maximizing geothermal resources in place, mainly energy. This will ensure sustainable used of all resources currently being exploited

4.6.6. Naivasha Municipality Urban Development Plan

KEP is situated within Naivasha Municipality. The main objectives of the plan are:

- 1. To pursue developmental opportunities which are available in the municipality;
- 2. To provide a high standard of social services in a cost-effective manner to the inhabitants of the Municipality;
- 3. To promote social cohesiveness and a sense of civic duty and responsibility among the inhabitants and stakeholders in the municipality;
- 4. To provide for services, By-laws and other matters for the Municipality benefit; and
- 5. Foster economic, social and environmental wellbeing of the community.

KEP therefore is in the right direction in supporting development and growth of Naivasha Municipality, once implemented.

CHAPTER 5: PUBLIC CONSULTATION

5.1 Overview

Effective public participation is critical for SEA process and is a requirement in undertaking SEA. The main aim of public participation is to create awareness of proposed, policies, plans and programmes. This process allows all categories of stakeholders including the public, private sector, civil societies and any other relevant stakeholder of interest to give their views. The stakeholder engaged are the most affected by the proposed plan as well as those with interest and influence in the outcome of the masterplan.

5.2 Community Consultation Meetings

Community consultative meeting were organized through the Olkaria Location Chief, Hell's Gate Sub-Location Assistant Chief as well as through KenGen Liaison Office who were key mobilizers of the host community. The meetings targeted communities that live in the periphery of the proposed Energy Park.

Three meetings were held at Rapland, Olomaiyana and Narasha villages as shown in Table 5-21 below. The meetings were free and open and ensured that all the community interest groups were represented. The meetings attendees consisted of respective villages elders, religious leaders, women representatives, local institutions representatives, local administrators, and persons with disabilities.

Village	Date	Attendance	Approximate Length of Meeting
Rapland (Figure 5-45)	31 st August, 2022	63	2 hours
Olomaiyana (Figure 5-43)	1 st September, 2022	79	1 hour 48 minutes
Narasha (Figure 5-44)	2 nd September, 2022	61	2 hours 20 minutes
	Total	203	

Table 5-21: Community Consultative Meetings

A brief summary on the proposed Master Plan and as the SEA was presented by KenGen and the Consultants respectively. This was followed by questions/comments session where the attendees were presented with an opportunity to give their views. The meetings proceedings were minuted and attending members recorded their names in the availed attendant sheets and photos of the meeting proceedings taken. Minutes of the respective meetings are annexed in the report in Appendix 8 and photos of the proceedings below (Figure 5-43, Figure 5-44, and Figure 5-45).



Figure 5-44: Meeting Proceeding at Narasha Village



Ocoscience



5.2.1. Summary of Outcomes

Table 5-22,

KenGen Table 5-23 and Table 5-24 below is a summary of the key issues that arose from the

community consultative meetings.

Number	Issue/Comment	Responses	Proposed Recommendation
1.	Enquired on the exact	Maps were distributed to the	Figure 2-5, Figure 2-6 and Figure
	location of the Energy	members showing the exact	2-9 are some of the maps that were
	Park.	location for the proposed Park.	presented.
2.	Raised the issue of	There was need to separate	N/A
	previous projects by	previous projects with the current	
	KenGen not really	one.	
	benefiting the community	The community will have a	
	and what would be	chance to engage the different	
	different this time around.	industries setting up on how the	
		community can benefit through	
		the implementation.	
3.	Raised concerns on the	A biodiversity assessment is	A biodiversity report is as annexed
	effect the Park would have	being conducted along the SEA	in Appendix 11.
	on both domestic and	to predict the impacts the project	
	wildlife.	would have on wildlife and the	
		best way to conserve them.	
4.	Enquired whether there be	The Energy Park would have	Appendix 10 has provided the
	sections in the Park set	designated green zones and	proposed green zones in the
	aside for conservation	hence not all areas would be	proposed industrial park.
	considering the Park will	under development.	
	occupy a very large area.		
5.	Enquired on the measures	EIA would be conducted for every	Respective Industrial Park
	in place to ensure the	industry that would set up, this	components should be subjected to
	community at Rapland are	would involve consultation with	EIA as stipulated by EMCA, 1999.
	protected from pollution.	the community on the impacts	
		expected and how they would be	
		addressed to protect the	
		community leaving near the Park.	
6.	Raised Concerns on	Engagement with Kenya Wildlife	Environmental Management and
	human -wildlife conflict	Service will be done to ensure	Monitoring Plan under the energy
	would be addresses	that the potential human-wildlife	park operation phase sections; Soil
	considering that the	conflict can be addressed.	and Water Pollution, Closure of
	Energy Park will be within	The Energy Park would have a	Wildlife Dispersal Areas and
	a Hells gate national Park.	perimeter wall to restrict	Increased Wildlife Accidents has
			recommended for continuous

Table 5-22: Narasha Community Meeting Outcomes

Ocoscience



Number	Issue/Comment	Responses	Proposed Recommendation
		•	•
		interaction between people and	engagement of KWS throughout
		the wildlife.	the industrial park implementation
			phase.
7.	Enquired on how the	Waste water would be treated	Environmental Management and
	waste water from the	before being re-injected in to	Monitoring Plan proposes for a
	industries will affect the	underground recharging wells to	waste management plan to be
	community down from the	limit pollution.	undertaken by a competent team to
	Energy Park.		enable efficient management of all
			waste.



Table 5-23: Olomaiyana Community Outcome			
Number	Issue / Comment	Responses	Proposed Recommendation
1.	Enquired on the impact	Different industries would have	Respective Industrial Park
	the project would have on	different impacts on the	components should be subjected
	the Environment, People	environment, people and	to EIA as stipulated by EMCA,
	and Animals.	animals.	1999. These EIAs will be critical in
2.	Enquired on the potential	The industries would however	identifying potential impact of the
	industries training the	have Environment Impact	industrial park.
	community on the working	Assessment before construction	
	of the Energy Park.	which would inform on the	
		specific impacts associated with	
		the specific industry.	
3.	Enquired on the specific	The masterplan is expected have	Section 6.3 has provided a
	benefits the Energy Park	immense benefits to the	summary of positive impacts
	will have to the	community including; improved	anticipated from the industrial park
	community.	roads network, water access,	implementation.
		waste management, employment	
		opportunities, demand for	
		housing creating opportunities	
		housing and increased business	
		opportunities.	
		Different industries have CSR	
		programmes that would also	
		benefit the community.	
4.	Enquired on issues of air	An Air Dispersion Model would	Environmental Management and
	pollution from all the	be conducted prior to the	Monitoring Plan section (Chapter
	industries, and how that	masterplan implementation to	8) during the construction phase;
	would be addressed.	predict on the impact fall out	air pollution has recommended for
		areas.	respective industry to undertake
		The specific industries are	air dispersion modelling.
		obligated by law to maintain	
		emissions at a set limit and put in	
		place control measures.	
5.	Enquired on increase in	Fencing would minimize the	Environmental Management and
	accidents due to high	interaction between the animals	Monitoring Plan section (Chapter
	traffic which could lead to	and the Energy Park.	8) during the operation phase of
	the death of livestock and		the industrial park recommends for
	wildlife.		installation of a perimeter wall
			along boundaries of the industrial
			park. This will limit entry by wildlife

Ocoscience



Number	Issue / Comment	Responses	Proposed Recommendation
			in the industrial park minimizing
			possible increase in wildlife
			accidents.
6.	Requested that the youth	Different industries will engage	One of the anticipated positive
	in the area should be given	the community on both skilled	impact of the proposed industrial
	priority in employment	and un skilled labour as needed.	park is creation of employment
	opportunities during		especially to locals as highlighted
	implementation.		by section 6.3.1 of this report.
7.	Requested for more	There will be more community	Section 8.2 of this report indicates
	stakeholder engagements	engagements as the masterplan	that all industries are required to
	to help the community	will be implemented e.g. during	undertake EIA. This will ensure
	understand the project	the EIA process for the different	more community engagements
	better.	industries that may set up.	will take place.
8.	Requested for the rights of	KenGen liaison committee would	N/A
	the minority (Turkana) to	consider that.	
	be considered as part of		
	the community.		



Table	Table 5-24: Rapland Community Meeting Outcomes			
Number	Issue / Comment	Responses	Proposed	
			Recommendation	
1.	Raised the concern of previous	At the moment, the masterplan is in	N/A	
	projects not fulfilling community	planning, the proponent would		
	requests during	endeavour to involve the		
	implementation (priority not	community through the		
	given to the community for	implementation phase.		
	employment, local contractors			
	and local business).			
2.	Enquired on the benefits the	The masterplan is expected have	Section 6.3 has provided a	
	masterplan to the community.	immense benefits to the community	summary of positive impacts	
		including; improved roads network,	anticipated from the industrial	
		water access, waste management,	park implementation.	
		employment opportunities.		
		Different industries have CSR		
		masterplans that would also benefit		
		the community.		
3.	Enquired on what industries will	EIA would be conducted for	Respective Industrial Park	
	be built at the Park and what	individual industry projects where	components should be	
	impacts would they have on the	the community will have an	subjected EIA as stipulated	
	community.	opportunity to be informed on the	by EMCA, 1999. These EIAs	
		industry operations, benefits and	will be critical in identifying	
		impacts and to raise their concerns	potential impact of the	
		and comments.	industrial park.	
4.	Raised concerns that the	An Air Dispersion Model would be	Environmental Management	
	location of the Park which is on	conducted prior to the masterplan	and Monitoring Plan section	
	the higher side would impact	implementation to predict on the	(Chapter 8) during the	
	the community negatively due	impact fall out.	construction phase; air	
	to waste flowing down to the	Waste water will be treated before	pollution has recommended	
	communities.	recycling or re-injection into the	for respective industry to	
		recharge wells.	undertake air dispersion	
			model.	
5.	Supported the masterplan and	The Energy Park will have great	Section 6.3 has provided a	
	requested for the community to	benefits to the community through	summary of positive impacts	
	benefit from the implementation	the implementation and operation	anticipated from the industrial	
	of the masterplan.	phases.	park implementation.	
6.	Requested that during the	The community should write a	N/A	
	implementation the masterplan	proposal on the request and also		
	should consider building a	different industries have CSR		

		KenGen	
Number	Issue / Comment	Responses	Proposed
			Recommendation
	secondary school for the	programmes that could benefit the	
	community.	community.	
7.	Requested for diversity in the	The 4 villages (Cultural Centre,	N/A
	key stakeholders meeting	Oloonogot, Oloosinyal and	
	representation.	Olomaiyana Ndogo) should send	
	Requested for the community	representatives after consultation	
	representative to the key	and ensure gender balance.	
	stakeholders meeting to be		
	selected after further		
	consultation with the		
	community members.		
8.	Raised concerns on the	Part of the Energy Park will consist	Appendix 10 has provided
	environmental impacts that	of green zones.	the proposed green zones in
	would be brought by the		the proposed industrial park.
	establishment of the Energy		
	Park.		
9.	Enquired on the level of	EIA would be conducted for the	Section 8.2 of the report has
	impacts the proposed	industries to give the specific	recommended for respective
	masterplan would have on the	impacts associated with the	industries in the proposed
	environment and the people.	different industries.	industrial park industrial park
			to be subjected to EIA. These
			EIAs will be critical in
			identifying potential impact of
			the industrial park.
1		1	

5.3 Stakeholder Workshop

Various stakeholders were identified at the scoping stage. Stakeholders were identified based on the proximity to the project area, those with regulatory roles/authority, academia, research institutions, civil societies, NGO's, among others. The stakeholders were engaged through the interviews, structured questionnaires and workshops. The first stakeholder workshop was held on 9th September, 2022 with the meeting proceedings as shown in Figure 5-46 and Figure 5-47 below.

Key informants were interviewed through customised questionnaires. A sample questionnaire is presented in Appendix 7of this report. Inputs from the stakeholders were key in understanding the general environmental conditions in addition to analysis of the proposed masterplan impacts.

The workshop attendees constituted the following stakeholders:

- Community Representatives;
- Naivasha Constituency Member of Parliament Representative;
- Naivasha Sub-County Physical Planner;
- Kenya Railways;
- Lake Naivasha Growers Association (L.N.G.A);
- Lake Naivasha Riparian Association (L.N.R.A);
- Naivasha Sub-County Water Officer;
- Energy and Petroleum Regulatory Authority (EPRA);
- County Government of Nakuru, Environmental Officer;
- KenGen;
- Ecoscience and Engineering (SEA Consultant) representatives;
- Kenya Marine and Fisheries Research Institute;
- Kenya Power and Lighting Company;
- Kenya Wildlife Service representatives;
- Kenya Forest Service representatives;
- Energy and Petroleum Regulatory Authority (EPRA);
- Naivasha Sub-County Assistant County Commissioner;
- Hell's Gate Location chief;
- Olkaria Sub-Location assistant chief;
- County Government, Naivasha Sub-County line departments (water, physical planning, environment, education, sub-county administrator, public health, education, Member of County Assembly);
- National Environment Management Authority; and
- Kenya National Chambers of Commerce-Nakuru.

Figure 5-46: SEA Team Leader presenting SEA Scoping Report



KenGen

Figure 5-47: Stephen Mbatha, Acting New Business Manager presenting KenGen Energy Park Masterplan



In addition, letters of invitation were sent to the respective stakeholders with a notice of 2 weeks provided as illustrated by workshop invitation letters annexed in the report as Appendix



5.3.1. Summary of Outcomes

The outcomes of the stakeholder workshop are as presented on Table 5-25 below.

Number	Stakeholder Comments	Response
1.	Clarification on the land area under which the Energy	The land under which the Energy Park
	Park will be located.	will be located is 18,248,616m ² i.e.
		4509.3 Acres or 1824.9 Ha.
2.	Rapland community land is situated downhill of the	Respective industries that will be set-up
	proposed Energy Park.	in the Energy Park will be required to
		undertake air dispersion modelling to
		determine how pollutants from the
		industries might impact on the
		surrounding areas.
3.	Benefits that will accrue from the proposed Energy	The feasibility study stage including the
	Park implementation should be documented.	SEA process is aimed at aiding KenGen
4.	Local community to be given priority in jobs and	to secure licences to operationalize the
	opportunities arising from the Energy Park	Energy Park. Once then has been
	implementation.	accomplished, KenGen will engage the
		community so that the shared benefits
		can be discussed in details.
5.	SEA process will identify most of the negative	Impacts analysis have been provided in
	impacts that might result from the Energy Park	chapter 6 of the SEA report.
	implementation. This is in addition to the benefits that	
	will come as a result of the Energy Park	
	implementation.	
6.	- Request for information on whether the Energy Park	The Energy Park is working
	is working in collaboration or independently of	independently as it at the feasibility
	Naivasha Energy Park.	stage. However, once the feasibility
	- Whether there was an MOU in place for the type of	study is complete, consultations will be
	industries to be established if working in collaboration	held with the Naivasha Energy Park.
	with Naivasha Industry.	Additionally, it was highlighted that the
	- What measures have been put in place the negative	unique aspect of KenGen Energy Park
	or positive impacts that can be experienced through	was that it was seeking to leverage from
	running the two Energy Parks.	its geothermal resources.
7.	Whether the Energy Park was being implemented	The site where the Energy Park will be
	within the disputed Ngati Farm land as is might have	located is exclusively within KenGen
		land which is not disputed. No resettled

Table 5-25: Key Stakeholder Workshop Outcome



Number	Stakeholder Comments	Response
	an impact on successful implementation of Energy	will be undertaken to facilitate setting up
	Park.	the Energy Park.
8.	Clarification on the geographical location and extent	A map showing the geographical
	of the proposed industrial location as the map	location of the proposed site was
	provided had not indicated so.	presented. This included Lake Naivasha
		and Hell's Gate National Park key
		features that most people were familiar
		with.
9.	Request for information of the outcome of the 2016	The 2016 feasibility study is being
	feasibility study and the reason it has not been	revised as a number of changes have
	implemented to date.	occurred since then. This includes legal
		(e.g. SEZA Act) and economic changes
		and market values. Additionally, the
		2016 feasibility study was not subjected
		to SEA and this part of the reason the
		feasibility study is being revised.
10.	Concerns over the unfavourable topography of the	Infrastructure development will only be
	area the proposed Energy Park is scheduled to be	carried out on land with a slope of less
	implemented with deep gorges and other	than 15°. Therefore, land with over 15°
	topographical features that can be a challenge to	slopes will not be developed and will
	infrastructure development.	serve as green zones for other
		conservation purposes.
11.	Concern over the impacts the Energy Park among	The feasibility study has taken into
	other proposed developments including Oserian	consideration the socio-economic
	Farm and Naivasha Energy Park will have on the	activities as well as sensitive
	socio-economic and land use activities in the area.	ecosystems in place. SEA will in addition
	This includes livestock rearing and wildlife habitats.	recommend measures that will ensure
	This will lead to reduced grazing lands for Maasai	that the Energy Park will not negatively
	community livestock forcing them to graze their	impact wildlife and the Maasai
	livestock in Hell's Gate National Park leading to	community way of life.
	human-wildlife conflict. This will further compromise	
	livestock farming as well as wildlife habitats and their	
	migration corridors/routes.	
12.	Request for the KEP masterplan team to have a	
	sitting with various environmental agencies including	
	KWS among others to incorporate the environmental	
	issues of concern in the proposed Energy Park.	



Number	Stakeholder Comments	Response
13.	An observation that the map was presented was not	A map showing the geographical
	clear.	location of the proposed site was
		presented during the stakeholder
		meeting. This included Lake Naivasha
		and Hell's Gate National Park key
		features that most people were familiar
		with
14.	An emphasis on the need to have a detailed	Among the industries being targeted in
	presentation on the types of industries that will	the Energy Park includes fertilisers, iron
	be constitute the Energy Park.	& steel, plastics & packaging, fabricated
		metal products pulp & paper, wood &
		wood products, textiles and apparel,
		food & beverages, warehousing and
		logistics and supporting light industry.
		This has been detailed in the draft
		masterplan.
15.	Request for information on integration of the	A map on infrastructure integration in the
	Energy Park with other infrastructure including	Energy Park is available.
	electric lines, connectivity among others.	
16.	Request for information on neighbourhood	The Energy Park has taken into
	compatibility of the Energy Park in terms of	considerations on the site
	accessibility and connectivity.	neighbourhoods. Additionally, all the
		stakeholders in the neighbourhood will
		be engaged to have their concerns and
		inputs to be incorporated in the
		masterplan.
17.	Request for information about whether a biodiversity	A rapid biodiversity study was carried out
	survey within the site has been carried out to	and is appended in the report in
	determine whether species within the site will	Appendix 11 and is part of SEA study to
	become extinct as a result of the Energy Park	have an inventory on the flora and fauna
	implementation.	in the proposed Energy Park site.
		Additionally, based on previous studies,
		there are no critically endangered
		species within the proposed site. The
		biodiversity study will also detail
		ecosystem services provided by the site
		species.



Number	Stakeholder Comments	Response
18.	An observation that good transportation	KenGen will have a consultative meeting
	infrastructure will be required for transportation of raw	Kenya Railways to have a discussion of
	materials and finished products. As such, KenGen	the need for a rail infrastructure.
	should engage Kenya Railways early enough in	
	design of railway infrastructure that will suite the	
	Energy Park needs, if needed.	
19.	An observation for the need for the Energy Park	Consultation with other Energy Park in
	masterplan preparation team to consult other Energy	the area will be undertaken.
	Parks in the pipeline in the area to avoid any form of	
	conflict as well as to share available resources.	
20.	Concerns over water sources to facilitate operations	KenGen intends to source water for the
	of the proposed Energy Park as well as water	Energy Park from Lake Naivasha,
	sources for other proposed Energy Parks in the area.	boreholes as well as brine water.
21.	Request for information on the type of industries that	Among the industries being targeted in
	will be set-up in the proposed Energy Park.	the Energy Park includes fertilisers, iron
		& steel, plastics & packaging, fabricated
		metal products pulp & paper, wood &
		wood products, textiles and apparel,
		food & beverages, warehousing and
		logistics and supporting light industry.
		This has been detailed in the draft
		masterplan.
22.	Concerns over acid precipitation in Naivasha Town	Respective industries that will be set-up
	from industries proposed in the Energy Park as a	in the Energy Park will be required to
	result of pollutants dispersed by afternoon northerly	undertake air dispersion model to
	winds that are experienced.	determine how pollutants from the
		industries might impact on the
		neighbourhoods.
23.	Observation on the need for the radius under which a	This was noted and will be
	special planning zone beyond the proposed site so	recommended.
	that land use beyond the proposed Energy Park can	
	be guided.	
24.	A recommendation on zonation inside the Energy	Zoning has already been carried out in
	Park site ensuring that a green zone/belt is	the draft masterplan ensuring symbiosis
	established along the industrial site bordering the	of industries.
	Hell's Gate National Park.	



Number	Stakeholder Comments	Response
25.	Concerns over critical infrastructure provision within	Respective industries will be required to
	the Energy Park including water provision, waste	have a waste water treatment plant. The
	water and solid water management bearing in mind	treated waste water will then and
	the community living around as well as ecosystems	condensate from geothermal operations
	in the area e.g. Lake Naivasha.	will be reinjected in the geothermal
		reinjection wells.
26.	A recommendation that feasibility study team should	This was noted and will be reviewed as
	take note of regulations that are in advance stage to	recommended.
	put into effect the Energy Act, 2019 e.g. Electrical	
	Generation and supply, energy marketing, pricing	
	guidelines among others as they can impact on the	
	Energy Park operations.	
27.	Request for information on how and when the Nakuru	All the stakeholders in the area will be
	County Government technical departments (i.e.	engaged to have their concerns and
	roads, health, water, education, social development,	inputs to be incorporated in the
	planning etc.) will be engaged as they will have a	masterplan.
	direct input during the implementation of the	
	proposed plan.	
28.	Observation on the significance of public participation	Three public participation meetings have
	including engagement of the host community	already been undertaken in Rapland,
	emphasizing and their inputs incorporated in the	Olomaiyana and Narasha areas.
	masterplan.	Comments from the community were
		documented and will have a major part
		of SEA.
29.	Request for information on whether inventory on the	A rapid biodiversity study was carried out
	ecosystem services provided by the proposed	as part of the SEA study to have an
	Energy Park site in its current state has been	inventory on the flora and fauna in the
	undertaken.	proposed Energy Park site. Additionally,
		based on previous studies, there are no
		critically endangered species within the
		proposed site. The biodiversity study will
		also detail ecosystem services provided
		by the site species.
30.	Concerns that it might be a challenge to implement	The Energy Park will be zoned which will
	the climate change effect of the Energy Park if all the	include green zones especially in high
	land is taken up by industries.	slope areas.
31.	Concerns over depletion of livestock grazing as the	The feasibility study has taken into
	proposed Energy Park site land serves grazing land.	consideration the socio-economic

Ocoscience



Number	Stakeholder Comments	Response
		activities. SEA will in addition
		recommend measures that will ensure
		that the Energy Park will not negatively
		the Maasai community way of life.
32.	Concerns over increased noise levels from industrial	Baseline noise of the site will be
	operations.	documented for future reference once
		the Energy Park is operational.
33.	Concerns over inflow of workers in the area to work	This was noted and a recommendation
	in the industry's leading to intermarriages that will	will be provided to mitigate against this
	potentially result in cultural erosion to the Maasai	possibility.
	community.	
34.	Concerns over the impacts the proposed Energy	The masterplan has ensured that zoning
	Park will have on a gorge located within the proposed	is done to ensure features such as
	site that is a key tourist site whereby a number of	gorges and hills will serve as
	locals serves as tour guides. This is in addition to it	conservation zones or green zones.
	serving as a water catchment area.	
35.	Concerns over traffic congestion through an access	The masterplan has proposed for the
	road that serves KenGen, Olomaiyana area, Narasha	access from Olkaria 4 and 5 to be
	area and Rapland area once the Energy Park is	extended to Suswa serving as the main
	implemented.	access road to the Energy Park.
36.	Recommendation to have an access through 922 that	
	will reduce on possible traffic build up.	
37.	Concerns over how a hill within Olkaria 5 will be	The masterplan has ensured that zoning
	managed as it is located within the Energy Park site.	is done to ensure features such as
		gorges and hills will serve as
		conservation zones or green zones.
38.	Concerns over accumulation of hydrogen sulphide	It was noted that hydrogen sulphide is
	from industrial emissions as this will negatively affect	mainly from geothermal exploration
	them.	activities and not from industrial activities
		as the community members stated.
		However, industries that will be set-up in
		the Energy Park will be required to
		undertake air dispersion model to
		determine how pollutants from the
		industries might impact on the
		neighbourhoods



	Kenden	
Number	Stakeholder Comments	Response
39.	Concerns over increased prevalence of sexually	This was noted and will be
	transmitted diseases as a result of the interactions	recommended in the SEA Report.
	between the community and the Energy Park	Note:
	workforce.	A recommendation on the same has
40.	Recommendation on the importance of public	been provided in the report. E.g.
	awareness on sexually transmitted diseases during	Sections 6.4.3 (e) and 6.5.3 (e).
	the proposed masterplan implementation.	
41.	Recommended that water harvesting to be carried	This was noted and will be
	out on a gorge that was closed for community and	recommended in the SEA Report.
	Energy Park usage.	Note:
		Retention ponds have been
		recommended as illustrated in Appendix
		10.
42.	Request for information on the proposed Energy Park	The Energy Park is at the feasibility
	implementation timelines.	stage as hence no timelines have been
		set on when the Energy Park
		implementation will take place.
43.	A proposal for a site visits to be organized so that all	This was noted and would be
	the stakeholders can appreciate the proposed	recommended.
	Energy Park site.	
1		

5.4 Stakeholder Consultations

Stakeholder engagement was undertaken though the use of questionnaires administered in person or shared via email. Key stakeholders engaged included;

- Naivasha Sub-County Department of Health;
- Naivasha Sub-County Occupational Safety and Health Officer (DOSH);
- Water Resource Authority- Lake Naivasha Nakuru Sub-Region;
- Kongoni Police Station;
- Naivasha Sub-County Department of Education;
- Lake Naivasha Management Organizations;
- Oserian Development Company Limited;
- Kenya Wildlife Service (KWS) Hell's Gate National Park;
- The Wildlife Research and Training Institute (WRTI);
- Kenya Marine and Fisheries and Fisheries Research Institute (KEMFRI);
- Naivasha Constituency Member of Parliament (MP);
- Naivasha Water and Sanitation Company;
- Lake Naivasha Water Resource Users Association (LANAWRUA); and
- Naivasha Sub-County Deputy County Commissioner.



Table 5-26 below presents a summary of stakeholders' inputs.

Stakeholder	Key Observations	Actions Recommended
Naivasha Sub- County Department of Health	 Environmental pollution notably air, water and land. Increased cases of HIV infections. 	 All establishments in the industrial park will be required to undertake EIA ensuring baseline air, water and soil analysis. Similarly, all establishments will be required to carry out continuous air, soil and water monitoring. Full implementation of HIV
	 Increased population leading to increased demand in residential housing. Mushrooming of informal settlements. 	 and AIDS Prevention and Control Act, 2006 during all phases of KEP implementation. Residential housing to be provided at Naivasha Special Economic Zone. Efficient development control by Nakuru County Government and Naivasha Municipality.
Naivasha Sub- County Occupational Safety and Health Officer (DOSH)	 Increased workplace hazards e.g. noise and dust during construction phase. Increased accidents of employees due to exposure to workplace hazards 	 All establishments in the industrial park to fully comply with OSHA, 2007 and its rules.
Water Resource Authority- Lake Naivasha Nakuru Sub-Region	 Increase in effluent discharge notably from industries and sewerage. Point source pollution from runoff. Increased solid waste generation. 	 All industries in the industrial park will have in place a waste water treatment plant in ensuring efficient management of the water. KEP masterplan proposes detention ponds in management of runoff. Municipal Solid Waste will be collected from the various land uses in the industrial park and stored in a central storage area for consolidation before being transported offsite for treatment/disposal at offsite Municipality facilities (existing/ planned facilities).
Kongoni Police Station	 Environmental pollution. 	 All establishments in the industrial park will be

Table 5-26: Stakeholders Inputs



Stakeholder	Key Observations	Actions Recommended
		required to undertake EIA ensuring baseline air, water and soil analysis. Similarly, all establishments will be required to carry out continuous air, soil and water monitoring.
Naivasha Sub- County Department of Education	 Increased pollution. Land contamination. 	 All establishments in the industrial park will be required to undertake EIA ensuring baseline air, water and soil analysis. Similarly, all establishments will be required to carry out continuous air, soil and water monitoring.
	 Labour-related issues e.g. abuse. 	 All entities/establishments in the industrial park will be required to be fully compliant with Employment Act, 2007 and Employment (General) Rules, 2014.
Lake Naivasha Management Organizations	 Pollution mainly water sources, soil and air from acid precipitation affecting Lake Naivasha biodiversity and horticultural farming. 	 All establishments in the industrial park will be required to undertake EIA ensuring baseline air, water and soil analysis. Similarly, all establishments will be required to carry out continuous air, soil and water monitoring.
	 Risk of depletion of surface water; mainly Lake Naivasha as a result of over abstraction. 	 KenGen will exploit water from Lake Naivasha based on WRA allocated abstraction permit. Water for other industrial uses will be used from geothermal brine.
	 Cultural contamination / erosion / collapse due to inflow of non-locals leading to vices such as drugs and alcohol abuse, insecurity and prostitution etc. 	 A recommendation on establishments of programmes in promoting Maasai community cultural heritage is proposed. This is in addition to employment of competent persons in enabling this is effectively carried out.
	 Uncontrolled/uncoordinated development in the area. 	Efficient development control by Nakuru County



Stakeholder	Key Observations	Actions Recommended
		Government and Naivasha Municipality.
	 Increased population leading to increased demand in residential housing provision. 	 Residential housing to be provided at Naivasha Special Economic Zone.
	 Restricted movement of wildlife from Hell's Gate National Park to Mount Longonot National Park 	 The industrial park will be implemented in an eco- manner ensuring that the
Oserian Development Company Limited	 Conflict with wildlife from Hell's Gate National Park. Conflicts with tourists visiting Hell's Gate National Park. Restriction of wildlife movement within Hell's Gate National Park. Waste disposal associated with waste generated from the industrial park. 	 existing flora and fauna is maintained and enhanced. This will enable synchrony with existing ecosystems including but not limited to Hell's Gate National Park. Municipal Solid Waste will be collected from the various land uses in the industrial park and stored in a central storage area for consolidation before being transported offsite for treatment/disposal at offsite Municipality facilities (existing/planned facilities)
	 Increased pressure on Lake Naivasha, a key water source in the area. 	 KenGen will exploit water from Lake Naivasha based on WRA allocated abstraction permit
Kenya Wildlife Service (KWS) Hell's Gate National Park and	 Concerns over possible outcrop of informal settlements due to increase demand for housing by Energy Park workers. 	 Efficient development control by Nakuru County Government and Naivasha Municipality.
Wildlife Research and Training Institute (WRTI);	 The Energy Park implementation to consider impact on birds' flight path. 	 The industrial park will be implemented in an eco- manner ensuring that the existing flora and fauna is maintained and enhanced. This will enable synchrony with existing ecosystems including but not limited to Hell's Gate National Park. Visual intrusion will be minimized through ensuring Green and Blue infrastructure is put in place.
	 Increased population due to the required workforce in the Energy Park stressing existing social amenities. 	 Efficient development control by Nakuru County Government and Naivasha
	Planning should be undertaken beyond the proposed site.	iviunicipality.



Stakeholder	Key Observations	Actions Recommended
	 There should be continuous monitoring of impacts of the proposed Energy Park. Hell's Gate-Longonot National Parks Management Plan should be factored in the industrial park implementation. Increased poaching as a result of industrial park implementation. Diminished grazing land forcing residents to graze along the road corridors. 	 The KEP implementation team (KenGen) to collaborate with KWS and WRTI in enabling efficient monitoring of impacts relating to biodiversity. The industrial park will be implemented in an ecomanner ensuring that the existing flora and fauna is maintained and enhanced. This will enable synchrony with existing ecosystems including but not limited to Hell's Gate National Park. This is addition to ensuring that grazing areas are set aside within the industrial park.
	 Possible isolation of Maasai community from Naivasha area through the implementation of the Energy Park. Increase in traffic along the Kongoni-Moi South Lake Road necessitating expansion of the road. 	 A road is proposed to connect KEP to ICD to ease traffic from Moi South Lake Road. This will further ensure connectivity to all residents.
	 Danger of Maasai community cultural erosion through KEP implementation. 	 A recommendation on establishments of programmes in promoting Maasai community cultural heritage is proposed. This is in addition to employment of competent persons in enabling this is effectively carried out.
	 Water sources for KEP should be provided in the masterplan. 	 KenGen will exploit water from Lake Naivasha based on WRA allocated abstraction permit.
	 KEP should have in place waste water management plan. 	 Municipal Solid Waste will be collected from the various land uses in the industrial park and stored in a central storage area for consolidation before being transported offsite for treatment / disposal at offsite Municipality facilities (existing/planned facilities).

CHAPTER 6: IMPACTS ANALYSIS

6.1 Overview

The basis for identification of the possible environmental and social impacts are the field visits, literature reviews and stakeholders' input. The literature review included previous study reports, policies, regulatory frameworks, environmental monitoring reports among others. Stakeholder consultations including interviews conducted with government officials, community meetings held as well as the stakeholders workshop held in Naivasha attended by sectoral stakeholders including private sector representatives, County and National government representatives, community leaders among other stakeholders.

This section highlights the impacts including the positive, negative as well as the cumulative impacts that will come about when the master plan is implemented. Chapter 8 of this report provides mitigation measures of the identified negative impacts in guiding the proposed implementation team. Figure 3-48 below presents the identified impacts.



Figure 3-48: Possible Energy Park Environmental Impacts



6.2 Methodology for Impacts Analysis

Impacts were categorised as negative and positive. Further, negative impacts were then analysed based on impacts consequence and impacts likelihood as shown on **Table 6-27** and **Table 6-28** below. Similarly, impacts rating was determined based on impacts consequence and impacts likelihood as shown in **Table 6-29**. Impacts prediction was then made during the construction and the operation phase of the industrial park. Mitigation measures were then proposed with the hierarchy of avoidance, minimisation, mitigation and offsetting the impacts used.

Table 6-27: Impacts Consequences

Severity / Magnitude of Impact	Rating	Spatial Scope / Geographic Extent of Impact	Rating	Duration of Impact	Rating
Insignificant / non- harmful	1	Activity specific	1	One day to one month	1
Small / potentially harmful	2	Area Specific	2	One month to one year	2
Significant / slightly harmful	3	Whole Site	3	One year to ten years	3
Great / harmful	4	Regional/Neighbouring areas	4	Life of operation	4
Disastrous / Extremely harmful	5	National	5	Post closure / permanent	5

Note:

Total Rating of Impact Consequence = Rating of Severity/Magnitude + Rating of Spatial Scope of Impact + Rating of Impact Duration

Frequency / duration of activity	Rating	Frequency of impact	Rating
Annually or less	1	Almost never / Impossible	1
6 monthly / temporary	2	Very seldom / highly unlikely	2
Monthly / infrequent	3	Infrequent / unlikely / seldom	3
Weekly / life of operation	4	Often / regularly / likely / possible	4
Post closure	5	Daily / highly likely / definitely	5

Table 6-28: Impacts Likelihood

Note:

Total Rating of Impact Likelihood = Rating of Frequency/Duration of Activity + Rating of Impact Frequency

The definitions used in the impact assessment are given below:

- **Frequency** of activity refers to how often the proposed activity will take place.
- **Frequency** of impact refers to the frequency with which a stressor (aspect) will impact on the receptor.
- Severity refers to the degree of change to the receptor status in terms of the reversibility
 of the impact; sensitivity of receptor to stressor; duration of impact (increasing or
 decreasing with time); controversy potential and precedent setting; threat to
 environmental and health standards.
- **Spatial** scope refers to the geographical scale of the impact.



• Duration refers to the length of time over which the stressor will cause a change in the

resource or receptor.

Table 6-29: Significance Rating Matrix

Consequence (Magnitude+ Geographic extent + Duration of the Impact)															
۲ کر	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2 C C	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
ancia	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45
ent	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60
Lec	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
ШШ	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90
0 +	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105
/it/	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120
n på	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135
$\Box \land \Box$	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150

Note:

Rating of Impact Significance = Rating of Likelihood x Rating of Consequence

Table 6-30:	Negative Ir	nnacts rat	inas and a	associated	colour codes
	nogunvo n	inpuolo ruli	ngo unu c	association	

Significance rating	Value	Colour Code	Negative Impact Management Recommendation
Very high	121-150		Propose mitigation measures
High	100-120		Propose mitigation measures
Medium high	77-99		Propose mitigation measures
Low medium	51-76		Maintain current management
Low	25-50		Maintain current management
Very low	4-24		Maintain current management

6.3 Positive Impacts

A number of positive impacts are anticipated from KEP as illustrated in Table 6-31 below as discussion below.

Table 6-	31: Positiv	ve Impact S	Summarv
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Number	Positive	Construction Phase	Operation Phase
1.	Employment Opportunities	\checkmark	\checkmark
2.	Revenue Generation	\checkmark	\checkmark
3.	Growth of Foreign Exchange Reserves	\checkmark	\checkmark
4.	Local Infrastructure Development	\checkmark	\checkmark
5.	Increased Land Property Values		\checkmark
6.	Increased Number of Tourist Visiting the Area	\checkmark	\checkmark
7.	Improved Social Amenities		\checkmark
8.	Increased Market for Local Agricultural Produce		\checkmark
9.	Vibrancy of Area Commercial / Urban Nodes		\checkmark
10.	Improved Network Connectivity in the Area		\checkmark



Number	Positive	Construction Phase	Operation Phase
11.	Increase of Locally Manufactured		\checkmark
	Products		
12.	Improved Public Transportation		\checkmark
13.	Increased Corporate Social		\checkmark
	Responsibilities (CSR)		
	Programmes in the Area		
14.	Improved Quality of Life		\checkmark
15.	Exploitation of Geothermal		\checkmark
	Resources		

6.3.1. Employment Opportunities

The proposed masterplan will create employment opportunities to skilled, semi-skilled and unskilled workers. These employment opportunities will emanate from construction activities as well as during the operational phase of the Energy Park. The employment opportunities will either be direct, indirect or induced.

In reference to construction, direct employment opportunities will entail those workers that will be engaged in various construction activities of the various infrastructure required for the Energy Park operations. Indirect opportunities, on the other hand, will involve opportunities originating from the construction supply chain e.g. opportunities for construction material suppliers / manufacturers, design and supervision firms among others. Finally, induced opportunities will be in the form of opportunities created arising from spending by individuals both directly and indirectly involved in the construction sector.

The operational phase of the proposed Energy Park is anticipated to generate approximately 59,000 employment opportunities; 33,700 direct opportunities in the Energy Park, 10,100 indirect opportunities and 15,000 induced opportunities.

6.3.2. Revenue Generation

The proposed Energy Park is anticipated to generate an approximate total revenue of Ksh. 327.8 Billion by the end of year 2045. This will be constituted of Ksh. 181.8 Billion direct revenue, Ksh. 58.8 Billion indirect income and Ksh. 87 Billon induced revenue. This will have a major positive impact to the local, county and national economy.

6.3.3. Growth of Foreign Exchange Reserves

The Park is anticipated to boost Kenyan Foreign Exchange Reserves and bring in foreign currency through two major streams:

- Increased Export Earnings growth of the industrial base will help Kenya reduce its dependence on foreign imports to meet manufactured product needs.
- Foreign Direct Investments into the manufacturing industrial sector.



6.3.4. Local Infrastructure Development

The Park will be a stimulus towards the development of local infrastructure, notably the transport infrastructure (including SGR connectivity), to support the transport connectivity needs of manufacturing industries.

6.3.5. Increased Land Property Values

The implementation of the Energy Park will lead to an increase in demand for residential housing in the area. This will in turn lead to an increase in land and property values in the area benefiting residents owning land and residential properties.

6.3.6. Increased Number of Tourist Visiting the Area

The proposed masterplan area has numerous tourist attraction sites that include Hell's Gate National Park, Maasai community cultural centres, Mt. Longonot National Park, Lake Naivasha among others. An increase in population as attributed to the number of workers to be engaged in the Energy Park will translate to more visitors in these tourist attraction sites. This will in turn translate to an increased demand in existing hospitality facilities as well as those that are proposed in the Energy Park.

6.3.7. Improved Social Amenities

An increase in population attributed to workers in the Energy Park will inform provision of more and better social amenities including education facilities, health facilities, recreational facilities, markets among others. This will ensure improved living conditions to the community members.

6.3.8. Increased Market for Local Agricultural Produce

An increase in population as a result of proposed Energy Park will inform an increase in demand in agricultural produce from the area. As such, livestock products from the Maasai community as well as other agricultural produce from the area.

6.3.9. Vibrancy of Area Commercial / Urban Nodes

Notable commercial and urban nodes in the proposed Energy Parks includes Kamere, Kongoni, Karagita and Naivasha. These urban areas are key commercial nodes that will significantly benefit from the proposed implementation of KenGen Energy Park due to an increase in population of workers in the Energy Park. This will be attained through the establishment of various operations in these nodes to support the Energy Park operations.

6.3.10. Improved Network Connectivity in the Area

Network coverage in most of the areas in the proposed masterplan area as well as within its vicinity poor a factor that can mainly be attributed to minimal development in the area. As such, increased in population of workers in the Energy Park will necessitate investment in network coverage by various service providers in the country.
() KenGen

6.3.11. Increase of Locally Manufactured Products

The proposed Energy Park is aimed at leveraging on KenGen geothermal resources. This will significantly reduce the cost of production for the industries that will be implemented in the Energy Park. The low production cost will translate to below the current local market values for the finished products produced. This will encourage high local demand and consumption of products emanating from these industries. The proposed Energy Park will therefore be in line with the spirit of 'Buy Kenya, Build Kenya' a national government strategy.

6.3.12. Improved Public Transportation

Public transportation is currently limited to *bodabodas*. This can mainly be attributed to the fact that most local roads are in poor state. This is in addition to the fact that the only access road that is to motorable is an access to KenGen geothermal operations and is restricted by KWS due to the location of Hell's Gate National Park. In view of this, the implementation of the Energy Park will facilitate provision of more unrestricted and motorable access roads. This will encourage establishment of public transportation and enhancing mobility in the area. This will mainly benefit residents of Narasha, Ol Maiyana and Rapland among others in the vicinity.

6.3.13. Increased Corporate Social Responsibilities (CSR) Programmes in the Area

The proposed Energy Park will bring on board various industries with various CSR programmes including but not limited to improvement of education and medical facilities, provision of more portable water, more education sponsorships/scholarships and improved roads. This will benefit that host community as well as Naivasha Sub-County residents.

6.3.14. Improved Quality of Life

The proposed masterplan implementation will improve livelihoods of the area residents through creation of opportunities and improved level of infrastructure and social provision.

6.3.15. Exploitation of Geothermal Resources

The proposed Energy Park will exploit various geothermal resources that are currently not being utilised. This includes but is not limited to steam and brine.

6.4 Negative Impacts during Energy Park Construction Phase

This phase will involve putting in place critical infrastructure including roads, drainage infrastructure, land sub-division, fencing of the proposed Energy Park land, water infrastructure and other supportive infrastructure including offices and hospitality facilities among others. This is in addition to setting up or respective industries and their supportive infrastructure.

6.4.1. Biological Environment Impacts

a. Soil Pollution

Currently, most of the land at the proposed masterplan site is covered by vegetation as well as KenGen geothermal exploration infrastructure including wells and pipelines. Implementation of the industrial park will involve construction activities including road construction, drainage infrastructure, industrial development as well as construction of other buildings in support of the Energy Park. Construction activities will involve usage of various materials and chemicals that if not properly handled will lead to soil pollution. This will be through accidental spillage or illegal dumping. Such chemicals or pollutants include but not limited to bitumen, cement, paints, fuel and oils among others. Soil pollution will lead to diminishing flora coverage in the areas affected. This is in addition to pollution of Lake Naivasha water through the runoff. Soil pollution will in turn affect the fauna coverage, especially wildlife population in the area, domestic animals as well as Lake Naivasha biodiversity. Soil pollution impact significance is rated as mediumhigh as shown in the table below.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	3
	Frequency of impact	4
Impact Significance Rating	Medium-High	84

 Table 6-32: Soil Pollution Impact Significance (Construction Phase)

In mitigating against soil erosion impact, baseline soil analysis is recommended for all establishments in the energy park. This is in addition to continuous monitoring of soil quality as stipulated by EMCA, 1999 regulations.

b. Barrier to movement of elephants and other animals across the landscape

Activities of Industrial Park construction will likely prevent movement of the wild animals that uses the Olkaria area as their residential habitat or ranging destination. Animal species that would be affected adversely are the Elephants (Critically Endangered), buffaloes (Near Threatened). Buffaloes are residents of the area moving within locality while elephants use the area as a ranging destination. Wild animals especially Elephants, Zebras, Buffaloes and Antelopes more freely between Hell's Gate National Park to Longonot NP and to Mt. Suswa Conservancy and to the far south during construction, excavations of deep and wide channels will likely affect crossing of Elephant Calves. These excavations will likely to cause pitfall effects on small mammals while crossing.

Table 6-33: Closure of Wildlife Dispersal Area Impact Significance (Construction Phase)	
Criteria	Rating

KenGen		
Consequences	Severity/Magnitude of Impact	5
	Duration of Impact	3
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	5
	Frequency of impact	4
Impact Significance Rating	High	108

To mitigate against this, the following mitigation measures are recommended;

- Vehicle movement should be restricted to the current 40 km/h during construction;
- Any fencing should provide allowance for animal movement around the establishments; and
- Avoid using bright lights on establishment that might scare away wild animals moving within the location.

c. Increased Wildlife Accidents

The construction phase will involve increased vehicular traffic movement. This will involve trucks ferrying various construction materials as well as transportation of construction workforce. With the proposed Energy Park situated in the neighbourhood of Hell's Gate National Park and Mount Longonot National Park, key wildlife habitats in the area, wildlife accidents are anticipated.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	3
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	3
	Frequency of impact	4
Impact Significance Rating	Medium-High	77

 Table 6-34: Increased Wildlife Accidents Impact Significance (Construction Phase)

To mitigate against this a traffic policy will need to be prepared recommending vehicles to be driven at a maximum speed of 40 km/h within the IP to allow for an emergence breaking for crossing herpes.

d. Diminished Grazing Land for Livestock

The Energy Park currently serves as grazing land for local community livestock. In view of this, the proposed Energy Park as well as other Energy Park proposed in the area; Naivasha Energy Park and Oserian Energy Park will contribute to reduction in livestock grazing lands. Introduction of Invasive Alien Plant Species might also colonize the existing grazing flora which might reduce fodder population.

 Table 6-35: Diminished Grazing Land for Livestock Accidents Impact Significance (Construction Phase)

Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	3
	Spatial Scope/Geographic Extent of Impact	3
Likelihood	Frequency/duration of activity	4

() KenGen		
	Frequency of impact	5
mpact Significance Rating	Medium-High	90

In mitigating against this, below are some of the mitigation measures proposed;

- Since Alien Invasive Plant Species (AIPS) appears later after soil disturbance, aftermath proliferation, AIPS should be controlled by regularly uprooting reducing their population and recruitment.
- Respective EIA for all industrial components to ensure that baseline biodiversity studies are conducted. This is in addition to ensuring that continuous biodiversity monitoring is undertaken.
- Reduction of construction footprint.

e. Human-Wildlife Conflicts

Diminished livestock grazing lands through the proposed implementation of the Energy Park will force locals to graze their livestock in Hell's Gate National Park and Mount Longonot National Park. This will create human-wildlife conflict. The construction activities will likely cause diversion of movements of wild animals and prevent them from accessing some areas as shown in **Figure 6- 49** below. Movements of animals will be directed to human settlement around the proposed Industrial which will affect the village residents. The wild animals are likely to cause damage to crops that residents grow. Some animals will be in physical confrontation with residents that will likely cause injuries or death to the residents or the animals.

Figure 6- 49: Areas with likely impacts on Human Wildlife conflicts



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 Table 6-36: Human-Wildlife Conflicts Impact Significance (Construction Phase)

Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	3
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	4
	Frequency of impact	5
Impact Significance Rating	Medium-High	99

In mitigating against the impact, the following mitigation measures are proposed;

- Vehicles should slowly at 40 km/h in to allow for emergency breaking; and
- Site should be inspected before excavation begins in order to remove (or chase away) present animals.

f. Increased Cases of Poaching

The construction phase of the proposed KEP will lead to increased traffic movement in the proposed masterplan area that is currently limited and monitored. This is bearing in mind that the Energy Park is situated in the vicinity of Hell's Gate National Park and Mount Longonot National Park. Increased traffic will therefore present a leeway for poachers to the area.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	2
	Duration of Impact	3
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	3
	Frequency of impact	3
Impact Significance Rating	Low-Medium	54

 Table 6-37: Increased Cases of Poaching Impact Significance (Construction Phase)

Below are some of mitigation measures proposed to mitigate against poaching;

- KenGen in collaboration with KWS should screen contractor personnel working in the project area;
- Contractor should work within the construction space of the road and designated construction camp;
- KWS should screen contractor's construction plant, equipment, containers, etc.
- Improve surveillance on wild animals by KWS;
- Increase inspection of butcheries;
- Personnel should be educated on wildlife conservation and protection;
- Security in the region should enhance surveillance on vehicles; and
- Vehicles should be inspected on entrance and exit.

g. Reduction in Flora and Fauna Coverage

Implementation of various infrastructure aspects to facilitate operationalization of the Energy Park will lead to removal of flora and displacement of fauna species from their habitats. This will be occasioned by excavations works to put up various infrastructure required. Introduction



of Invasive Alien Plant Species might also colonize the existing grazing flora which might reduce flora which might reduce fauna population. Reduced population of flora may also be caused by disruption of dispersal of seeds for sustainable enrichment.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	3
Likelihood	Frequency/duration of activity	3
	Frequency of impact	4
Impact Significance Rating	Medium-High	77

 Table 6-38: Reduction in Flora and Fauna Coverage Impact Significance (Construction Phase)

In mitigating against this, the following recommendations measures are proposed;

- Since AIPS appears later after soil disturbance, aftermath proliferation of AIPS should be controlled by regularly uprooting reducing their population and recruitment;
- Respective EIA for all industrial components to ensure that biodiversity baseline biodiversity studies are conducted. This is in addition to ensuring that continuous biodiversity monitoring is undertaken;
- Avoid fencing the lower slopes of the hills to allow movements of wild herbivores to allow for seed dispersal;
- The lower slopes should not be cleared or any project located on the area in order to preserve the seed reservoirs on the landscape; and
- Engage community in collection of seeds for pasture species for strategic reseeding on pasture areas.

h. Introduction and Spread of Invasive Species

Construction activities will involve transportation of construction materials to and from site. This will include soils, sand and other materials that has a potential to introduce or spread the exiting invasive species in the proposed masterplan site as well as the its vicinity including Hell's Gate National Park and Mount Longonot National Park. Introduction of Invasive Alien Plant Species might also colonize the existing grazing flora which might reduce fodder population.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	3
	Frequency of impact	5
Impact Significance Rating	Medium-High	96

 Table 6-39: Introduction of Invasive Species Impact Significance (Construction Phase)

In mitigating against this, the following recommendations measures are proposed;

 Since AIPS appears later after soil disturbance, aftermath proliferation of AIPS should be controlled by regularly uprooting reducing their population and recruitment;



 Respective EIA for all industrial components to ensure that biodiversity baseline biodiversity studies are conducted. This is in addition to ensuring that continuous biodiversity monitoring is undertaken.

i. Reduced Population of Fish in Lake Naivasha

The construction phase of the masterplan will lead to an increase in demand in fish from Lake Naivasha, leading to possible overfishing. Industrial park operations might also lead to pollution of Lake Naivasha water which might significantly reduce the lake biodiversity population.

Table 6-40: Reduced Population of Fish in Lake Naivasha Impact Significance (Construction Phase)

Criteria		Rating
Consequences	Severity/Magnitude of Impact	3
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	3
	Frequency of impact	4
Impact Significance Rating	Medium-High	77

To mitigate against this, KenGen is recommended to collaborate with the lake management organizations in monitoring lake's biodiversity trends.

6.4.2. Physical Environment Impacts

a. Land Scaring and Visual Intrusion

The industrial establishment will be associated with huge structures that will cause visual intrusion to animals and tourist in the area. Introducing of huge structures on the landscape interferes with scenic beauty that is attractive and appreciated by tourist. Besides this, visual intrusion would be caused by distribution of the AIPS and scattered solid wastes. All these affect the nature beauty of the landscape. Modification of physical appearance of landscape and introduction of flood lights severely affects animals that uses the landscape feature for navigation. Features that causes visual intrusions are normally introduced during construction phase of the project. Production of industrial plumes and flood lights takes place during the operation phase which also causes visual impact.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	5
	Duration of Impact	3
	Spatial Scope/Geographic Extent of Impact	3
Likelihood	Frequency/duration of activity	3
	Frequency of impact	5
Impact Significance Rating	Medium-High	88

 Table 6-41: Land Scaring Impact Significance (Construction Phase)

In mitigating against the impact, below are some of the recommendations;

- Minimize clearing of vegetation around the industrial establishment;
- Plant trees around the industrial establishments to provide a curtain for the industries;

- Avoid using colours which do not match the surrounding landscape and may be considered an eyesore; and
- Avoid use of flood lights at night to enable wild animals access areas adjacent to the establishment.

b. Air Pollution

Earth moving activities will result to dust generation in the proposed masterplan area and its vicinity. This is in addition to various concrete mixing and painting activities. This will affect the construction workforce, the host community, flora and fauna in the area and residents living downstream including residents of Naivasha Municipality. Additionally, air pollution will result from machinery as well as vehicular emissions.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	5
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	3
	Frequency of impact	5
Impact Significance Rating	High	104

 Table 6-42: Air Pollution Impact Significance (Construction Phase)

To mitigate against the air pollution impact, below are some of the recommendations,

- Use appropriate technology to reduce emission levels of the plant engines and other processes;
- Use high stacks for emissions of exhaustion gases and particulates to enhance mixing of the emissions to reduce exposure levels in the environment;
- Ensure all energy park components undertakes baseline air quality; and
- Ensure continuous air quality monitoring by respective establishments in the industrial park.

c. Noise and Vibration Pollution

Noise pollution will mainly result from construction vehicles movement as well as from various machinery operations including metal grinding works, excavations, blasting among other machinery operations. Excessive noise will impact on the community residing within the proposed masterplan vicinity, wildlife and the construction workforce.

Vibrations on the other hand will be caused by grading activities, drilling as well as blasting activities. Excessive vibration has the potential to affect the existing KenGen infrastructure, destabilise the area geological formation and structural integrity of community houses.

 Table 6-43: Noise and Vibration Pollution Impact Significance (Construction Phase)

Criteria		Rating
Consequences	Severity/Magnitude of Impact	4



Nenden		
	Duration of Impact	3
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	3
	Frequency of impact	5
Impact Significance Rating	Medium-High	88

In mitigating against the impact, below are some of the recommendations;

- Use of noise mufflers is highly recommended to reduce on levels of noise;
- Plant machines should be well maintained for smooth running of the engines which reduces levels of noise;
- Baseline noise and vibrations should be undertaken in all project components of the energy park.

d. Surface and Ground Water Pollution

The proposed development will involve use of various chemicals including but not limited to cement, bitumen and paints. Improper handling of these chemicals will lead to them being washed away by runoff. Additionally, the high number of construction force will lead to generation of high volume of human waste whereby if appropriate and adequate management measures are not put in place can lead to pollution of the surrounding water resources. In view of this, these pollution sources have the potential to be transported to various water resources including ground water and surface water most notably Lake Naivasha.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	3
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	3
	Frequency of impact	5
Impact Significance Rating	Medium-High	88

 Table 6-44: Surface and Ground Water Pollution Impact Significance (Construction Phase)

Some of the recommended mitigation measures include;

- Respective industrial park projects components to ensure baseline soil analysis is carried out as stipulated by Environmental Management and Coordination Water Quality Regulations, 2006 Fourth Schedule;
- Installation of detention ponds in the industrial park;
- Respective industrial park projects components to ensure waste management plans are in place.

e. Increased Demand in Water from Lake Naivasha

Construction activities are water intensive with the water used for various operations. As such, the construction phase of the masterplan is anticipated to require high volume of water. Lake Naivasha is the main source of water; both domestic and for industrial use in the area. As such,



Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	3
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	3
	Frequency of impact	5
Impact Significance Rating	Medium-High	88

 Table 6-45: Increased Demand in Water from Lake Naivasha Impact Significance (Construction Phase)

In mitigating against over abstraction of water from Lake Naivasha due to the industrial park operations, below are some of the mitigation measures;

- Alternative water sources to be explored including ground water, brine water and geothermal steam;
- All industrial park establishments to ensure all the water used is metered to ensure sustainable usage of the water.

f. Alteration of Drainage Regime of the Area and Soil Erosion

The proposed masterplan area is mainly defined by an undulating terrain. Based on this, various drainage channels are in place in the proposed masterplan site as well as within other areas whereby supportive infrastructure including roads will be set up. This will alter the existing drainage regime leading to possible polling of water, flooding and destruction of existing infrastructure among others.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	5
	Duration of Impact	3
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	3
	Frequency of impact	4
Impact Significance Rating	Medium-High	84

 Table 6-46: Alteration of Drainage Regime of the Area Impact Significance (Construction Phase)

In mitigating against the impact, the following recommendations are proposed;

- Areas within the industrial park with a slope of above 15% to be avoided for development;
- Creation of detention ponds to reduce the speed of runoff.

g. Increased Generation of Solid Waste

Solid waste will result from soil spoils, damaged construction materials, unutilised construction materials, removed vegetation among others. Accumulated solid waste might affect the host community, area biodiversity and Lake Naivasha.



Fable 6-47: Increased Generation of Solid Waste Impact Significance (Construction Phase)		
Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	3
	Spatial Scope/Geographic Extent of Impact	3
Likelihood	Frequency/duration of activity	3
	Frequency of impact	5
Impact Significance Rating	Medium-High	80

Below are some of the mitigation measures proposed;

- Roll out waste management plan for the surrounding areas where population influx is envisaged. The plan to detail ways to minimize waste generation for respective contractors, waste segregation at source, waste receptacles sites and waste disposal among others;
- Provide dustbins on locations within the establishment for dumping waste litters;
- Provide environmental education and awareness on waste management to industry personnel;
- Collaboration between Nakuru County Government and KenGen in solid waste management within the industrial park environs.

h. Flooding

Flooding will occur mainly due to alternation or blockage of existing drainage channels during construction. This is bearing in mind the undulating terrain in the proposed masterplan area. In view of this, areas and settlements situated downstream of the Energy Park notably Rapland will be affected. This will further affect tourism with area gorges serving as key tourist attraction sites.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	3
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	3
	Frequency of impact	4
Impact Significance Rating	Medium-High	77

 Table 6-48: Flooding Impact Significance (Construction Phase)

Establishments of a number of detention ponds is recommended in reducing the volume of flow of runoff. This is in addition to availing development in areas with a slope of 15%.

6.4.3. Socio-Economic Environment

a. Maasai Community Cultural Erosion

The construction phase of the proposed masterplan will require major workforce; skilled, semiskilled and unskilled. As such, an inflow of workers is anticipated in the area whereby the Maasai community are the natives and the majority. The rate of inflow of non-locals in the area will lead to interactions with the local community which can alter the cultural practices of the



Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	5
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	5
	Frequency of impact	5
Impact Significance Rating	Very High	130

Table 6-49: Maasai Community Cultural Erosion Impact Significance (Construction Phase)

To mitigate against this, an establishment of a cultural centre within the local Maasai community is recommended. Creation of the cultural centres will ensure the Maasai community rich cultural heritage; namely way of clothing, housing typologies, rites of passage, food, economic activities among others are preserved. This will further be a major source of income to the community. The cultural centre should be implemented as a CSR and should be done in collaboration with the community.

b. Increased Human Traffic Accidents

The proposed masterplan area currently has limited vehicular traffic. However, it is anticipated that vehicular transport will increase during the construction phase of the masterplan. This is in addition to the increased human traffic in the form of construction workforce. In view of this, traffic accidents that are currently minimal in the area are anticipated to increase.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	4
	Frequency of impact	4
Impact Significance Rating	Medium-High	96

 Table 6-50: Increased Human Traffic Accidents Impact Significance (Construction Phase)

To mitigate against the impact, below are some of the recommendations;

- Formulation of a traffic management plan detailing speed limits, route plan for construction machineries/vehicles, time of operations among others;
- Speed limits within the industrial park to be maintained at 40Km/h;
- All roads in the industrial park to be fitted with surveillance cameras for traffic monitoring.
- Training of construction workers and drivers about site and road safety;

c. Increased Occupational Accidents and/or Diseases

The construction phase of the Energy Park is anticipated to engage a handful of workers in various activities. Based on this, occupational accidents including injuries from slips, falls,



abrasion, fall from height, falling objects, occupational noise, exposure to hazardous substances, extreme temperatures and ergonomic are anticipated to increase. These will lead to accidents of fatalities as well as increased cost of compensations.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	5
-	Duration of Impact	5
	Spatial Scope/Geographic Extent of Impact	3
Likelihood	Frequency/duration of activity	5
	Frequency of impact	5
Impact Significance Rating	Verv High	130

 Table 6-51: Increased Occupational Accidents and/or Diseases Impact Significance (Construction Phase)

In mitigating against the impact, the following recommendations are proposed;

• All industrial park components to fully comply with OSHA, 2007 and its rules.

d. Outcrop of Informal Settlements

The construction phase of the proposed masterplan will lead to an increased inflow of workers; skilled, semi-skilled and unskilled in the Energy Park. Based on this, there will be an increase in housing demand to accommodate the Energy Park construction workforce. This is despite the limited provision of residential houses in the areas of different classes in the area. In view of this, there is a potential for emergence of informal settlements in the area to accommodate the construction workers.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
-	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	4
	Frequency of impact	5
Impact Significance Rating	High	108

 Table 6-52: Outcrop of Informal Settlements Impact Significance (Construction Phase)

Mitigation measures recommended to mitigate against this includes;

- KenGen in collaboration with Nakuru County Government and Naivasha Municipality to ensure land use planning in the area is done beyond the industrial park boundaries.
- Effective development control by Nakuru County Government.

e. Increase in Immoral Behaviours

The proposed masterplan will bring forth non-locals with diverse moral backgrounds through the various construction workforce and employees that will be engaged in the industrial park. This is in addition to the fact that a majority of non-resident workers will not bring forth their families in their entire stay during the construction phase of the masterplan. In view of this, it is anticipated that there will be an increase in immoral behaviours in the area that will lead to vices



Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	4
	Frequency of impact	5
Impact Significance Rating	High	108

 Table 6-53: Increase in Immoral Behaviours Impact Significance (Construction Phase)

In mitigating against this, below are some of recommended mitigation measures;

- KenGen through the masterplan implementation team to ensure full implementation of HIV and AIDS Prevention and Control Act, 2006 throughout masterplan implementation period;
- KenGen through the masterplan implementation team to roll out alcohol and drugs abuse campaigns throughout the plan implementation period.

f. Conflicts with the Host Community

Based on community engagement meetings held, the community members have high expectations from the proposed masterplan. This is in terms of the locals being offered first priority in jobs in the Energy Park during all phases of its implementation. This is based on their entitlement as the land under which the Energy Park is located within was originally theirs. As such, failure for the community members being offered priority in the implementation of the Energy Park might lead to disputes. This might have an impact in reference to successful implementation of the masterplan.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	4
	Frequency of impact	4
Impact Significance Rating	Medium-High	96

 Table 6-54:
 Conflicts with the Host Community Impact Significance (Construction Phase)

In mitigating against this impact, below are some of the key recommendations;

 KenGen through the plan implementation team to formulate a CSR section that will liaise with all industrial park occupiers in initiating CSR programmes that will benefit the local residents.

g. Gender Issues

The male population accounts for the highest proportion of the masterplan area population. Based on this, it is anticipated that more males will secure jobs in various construction activities.



Criteria		Rating
Consequences	Severity/Magnitude of Impact	3
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	1
Likelihood	Frequency/duration of activity	4
	Frequency of impact	5
Impact Significance	Low-Medium	72
Rating		

Table 6-55: Gender Issues Impact Significance (Construction Phase)

In mitigating against this impact, it is recommended that all entities in the industrial park to exclusively implement the one third gender rule in compliance with the constitution.

6.5 Energy Park Operation Phase

6.5.1. Biological Environment Impacts

a. Soil and Water Pollution

Various industries to implemented in the proposed Energy Park will generate various waste streams of various chemical composition from their production. In view of this, improperly managed waste will be washed away by runoff in the area, to the drainage channels leading to the pollution of soils and water; both surface and ground water. This will in turn affect the fauna coverage, especially wildlife population in the area as well as surface water sources especially Lake Naivasha and ground water sources in the area.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	3
Likelihood	Frequency/duration of activity	4
	Frequency of impact	5
Impact Significance Rating	Medium-High	99

Table 6-56: Soil and Water Pollution Impact Significance (Operational Phase)

In mitigating against soil erosion impact, all establishments in the energy park will be required to ensure continuous monitoring of soil quality as stipulated by EMC Water Quality Regulations, 2006 under Fourth Schedule.

b. Closure of Wildlife Dispersal Areas

The Energy Park site is a key wildlife dispersal area between Hell's Gate National Park and Mount Longonot National Park. As such, implementation of the proposed Energy Park will inhibit effective wildlife movement within the area and region. This will significantly increase cases of human-wildlife conflicts, reduction in wildlife population in the area which will be a major blow to tourism sector in the area.



Table 6-57: Closure of Wildlife Dispersal Areas Impact Significance (Operational Phase)		
Criteria		Rating
Consequences	Severity/Magnitude of Impact	5
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	5
	Frequency of impact	4
Impact Significance Rating	High	117

To mitigate against this, the following mitigation measures are recommended;

- Vehicle movement should be restricted to the current 40 km/h during construction;
- Any fencing should provide allowance for animal movement around the establishments;
- Avoid using bright lights on establishment that might scare away wild animals moving within the location; and
- Close part of the site during some seasons when there is a huge wildlife migration, where appropriate.

c. Increased Wildlife Accidents

The operational phase of the Energy Park will inform transportation of raw materials and finished products to various destination. This will also include transportation of Energy Park workers to their residential areas. With the proposed Energy Park situated in the neighbourhood of Hell's Gate National Park and Mount Longonot National Park, with key wildlife habitats in the area, wildlife accidents are anticipated to increase if proper measures are not put in place.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	3
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	3
	Frequency of impact	4
Impact Significance Rating	Medium-High	77

 Table 6-58: Increased Wildlife Accidents Impact Significance (Operational Phase)

To mitigate against this a traffic policy will need to be prepared recommending vehicles to be driven at a maximum speed of 40 km/h within the IP to allow for an emergence breaking for crossing herpes.

d. Diminished Grazing Land for Livestock

The Energy Park currently serves as grazing land for local community livestock. In view of this, the proposed Energy Park as well as other Energy Park proposed in the area; Naivasha Energy Park and Oserian Energy Park will contribute to reduction in livestock grazing lands. Introduction of Invasive Alien Plant Species during the construction phase might colonize the existing grazing flora which might reduce fodder population.



Table 0-59: Diminished Grazing L	and for Livestock impact Significance (Operational Phase)
Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	3
Likelihood	Frequency/duration of activity	4
	Frequency of impact	5
Impact Significance Rating	Medium-High	99

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In mitigating against this, below are some of the mitigation measures proposed;

- Since AIPS appears later after soil disturbance, aftermath proliferation of AIPS should • be controlled by regularly uprooting reducing their population and recruitment;
- Respective industrial establishments in the industrial park to ensure continuous biodiversity monitoring is undertaken; and
- The masterplan to consider setting aside some sections as grazing lands for the community livestock.

e. Human-Wildlife Conflicts

Diminished livestock grazing lands through the proposed implementation of the Energy Park will force locals to graze their livestock in Hell's Gate National Park and Mount Longonot National Park. The construction activities will likely cause diversion of movements of wild animals and prevent them from accessing some area such as Lake Naivasha. Movements of animals will be directed to human settlement around the proposed industrial park which will affect the village residents and their crops or establishments. Some animals will be in physical confrontation with residents that will likely cause injuries or death to the residents or the animals. This will lead to a reduction in wildlife population which will significantly affect tourism, a key economy contributor in the area.

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Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	4
	Frequency of impact	5
Impact Significance Rating	High	108

 Table 6-60: Human-Wildlife Conflicts Impact Significance (Operational Phase)
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In mitigating against the impact, the following mitigation measures are proposed;

- Vehicles should slowly at 40 km/h in to allow for emergency breaking; and
- Site should be inspected before excavation begins in order to remove (or chase away) present animals.
- KenGen through the plan implementation team to collaborate with KWS and WRTI in monitoring wildlife movement in reference to the industrial park. The feasibility of

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providing a buffer area between the project site and the Hell's Gate National Park can be considered, where appropriate.

f. Increased Cases of Poaching

The Operation construction phase of the proposed KEP will lead to increased traffic movement in the proposed masterplan area that is currently limited and monitored. This is bearing in mind that the Energy Park is situated in the vicinity of Hell's Gate National Park and Mount Longonot National Park. Increased traffic through transportation of raw materials and finished products will necessitate ease of poaching in the area.

 Table 6-61: Increased Cases of Poaching Impact Significance (Operational Phase)

Criteria		Rating
Consequences	Severity/Magnitude of Impact	2
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	3
	Frequency of impact	4
Impact Significance Rating	Low-Medium	70

Below are some of mitigation measures proposed to mitigate against poaching;

- Improve surveillance on wild animals by KWS;
- Increase inspection of butcheries;
- Personnel should be educated on wildlife conservation and protection;
- Security in the region should enhance surveillance on vehicles; and
- Vehicles should be inspected on entrance and exit.

g. Reduced Population of Fish in Lake Naivasha

The operational phase of the masterplan is anticipated to bring forth approximately 59,000 workers in the Energy Park both locals and non-locals. This will in turn increase the demand for fish, a key source of protein in the area leading to an increase in demand for fish from the lake. Industrial park operations might also lead to pollution of Lake Naivasha water which might significantly reduce the lake biodiversity population.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	3
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	4
	Frequency of impact	4
Impact Significance Rating	Medium-High	88

 Table 6-62: Reduced Population of Fish in Lake Naivasha Impact Significance (Operational Phase)

To mitigate against this, KenGen is recommended to collaborate with the lake management organizations in monitoring lake's biodiversity trends.

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6.5.2. Physical Environment Impacts during Operation Phase

a. Visual Intrusion

The industrial establishment will be associated with huge structures that will cause visual intrusion to animals and tourist in the area. Introducing of huge structures on the landscape interferes with scenic beauty that is attractive and appreciated by tourist. Besides this, visual intrusion would be caused by distribution of the AIPS and scattered solid wastes. All these affect the nature beauty of the landscape. Modification of physical appearance of landscape and introduction of flood lights severely affects animals that uses the landscape feature for navigation. Features that causes visual intrusions are normally introduced during construction phase of the project. Production of industrial plumes and flood lights takes place during the operation phase which also causes visual impact.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	2
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	3
Likelihood	Frequency/duration of activity	4
	Frequency of impact	5
Impact Significance Rating	Medium-High	81

 Table 6-63:
 Visual Intrusion Impact Significance (Operational Phase)

In mitigating against the impact, below are some of the recommendations;

- Minimize clearing of vegetation around the industrial establishment;
- Plant trees around the industrial establishments to provide a curtain for the industries;
- Avoid using colours which do not match the surrounding landscape and may be considered an eyesore; and
- Avoid use of flood lights at night to enable wild animals access areas adjacent to the establishment.

b. Air Pollution

Various industries that will be implemented in the proposed Energy Park will lead to emission of pollutants. This will mainly affect the Energy Park occupiers, workforce, the host community, flora and fauna in the area and residents living downstream including residents of Naivasha Municipality if not properly managed. Continuous pollution will lead to health-related complications, acidic precipitation and climate change impacts.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	5
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	5
	Frequency of impact	5
Impact Significance Rating	Very-High	130

Table 6-64: Air Pollution Impact Significance (Operational Phase)



- Use appropriate technology to reduce emission levels of the plant engines and other processes;
- Use high stacks for emissions of exhaustion gases and particulates to enhance mixing of the emissions to reduce exposure levels in the environment; and
- Ensure continuous air quality monitoring by respective establishments in the industrial park.

c. Noise and Vibration Pollution

Noise will mainly result from vehicles transporting raw materials and finished products. This is in addition to industrial operations emanating from various production activities. Lack of inadequate control measures to manage this will lead to noise affecting the community residing within the proposed masterplan vicinity, wildlife and the Energy Park occupiers.

Vibrations on the other hand will be as a result of vehicular transportation of raw materials and finished products. This is in addition to various machinery operations in respective industries. Excessive vibration has the potential to affect the existing KenGen infrastructure, destabilise the area geological formation and structural integrity of community houses.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	5
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	5
	Frequency of impact	5
Impact Significance Rating	Very-High	130

 Table 6-65: Noise and Vibration Pollution Impact Significance (Operational Phase)

In mitigating against the impact, below are some of the recommendations;

- Use of noise mufflers is highly recommended to reduce on levels of noise;
- Plant machines should be well maintained for smooth running of the engines which reduces levels of noise; and
- Continuous noise and vibrations should be undertaken in all project components of the energy park.

d. Surface and Ground Water Pollution

The proposed development will constitute various industries have various waste streams; both liquid and solid with varying chemical composition. This waste will require effective management, failure to which it will result to pollution of surface and ground water including existing boreholes and Lake Naivasha that are key water sources for domestic, institutional and industrial use.



Table 6-66: Surface and Ground Water	Pollution Impact Significance (Operational Phase)	
Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	3
Likelihood	Frequency/duration of activity	4
	Frequency of impact	4
Impact Significance Rating	Medium-High	88

Some of the recommended mitigation measures include;

- Respective industrial park projects components to ensure baseline soil analysis is carried out;
- Installation of detention ponds in the industrial park;
- Respective industrial park projects components to ensure continuous monitoring their effluent. This is in addition to continuous monitoring of soils within their establishments.

e. Increase Demand in Water from Lake Naivasha

The proposed Energy Park is estimated to require a total of 20,100 m³/day of water by the year 2045 for its industrial operations. As such, this will lead to increased abstraction of water from Lake Naivasha.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	3
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	4
	Frequency of impact	5
Impact Significance Rating	Medium-High	99

Table 6-67: Increase Demand in Water from Lake Naivasha Impact Significance (Operational Phase)

In mitigating against over abstraction of water from Lake Naivasha due to the industrial park operations, below are some of the mitigation measures;

- Alternative water sources to be explored including ground water, brine water and geothermal steam;
- All industrial park establishments to ensure all the water used is metered to ensure sustainable usage of the water.

f. Accumulation of Runoff Water and Flooding

The proposed Energy Park site is currently dominated by natural vegetation as well as KenGen infrastructure. The implementation of Energy Park will hence lead to a reduced rate of water infiltration rate due to increased concrete coverage in the area. In view of this, the volume of runoff will accumulate from the current volumes leading to a strain to the existing drainage channels. This will lead to flooding downstream if proper measures are not put in place. This will in turn lead to an increase in the soil erosion in the area.



Criteria		Rating
Consequences	Severity/Magnitude of Impact	3
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	4
	Frequency of impact	4
Impact Significance Rating	Medium-High	88

Table 6-68: Accumulation of Runoff Water Impact Significance (Operational Phase

Below are some of the mitigation measures proposed;

- Continuous maintenance of drainage channels provided. This is in addition to the retention ponds provided.
- Continuous revegetation with local vegetation in soil protection.

g. Increased Generation of Solid Waste

Various industries that will be implemented in the proposed Energy Park will lead to generation of diverse solid waste streams constituting of industrial and municipal solid waste. A total of 1,445.09 kg/day and 1,305 T/day of municipal solid waste and industrial waste is projected to be generated from the Energy Park by the year 2045. This if not properly managed will lead to outbreak of diseases or creation of illegal solid waste dumpsites.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	4
	Frequency of impact	5
Impact Significance Rating	High	108

 Table 6-69: Increased Generation of Solid Waste Impact Significance (Operational Phase)

Below are some of the mitigation measures proposed;

- Continuous monitoring of effectiveness of waste management plans for respective establishments in the industrial park.
- Continuous maintenance of waste receptacles in the industrial park;
- Provide environmental education and awareness on waste management to industry personnel;
- Collaboration between Nakuru County Government and KenGen in solid waste management within the industrial park environs.

h. Increased Generation of Waste Water

The proposed Energy Park is anticipated to generate various forms of waste water. This will be from human waste as well as from industrial waste water. An estimated volume of 18,800m³/day is projected by the year 2045. This is bearing in mind that there is no existing waste water treatment plan in the proposed masterplan area. As such this high volume of waste water might be a major health hazard if proper measures are not put in place.



 Table 6-70: Increased Generation of Waste Water Impact Significance (Operational Phase)

 Criteria
 Rating

 Consequences
 Severity/Magnitude of Impact
 4

 Duration of Impact
 4

	Bulation of impact	
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	4
	Frequency of impact	5
Impact Significance Rating	High	108

In mitigation of this impact, effective maintenance of waste water treatment that will be provided is recommended. This is in addition to continuous monitoring of effluent discharge to the environment, as stipulated by EMC Water Quality Regulations, 2014.

6.5.3. Socio-Economic Environment during Operation Phase

a. Maasai Community Cultural Erosion

The operational phase of the proposed masterplan will require major workforce; skilled, semiskilled and unskilled. As such, an inflow of workers is anticipated in the area, whereby the Maasai community are the natives and the majority. The rate of inflow of non-locals in the area will lead to interactions with the local community which can alter the cultural practices of the Maasai community who have a very diverse and rich cultural heritage. This includes their cultural practices and their way of life including livestock keeping.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	5
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	5
	Frequency of impact	5
Impact Significance Rating	Very High	130

Table 6-71: Maasai Community Cultural Erosion Impact Significance (Operational Phase)

To mitigate against this, establishment of a cultural centre within the local Maasai community is recommended. Creation of the cultural centres will ensure the Maasai community rich cultural heritage; namely way of clothing, housing typologies, rites of passage, food, economic activities among others are preserved. This will further be a major source of income to the community. This should be done as a CSR and should be done in collaboration with the community.

b. Increased Human Traffic Accidents

The proposed masterplan area currently has limited vehicular traffic. However, it is anticipated that vehicular transport will increase during the operation phase of the masterplan, transporting raw materials and finished products. This is in addition to the increased human traffic in the form of Energy Park workforce. In view of this, traffic accidents that are currently minimal in the area are anticipated to increase.

To mitigate against the impact, below are some of the recommendations;

- Speed limits within the industrial park to be maintained at 40Km/h;
- All roads in the industrial park to be fitted with surveillance cameras for traffic monitoring; and
- KenGen through the plan implementation team to establish a traffic department in monitoring traffic in the industrial park.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	4
	Frequency of impact	4
Impact Significance Rating	Medium-High	96

 Table 6-72: Increased Human Traffic Accidents Impact Significance (Operational Phase)

c. Increased Occupational Diseases

The proposed industrial will have in place diverse industries. Respective industries will expose workers to various occupational hazards. Ranging from injuries from slips, falls, abrasion, fall from height, falling objects, occupational noise, exposure to hazardous substances, extreme temperatures and ergonomic. Lack or inadequate measures to ameliorate hazards will lead to numerous accidents, fatalities and cost of compensation.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	5
	Duration of Impact	5
	Spatial Scope/Geographic Extent of Impact	3
Likelihood	Frequency/duration of activity	5
	Frequency of impact	5
Impact Significance Rating	Very High	130

 Table 6-73: Increased Occupational Diseases Impact Significance (Operational Phase)

In mitigating against the impact, all industrial park entities to fully comply with OSHA, 2007 and its rules.

d. Emergence of Informal Settlements

The operation phase of the proposed Energy Park is anticipated to employ a total of 59,000 workers either as direct employment, indirect employment or induced employment. This will range from skilled, semi-skilled and unskilled workers. Based on this, there will be an increase in housing demand to accommodate the Energy Park workforce. This is despite the limited provision of residential houses in the areas of different classes in the area and the fact that housing provision is not factored in the masterplan. In view of this, there is a potential for emergence of informal settlements in the area to accommodate the construction workers.

Table 6-74: Emergence of Informal Settlements Impact Significance (Operational Phase)	
Criteria	Rating



Nen den		
Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	5
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	4
	Frequency of impact	5
Impact Significance Rating	High	117

Mitigation measures recommended to mitigate against this includes KenGen collaboration with Nakuru County Government and Naivasha Municipality to ensure planning is done beyond the industrial park boundaries. This in addition to effective development control by Nakuru County Government.

e. Increase in Immoral Behaviours

The proposed masterplan will bring forth non-locals with diverse moral backgrounds through the various workforce that will be engaged. In view of this, it is anticipated that there will be an increase in immoral behaviours in the area e.g. prostitution. This will in turn lead to an increase in sexually transmitted diseases.

Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
-	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
Likelihood	Frequency/duration of activity	4
	Frequency of impact	4
Impact Significance Rating	Medium-High	96

 Table 6-75: Increase in Immoral Behaviours Impact Significance (Operational Phase)

In mitigating against this, below are some of recommended mitigation measures;

- KenGen through the masterplan implementation team to ensure full implementation of HIV and AIDS Prevention and Control Act, 2006 throughout masterplan implementation period;
- KenGen through the masterplan implementation team to roll out alcohol and drugs abuse campaigns throughout the plan implementation period.

f. Conflicts with the Host Community

Based on community engagement meetings held, the community members have high expectations from the proposed masterplan. This is in terms of the locals being offered first priority in terms of being offered jobs in the Energy Park during and after its implementation. This is based on their entitlement as the land under which the Energy Park is located within was originally theirs. As such, failure for the community members being offered priority in the implementation of the Energy Park might lead to disputes.

Table 6-76: Conflicts with the Host Community Impact Significance (Operational Phase)

Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	4

KenGen								
Likelihood	4							
	Frequency of impact	4						
Impact Significance Rating	Medium-High	96						

In mitigating against this impact, below are some of the key recommendations;

 KenGen through the plan implementation team to formulate a CSR section that will liaise with all industrial park occupiers in initiating CSR programmes that will benefit the local residents.

g. Gender Issues

The male population accounts for the highest proportion of the masterplan area population. Based on this, it is anticipated that more males will secure jobs in various industries that will be set-up in the proposed Energy Park. Proper measures should therefore be put in place to ensure fair opportunities on job allocations for both genders.

 Table 6-77: Gender Issues Impact Significance (Operational Phase)

Criteria		Rating
Consequences	3	
	Duration of Impact	4
	Spatial Scope/Geographic Extent of Impact	3
Likelihood	Frequency/duration of activity	4
	Frequency of impact	5
Impact Significance Rating	Medium-High	90

In mitigating against this impact, it is recommended that all entities in the industrial park to exclusively implement the one third gender rule in compliance with the constitution.

CHAPTER 7: MASTERPLAN ALTERNATIVES

7.1 Overview

The chapter presents an analysis of the proposed masterplan alternatives. The alternatives were based on three development scenarios. In addition, the 'No Plan' (i.e. no development) alternative was also explored.

7.2 Masterplan Phasing Alternatives

Three (3) masterplan phasing options; Option 1, Option 2 and Option 3 were selected for consideration. They were evaluated against three scenarios:

- Scenario 1 Focuses on Low Capital Expenditure (CAPEX);
- Scenario 2 Emphases on Marketability; and
- Scenario 3 Aims to Provide Equal Priority for Low Capex and to attract Investors.

The evaluation findings suggested that Option 1 was the most preferred. The three options can be distinguished based on the phasing of the 5 masterplan phases as illustrated in Figure 7-50 below.

Figure 7-50: Masterplan Options



Source: KEP Draft Masterplan, 2022

Table 7-78 below present the criteria through which the options were evaluated.

|--|

Evaluation Matrix										
	Ca	tegory			Criteria Weight	Criteria/Objectives				
Low Capex and Ease of					40%	Maximise use of existing infrastructure,				
Development.						such as roads and power lines from				
						existing geothermal plants.				
					30%	Minimise building new roads in early				
						phases of the development.				
					30%	Minimise cost of new water and power				
						distribution network.				



Evaluation Matrix									
Category	Criteria Weight	Criteria/Objectives							
Priority to attract new Investors.	70.0%	Early connection to Naivasha ICD and SGR / Development seeks to leverage connection to the ICD.							
	15.0%	Early Phases of the Project are away from existing complex network of Geothermal infrastructure (less obstruction).							
	15.0%	Strong integration of the industrial areas in early phases.							
Integration with the existing settlements and Naivasha township.	100%	Access to Labour Market.							
Allow for retaining some existing areas for geothermal investigation and expansion of geothermal infrastructure.	100%	Supports KenGen's exploration of Geothermal Operations onsite.							
Environmental.	100%	Reduce impact on Hells Gate National Park by minimising expansion into undeveloped areas within the early phases.							

Source: Draft KEP Masterplan, 2022

The criteria through which Option 1 was chosen as the most preferred option is as shown and illustrated in the Figure 7-51 below.



Figure 7-51: Preferred Option Evaluation Criteria

Evaluation Matrix – Weightage & Scoring

Evaluation Matrix			Scenario 1			Scenario 2			Scenario 3			1			
Weig	ghtag cenar	e Per	Category	Criteria	Criteria Weight	Option 1	Option 2	Option 3	Option 1	Option 2	Option 3	Option 1	Option 2	Option 3	Legend
				 Maximise use of existing infrastructure, such as roads and power lines from existing geothermal plants 	40%										Strong
607%	-	1.000 Capes Jake Case of Orynhysmeni	2. Minimise cost of new water and power distribution network	30%	12	0.4	0.8	0.6	0.2	0.4	0.9	0.9 0.3	0.6	3 Weak	
				3. Minimise building new roads in early phases of the development	30%										
				4. Early connection to Naivasha ICD and SGR	70%										Strongest Option within the Scenario
2016		2015	2. Priority to attinut new insettions	 Early phases of the project are away from existing complex network of geothermal infrastructure (less obstruction) 	15%	0.2	0.54	0.32	0.4	1.08	0.64	0.3	0.81	0.48	Scenarios Scenario 1: Weightage on Low Capex
				 Strong integration of the industrial areas and early phases, Establish new residential worker township. 	15%										Scenario 2: Weightage on Marketability Scenario 3: Equal Priority for Low
2005	-	20%	1. intropation with the velocity entirements and famousle Sheridap	7. Access to Labour Market	100%	0.6	0.4	0.6	0.6	0.4	0.6	0.6	0.4	0.6	Capex and Attracting investors
10%		10%	4. Allow for relaining tome misting areas for geothermal investigation and expansion of geothermal information	8. Supports KenGen's exploration of Geothermal Operations onsite	100%	0.1	0.2	0.3	0.1	0.2	0.3	0.1	0.2	0.3	
10%		1076	S. Environmental	9. Reduce impact on Hells Gete National Park by minimizing expansion into undeveloped areas within the early phases	100%	0.3	0.3	0.1	0.3	0.3	0.1	0.3	0.3	0.1	
			Final Scores	Across Scenarios		2.40	1.84	2.12	2,00	2.18	2.04	2.20	2.01	2.08	
			Performa	nce of Options			3	2	3		2		3	2	

Source: Draft KEP Masterplan, 2022

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7.2.1. Alternative 1- Ease of Development

Alternative / Option 1 is as presented in Figure 2-52 below. It will ensure that a minimal amount of resources is spent on the development of the Energy Park, while maintaining the existing infrastructure and maximising the site's area to achieve higher return on investment. The key strengths of this alternatives include;

- It will ensure minimal cost of new water and power distribution network;
- It will enable maximum use of existing infrastructure, such as roads and power lines from existing geothermal plants;
- It will minimise building new roads in early phases of the development;
- It will ease access for employees;
- It will provide a link to the ICD introduced in latter phases to minimize capex costs;
- It will have minimal air quality impact on the neighbouring communities notably Narasha, Rapland, Olomaiyana Kubwa and Turkana Camp since the predominant wind direction is South South-East to North North-West;
- The option will have minimal impacts on loss of flora based on the fact that the phases
 1 and 2 will be located within exiting KenGen geothermal operations;
- The option will in addition enable ease of management of runoff as it is situated within exiting KenGen geothermal operations; and
- The option will have minimal impact on livestock grazing lands with the early phases situated within existing KenGen operations.



Figure 2-52: Masterplan Alternative 1

Ocoscience

7.2.2. Alternative 2- Early Access to Naivasha ICD

Alternative 2 is as illustrated in Figure 2-53 below. The majority of the development will occur to the south of the site, allowing for a closer and more integrated development along the Standard Gauge Railway, in particular the Naivasha ICD Depot, the key Energy Park enabler. The key strengths of this alternative include;

- Construction of a road to Naivasha ICD in the early phase;
- Early phases of the project are away from existing complex network of geothermal infrastructure;
- It will reduce impact on Hells Gate National Park by minimising expansion into undeveloped areas within the early phases; and
- The option will have minimal impacts on air pollution based on its phases and the predominant wind direction; South South-East to North North-West an indication that neighbouring communities will not be affected.

Some of the key constraints of this option include;

- The early phases of this option are located in the southern site of the Energy Park which is in close proximity to Rapland settlement. Based on this, noise generated from the Energy Park operations would affect Rapland residents;
- Any form of water pollution will affect Rapland community members based on the proximity of early phases of the option to the community;
- The location of early phases of this option in close proximity to Rapland community will lead to early reduction in livestock grazing lands for the community; and
- Locating early phases of the energy park in close proximity to Rapland settlement will expose the residents to possible flooding to accumulated volume of runoff. This based on the fact that the settlement is located downstream of the Energy Park.



Figure 2-53: Masterplan Alternative 2

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7.2.3. Alternative 3- Segregated Energy Park

Alternative 3 is as illustrated in **Figure 2-54** below. Alternative 3 will provide for a substantial portion of development to occur to the east of the site, where the terrain is topographically favourable, allowing for a more holistic development and facilitating the implementation of new infrastructure. The key strengths of alternative 3 are;

- Strong integration of the industrial areas and early phases;
- Early establishment of a new residential worker township; and
- It will support Geothermal Operations onsite.

The key constraints of the option include;

- The early phases on the option; especially phase 2 and 3 are situated next to Hell's Gate National Park and Rapland settlement increased impacts on the national park and settlement residents;
- The early phasing of the option in the eastern side of the Energy Park will lead to increased exposure of wildlife in Hell's Gate National Park to pollutants from industrial operations;
- Wildlife in Hell's Gate National Park as well as residents in Rapland settlement will be exposed to noise pollution from Energy Park due to the proximity of these sensitive areas to early phases of this option; and
- Increased volume of runoff from the Energy Park to Rapland settlement as it is located at a lower altitude relative to the Energy Park.



Figure 2-54: Masterplan Alternative 3



7.3 The 'No' Plan Alternative

The 'No' Plan alternative implies maintenance of the status quo of the proposed Energy Park site. The KenGen Energy Park hence will not be implemented as proposed. This will in turn translate to maintenance of the ecosystem services provided by the proposed site that include but not limited to hunting and gathering land, source of biofuel, source of water resources, source of traditional medicine, recreation and tourisms site, natural disaster and control soil erosion and control among others.

Additionally, the negative impacts anticipated from implementation of the proposed masterplan will be avoided. These impacts include but are not limited to;

- Exploitation of natural resources;
- Diminishing of livestock grazing lands;
- Noise, soils, air and water pollution;
- Influx of non-locals in the area;
- Possible outcrop of slums;
- Increased population in the area creating a strain to the available resources;
- Human-wildlife conflicts; and
- Acidic precipitation in Naivasha Town; among others.

However, the anticipated benefits to accrue from the proposed KenGen Energy Park implementation will not be actualised. These benefits include but are not limited to;

- Creation of employment opportunities;
- Provision of infrastructure that is currently not in place currently;
- Development of the proposed masterplan area;
- Increased National GDP; and
- Availability of locally manufactured goods due to influx of global industries in the proposed Energy Park; among others.

7.4 Alternative Sites

Under this alternatives, two alternatives were explored namely site 1 and site 2 as illustrated in Figure 7-55 below and as described below.





Source: KEP, Masterplan, 2022

7.2.4. Site 1

Site 1 is located within KenGen land and has the following characteristics;

- There are three existing power plants and power infrastructure (power lines and steam pipelines);
- The site is connected to key internal road network;
- The site lies adjacent to Hell's Gate National Park;
- The site has in place drainage channels traversing through it; At present 59% of the site is developable (low to gentle slopes) while 28% has steep slopes. 13% of the site is covered by existing roads, pipes and other infrastructure;
- The site topography is undulating and has peaks and valleys;
- The total developable land area at the site is 1,082 ha out of 1,824 ha;
- The Suswa, Mai Mahiu and Naivasha ICD stations are close to the site, however the selected site has a restricted road access at the moment and new access roads will be required;
- There is an existing settlement south of the site, which can be expanded as staff accommodations. The Site is not easily accessible from the existing towns and villages;
- The site is around 12km away from the main water intake (Lake Naivasha); and
- The site has deeper aquifer (i.e. greater depth to water).

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7.2.5. Site 2

Site 2 is exclusively located within Oserian land, hence will require acquisition for development. Other features of this site include;

- The site terrain is flat, allowing for maximum efficiency in land utilization;
- 96.6% of the site is developable whereas 3.4% of the site area has steep slopes;
- The total developable land area at the site is 140 ha out of 145.6 ha;
- The site is accessible via the main roads: Moi South Lake Road and Olkaria Route Road which will allow it to be accessible to important industries in Nakuru County and Overseas.
- The site is relatively distant from the proposed SGR stations and Naivasha ICD;
- Existing towns (e.g. Kongoni and Kamere) and villages close to the site enable easy access to labour;
- The site is around 7.5km away from the main water intake (Lake Naivasha);
- Due to the proximity to lake Naivasha and encountered alluvial deposits formation, a shallow groundwater table (i.e. less depth to water) is expected and in need for more comprehensive local data for better assessment of the potential risks;
- The site has one existing power plant;
- The main access route outside the site boundary to the east;
- The site is adjacent to Hells Gate National Park;
- There are no steam pipelines and power lines on-site and this allows for greater development flexibility.

7.2.6. Preferred Site

Based on analysis above, Site 1 is the larger site and enables the development of an integrated industrial area in close proximity to the existing Olkaria Power Plants, with ease of access to the Naivasha ICD and the new residential settlement towards the South of the Site. It is, therefore, the preferred site.

This is as compared to Site 2 that is small in size; 145 ha as compared to Site 1; 1824 ha. However, Site 2 also shows distinct strengths in terms of suitability for industrial development, with largely flat topography, and few on-site constraints. It also features easy accessibility to the existing settlements in Naivasha, allowing for good synergies with the existing township.

7.5 Alternative Water Sources at the Energy Park

The proposed Energy Park is anticipated to be water intensive with an estimated daily water demand of 20,100m³. Based on this, alternative water sources for use in the industrial park has been described below.


7.5.1. Lake Naivasha

KenGen has a Water Resource Authority (WRA) water abstraction license for Lake Naivasha, whereby the currently authorized volume is not being fully utilized. In reference to this, KenGen can apply for an additional volume for obstruction for use in the proposed industrial park. This will enable KenGen to meet the proposed industrial park operations water demand. However, it is important to point out that Lake Naivasha is the main water source in within Naivasha and its environs; for domestic, commercial and industrial uses. It is further a designated Ramsar site and a critical source of fish in the area. In view of this, and in the spirit of the lake sustainability, KenGen should not consider to meet the energy park water demand from the lake in entirety.

7.5.2. Ground Water

A ground water survey undertaken in the proposed industrial park site indicated that the area has an aquifer with a volume of 16,964,640 m³. The report however, proposed for a comprehensive study to be carried to determine area ground water potential. The estimated aquifer volume is not adequate to cover the estimated daily water demand for the industrial park.

7.5.3. Rain Water Harvesting

The area rainfall ranges between 500-1,100 mm. Further, there a number of drainage channels located within the proposed site that can be key in facilitating rain water harvesting. Water harvesting will be enabled through a number of water detention ponds proposed in the industrial park for storm water management. However, based on the amount of rainfall received in the areas as well as the detention ponds sizing, the water harvested cannot be adequate in meeting the energy park daily water demand.

7.5.4. Mixed Water Sources

Lake Naivasha, ground water, rain water harvesting and brine from geothermal operations are the main water sources in the proposed plan area. As such, KenGen should consider having a hybrid of the four water sources in meeting the industrial park daily water demand.

CHAPTER 8: ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

8.1 Overview

The main objective of this section is to provide mitigation measures aimed at mitigating against the anticipated negative impacts of the proposed KenGen Energy Park. The section has therefore provided mitigation measures and monitoring measures aimed at ensuring that the proposed Energy Park is implemented in an environmentally sustainable and socially acceptable manner. Further, the section has identified capacity required to facilitate successful implementation of the Energy Park.

8.2 Monitoring Plan

In ensuring that the proposed mitigation measures put in place to ameliorate the negative impacts indented, a monitoring plan is important in ensuring sustainability of KEP. An important aspect that has been identified is institutional/capacity building in ensuring effective implementation of the mitigation measures. KenGen will play a lead role in ensuring that all the issues highlighted are effectively implemented during all phases of the industrial park implementation. This will be in liaison with identified stakeholders and expertise. Notable expertise that should be engaged in ensuring that mitigation measures are efficiently managed and include but is not limited to;

- KenGen environmental experts and other departments;
- Environmental experts;
- Ecologists;
- Biodiversity expert;
- Landscape experts;
- Air quality monitoring experts;
- Noise and vibration experts;
- Water resource and management experts;
- Special Economic Zones Authority (SEZA);
- Kenya Railways;
- Kenya Rural Roads Authority (KeRRA);
- Waste management experts;
- Occupational safety and health experts;
- Community liaison officers;
- Social development experts; and
- Civil, structural and water engineers.



These experts should be engaged at an early stage of the Energy Park implementation so that the proposed plans and policies can be formulated to guide and direct the implementation of the Energy Park in an environmentally sustainable manner and a socially acceptable way.

The plans preparation should be prepared at an early stage prior to so that they can form as a guide to the various EIAs to be undertaken to various infrastructure development in the Energy Park.

The **Table 8-79** below provides a detailed description of the proposed masterplan environmental and social management and monitoring plan.



No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of Implementation	
	CONSTRUCTION PHASE				
1.	Biodiversity and Natural Conservation	 The KenGen through masterplan implementation team to prepare a waste management plan. The proposed masterplan implementation team to prepare spill management plan. All contractors engaged in the proposed masterplan to be audited monthly in ensuring compliance with waste management and spill management plans. The plan should ensure that all industrial developments and Energy Park infrastructure developments are subjected to Environmental Impact Assessment (EIA). This is in addition to ensuring that annual Environmental Audits (EA) are undertaken with continuous soils monitoring carried out. This is as stipulated by Environmental (Impact Assessment & Audit) Regulations, 2003. The proposed masterplan implementation to 	 Results/reports on annual water to monitor level of soil pollution quality for respective industries in the industrial park as in conformity with Environmental Management and Coordination, (Water Quality) Regulations 2006. Priority pollutants that should be monitored for are as guided by The Fourth Schedule of the Regulations. 	Management Cost	
		employ a team of competent environmental			



No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of Implementation
		experts to ensure compliance to waste		-
		management and spill management plans.		
		The proposed masterplan implementation	Implementation of Wildlife	Management Cost
		team should liaise with KWS among other	Conservation and	
		stakeholders in the environmental sector to	Management Act, 2013,	
		ensure that the existing wildlife dispersal	notably in implementation	
		areas are designated. These areas should be	of KWS mandates as	
		provided with supportive infrastructure to	stipulated by Section 7 of	
		facilitate ease of movement of wildlife.	the Act.	
		Additionally, the proposed masterplan team	Records on wildlife	
		should engage an ecologist in ensuring	accidents or kills.	
		efficient management of wildlife in the	 Population and inventory of 	
		masterplan area in collaboration with KWS	flora and fauna.	
		and WRTI.	 Records or reports of 	
		• The proposed Energy Park implementation	invasive species	Management Cost
		team should liaise with KWS and WRTI to	introduced as a result of the	
		facilitate fencing of national Parks	industrial park	
		neighbouring KEP-Longonot and KEP-Suswa	implementation.	
		Roads that are proposed. Additionally, wildlife	Records on recorded or	
		crossings should be provided in wildlife	reported human-wildlife	
		migration corridors and dispersal areas.	conflicts.	
		• The proposed masterplan implementation	Records or reports on	Management Cost
		team should designate areas in the Energy	poaching cases.	-
		Park that will serve as grazing lands for the		



No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of
		local community members in an organized	 Records or reports on 	
		manner.	complaints from	
		The proposed Energy Park implementation	neighbouring community	Management Cost
		team should liaise with KWS to facilitate	on reduced grazing land.	
		fencing of the national Parks and providing	KWS in collaboration with	
		wildlife crossing to facilitate wildlife dispersal.	plan implementation team	
		The proposed masterplan implementation	should undertake the	
		team should designate areas in the Energy	monitoring.	
		Park that will serve as grazing lands for the		
		local community members in an organized		
		manner.		
		• The masterplan to ensure compliance to		
		Hell's Gate-Mt. Longonot National Parks		
		Ecosystem Management Plan, 2017-2027.		
		Notably, the masterplan should ensure the		
		that areas identified as wildlife migratory		
		corridors or dispersal areas are not affected.		
		Further, the masterplan implementation team		
		should ensure continuous communication		
		with KWS.		
		 The proposed masterplan implementation 		Management Cost
		team should collaborate with KWS in		
		installation of security measures to monitor		
		poaching. This includes but not limited to		



No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of Implementation
		installation of barriers to monitor all traffic,		
		mechanisms to track movement within the		
		Energy Park and wildlife areas, continuous		
		patrols and installation of surveillance		
		cameras.		
		The masterplan implementation team should		
		consider engaging KWS in managing and		
		monitoring traffic in the area which will ensure		
		efficient management of poaching.		
		The proposed masterplan implementation	-	Management Cost
		team should prepare and implement a		
		biodiversity management plan.		
		The biodiversity management should focus		
		on controlling flora species to be revegetated		
		in the affected areas through approvals by		
		relevant authority. Local and existing flora		
		should be considered for use. Additionally,		
		species loss should be well documented to		
		facilitate adequate revegetation. Further,		
		respective industries and infrastructure		
		development should ensure a full census on		
		flora coverage in their respective sites.		
		• The proposed masterplan implementation		
		should seek for approval from KFS/KWS for		



No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of Implementation
		all the vegetation/trees to be planted in		
		recovery of lost flora.		
		• The proposed masterplan should employ a		
		competent biodiversity expert in ensuring full		
		implementation and monitoring of the		
		biodiversity plan in place.		
		• The proposed masterplan should employ		Management Cost
		competent persons in ensuring full		
		implementation and monitoring of the		
		biodiversity plan in place.		
		• As part of the biodiversity plan, respective		
		industries and infrastructure development		
		should ensure a full census on flora coverage		
		in their respective sites while undertaking EIA		
		for their facilities.		
		• Equipment to be used should be		
		decontaminated e.g. washing equipment to		
		remove soil potentially carrying AIPS		
		propagules before brought on site		
		 Always avoid the top surface of the soil from 		
		borrow pit when excavating gravels for road		
		construction as well as industrial		
		development in order to avoid transporting		
		AIPS propagules to new areas.		



No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of
		 Since AIPS appears later after soil disturbance, aftermath proliferation of AIPS should be controlled by regularly reducing 		Implementation
		their population and recruitment.		
		 The proposed masterplan should employ competent persons in ensuring full implementation and monitoring of the biodiversity plan in place. Fisheries department at the county and County Government level as well as KMFRI should collaborate in management of fish resources in Lake Naivasha. 	 Records on fish population trends in Lake Naivasha as documented by Kenya Fisheries Service tasked by Fisheries Management and Development Act, 2016 in management of fisheries resources. Kenya Fisheries Service and the plan implementation team should be responsible 	Management Cost
			for monitoring.	
		The proposed masterplan implementation team should formulate a water quantity monitoring and management plan to regulate water usage in the Energy Park. As part of the management plan, this should be provided;	 Records on water usage for usage in the industrial park from Lake Naivasha. Records on water consumption by 	Management Cost



No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of
		 ✓ Drilling of boreholes to serve as alternative sources of water for use in the Energy Park. ✓ Have a policy in place to ensure that all facilities in the Energy Park has in place a rain water harvesting system. The proposed masterplan implementation team should employ competent persons in ensuring full implementation of water quantity management and monitoring plan. 	 industries and industrial park supportive infrastructure. The plan implementation team and the respective industries should be responsible for water consumption recording. 	Implementation
2.	Environmental and Landform Changes	 The proposed masterplan implementation team to prepare a land utilization and management plan. As part of the land utilization and management plan, the following should be considered; ✓ Ensure that landscaping is done immediately the affected areas are completed; ✓ Ensure that infrastructure provided in the masterplan area are compatible with the existing landscapes; 	 Records, complaints or reports on land scaring in relation to the proposed industrial park implementation. The plan implementation team should be responsible for monitoring. Reports, records or complaints on human-wildlife conflicts as a result of change in wildlife routes 	Management Cost





No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of Implementation
			as a result of the industrial	
			park construction activities.	
			 Records, reports or 	
			complaints on formation of	
			new gulley's.	
			 The plan implementation 	
			team and respective	
			industries should be	
			responsible for	
			monitoring.	
3.	Pollution	 The proposed masterplan implementation team and management team should prepare and implement air quality monitoring. The management and monitoring plan should ensure among the following; ✓ That every industrial and infrastructure development ensures that baseline air quality assessment is undertaken. ✓ Air dispersion modelling is undertaken for every industry to be developed in the Energy Park. ✓ That development of any industrial development should be done upon 	 Reports on level of pollutants for criterial pollutants including PM, SO_X, NO_X, CO₂, H₂S, and O₃ among others based on operations involved. The monitoring should be carried out in accordance with Environmental Management and Co- 	Management Cost



No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of
		 compliance with all air quality requirements in the country especially Air Quality Regulations, 2014. The proposed masterplan implementation team should employ competent persons in ensuring full implementation of air quality management and monitoring plan. 	ordination (Air Quality) Regulations, 2014. The plan implementation team and respective industries should be responsible for monitoring.	
		 The proposed masterplan implementation team should formulate a noise and vibration monitoring and management plan. The plan should ensure the following; Works within settlement areas as well as in wildlife habitats should be carried out during the day. That respective industries should undertake noise dispersion model for their facility. That development of any industrial development should be done upon compliance with all noise and vibration requirements in the country especially EMCA Noise and Excessive Vibration Pollution) (Control) Regulations, 2009. 	 Reports on noise and vibration levels relating to construction activities of various aspects of the industrial park implementation. Noise and vibration monitoring should be carried out as stipulated by Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009. 	Management Cost



No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of
		 The proposed masterplan implementation team should employ competent persons in ensuring full implementation of noise and vibration management and monitoring plan. 	 The plan implementation team as well as the respective industries should be responsible for noise and vibration monitoring for their respective projects. 	mplementation
		 The proposed masterplan implementation team prepare water quality monitoring and management plan. The plan should ensure the following; That all industrial and infrastructure development proponents ensure that chemicals with a potential to lead to surface and ground water pollution are efficiently managed. That all waste from construction activities are efficiently managed. That the masterplan implementation team has in place an emergency response plan in managing accidental chemical spillage. 	 Reports on water quality monitoring by the plan implementation team and respective industries. The water quality monitoring should be carried out as stipulated by Environmental Management and Co- ordination (Water Quality) Regulations, 2006. The plan implementation team and the respective 	Management Cost



No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of
		 The proposed masterplan implementation team should employ competent persons in ensuring full implementation of water quality management and monitoring plan. 	industries should be responsible for water quality monitoring based on their various construction activities.	Implementation
4.	Waste Management	 The proposed masterplan implementation team should formulate a waste monitoring and management plan. As part of the plan, the following should be factored in; Respective industries and infrastructure development proponents should compel that contractor to ensure proper planning in ensuring minimal solid waste generation from construction activities. All contractors should have a system in place to track waste. All waste generated in the construction works should be reused or recycled where possible. The proposed masterplan should ensure that the they designate a place where all construction waste is hold for 	 Volume of solid waste generated per months per every industrial park component. Records on solid waste management by the respective proponents in the industrial park. Solid waste management should be undertaken as stipulated by Environmental Management and Co- ordination (Waste Management Regulations), 2006. 	Management Cost



No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of
		 a day ready for disposal at designated sites. The proposed masterplan implementation team should employ a solid waste management in ensuring effective implementation of a solid waste management and monitoring plan. 	 The industrial park implementation team and respective industries should be responsible for managing their solid waste. 	Implementation
5.	Social Issues	 The proposed masterplan implementation team should formulate social development plan in management of social issues in the area including gender, underleveraged groups in the community, the Maasai community, immorality and communicable diseases. As part of the plan, the following should be considered; ✓ Sensitisation masterplans covering gender mainstreaming, HIV/AIDS and other communicable diseases campaigns, among other moral subjects. ✓ Initiate CSR programmes amongst the Maasai community in focusing on investment in cultural centres in place 	 Trends on the population of the Maasai community in the plan area. Records on changes in Maasai community was of life notably, livestock keeping, way of dressing or housing typologies. The plan implementation team should be responsible for monitoring trends in Maasai community way of life. 	Management Cost







No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of
		of Housing as well as Naivasha Municipality. The plan should focus on; • Designating areas that will provide residential housing for Energy Park workers. This should be presumably be set up in the identified site at Oserian Farm or the residential establishments proposed within ICD.	the industrial park implementation. Records on housing provision for industrial park workforce. The industrial park implementation team in collaboration with Naivasha Sub-County of Housing and Naivasha Municipal Board should be responsible for monitoring housing status as a result of the industrial park implementation.	Implementation
		 The proposed masterplan implementation team should formulate dispute redress committee constituted to KenGen representatives, local administrators representative (i.e. Naivasha Sub-County ACC or DCC), local community 	 Records, complaints or reports on conflicts relating to the industrial park construction activities related. 	Management Cost



No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of
		 representatives and industrial, construction companies' representatives and Energy Park implementation team representatives. The masterplan implementation should formulate a schedule for having public forums in ensuring continuous communication between the Energy Park implementation team and the neighbouring community. The industrial park implementation team 	 Reports on outcomes of quarterly community meetings. Disputes redress mechanism records. The plan implementation team should be responsible for monitoring community 	Implementation
		should hold quarterly meetings with the host community.	complaints and conflicts.	
6.	Occupational Safety and Health Issues	 The proposed masterplan implementation team to formulate an occupational, safety and health management and monitoring plan. This plan should consider; ✓ Having a traffic management plan in place to ensure effective traffic movement. ✓ OSHA, 2007 and its rules focusing on aspects such hazardous substances monitoring, noise monitoring, fire safety, safety audits among others. The proposed masterplan implementation team to employ a team of competent persons 	 Records, complaints or reports on increased human accidents. Level of compliance with the Traffic Act, 2012. Records or reports on occupational diseases or accidents as a result of the industrial park construction activities. Level of compliance to Occupational Safety and 	Management Cost



No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of Implementation
		responsible for implementation of the occupational, safety and health management and monitoring plan.	 Health Act, 2007 and its subsidiary legislations. The plan implementation team and respective industries should be responsible for monitoring trends in occupational diseases/accidents. 	
	EN	IERGY PARK OPERATION PHAS	E	
7.	Biodiversity and Natural Conservation	 The proposed masterplan implementation team to prepare a waste management plan. The proposed masterplan implementation team to prepare an emergency response plan in managing accidental chemical spillage. All contractors engaged in the proposed masterplan to be audited monthly in ensuring compliance with waste management and spill management plans. The proposed masterplan implementation to employ a team of competent environmental 	 Results/reports on annual water to monitor level of soil pollution quality for respective industries in the industrial park as in conformity with Environmental Management and Coordination, (Water Quality) Regulations 	Management Cost



No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of
	•		.	Implementation
		experts to ensure compliance to waste	2006. Priority pollutants	
		management and spill management plans.	that should be monitored	
			for are as guided by The	
			Fourth Schedule of the	
			Regulations.	
			•	
		The proposed masterplan team to ensure	Implementation of Wildlife	Management Cost
		continuous wildlife monitoring in the area to	Conservation and	
		track their trends and movements in	Management Act, 2013,	
		reference to the implementation of the Energy	notably in implementation	
		Park. This should be done in collaboration	of KWS mandates as	
		KWS and WRTI.	stipulated by Section 7 of	
		The proposed Energy Park should be	the Act.	Management Cost
		provided with a perimeter wall to restrict entry	■ Records on wildlife	
		by wildlife.	accidents or kills	
		The proposed Energy Park implementation		
		team should liaise with KWS and WRTI to	 Population and inventory of 	
		facilitate fencing of national Parks	flora and fauna.	
		neighbouring KEP-Longonot and KEP-Suswa	Records or reports of	
		roads that are proposed. Additionally, wildlife	invasive species	
		crossings and dispersal areas as highlighted	introduced as a result of the	
		by Hell's Gate-Mt. Longonot National Parks		
		Ecosystem Management Plan, 2017-2027		



No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of
		should be provided with appropriate	inductrial park	Implementation
		should be provided with appropriate		
		Infrastructure including culverts to facilitate	Implementation.	
		crossing of amphibians, reptiles and rodents	Records on recorded or	
		along the roads. This is in addition to crossing	reported human-wildlife	
		points to other areas.	conflicts.	
		 The proposed masterplan implementation 		Management Cost
		team should designate areas in the Energy	Records or reports on	
		Park that will serve as grazing lands for the	poaching cases.	
		local community members in an organized	Records or reports on	
		manner.	complaints from	
		• The proposed Energy Park implementation	neighbouring community	
		team should liaise with KWS to facilitate	on reduced grazing land.	
		fencing of the national Parks and providing	KWS in collaboration with	
		wildlife crossing to facilitate wildlife dispersal.	plan implementation team	
		• The proposed masterplan implementation	should undertake the	Management Cost
		team should collaborate with KWS and WRTI	monitoring	
		in installation of security measures to monitor	monitoring.	
		poaching. This includes but not limited to		
		installation of barriers to monitor all traffic,		
		mechanisms to track movement within the		
		Energy Park and wildlife areas, continuous		
		patrols and installation of surveillance		
		cameras.		





No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of
		 The masterplan implementation team should 		Implementation
		have in place a traffic management section in		
		managing and monitoring traffic in the area		
		which will ensure efficient management of		
		poaching. The traffic section/department		
		should collaborate with KWS in monitoring		
		poaching.		
		• The proposed masterplan should employ	Records on fish population	Management Cost
		competent persons in ensuring full	trends in Lake Naivasha as	
		implementation and monitoring of the	documented by Kenya	
		biodiversity plan in place.	Fisheries Service tasked	
		 KenGen should partner with Lake Naivasha 	by Fisheries Management	
		ecosystems management organizations and	and Development Act,	
		research institutes notably KMFRI in	2016 in management of	
		monitoring biodiversity coverage within the	fisheries resources.	
		lake.	Kenya Fisheries Service	
			and the plan	
			implementation team	
			should be responsible	
			for monitoring	
		The proposed masternlan implementation		Managamant Cast
		team should implement a water quantity	for use and in the industrial	wanayement Cost
		monitoring and management plan to regulate	for usage in the industrial	



No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of
		 water usage in the Energy Park. The plan should factor in; ✓ All industries and facilities in the Energy Park should have in place water metering installations in ensuring sustainable usage of water. The industries and various facilities in place in the Energy Park will be required to 	 park from Lake Naivasha. Records on water consumption by industries and industrial park supportive infrastructure. 	Implementation
		reuse/recycle water with such records kept. Additionally, rain water harvesting should be made a requirement for facilities and industries in the Energy Park.	 The plan implementation team and the respective industries should be responsible for water consumption recording. 	
8.	Environmental and Landform Changes	 Minimize clearing of vegetation around the industrial establishment; Plant trees around the industrial establishments to provide a curtain for the industries Avoid using colours which do not match the surrounding landscape and may be considered an eyesore. 	 Reports, records or complaints on human-wildlife conflicts as a result of change in wildlife routes due to industrial park visual intrusion. The plan implementation team should be responsible for monitoring. 	Management Cost



No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of
		 Avoid use of flood lights at night to enable wild animals access areas adjacent to the establishment. Continuous maintenance of drainage channels provided. This is in addition to the retention ponds provided. Continuous revegetation with local vegetation in soil protection. Retention ponds to be constructed within the industrial park site that will be critical in floods control. 	 Records, reports or complaints on floods cases as a result of the industrial park operation activities. Records, reports or complaints on formation of new gulley's. The plan implementation team and respective industries should be responsible for monitoring. 	Implementation
9.	Pollution	 The proposed masterplan implementation team should implement air quality monitoring and management plan. The plan should detail among others; ✓ Recommend putting in place infrastructure to facilitate air quality monitoring at identified locations. ✓ The need for all industries to undertake quarterly source emission and ensuring 	 Reports on level of pollutants for criterial pollutants including PM, SO_X, NO_X, CO₂, H₂S, and O₃ among others based on operations involved. Exceedance of the air quality parameters per 	Management Cost



No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of
		✓ All industries to undertake quarterly ambient air quality as stipulated by Air Quality Regulations, 2014 as well as indoor quality monitoring as stipulated by Factories and other Places of Work (Hazardous Substances), 2007.	 months with limits as based Environmental Management and Coordination (Air Quality) Regulations, 2014. The plan implementation team and respective industries should be responsible for monitoring. 	
		 The proposed masterplan implementation team should implement a noise and vibration monitoring and management plan. Specifically, the plan should consider the following; ✓ Recommend putting in place infrastructure to facilitate noise and vibration monitoring at identified locations. ✓ Ensure that respective industries carry out annual noise and vibration monitoring as stipulated by EMC (Noise 	 Reports on noise and vibration levels relating to industrial park operations activities of various aspects of the industrial park implementation. Exceedance of noise and vibration levels per month with limits as stipulated by Environmental 	Management Cost







No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of
		 metering installations in ensuring sustainable usage of water. ✓ The industries and various facilities in place in the Energy Park will be required to reuse/recycle water with such records kept. Additionally, rain water harvesting should be made a requirement for facilities and industries in the Energy Park. 	parksupportiveinfrastructure.The plan implementationteam and the respectiveindustriesshouldberesponsibleforwaterconsumption recording.	
11.	Waste Management	 The proposed masterplan implementation team should implement a solid waste monitoring and management plan. The plan should touch on; ✓ Industries situated in the Energy Park should reuse, recycle or reduce solid waste management. ✓ The proposed masterplan should ensure solid waste symbiosis in industries located on the Energy Park. ✓ Industries and facilities to be located in the proposed Energy Park be tasked to ensure solid waste segregate solid waste at source. 	 Monthly volume of solid waste generated per industries and facilities in the industrial park. Solid waste management should be undertaken as stipulated by Environmental Management and Co- ordination (Waste Management Regulations), 2006. 	Management Cost



No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of
No.	Impact	 Mitigation Measure & Responsibility ✓ The proposed masterplan implementation team should designate solid waste holding areas for holding waste, ready for transportation to the available municipal disposal site. ✓ The proposed masterplan implementation team should collaborate with Nakuru County department of Water, Environment, Energy and Natural Resources in ensuring efficient waste disposal at designated municipal site. 	Monitoring Indicators The industrial park implementation team and respective industries should be responsible for managing their solid waste.	Cost of Implementation
		 The proposed masterplan implementation team should formulate a waste water management and monitoring plan. Towards this, the following should be considered; The proposed masterplan implementation team to construct a liquid waste treatment plant to be able to treat an estimated waste water capacity of approximately 18,000m³/day. Industries and facilities in the industrial should be compelled to have a waste 	 Reports on water quality monitoring by the plan implementation team and respective industries. The water quality monitoring should be carried out as stipulated by Environmental Management and Co- ordination (Water 	Management Cost



No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of
		······g·······························	g	Implementation
		recycling plant in ensuring minimal waste water generation. ✓ Industries within the Energy Park should ensure they have in place inhouse waste water plant. The industries and facilities should be required to ensure quarterly monitoring of the waste water disposed at the waste treatment plant.	Quality)Regulations,2006.• Monthly exceedance of waterquality parameters.• The plan implementation team and the respective industriesindustriesshouldbe responsibleforwater quality monitoringontheir construction	Implementation
12.	Social Issues	 The proposed masterplan implementation team should formulate social development plan in management of social issues in the area including gender, underleveraged groups in the community, the Maasai community, immorality and communicable diseases. As part of the plan, the following should be considered; 	 Trends on the population of the Maasai community in the plan area. Records on changes in Maasai community was of life notably, livestock keeping, way of dressing or housing typologies. 	Management Cost



No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost	of
		 ✓ Establishment of a cultural centre within the local Maasai community is recommended. This should be done as a CSR and should be done in collaboration with the community. ✓ KenGen collaboration with Nakuru County Government and Naivasha Municipality to ensure planning is done beyond the industrial park boundaries. This in addition to effective development control by Nakuru County Government. The proposed masterplan implementation team to employ a team of competent socio development experts enable effective management and monitoring of social development issues. 	 The plan implementation team should be responsible for monitoring trends in Maasai community way of life. Records on proportion by gender of persons employed in the construction activities in the industrial park operation activities. Complaints or reports on gender discrimination. National Gender and Equality Commission Act, 2011. The plan implementation team and respective industries should be responsible for gender issues monitoring. 		





team and the neighbouring community.

responsible

for



No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost of
			monitoring community complaints and conflicts.	
13.	Occupational Safety and Health Issues	 The proposed masterplan implementation team to formulate an occupational, safety and health management and monitoring plan. This plan should consider; ✓ Speed limits within the industrial park to be maintained at 40Km/h; ✓ All roads in the industrial park to be fitted with surveillance cameras for traffic monitoring; and ✓ KenGen through the plan implementation team to establish a traffic department in monitoring traffic in the industrial park 	 Records, complaints or reports on increased human accidents. Level of compliance with the Traffic Act, 2012. Records or reports on 	Management Cost
		 All industrial park. All industrial park entities to fully comply with OSHA, 2007 and its rules. The proposed masterplan implementation team to employ a team of competent persons responsible for implementation of the occupational, safety and health management and monitoring plan. 	occupational diseases or accidents as a result of the industrial park operation activities. • Level of compliance to Occupational Safety and Health Act, 2007 and its subsidiary legislations.	


No.	Impact	Mitigation Measure & Responsibility	Monitoring Indicators	Cost Implementation	of
			The plan implementation		
			team and respective		
			industries should be		
			responsible for		
			monitoring trends in		
			occupational		
			diseases/accidents.		





8.3 Grievances Handling Mechanism for Energy Park

Based on the key areas of concerns identified in the area that might be triggered by the Energy Park implementation, KenGen is encouraged to be in continuous communication with various agencies in the masterplan area in ensuring compatibility with existing baseline conditions in the masterplan area. Towards this, a redress mechanism should be put in place in resolving possible conflicts and capturing any dispute relating to the industrial park. A redress mechanism committee should be formulated in addressing all disputes and complaints relating to the industrial park operations. Additionally, a physical office with an active phone number, email address and postal address. A complaint box should also be availed office premise. Complaints/concerns forms should be availed. A sample complaint form is as illustrated below. *Table 8-80: Complaint Form Illustrated*

Complaint Form Number:		
Date of Complaint:		
Name and Contact details of complainant (Optional):		
Complaint Description:		
Complaint Received on:		
Complaint Received by:		

Upon receipt of the complaint via all the means identified above below is the process that should be followed;

- Documentation of the complaint (1 day);
- Complaint acknowledgement (1-7 days);
- Draft complaint response by the grievance redress committee members (7-14 days);
- Signing of the complaint response by the grievance redress committee executive (1-7 days);
- Implementation of the complaint and communication (7-14 days);
- Complainant response on the action taken on confirmation whether the complaint should be closed (4-7 days); and
- Compliant/grievance closure (4-7 days).



The grievance redress committee members should be constituted of among others;

- KenGen representation;
- Local administrators;
- Community representation; and
- Key stakeholders in the area notably KWS, WRA, Nakuru County Government line departments, Special Economic Zones Authority representation among others.

Additionally, continuous stakeholders' engagement is critical in ensuring effective implementation of the proposed masterplan.

CHAPTER 9: CONCULUSION AND RECOMMENDATIONS

9.1 Conclusion

KEP SEA was undertaken as guided by the National SEA Guidelines, 2012. Further, SEA was undertaken in compliance with various legal provisions in the country. The assessment captured various aspects that included a description of various aspects of the proposed Energy Park masterplan. Additionally, the baseline conditions of the proposed Energy Park site were identified which provided an insight on how the proposed Energy Park will interact with its environs. Public participation also formed a key aspect of the SEA assessment whereby various stakeholders initially identified were engaged with an aim of informing them of the proposed masterplan as well as to gather their inputs.

Ultimately, through SEA, the proposed masterplan impacts were identified whereby mitigation measures were provided to mitigate against the negative impacts that might accrue from the implementation of the Energy Park. Additionally, a monitoring plan that detailed institutional requirement and capacity requirement in ensuring that the proposed mitigation measures are implemented. As part of monitoring plan, early preparation of various plans proposed has been recommended.

In summary, based on the SEA study, the proposed masterplan is located in an ecologically sensitive area based on its proximity to Hells Gate National Park. Further, the proposed masterplan will involve exploitation of sensitive local resources notably water from Lake Naivasha, a designated Ramsar site. However, despite these aspects, among others environmental and social considerations, the mitigation measures provided can be deemed adequate in enabling implementation of the Energy Park in an environmentally sustainable and socially acceptable manner.

9.2 Recommendations

Based on the SEA study, below are some of the recommendations that will ensure effective implementation of KenGen Energy Park.

9.1.1. Runoff and Soil Erosion Management

Soil erosion, mainly by runoff is one of the main challenges in the Olkaria area due to the nature of soil. Implementation of various infrastructure elements in the industrial park is anticipated to exacerbate soil erosion if appropriate measures are not put into consideration. To mitigate this, areas within the industrial park with a slope of above 15% will not be developed. Similarly, a number of retention ponds will be put in place in reducing the speed



9.1.2. Pressure on Social Facilities

The operation of the industrial park is anticipated to attract at least 59,000 persons through direct, indirect and induced employment. This will translate to a strain in existing facilities, notably residential housing and social facilities in addition to possible outcrop of informal settlements. In mitigating this, residential housing will be provided at Naivasha Industrial Park. However, effective development control by Nakuru County Government and Naivasha Municipality line departments is recommended.

9.1.3. Water Issues

KEP is expected to obtain water from Lake Naivasha. This is based on the allocated water abstraction permit from WRA. The area has a ground water potential of 16,964,640 m³ based on a ground water survey undertaken. Detailed ground water surveys are recommended to establish ground water potential. This will minimize dependence on water from Lake Naivasha. In addition, brine and steam from geothermal explorations operations is anticipated to significantly water reduce demand from the lake for industrial purposes in the industrial park.

9.1.4. Biodiversity Conservation and Sensitive Habitats

KEP is situated within a sensitive ecosystem, with Hell's Gate National Park, Mount Longonot National Park and Lake Naivasha in close proximity. Implementation of the industrial park within such sensitive ecosystems might negatively affect the area biodiversity if appropriate measures are not put in place. Notably, human-wildlife conflicts, wildlife accidents and poaching cases might increase. To mitigate this, it is recommended that KenGen, through the plan implementation team to collaborate with KWS and WRTI in ensuring effective measures are put in place in minimizing the occurrence of these instances. This should include but not limited to capacity in monitoring poaching, wildlife accidents and effective wildlife migrations.

9.1.5. Air, Water and Soil Pollution

Pollution in the form of air, water and soil from various industrial operations is anticipated to increase if appropriate measures are not put in place. In view of this, all components of the industrial park including infrastructure requirements and industries should be subjected to EIA as stipulated my EMCA, 1999. EIA for respective components should detail comprehensive baseline air quality, baseline noise and baseline soil quality. In addition, the EIA's should detail a schedule for monitoring for air, soil and noise pollution by respective industries.



9.1.6. Waste Management

Waste generated for the industrial park management can be detrimental to the environment, if appropriate measures are not put into considerations. In view of this, efficient waste management is recommended at the industrial park. Notably, a waste water treatment plant is recommended. Further, industrial symbiosis has been considered in identifying industries that will be implemented. This is in ensuring that various waste streams generated from various industries can be used as raw materials in other industries. This will minimize on volumes of solid waste generated. In addition, a solid waste holding bay site has been proposed at the site that will also facilitate waste segregation at source.

9.1.7. Climate Change

Industrial development is anticipated to negatively contribute to climate change if appropriate measures are not put into considerations. As such, climate change adaptation measures are recommended at the industrial park. These measures include but not limited construction of green structures, use of climate-friendly construction materials, adoption of carbon trading for high emission industries, emission monitoring for the respective industries among others. A weather station is also recommended at the industrial park for monitoring climate trends and air quality trends.

9.1.8. Cultural Issues and Engagement of the Local Community at the KEP

With KEP proposed in an area dominated by Maasai community with rich cultural practices, increased inflow of non-locals in the area, cultural erosion of the local Maasai community is anticipated, if appropriate measures are not put in place. As part of upholding cultural practices of the local Maasai community, a cultural centre managed by the host community is proposed, as a CSR. Further, the industrial park implementation team should have in place a CSR department in place in initiating projects/programmes in the area aimed at benefiting the host community as a result of the industrial park implementation.



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APPENDICES

Appendix 1: KenGen KEP Masterplan Brief NEMA Acknowledgement Letter



NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

Mobile Lines: 0724-253 398, 0723-363 010, 0735-013 046 Telkom Wireless: 020-2101370, 020-2183718 Incident Lines: 0786-101100, 0741-101100

NEMA/SEA/5/2/078

Environment and Sustainable Development Manager Kenya Electricity Generating Company (KENGEN) P.O. Box: 47936 - 00100 NAIROBI

RE: KENGEN INDUSTRIAL PARK PROGRAM BRIEF

The National Environment Management Authority (NEMA) acknoweldges receipt of your program brief dated 11th August 2022 on the above subject matter.

NEMA notes that KENGEN is in the process of reviewing its feasibility study of the KenGen Energy Park at Olkaria. The review is also meant to update among others and not limited to the economic & market studies, infrastructure planning, institutional framework and environmental aspects. The Authority recognizes that policies, programmes and plans are required to carry out Strategic Environmental Assessment (SEA) as per section 57A of EMCA, 1999 and sections 42 and 43 of the EIA/EA Regulations, 2003.

The Authority notes that a Strategic Environmental Assessment (SEA) for the Olkaria Geothermal field development programme was done and approved by NEMA on the 14th August 2015. The SEA addressed the various tiers among them spatial boundaries, environmental quality among other sectoral issues at a broad and strategic level within the Olkaria ecosystem. However, the SEA did not provide much detail for the industrial park since there was no feasibility study undertaken at the time of the SEA study and the SEA recommended for further studies to inform on the location/siting of the industrial park and the anticipated impacts and mitigation measures among other critical issues.

In view of the above, the Authority hereby registers its NO- objection to the updating of the feasibility study and the master plan of the KenGen Energy (industrial) Park at Olkaria, Naivasha. Once the feasibility study has been undertaken and updated accordingly and pursuant to the SEA guidelines, 2013, the Authority recommends for the submission of a SEA – Plan brief for the KenGen industrial park.

The subsequent specific projects in the Plan will then be subjected to an Environmental Impact Assessment as provided in the Environmental Management and Coordination Act, 1999 and its subsidiary legislations.

STUMMONTHING MAN

Yours

ZEPHANIAH OUMA FOR: DIRECTOR GENERAL

Our Environment, Our Life, Our Responsibility



P.O. Box 67839, 00200

Popo Road, Nairobi, Kenya

E-mail: dgnema@nema.go.ke Website: www.nema.go.ke 22nd August 2022

Appendix 2: KEP Masterplan Brief NEMA Approval



NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

Mobile Lines: 0724-253 398, 0723-363 010, 0735-013 046 Telkom Wireless: 020-2101370, 020-2183718 Incident Lines: 0786-101100, 0741-101100

NEMA/SEA/5/2/078

P.O. Box 67839, 00200 Popo Road, Nairobi, Kenya E-mail: dgnema@nema.go.ke Website: www.nema.go.ke 03rd October, 2022

Environment and Sustainable Development Manager Kenya Electricity Generating Company (KENGEN) P.O. Box: 47936 - 00100 NAIROBI

RE: BRIEF APPROVAL - STRATEGIC ENVIRONMENTAL ASSESSMENT FOR KENGEN ENERGY (INDUSTRIAL) PARK MASTER PLAN, OLKARIA, NAIVASHA SUB-COUNTY, NAKURU COUNTY

The National Environment Management Authority (NEMA) has reviewed the brief for the Land Use Master Plan for Kenya Electricity Generating Company PLC Energy (Industrial) Park and the following observations have been made:

- This is a Plan brief for Land Use to integrate the industrial development needs and important Wildlife aspects within the Hells gate National Park. The plan proposal is to harmonize and sustain the National Parks activities and KenGen activities within the greater Olkaria Ecosystem while avoiding/mitigating the environmental degradation and social conflicts associated with the utilization of natural resources.
- The Plan seeks to optimize and improve the use of land and land-based resources in the Olkaria area for the benefit of the KenGen, the Country and local community.
- The Plan prescribes the establishment of an intact block of land for the industrial zone use abating the wildlife sensitive area (Hells Gate National Park) to enhance sustainable development.
- The Land Use Plan will lead to several projects that will require to be subjected to site specific Environmental and Social Impact Assessment (EIA) process.
- 5. The Plan will lead to relatively high utilization and consumption of natural resources

In view of this, you are required to subject the KenGen Energy (Industrial) Park Master Plan to the Strategic Environment and Social Assessment (SESA) process.

Kindly get in touch with your firm of expert who will prepare and submit a scoping report to the Authority for review in line with the provisions of section 57Å of the Environment Management and Coordination Act (EMCA), 1999 and the National Guidelines for Strategic Environmental Assessment in Kenya.

Thank you for the willingness to comply

DUNDANNOUNNANN ZEPHANIAH OUMA FOR: DIRECTOR GENERAL

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Appendix 3: KEP SEA Scoping Report NEMA Acknowledgement Letter

KenGen



NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

Mobile Lines: 0724-253 398, 0723-363 010, 0735-013 046 Telkom Wireless: 020-2101370, 020-2183718 Incident Lines: 0786-101100, 0741-101100 P.O. Box 67839, 00200 Popo Road, Nairobi, Kenya E-mail: dgnema@nema.go.ke Website: www.nema.go.ke

NEMA/SEA/5/2/078

24th October, 2022

Environment and Sustainable Development Manager Kenya Electricity Generating Company (KENGEN) P.O. Box: 47936 - 00100 NAIROBI

RE: STRATEGIC ENVIRONMENTAL AND SOCIAL ASSESSMENT (SESA) REPORT FOR THE KENGEN ENERGY (INDUSTRIAL) PARK MASTER PLAN, OLKARIA, NAIVASHA SUB-COUNTY, NAKURU COUNTY

The Authority acknowledges receipt of the scoping report for the Strategic Environmental and Social Assessment (SESA) for KenGen Energy (Industrial) Park Master Plan, Olkaria, Naivasha Sub-County, Nakuru County.

In light of the provisions of Regulations 42 and 43 of the Environmental (Impact Assessment and Audit) Regulations, 2003 and the National Guidelines for Strategic Environmental Assessment in Kenya, the Authority has reviewed the scoping report and the following issues need to be included before proceeding:

- Clearly indicate if the SESA being done is for a Programme or a Plan considering the use of the two terms interchangeably in the scoping report.
- Indicate the linkages between the existing PPPs and with the strategic actions at different tier levels (the links between the PPP and higher- and lower-tier strategic actions)
- Provide well defined objectives of the land use and infrastructure plan and the integration of SESA in the Land Use Plan making process.
- Clear identification and description of current conditions, pressures, trends and ecosystems services within the Plan area.
- Indicate the data analysis methods to be employed during the SESA study
- The reasonable alternatives that can be subjected to detailed assessment need to be clear
- Including additional professionals/experts such as a sociologist, planner, wildlife expert, water expert among others to be part of the SESA team to ensure a comprehensive and detailed analysis of the issues to be studied during the SESA study stage.

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Note that effective and sustained stakeholder's engagement and appropriate communication methods are vital for a successful SEA process.

MARRIAN KIOKO FOR: DIRECTOR GENERAL

Appendix 4: KEP SEA Scoping Report NEMA Approval



KenGen

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

Mobile Lines: 0724-253 398, 0723-363 010, 0735-013 046 Telkom Wireless: 020-2101370, 020-2183718 Incident Lines: 0786-101100, 0741-101100

P.O. Box 67839, 00200 Popo Road, Nairobi, Kenya E-mail: dgnema@nema.go.ke Website: www.nema.go.ke

07th December 2022

NEMA/SEA/5/2/078 Environment and Sustainable Development Manager Kenya Electricity Generating Company (KENGEN) P.O. Box: 47936 - 00100 NAIROBI

RE: APPROVAL OF THE SCOPING REPORT FOR THE STRATEGIC ENVIRONMENTAL AND SOCIAL ASSESSMENT (SESA) FOR KENGEN ENERGY (INDUSTRIAL) PARK MASTER PLAN, OLKARIA, NAIVASHA SUB-COUNTY, NAKURU COUNTY

The National Environment Management Authority (NEMA) has reviewed the issues addressed to the scoping report that was submitted to the Authority on 06th December 2022.

In light of the provisions of section 57 Å of the Environmental Management and Coordination Act (EMCA), Regulations 42 and 43 of the Environmental (Impact Assessment and Audit) Regulations, 2003 and the National Guidelines for Strategic Environmental Assessment 2012, the scoping report for the proposed Kenya Electricity Generating Company (KenGen) energy (Industrial) Park Master Plan is hereby **APPROVED**.

As you prepare to undertake the SEA study, the Authority advises that effective and sustained stakeholder's engagement and appropriate communication methods are vital for a successful SEA process.

Ensure that linkages between the Master Plan and other regional, National and local plans are taken into consideration. You are informed to engage your SESA experts (*Ecoscience Engineering Limited*) who shall conduct the SESA process and prepare the draft SESA report for submission to NEMA.

You will be required to submit ten hard copies and one electronic copy of the draft SESA report (which should include a non-technical summary and the submission form) accompanied with the prescribed SEA processing and monitoring fee of Ksh. One million (Ksh. 1,000,000).

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Yours

ZEPHANIAH OUMA FOR: DIRECTOR GENERAL

Our Environment, Our Life, Our Responsibility



Appendix 5: Stakeholders Workshops Invitation Letters



KenGen

Our Ref: KEP_SEA 07/2022

30th August, 2022

Dear Sir/Madam,

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

Ecoscience & Engineering Limited, has been contracted by Dar Al-Handasah Consultants (Shair and Partners) to undertake a Strategic Environmental Assessment (SEA) to update the Feasibility Study of the KenGen Energy Park at Olkaria, Naivasha.

In view of this, Ecoscience & Engineering Limited invites you to a stakeholder workshop scheduled to be held on Friday, 9th September, 2022 at Astorian Grand Hotel Naivasha. Please purpose to attend or send a representative. The agenda and programme for the meeting are attached.

Kindly confirm your attendance through calling +254 710 705 056 or sending an email via technical@ecoscience.co.ke.

Yours Faithfully,

SCIENCE & ENGINEERING LINITE P. O. Box 55533-00200, NAIROB! Philip Abuor

Managing Director, Ecoscience & Engineering Limited

CC:

KenGen Dar Al-Handasah Consultants (Shair and Partners)



ECOSCIENCE & ENGINEERING LIMITED. Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobl P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Cell:+254713566825

Chief Executive Officer,

Export Processing Zones Authority (EPZA)

Administration Building, Viwanda Road, off Nairobi-Namanga Highway, Athi River, Kenya P.O. Box 50563, Nairobi 00200,

3 1 AUG 2022

50563-00201

Nairobi, Kenya.

30th August, 2022

Our Ref: KEP_SEA_13/2022

Dear Sir/Madam,

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

Ecoscience & Engineering Limited, has been assigned by Dar Al-Handasah Consultants (Shair and Partners) to undertake a Strategic Environmental Assessment (SEA) to update the Feasibility Study of the KenGen Energy Park at Olkaria, Naivasha.

In view of this, Ecoscience & Engineering Limited invites you to a stakeholder workshop scheduled to be held on Friday, 9th September, 2022 at Astorian Grand Hotel Naivasha. Please find purpose to attend or send a representative. The agenda and programme for the meeting are attached.

Kindly confirm your attendance through calling <u>+254_710705056</u> or sending an email via <u>technical@ecoscience.co.ke</u>.

Yours Faithfully ECOSCIENCE & ENGINEERING LINITED P. O. Box 55533-00200 NATROS Philip Abuse

Managing Director,

Ecoscience & Engineering Limited



ECOSCIENCE & ENGINEERING LIMITED. Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobl P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Cell:+254713566825

The Governor,

Nakuru County Government, P.O. Box 2870-20100, Nakuru, Kenya.

Our Ref: KEP_SEA_05/2022

30th August, 2022

Dear Madam,

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

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2870-20100,

Ecoscience & Engineering Limited, has been assigned by Dar Al-Handasah Consultants (Shair and Partners) to undertake a Strategic Environmental Assessment (SEA) to update the Feasibility Study of the KenGen Energy Park at Olkaria, Naivasha.

In view of this, Ecoscience & Engineering Limited invites you to a stakeholder workshop scheduled to be held on Friday, 9th September, 2022 at Astorian Grand Hotel Naivasha. Please find purpose to attend or send a representative. The agenda and programme for the meeting are attached.

Kindly confirm your attendance through calling +254 710705056 or sending an email via technical@ecoscience.co.ke.

Yours Faithfully, ECOSCIENCE & ENGINEERING LINIT 0. Box 55533-00200, HAIROBI Philip Abuor

Managing Director,

Ecoscience & Engineering Limited



ECOSCIENCE & ENGINEERING LIMITED. Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobi P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Cell:+254713566825

Director General,

Kenya Rural Roads Authority, Barabara Plaza, Block B Airport South Road, Opp. KCAA P.o. Box 48151-00100, Nairobi. Kenya

30th August, 2022

Our Ref: KEP_SEA_06/2022

Dear Sir/Madam,

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

Ecoscience & Engineering Limited, has been contracted by Dar Al-Handasah Consultants (Shair and Partners) to undertake a Strategic Environmental Assessment (SEA) to update the Feasibility Study of the KenGen Energy Park at Olkaria, Naivasha.

In view of this, Ecoscience & Engineering Limited invites you to a stakeholder workshop scheduled to be held on Friday, 9th September, 2022 at Astorian Grand Hotel Naivasha. Please purpose to attend or send a representative. The agenda and programme for the meeting are attached.

Kindly confirm your attendance through calling +254 710 705 056 or sending an email via technical@ecoscience.co.ke

ECOSCIENCE & ENGINEERING LIMITED Yours Faithfully P. O. Box 55533-00200 NAIROBI Philip Abuot

Managing Director, Ecoscience & Engineering Limited

CC:

KenGen Dar Al-Handasah Consultants (Shair and Partners)



ECOSCIENCE & ENGINEERING LIMITED.

Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobl P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Cell:+254713566825

Managing Director, Imarisha Naivasha, P.O. Box 2122, Naivasha, Kenya

Copy to: Chief Executive Officer

30th August, 2022

Our Ref: KEP_SEA_23/2022

Dear Sir/Madam,

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

Ecoscience & Engineering Limited, has been assigned by Dar Al-Handasah Consultants (Shair and Partners) to undertake a Strategic Environmental Assessment (SEA) to update the Feasibility Study of the KenGen Energy Park at Olkaria, Naivasha.

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Kindly confirm your attendance through calling <u>+254 710 705 056</u> or sending an email via <u>technical@ecoscience.co.ke</u>.

ECOSCIENCE & ENGINEERING LIMITED Yours Eaithfully, P. O. Box 55533-00200, HAIROBI Philip Abuor.

Managing Director,

Ecoscience & Engineering Limited

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ECOSCIENCE & ENGINEERING LIMITED.

Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobl P.O. Box 55533-00200 Nairobl, Kenya Tel:+254202000582 Cell:+254713566825

Deputy County Commissioner (DCC),

Naivasha Sub-County.

Naivasha, Kenya.

Copy to:

- 1. Assistant County Commissioner (ACC)-Naivasha Sub-County
- 2. Chief- Hells' Gate Location
- 3. Assistant Chief- Olkaria Sub-Location
- 4. Kamere Area Community Leader
- 5. Rapland Area Community Leader
- 6. Ol Mayiena Kubwa Area Community Leader
- 7. Iseneto Area Community Leader
- 8. Narasha Area Community Leader

30th August, 2022

Dear Sir/Madam

Our Ref: KEP_SEA 22/2022

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

Ecoscience & Engineering Limited, has been assigned by Dar Al-Handasah Consultants (Shair and Partners) to undertake a Strategic Environmental Assessment (SEA) to update the Feasibility Study of the KenGen Energy Park at Olkaria, Naivasha.

In view of this, Ecoscience & Engineering Limited invites you to a stakeholder workshop scheduled to be held on Friday, 9th September, 2022 at Astorian Grand Hotel Naivasha. Please find purpose to attend or send a representative. The agenda and programme for the meeting are attached.

Kindly confirm your attendance through calling +254 710705056 or sending an email via

SCIENCE C'ENCINEERING (UNI technical@e coscienc P. D. Box 55533-00200 5033 Yours Faithfully NAIROBI Philip Abuor Managing Director,

Ecoscience & Engineering Limited



ECOSCIENCE & ENGINEERING LIMITED. Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobi P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Cell:+254713566825

Chairperson,

Lake Naivasha Water Resource Users Association (LANAWRUA), Naivasha, Kenya.

Our Ref: KEP_SEA 29/2022

30th August, 2022

Dear Sir/Madam,

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

Ecoscience & Engineering Limited, has been contracted by Dar Al-Handasah Consultants (Shair and Partners) to undertake a Strategic Environmental Assessment (SEA) to update the Feasibility Study of the KenGen Energy Park at Olkaria, Naivasha.

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Kindly confirm your attendance through calling +254 710 705 056 or sending an email via technical@ecoscience.co.ke.

Yours Faithfully OSCIENCE & ENGINEERING LINITED P. O. Box 55533-00200, NAIROBI Philip Abuor

Managing Director,

Ecoscience & Engineering Limited

CC:

KenGen

Dar Al-Handasah Consultants (Shair and Partners)

LAKE NAIVASHA WATT RESOURCES USERS ASSOCIATE P. O. Boy 2117 NATIVATI

Tel: 050 2020205 Email: lanawrua@gmail.com Website: lanawrua.org

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ECOSCIENCE & ENGINEERING LIMITED.

Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobi P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Cell:+254713566825

Managing Director, Naivasha Water and Sanitation Company Ltd. P.O. Box 321, Naivasha, Kenya

Our Ref: KEP_SEA_18/2022

30th August, 2022

Dear Sir/Madam,

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL

Ecoscience & Engineering Limited, has been contracted by Dar Al-Handasah Consultants (Shair and Partners) to undertake a Strategic Environmental Assessment (SEA) to update the Feasibility Study of the KenGen Energy Park at Olkaria, Naivasha.

In view of this, Ecoscience & Engineering Limited invites you to a stakeholder workshop scheduled to be held on Friday, 9th September, 2022 at Astorian Grand Hotel Naivasha. Please purpose to attend or send a representative. The agenda and programme for the meeting are attached.

Kindly confirm your attendance through calling <u>+254 710 705 056</u> or sending an email via technical@ecoscience.co.ke.

ENCE & ENGINEERING LIMIT Yours Faithfull P. O. Box 55533-00200 NAIROBI Philip Abuoi

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Managing Director, Ecoscience & Engineering Limited

CC:

KenGen

Dar Al-Handasah Consultants (Shair and Partners)



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ECOSCIENCE & ENGINEERING LIMITED.

Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobi P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Cell:+254713566825

The Director General

Kenya Marine and Fisheries Research Institute (KMFRI),

P.O. Box 81651-80100,

Mombasa, Kenya.

Copy to: KEMFRI- Naivasha Station Coordinator

Our Ref: KEP_SEA_28/2022

Dear Sir,



30th August, 2022

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

Ecoscience & Engineering Limited, has been contracted by Dar Al-Handasah Consultants (Shair and Partners) to undertake a Strategic Environmental Assessment (SEA) to update the Feasibility Study of the KenGen Energy Park at Olkaria, Naivasha.

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Kindly confirm your attendance through calling <u>+254 710 705 056</u> or sending an email via <u>technical@ecoscience.co.ke</u>.

ECOSCIENCE & ENGINEERING LIMIT Yours Faithfully P. O. Box 55533-00200 t HAIROB!

Philip Abuo Managing Director. Ecoscience & Engineering Limited

CC:

E.W.

KenGen Dar Al-Handasah Consultants (Shair and Partners)



ECOSCIENCE & ENGINEERING LIMITED.

Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobi P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Cell:+254713566825

Chairperson,

Lake Naivasha Riparian Association (LNRA), South Lake Road. Lake Naivasha Riparian Association P.O. Box 1011 – 20117, Naivasha, Kenya.

Our Ref: KEP_SEA_24/2022

30th August, 2022

Dear Sir/Madam,

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

Ecoscience & Engineering Limited, has been contracted by Dar Al-Handasah Consultants (Shair and Partners) to undertake a Strategic Environmental Assessment (SEA) to update the Feasibility Study of the KenGen Energy Park at Olkaria, Naivasha.

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Kindly confirm your attendance through calling +254 710 705 056 or sending an email via technical@ecoscience.co.ke

Yours Faithfully, Philip Abuor

ECOSCIENCE & ENGINEERING LIMITED P. O. Box 55533-00200, NAIROBI

For Siles

Managing Director,

KenGen

Ecoscience & Engineering Limited

CC:

Dar Al-Handasah Consultants (Shair and Partners)



ECOSCIENCE & ENGINEERING LIMITED. Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobi P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Cell:+254713566825

OCS,

Kongoni Police Station,

Our Ref: KEP_SEA 22/2022

Naivasha, Kenya

30th August, 2022

Dear Sir/Madam.

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

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Yours Faithfully 0. Box 555

Philip Abuor

Managing Director,

Ecoscience & Engineering Limited





OSCIE ENGINEERI

ECOSCIENCE & ENGINEERING LIMITED. Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobi P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Cell:+254713566825

Deputy County Commissioner (DCC),

Naivasha Sub-County,

Naivasha, Kenya.

Copy to:

- 1. Assistant County Commissioner (ACC)-Naivasha Sub-County
- 2. Chief- Hells' Gate Location
- 3. Assistant Chief- Olkaria Sub-Location
- 4. Kamere Area Community Leader
- 5. Rapland Area Community Leader
- 6. Ol Mayiena Kubwa Area Community Leader
- Iseneto Area Community Leader 7
- 8. Narasha Area Community Leader

30th August 2022

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SEP 2022

-20117, NA

Our Ref: KEP_SEA 22/2022

Dear Sir/Madam.

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

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Yours Faithfully CENCE & ENGLACEMENT P. O. Box 555 NALS Philip Abuor Managing Director,

Ecoscience & Engineering Limited



COSCIENCE

ECOSCIENCE & ENGINEERING LIMITED.

Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobl P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Cell:+254713566825

Managing Director,

Kenya Electricity Transmission Company Limited (KETRACO)

P. O. Box 34942 - 00100

Nairobi, Kenya. Copy to:

Chief Executive Officer

Our Ref: KEP_SEA 01/2022

Dear Sir/Madam,

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

ENTED

30th August, 2022

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Yours Faithfully SCIENCE & ENGINEERING LIMITED 6033 P. O. Box 55533-00200. NAIROB! Philip Abude,

Managing Director, Ecoscience & Engineering Limited

CC:

KenGen Dar Al-Handasah Consultants (Shair and Partners)



ECOSCIENCE & ENGINEERING LIMITED.

Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobi P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Cell:+254713566825

Naivasha Sub-County Administrator,

Nakuru County Government, P.O. Box 2870-20100, Nakuru, Kenya.

Copy to:

0

- 1. Livestock Officer, Naivasha Sub-County
- 2. Forest Officer, Naivasha Sub-County
- 3. Agricultural Officer, Naivasha Sub-County
- 4. Fisheries Officer, Naivasha Sub-County
- 5. County Education Officer, Naivasha Sub-County
- 6. Social Development Officer, Naivasha Sub-County
- 7. Land and Settlement Officer, Naivasha Sub-County
- 8. Physical Planner Naivasha Sub-County
- 9. Public Health Officer, Naivasha Sub-County
- 10. Environment Officer, Naivasha Sub-County
- 11. Member of County Assembly, Olkaria Ward
- 12. Directorate of Occupational Health & Safety Services, Naivasha Sub-County
- 13. Sub-Regional Manager, WRA

30th August, 2022

Our Ref: KEP_SEA_31/2022

Dear Sir/Madam,

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

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ECOSCIENCE & ENGINEERING LIMITED. Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobi P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Cell:+254713566825

Member of Parliament, Naivasha Constituency, P.O Box 1918, Naivasha, Kenya.

Our Ref: KEP_SEA_39/2022

30th August, 2022

Dear Sir/Madam,

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

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OSCIENCE & ENGINEERING LINITED Yours Faithfully, P. O. Box 55533-00200 MAIROBI Philip Abuos

Managing Director, Ecoscience & Engineering Limited

CC:

KenGen

Dar Al-Handasah Consultants (Shair and Partners)





ECOSCIENCE & ENGINEERING LIMITED. Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobi P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Cell:+254713566825

Project Coordinator.

World Wide Fund for Nature Kenya (WWF-Kenya), P.O Box 62440-00200

Nairobi, Kenya.

Our Ref: KEP_SEA_25/2022

30^m August, 2022

Dear Sir/Madam

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

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COSCIENCE & ENGINEERING LINITED Yours Faithfully. P. 0. 80x 55533-00200 HATROBI Philip Abuor

Managing Director. Ecoscience & Engineering Limited

CC:

KenGen

Dar Al-Handasah Consultants (Shair and Partners)





ECOSCIENCE & ENGINEERING LIMITED.

Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobi P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Cell:+254713566825

Managing Director,

Kenya Association of Manufacturers, Mwanzi Rd Off Peponi Rd, Westlands, P.O Box 30225-00100, Nairobi, Kenya. Copy to: Chief Executive Officer

Our Ref: KEP_SEA_09/2022

Dear Sir/Madam,

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

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SHERS

30th August, 2022

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Yours Faithfully P. O. Box 55533-00200, NAIROBI Philip Abuor,

Managing Director,

Ecoscience & Engineering Limited



COSCIENCE

ECOSCIENCE & ENGINEERING LIMITED. Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobl P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Cell:+254713566825

Chief Executive Officer,

Kenya Private Sector Alliance (KEPSA), 5th Floor, Shelter Afrique House, Mamlaka Rd. P.O. Box 3556-00100, Nairobi, Kenya.

Our Ref: KEP_SEA_11/2022

Dear Sir/Madam,

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

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30th August, 2022

DECE

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ENGINEERING LINITED Yours Faithfully Box 55533-0 NAIROBI Philip Abuor

Managing Director,

Ecoscience & Engineering Limited



ENGINEER

ECOSCIENCE & ENGINEERING LIMITED. Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobl P.O. Box 55533-00200 Nairobl, Kenya Tel:+254202000582 Cell:+254713566825

Chief Executive Officer,

Special Economic Zone Authority (SEZA) AP Old Mutual Tower, 14th Floor Upper Hill Road, Nairobi P.O Box 30418 -00100 GPO. Nairobi, Kenya.

30th August, 2022

email: info@sezauthority.go.ke

web: www.sessuthurity.go.ks

Our Ref: KEP_SEA 12/2022

Dear Sir/Madam,

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

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ECOSCIENCE & ENGINEERING LINITED Yours Faithfully, P. D. Box 55533-00200. HAIROBS Philip Abudr

Managing Director,

Ecoscience & Engineering Limited

CC:

KenGen Dar Al-Handasah Consultants (Shair and Partners)



ECOSCIENCE & ENGINEERING LIMITED. Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobi P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Cell:+254713566825

Director General,

Kenya Wildlife Service P.O. Box 40241 - 00100, Nairobi Kenya

Copy to: Senior Warden- Hell's Gate National Park

Our Ref: KEP_SEA 29/2022

30th August, 2022

Dear Sir/Madam,

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

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Philip Abuor Managing Director, Ecoscience & Engineering Limited

> KenGen Dar Al-Handasah Consultants (Shair and Partners)

> > Page 1 of 1

CC:



ECOSCIENCE & ENGINEERING LIMITED. Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobi P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Ceil:+254713566825

Managing Director,

Imarisha Naivasha,

P.O. Box 2122, Naivasha, Kenya

Copy to: Chief Executive Officer

30th August, 2022

Our Ref: KEP_SEA_23/2022

Dear Sir/Madam,

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

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ECOSCIENCE & ENGINEERING LINITED Yours Faithfully P. O. Box 55533-00200, NATROBI Philip Abuor

Managing Director,

Ecoscience & Engineering Limited



ECOSCIENCE & ENGINEERING LIMITED. Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobi P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Cell:+254713566825

Managing Director,

Elsamere Conservation Centre P.O Box 1497-20117, Naivasha, Kenya.

30th August, 2022

Our Ref: KEP_SEA_26/2022

Dear Sir/Madam,

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

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Yours Faithfoll Xintexce & ENCINEERING LINE P. O. Box 55533-00200. HAIROSI

Philip Abuor,

Managing Director,

Ecoscience & Engineering Limited



2/09/2022


OCOSCIENCE ENGINEERING LTD

ECOSCIENCE & ENGINEERING LIMITED. Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobi P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Cell:+254713566825

Chief Officer

Environment Natural Resources Energy and Water, Nakuru County Government, P.O. Box 2870-20100, Nakuru, Kenya.

30th August, 2022

Our Ref: KEP_SEA_04/2022

Dear Sir/Madam,

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

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Kindly confirm your attendance through calling <u>+254 710705056</u> or sending an email via technicak@ecoscience.co.ke

SCENE I DIGNEE(06 LOU Yours Eaithfully P. O. BOX 55533 NATROS Philip Abuor

Martin Comment

Managing Director,

Ecoscience & Engineering Limited

0727909895 Ennonment Officer

CHIEF OFFICER ENVIOUMENT, ENERGY & 0 2 SEP 2622 RO. BOX 2870-20100.



COSCIENCE ENGINEERING LTD

ECOSCIENCE & ENGINEERING LIMITED.

Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobl P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Cell:+254713566825

Deputy County Commissioner (DCC),

Naivasha Sub-County,

Naivasha, Kenya

Copy to:

- 1. Assistant County Commissioner (ACC)-Naivasha Sub-County
- 2. Chief- Hells' Gate Location
- 3. Assistant Chief- Olkaria Sub-Location
- 4. Kamere Area Community Leader
- 5. Rapland Area Community Leader
- 6. Ol Mayiena Kubwa Area Community Leader
- 7. Iseneto Area Community Leader
- 8. Narasha Area Community Leader

Our Ref: KEP_SEA_22/2022

Dear Sir/Madam,

Recient d! Kus Hellson A.P M. Oduor Tleduman

30th August, 2022

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Kindly confirm your attendance through calling +254 710705058 or sending an email via

technical@ecoscience.co.tr. Yours Faithfully, EUXCENS 1 MoUNT(NG UNIT P. O. Box 55533-00200. WAIR081 Philip Abuor Managing Director.

Ecoscience & Engineering Limited



COSCIENCE

ECOSCIENCE & ENGINEERING LIMITED. Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobl P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Cell:+254713566825

County Director of Environment, National Environment Management Authority (NEMA), PC's Building Block B, 2nd Floor Room 12 P.O Box: 13414, Nakuru. Nakuru. Kenya

Copy to:

Sub-County Environment Officer, Naivasha

Our Ref: KEP_SEA_17/2022

30th August, 2022

Dear Sir/Madam,

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

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ECOSCIENCE & ENGINEERING LIWITED Yours Faithfully P. O. Box 55533-80200, NAIR081 Philip Abuor,

Managing Director, Ecoscience & Engineering Limited

CC: KenGen

Dar Al-Handasah Consultants (Shair and Partners)





COSCIENCE ENGINEERING LTD

ECOSCIENCE & ENGINEERING LIMITED.

Mitsumi Business Park, 11th Floor, Muthithi Road, Westlands Nairobl P.O. Box 55533-00200 Nairobi, Kenya Tel:+254202000582 Cell:+254713566825

Chamber President,

Kenya National Chamber of Commerce & Industry (KNCCI),

Heritan House (Ground Floor), Woodlands Road (Off Argwings Kodhek Road),

P.O. Box 00200-47024,

Nairobi, Kenya.

Copy to:

- 1. Chief Operating Officer
- 2. Director, KNCCI- South Rift Region
- 3. KNCCI- Naivasha

HATIONAL CHARGER OF COMARGER OF AN OF A DOULARTERS HEADQUARTERS 31 AUG 2022 HE CEIVED

30th August, 2022

Our Ref: KEP_SEA_10/2022

Dear Sir/Madam,

RE: INVITATION FOR KENGEN INDUSTRIAL PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) STAKEHOLDER WORKSHOP

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COSCIENCE & ENGINEERING LINITED Yours Faithfully P. O. Box 55533-00200, NAIROBI



Appendix 6: Stakeholders Workshops Minutes

STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) SCOPING REPORT WORKSHOP MEETING MINUTES

VENUE: ASTORIAN GRAND HOTEL, NAIVASHA

DATE: 9TH SEPTEMBER, 2022

LIST OF ATTENDANTS: List Appended

MEETING AGENDA

- 1. Opening Remarks and Introductions
- 2. KenGen Energy Park Masterplan Presentation
- 3. SEA Scoping Report Presentation
- 4. Questions and Answer Session
- 5. Closing Remarks

MIN 09/09/2022-01: OPENING REMARKS AND INTRODUCTIONS

The meeting was called to order at 10:00 am by Philip Abuor, Strategic Environmental Assessment (SEA) assignment team leader. He invited Onduko Rosasi, from Ecoscience and Engineering Limited to open with a word of prayer. He the invited Albert Rioba, Naivasha Sub-County Assistant County Commissioner (ACC) to spearhead the introduction session.

MIN 09/09/2022-02: KENGEN ENERGY PARK AND SEA SCOPING REPORT PRESENTATION

KenGen Energy Park Masterplan presentation was done by Stephen Mbatha, Acting New Business Manager. He highlighted that the proposed industrial park was aimed at leveraging KenGen geothermal resources. He further stated that the industrial park will be entirely implemented within KenGen land. He informed the gathering that the guiding principles in preparation of the industrial park masterplan entailed;

- Cost Efficiency
- Minimize Environmental Impact
- Flexibility
- Quality of the urban development
- Minimize Visual Impact of the development
- Ensure strong connectivity to the site
- Eco Industrial Park: embed Circular Economy & Industrial Symbiosis.

He also stated that the industrial park is mainly targeting energy intensive industries.

Scoping Report Workshop Minutes- September 2022



MIN 09/09/2022-03: SEA SCOPING REPORT PRESENTATION

The presentation was done by Philip Abuor, SEA Team Leader. He highlighted that KenGen contracted Dar Al-Handasah Consultants (Shair and Partners) to undertake feasibility for the proposed KenGen Energy Park. As part of the Feasibility Study, Dar contracted Ecoscience & Engineering Ltd. to undertaking SEA. Among the key aspects that were presented entailed;

- The SEA Process as guided by National SEA Guidelines, 2011.
- The scope of SEA.
- SEA objectives.
- Issues of significance in the SEA study.
- Approach in undertaking SEA.
- SEA timelines and deliverables.

Scoping Report Workshop Minutes- September 2022



MIN 09/09/2022-04: QUESTIONS/COMMENTS AND ANSWER SESSION

No	Name	Stakeholder Comment	Response by Proponent/Consultant
1.	Peter Suyanga- Rapland Community Representative	He requested for clarification on the land area under which the industrial park will be located.	The land under which the industrial park will be located is 18,248,616m ² /i.e. 4509.3 Acres or 1824.9Ha.
2	Rantoine Nkamasial- Rapland Community Representative	Highlighted that Rapland community land is situated downhill of the proposed industrial park.	Respective industries that will be set-up in the industrial park will be required to undertake air dispersion model to determine how pollutants from the industries might impact on the neighbourhoods.
		Highlighted that benefits that will accrue from the proposed industrial park implementation should be documented.	The feasibility study stage including the SEA process is aimed at aiding KenGen to secure licences to operationalize the industrial park. Once
		He also highlighted the need for the local community to be given a priority in job and opportunities arising from the industrial park implementation.	then has been accomplished, KenGen will engage the community so that the shared benefits can be discussed in details.
3.	Charles Wairegi- Naivasha Constituency Member of Parliament Representative	He applauded the SEA process as it will identify most of the negative impacts that might result from the industrial park implementation. This is in addition to the benefits that will come as a result of the industrial park implementation.	•
		He requested for information on whether the Energy Park is working in collaboration or	The Industrial Park is working independently as it at the feasibility stage. However, once the

Scoping Report Workshop Minutes-September 2022

Page 3 of 20

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No	Name	Stakeholder Comment	Response by Proponent/Consultant
		independently of Naivasha Industrial Park. He further enquired whether there was an MOU in place for the type of industries to be established if working in collaboration with Naivasha Industry. If working independently, he requested to know what measures have been put in place the negative or positive impacts that can be experienced through running the two industrial parks.	feasibility study is complete, consultations will be held with the Naivasha Industrial Park. Additionally, it was highlighted that the unique aspect of KenGen Energy Park was that it was seeking to leverage from its geothermal resources.
		He made an enquiry on whether the industrial park was being implemented within the disputed Ngati Farm land as is might have an impact on successful implementation of industrial park.	The site where the industrial park will be located is exclusively within KenGen land which is not disputed. No resettled will be undertaken to facilitate setting up the industrial park.
4.	Muchiri Francis- Hell's Gate National Park Senior Warden	He requested for clarification on the geographical location and extent of the proposed industrial location as the map provided had not indicated so.	A map showing the geographical location of the proposed site was presented. This included Lake Naivasha and Hell's Gate National Park key features that most people were familiar with.
		He further requested for information of the outcome of the 2016 feasibility study and the reason it has not been implemented to date.	The 2016 feasibility study is being revised as a number of changes have occurred since then. This includes legal (e.g. SEZA Act) and economic changes and market values. Additionally, the 2016 feasibility study was not subjected to SEA and this

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No	Name	Stakeholder Comment	Response by Proponent/Consultant
			part of the reason the feasibility study is being revised.
		He was concerned over the unfavorable topography of the area the proposed industrial park is scheduled to be implemented with deep gorges and other topographical features that can be a challenge to infrastructure development.	Infrastructure development will only be carried out on land with a slope of less than 15 ⁶ . Therefore, land with over 15 ⁶ slopes will not be developed and will serve as green zones for other conservation purposes.
		He was concerned over the impacts the industrial park among other proposed developments including Oserian Farm and Naivasha Industrial Park will have on the socio-economic and land use activities in the area. This includes livestock rearing and wildlife habitats. This will lead to reduced grazing lands for Maasai community livestock forcing them to graze their livestock in Hell's Gate National Park leading to human- wildlife conflict This will further compromise livestock farming as well as wildlife habitats and their migration corridors/routes.	The feasibility study has taken into consideration the socio-economic activities as well as sensitive ecosystems in place. SEA will in addition recommend measures that will ensure that the industrial park will not negatively impact wildlife and the Maasai community way of life.
		The masterplan should therefore have a sitting with various environmental agencies including KWS among others to incorporate the	

Page 5 of 20



No	Name	Stakeholder Comment	Response by Proponent/Consultant
		environmental issues of concern in the proposed industrial park.	
5.	Douglas Ongori- Naivasha Sub- County Physical Planner	He stated that the map was presented was not clear.	A map showing the geographical location of the proposed site was presented. This included Lake Naivasha and Hell's Gate National Park key features that most people were familiar with
		He stated that there was need to have a detailed presentation on the types of industries that will be constitute the industrial park.	Among the industries being targeted in the industrial park includes fertilisers, iron & steel, plastics & packaging, fabricated metal products pulp & paper, wood & wood products, textiles and apparel, food & beverages, warehousing and logistics and supporting light industry. This has been detailed in the draft masterplan.
		He further requested for information on integration of the industrial park with other infrastructure including electric lines, connectivity among others.	A map on infrastructure integration in the industrial park is available.
		He also requested information on neighborhood compatibility of the industrial park in terms of accessibility and connectivity.	The industrial park has taken into considerations on the site neighbourhoods. Additionally, all the stakeholders in the neighbourhood will be

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No	Name	Stakeholder Comment	Response by Proponent/Consultant
			engaged to have their concerns and inputs to be incorporated in the programme.
		He further requested for information about whether a biodiversity survey within the site has been carried out to determine whether species within the site will become extinct as a result of the industrial park implementation.	A rapid biodiversity study will be carried out as part of the SEA study to have an inventory on the flora and fauna in the proposed industrial park site. Additionally, based on previous studies, there are no critically endangered species within the proposed site. The biodiversity study will also detail ecosystem services provided by the site species.
6.	Tom Nyaga- Kenya Railways	He highlighted that as expected for an industrial park, good transportation infrastructure will be required to enable efficient transportation of raw materials and finished products. As such, KenGen should engage Kenya Railways early enough in design of railway infrastructure that will suite the industrial park needs, if needed.	KenGen will have a consultative meeting Kenya Railways to have a discussion of the need for a rail infrastructure.
		He further encouraged the industrial park masterplan preparation team to consult other industrial parks in the pipeline in the area to avoid any form of conflict as well as to share available resources.	Consultation with other industrial park in the area will be undertake.

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No	Name	Stakeholder Comment	Response by Proponent/Consultant
7.	Joseph Kariuki- Lake Naivasha Growers Association (L.N.G.A)	He was concerned over the number of industrial parks that are proposed in the area that includes Naivasha Industrial Park, Oserian Industrial Park and KenGen Energy Park. As such, he requested for information on where KenGen Industrial Park will source its water to sustain its operations as well as water sources for other proposed industrial parks in the area.	KenGen intends to source water for the industrial park from boreholes as well as brine water.
8.	Silas Wanjala- Lake Naivasha Riparian Association (L.N.R.A)	He requested for information on the type of industries that will be set-up in the proposed industrial park.	Among the industries being targeted in the industrial park includes fertilisers, iron & steel, plastics & packaging, fabricated metal products pulp & paper, wood & wood products, textiles and apparel, food & beverages, warehousing and logistics and supporting light industry. This has been detailed in the draft masterplan.
		He was further concerned over acid precipitation in Naivasha Town from industries proposed in the industrial park as a result of pollutants dispersed by afternoon northerly winds that are experienced.	Respective industries that will be set-up in the industrial park will be required to undertake air dispersion model to determine how pollutants from the industries might impact on the neighbourhoods.
		He further emphasized on the need for the radius under which a special planning zone beyond the	This was noted and will be recommended.

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No	Name	Stakeholder Comment	Response by Proponent/Consultant
		proposed site so that land use beyond the proposed industrial park can be guided.	
		He further recommended zonation inside the industrial park site ensuring that a green zone/belt is established along the industrial site bordering the Hell's Gate National Park.	Zoning has already been carried out in the draft masterplan ensuring symblosis of industries.
		He finally advised that feasibility study team to consult other plans so that they can be in line with these plans.	Consultation with other available plans in the area will be undertake.
9.	Francis Warui- Naivasha Sub- County Water Officer	Critical infrastructure provision within the industrial park including water provision, waste water and solid water management. This is an important aspect bearing in mind the community living around as well as ecosystems in the area e.g. Lake Naivasha.	Respective industries will be required to have a waste water treatment plant. The treated waste water will then and condensate from geothermal operations will be reinjected in the geothermal reinjection wells.
10.	Lee Okombe- Energy and Petroleum Regulatory Authority (EPRA)	The feasibility study team should take note of regulations that are in advance stage to put into effect the Energy Act, 2019 e.g. Electrical Generation and supply, energy marketing, pricing guidelines among others as they can impact on the industrial park operations.	This was noted and will be reviewed as recommended.

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No	Name	Stakeholder Comment	Response by Proponent/Consultant
11.	Samwet Wamale- Naivasha Sub- County Administrator	In accessing the practicality of the proposed industrial park, he requested for information on how and when the Nakuru County Government technical departments (i.e. roads, health, water, education, social development, planning etc.) will be engaged as they will have a direct input during the implementation of the proposed programme.	All the stakeholders in the area will be engaged to have their concerns and inputs to be incorporated in the programme.
		He further highlighted the significance of public participation including engagement of the host community emphasising that outputs of these meetings should form as part of the plan.	Three public participation meetings have already been undertaken in Rapland, Olomaiyana and Narasha areas. Comments from the community were documented and will have a major part of SEA.
12.	Edward Ngetich- County Government of Nakuru, Environmental Officer	He enquired whether an inventory on the ecosystem services provided by the proposed industrial park site in its current state has been undertaken.	A rapid biodiversity study will be carried out as part of the SEA study to have an inventory on the flora and fauna in the proposed industrial park site. Additionally, based on previous studies, there are no critically endangered species within the proposed site. The biodiversity study will also detail ecosystem services provided by the site species.
		He further noted that as observed, the industrial park will take up most of the proposed land. As such he anticipates that it might be a challenge to	The industrial park will be zoned which will include green zones especially in high slop areas.



No	Name	Stakeholder Comment	Response by Proponent/Consultant
		implement the climate change effect of the industrial park if all the land is taken up by industries.	
13.	Jackson Torinke- Narasha Community Representative	He stated that Narasha community is concerned as the proposed industrial park site land serves as their grazing land that will be lost through the implementation of the programme.	The feasibility study has taken into consideration the socio-economic activities. SEA will in addition recommend measures that will ensure that the industrial park will not negatively the Maasai community way of life.
		He further highlighted that noise levels will be increased from the already high noise levels experienced through current KenGen operations through setting up of more industries.	Baseline noise of the site will be documented for future reference once the industrial park is operational.
		He was also concerned about inflow of workers in the area to work in the industries. This will lead to intermarriages that will lead to cultural erosion of the native Maasai community as well as endangering their existence.	This was noted and a recommendation will be provided to mitigate against this possibility.
14.	Sanare Kishanto- Olomaiyana Kubwa Community Representative	He highlighted that a gorge that is located approximately 3 Km form the proposed industrial park site is a key tourist site whereby a number of locals serves as tour guides. This is in addition to it serving as a water catchment area. This might	The masterplan has ensured that zoning is done to ensure features such as gorges and hills will serve as conservation zones or green zones.

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No	Name	Stakeholder Comment	Response by Proponent/Consultant
		be affected once the industrial park is implemented.	
		He was concerned over traffic congestion through an access road that serves KenGen, Olomaiyana area, Narasha area and Rapland area once the industrial park is implemented. Towards this, he recommended to have an access through 922 that will reduce on possible traffic build up.	The masterplan has proposed for the access from Olkaria 4 and 5 to be extended to Suswa serving as the main assess road to the industrial park.
		He was enquired on how a hill within Olkaria 5 will be managed as it is located within the industrial park site.	The masterplan has ensured that zoning is done to ensure features such as gorges and hills will serve as conservation zones or green zones.
		He was further concerned over accumulation of hydrogen sulphide from industrial emissions as this will negatively affect them.	It was noted that hydrogen sulphide is mainly from geothermal exploration activities and not from industrial activities as the community members stated. However, industries that will be set-up in the industrial park will be required to undertake air dispersion model to determine how pollutants from the industries might impact on the neighbourhoods.
15.	Paul Kiseto Masororo- Rapland Community Representative	He was concerned that the community might lose their grazing land through the implementation of the industrial park. Towards this, he requested for a meeting with the community and KenGen to	The feasibility study has taken into consideration the socio-economic activities. SEA will in addition recommend measures that will ensure that the

Page 12 of 20

No	Name	Stakeholder Comment	Response by Proponent/Consultant
		deliberate on how the residents will benefit from the programme in terms of earning their livelihoods if they happen to lose their gazing lands.	industrial park will not negatively the Maasai community way of life.
		He was further concerned over increased prevalence of sexually transmitted diseases as a result of the interactions between the community and the industrial park workforce. He stated the importance of public awareness on sexually transmitted diseases.	This was noted and will be recommended in the SEA Report.
16.	Rapland Community Representative	He requested for information on the industrial park plans on a gorge that was closed to public. He stated that KenGen should put in place a plan on how to harvest the storm water as it has the potential to bring more damages once the industrial park is implemented.	This was noted and will be recommended in the SEA Report.
17.	Rapland Community Representative	He requested for information on the proposed industrial park implementation timelines.	The industrial park is at the feasibility stage as hence no timelines have been set on when the industrial park implementation will take place.
18.	Damarice Waithera- Hell's Gate Assistant Chief	She proposed for a site visit to be organized so that all the stakeholders can appreciate the proposed industrial park site.	This was noted and would be recommended.

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MIN 09/09/2022-05: CLOSING REMARKS

The ACC applauded all in attendance for their active participation in the workshop. Additionally, the SEA Team Leader informed the workshop attendees that further comments on KenGen Energy Park SEA should be sent via <u>technical@ecoscience.co.ke</u>. He finally invited Salome Gikonyo, from NEMA to give the closing remarks and to close with a word of prayer. The meeting was adjourned at 4:00 pm.

Scoping Report Workshop Minutes- September 2022















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Meeting Prepared by:	Name & Organization: Cyrus Kiambati, Ecoscience & Engineering Ltd.
	Date: 14th September, 2022
	Signature and Stamp: ECOSCIENCE & ENGINEERING LTD. P.O. Box 55533 · 00200, NAIROBI
Meetings Confirmed by:	Name & Organization:
	Date:
	Signature and Stamp:

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Appendix 7: Stakeholders Questionnaires and Consultation Log



KenGen

STRATEGIC ENVIORNMENTAL ASSESSMENT (SEA) FOR PROPOSED KENGEN ENERGY PARK LOCATED AT OLKARIA, NAIVASHA, KENYA

STAKEHOLDER CONSULTATION

DEPARTMENT OF HEALTH

INTRODUCTION

KenGen contracted Dar Al-Handasah Consultants (Shair and Partners) to update the Feasibility Study of the KenGen Energy Park at Olkaria, Naivasha. As part of the Feasibility Study, Dar Al-Handasah Consultants (Shair and Partners) sub-contracted Ecoscience & Engineering Limited to undertake a Strategic Environmental Assessment (SEA).

In view of this and in cognisance with National SEA Guidelines, Ecoscience & Engineering Limited intends to engage various stakeholders to have an understanding on their thematic areas of operations in relation to proposed programme. This will further present the stakeholders an opportunity to give their views in reference to KenGen Energy Park Feasibility Study.



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KenGen	
INTRODUCTION	
As one of the identified stakeholders, kindly provide feedback to the questi in the following sections.	ons
1. Kindly provide a list of health facilities within the proposed programme area.	
- Alliant dimension	=
- MATELLA ATRAPTH CENTRE	
- NGONOL DESPENSART	
- MOINDABL HEALTH CONTRE	_
- KILKONTO DISPONSARY	_
- NUTTERED DISPENSAL	_
	-
Kindly provide a list of 5 most common diseases in the proposed programme area.	
Francisco Depeser	_
LIPPER & LOWER RESPIRATORY INFECTIONS	
EYE CONDITIONS (CONTINUTIONS	_
MUSCO SKELETAL CONDITIONS	_
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A	_
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3. What are the main health challenges within the proposed programme area?	-
1 HUV & APPS INTRECTIONS	-
2 TEMAGE PLEG MANGLES	-
3 OLCOTOL & DILIGS ABUSE	
4. MALNUTRITION	_
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	-
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KenGen KenGen 6. What negative impacts do you foresee from the proposed KenGen Industrial Park? etter pmental 271 DOIL Un tol this P in P egr 3 atal DOLDU ir eare ave 4 OI 1 C th 0 onny 4 Mashnooming nong 7. Please suggest how the anticipated negative impacts can be managed: 2 megyres industrie all 10 (VI GV2) In gwate (Said · Proper 2poxal utanh TC that fluest. (2) Phonde GA Die regime epa Amit g hegite throu OUNTER Megoyr (3) THE 16 development plannih 0 com ming (4) Proper Hereit (5) A11 Indubites on Q. -0 Ciclui dependents DY tton im (6) ngh) and Hovermit deponent T4 wites Gel 1 8. What other recommendations do you have for the study team? NON 8 Page 5 of 6 dar Ocoscience NGINEERING LTD



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STAKEHOLDER CONTACTS:

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THANK YOU FOR YOUR TIME AND INPUTS



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STRATEGIC ENVIORNMENTAL ASSESSMENT (SEA) FOR PROPOSED KENGEN ENERGY PARK LOCATED AT OLKARIA, NAIVASHA, KENYA

STAKEHOLDER CONSULTATION

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INTRODUCTION

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In view of this and in cognisance with National SEA Guidelines, Ecoscience & Engineering Limited intends to engage various stakeholders to have an understanding on their thematic areas of operations in relation to proposed programme. This will further present the stakeholders an opportunity to give their views in reference to KenGen Energy Park Feasibility Study.





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	KenGen	
	QUESTIONS	
	As one of the identified stakeholders, kindly provide feedback to the questions in the following sections.	
	1. Kindly provide your general comments in reference to the proposed programme.	
	The a good project & looking formed to it.	
	2. What positive impacts do you foresee from the proposed KenGen Industrial Park?	
	O Creation of employment	
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5. What other recommendations do you have for the study team?

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STAKEHOLDER CONTACTS:

Name:	Judith Materia	
Contacts:	Tel/Mobile: e-mail: 0720754791 imutertsi@gmail.com	
Organization Represented:	Dozek	
Designation:	Sub-County Occupational system & Health Sphie	
Locality:	Depity County Communicity compared, habour	Office
Date:	119/2022	Qr
Signature:	Attatest	
Official Stamp: (if available)	H DEPRESE INCRASES P.O. Box 311-20127 NAIVASEA Determined B 2021	

THANK YOU FOR YOUR TIME AND INPUTS



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STRATEGIC ENVIORNMENTAL ASSESSMENT (SEA) FOR PROPOSED KENGEN ENERGY PARK LOCATED AT OLKARIA, NAIVASHA, KENYA

STAKEHOLDER CONSULTATION

WATER RESOURCE AUTHORITY

INTRODUCTION

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INTRODUCTION

As one of the identified stakeholders, kindly provide feedback to the questions in the following sections.

1. Kindly provide a list of water resources in the programme area?

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2. What is i	the capacity of Lake I	Naivasha? the lake	iu 130	ikm ² at	1554 m
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KenGen KenGen What positive impacts do you foresee from the proposed KenGen Industrial Park? 8. venue Winne marosi ĺι li 9. What negative impacts do you foresee from the proposed KenGen Industrial Park? i 10. Please suggest how the anticipated negative impacts can be managed: 0 790 ili 0



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STRATEGIC ENVIORNMENTAL ASSESSMENT (SEA) FOR PROPOSED KENGEN ENERGY PARK LOCATED AT OLKARIA, NAIVASHA, KENYA

STAKEHOLDER CONSULTATION

KENYA POLICE

INTRODUCTION

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Page 1 of 5



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	2. What are the main insecurity issues within the proposed programme area?
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	4. Demuide your general comments is reference to the proced KanGan Energy Park
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		$\overline{\mathbf{O}}$
		KenGen
	8. What other recor	nmendations do you have for the study team?
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	STAKEHOLDE	R CONTACTS:
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	Contacts:	Tel/Mobile: e-mail:
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STRATEGIC ENVIORNMENTAL ASSESSMENT (SEA) FOR PROPOSED KENGEN ENERGY PARK LOCATED AT OLKARIA, NAIVASHA, KENYA

STAKEHOLDER CONSULTATION

DEPARTMENT OF EDUCATION

INTRODUCTION

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4. Kindly provide you L: Chew 27,18 Shall	ir general comments in reference he care for the or	e to the proposed programme.
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Page 4 of 6

6. What negative impacts do you foresee from the proposed KenGen Industrial Park?
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7. Please suggest how the anticipated negative impacts can be managed:
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8. What other recommendations do you have for the study team? Create a kide play greaned once a couple might visit and bring their kide along Mot of treas checked be grown to create chades.
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STAKEHOLDER CONTACTS:

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	Grace Wambui Tel/Mobile: 0703231219 Mmistry of ICT officer Naivasha 1927 SUB-COUNTY DIREC OF EDUCATIO MAIVAGHA

THANK YOU FOR YOUR TIME AND INPUTS



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STAKEHOLDER CONSULTATION

LAKE NAIVASHA MANAGEMENT ORGANISATIONS

INTRODUCTION

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The table below presents a summary of land uses proposed by KenGen Energy Park Masterplan. Table 1: Proposed Land Uses

Land Classification	Land Use	Total Area (m ²)	Site Total Land Use Proportion	
	Fertilisers			
Medium/Heavy	Iron & Steel	4 450 005	0.000	
Industrial	Plastics & Packaging	1,152,635	6.3%	
	Fabricated Metal products			
	Pulp & Paper	112,362	0.6%	
Steam Intensive	Wood & Wood Products	165,486	0.9%	
Industrial	Textiles and Apparel	700.040		
	Food & Beverages	- 190,646	4.3%	
	Textiles and Apparel	C10 005		
Light Industrial	Food & Beverages	518,835	2.8%	
Light industrial	Warehousing and Logistics	C 47 400		
	Supporting Light Industry	- 547,156	3.0%	
Non-Industrial	Non-Industrial	131,210	0.7%	
	Proposed Utilities	139,170	0.8%	
	Existing Utilities	1,602,022	8.8%	
	Future Phases	1,771,997	9.7%	
Unsaleable Land	Conservation Area	1,829,649	10.0%	
	Open Space	456,813	2.5%	
	Green Belt	8,091,009	44.3%	
	Road	939,626	5.1%	
Total		18,248,616	100.0%	



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Ocoscience

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Gcoscience

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INTRODUCTION

As one of the identified stakeholders and bearing in mind the proximity of the proposed KenGen Energy (Industrial) Park to Lake Naivasha, kindly provide feedback to the questions in the following sections.

- 1. What are the main challenges facing Lake Naivasha?
 - a. Over exploitation of the lakes resources is presently the main challenge facing Lake Naivasha; specifically water resources, fish and other derived ecosystem services.
 - b. Over population in townships leading to insecurity
 - c. Encroachment and destruction of some parts of the lakes riparian and littoral buffer zones.
 - d. Pollution emanating from point and non-point sources.
 - e. Human wildlife conflict and other human to human resource use related conflicts.
- 2. What is currently being done in addressing challenges facing Lake Naivasha?
 - a. A multiagency approach has been initiated with interagency coordination under the leadership of the office of the County Commissioner (Nakuru) and the Deputy County Commissioner (Naivasha) to address some security and resource use challenges in the fisheries subsector.
 - A process of preparing a Lake Naivasha Fisheries Management Plan is in progress.
 - c. Stakeholders have routinely mobilized resources to carry out lake and estate cleanups to mitigate on solid waste pollution in the lake.
 - d. There exists a water allocation plan that helps regulate surface and groundwater abstractions across the lake's catchment.
 - e. To reduce human wildlife conflicts, stakeholders are working to open up wildlife dispersal corridors to link the lake with other adjacent ecosystem to ease wildlife dispersal and movement.
- 3. What are your general comments in reference to the proposed KenGen Energy (Industrial) Park and sourcing of water from Lake Naivasha for use in the industrial park?
 - a. There exists a disjointed and uncoordinated water resource use planning in Naivasha where planning is done in silos by developers, agencies and ministries all targeting to source water from the same resource. This is a bad precedence that will put these capital intensive projects into jeopardy. For instance, we have interacted with documents of a number of proposed projects and programs whose feasibility studies have pointed at sourcing water from the lake. Abstraction surveys have already raised concerns of present over abstraction of lake water.







The planned Naivasha SEZ is already abstracting from the lake's ground water table and have a proposed plan to dam River Malewa, one of the key recharge sources for the lake. A number of Developers within the larger Kedong Ranch are also targeting to source water from the lake. This uncoordinated plans are a threat not only to the lake but also to the long-term sustainability of the investments bearing in mind that Lake Naivasha is highly erratic with regard to stability of lake level.

Having pointed the above, we strongly recommend that the project proponent undertakes a hydrological study to determine other water sources that can support the project other than the lake and then plan backwards based on the findings of the study so as to cushion the planned investments from water related challenges as Naivasha is generally a water scarce area. One can only allocate water that is available, thus the projected water demand for the project should first be guided by a study that determines how much water is available. How sustainable is the water abstraction plan? We also recommend that the project proponent considers targeting industries with less water intensity demand.

- b. Where will the waste from the fertilizer, textile and plastics go? Is there a Waste Management Plan in place? Manufacturing hubs in Kenya are often associated with major environmental pollution, Nairobi being a significant example. If not well planned, there is a great risk of establishing another pollution hub in Naivasha. Proper environmental planning is essential.
- c. The proposed project area is adjacent to Hell's Gate National park. There is a great risk that project will impact on wildlife in the neighboring park.
- d. The risk of environmental pollution is high going by the choice of the targeted industries. Is textile not highly pollutant and does this not take a high volume of water?
- e. Based on the project location, we would like to point out that transport infrastructure is key and all stages of project implementation. What access routes are the project proponents targeting to use during the construction and the operation phase? Do they intend to use South Lake road or Suswa side? We fear that transporting heavy material along recently re-carpeted south lake road will destroy it. We recommend that the proponent considers minimizing the use of the busy South lake road. Proper planning for the transport infrastructure is key for both the construction and the operation phase.
- f. The general Soil structure around Naivasha, including the project area, is loose volcanic ash. Has erosion been considered wherein the industrial park is being constructed on purnice land?

4. Kindly provide a summary of positive impacts you anticipate through the implementation of KenGen Energy Park?

a. Naivasha's economy is largely founded on Horticulture, Tourism/ Hospitality, Geothermal Power Generation and Fisheries, with less manufacturing. Implementation of the planned project will to a greater extent stir the expansion of the Manufacturing sector and contribute towards establishing Manufacturing as an economic base sector.



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- b. The proposed project will create employment opportunities and will also have other economic stimulus opportunities for other sectors in Naivasha.
- c. The implementation of the project will also hugely contribute to the National Gross Domestic Product (GDP) and Gross National Income (GNI) and will be a major foreign exchange earner.
- 5. Kindly provide a summary of the potential negative impacts you anticipate in reference to the proposed KenGen Energy Park.
 - a. Going by the choice of industries of target, there exists a great likelihood of pollution of water source, soil and air. Textile industries have been known to be one of the industries that have a greater pollution footprint. The risk of acid rain is eminent. Naivasha often experiences string winds that blow northwards in the afternoons. The project being located on the southern side of Naivasha poses a risk as any atmospheric emissions from the proposed industries (including sulphur) is likely to condense and later precipitate in the lake. This is not only a threat to the lake's biodiversity, but also threatens to destroy the horticultural industry that directly depends on the lakes freshness. The Horticultural sector operates under strict quality standards and any trace of sulphur and any other contaminants on the produce will jeopardize the sector as the produce will get rejected by the market.
 - b. There is a high risk of depletion of water sources as a result of over abstraction of existing sources if proper planning is not done. Some of the targeted industries have huge water demand and Naivasha being generally a water scarce area, the risk of depletion of water resources and recurrence of water use conflicts is eminent in the event of prolonged drought and failed rains.
 - c. There is an eminent risk of culture contamination/ erosion and even collapse, which is often accompanied with vices that stir trends of drug and alcohol use, insecurity, prostitution etc. It is anticipated that the project will trigger an episode of migration as people will be attracted to Naivasha in search for opportunities. This will likely bring people of diverse racial, tribal and cultural backgrounds to interact with the native community. The native Pastoralist community that is adjacent to the proposed project area also risks losing their way of life and also risk being outcompeted by the incoming populations in accessing opportunities.
 - d. The proposed project is also likely to lead to mushrooming of housing and other commercial investments and uncontrolled/uncoordinated development beyond the project area thus causing land use and physical planning challenges.
 - e. Increased population around South Lake due to the jobs created from industrial park. As much as the project will create Employment and investment opportunities, where will all these people live/be housed? Current townships over stretched. How will Naivasha accommodate the migration populations that come to look for opportunities at the industrial park and how will the issues the increased population brings be dealt with for e.g. waste management, water use?



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f. Being on the border with Hells Gate, the proposed industrial park may impact on wildlife movement between Hell's Gate National Park and Mount Longonot National Park. Securing corridors in and out of the park is essential.

6. What are your recommendations in mitigating the highlighted negative impacts in (4 above)?

- a. As much as the project proponent may not have influence beyond the project area, we recommend prior engagement with respective planning agencies (National and County) so as to have controlled development beyond the project area and also plan for the provision of housing and related infrastructure beyond the industrial park. There is need to establish (gazette) a certain radius as a special planning area so as to have controlled development, land use and physical planning beyond the project area. This planning should also include planning for the development of supporting infrastructure.
- b. There is need to carry out hydrological studies on surface and ground water, to guide on sustainable water allocation. Water allocation planning should accommodate all demands (present and planned/ projected demand) so as to cushion the ecosystems and investments from water abstraction related risks and uncertainties. Ensuring the analysis of the volume of water abstraction needed from the lake should be thoroughly conducted to make sure the industrial park does not deplete Lake water level. We strongly recommend that project planning be guided by water availability so that water quantities influences other project aspects.
- c. We propose that the project proponents considers relooking at the choice of targeted industries and only consider industries with minimal water demand and those with less pollution risks. We strongly believe that textile and apparel industries are not ideal, based on their pollution and water demand profile.
- d. With regard to pre project planning, we recommend that plans be put in place with considerations of accessing the project area from Suswa side and not South Lake side during the project construction and project operation phases.
- e. To cushion wildlife from the project impacts, we recommend that a buffer zone (green zone) be established on areas adjacent to Hells Gate National Park and only lighter land use practices that are friendly to wildlife be undertaken within this belt. We also propose that wildlife dispersal corridors be considered in the planning so as to maintain the free movement of wildlife between Hell's Gate and Mount Longonot National Parks.
- f. To cushion the from eminent pollution, the project proponents should conduct an Environmental Risk Assessment that targets to map the extent of the risk and based on the outcome of the assessment, implement recommendations that target to mitigate the pollution risks.
- g. We also recommend that the project proponent vets the technologies being brought by the investors and only accept investments with current technological advancement and those with minimal pollution footprints/ risks and uncertainties.
- h. We recommend that the project proponent sets up strict standards and codes of operation to guide on how the investments will be established and operated. This should include sanitation and waste management standards. Strict enforcement of these standards is essential.



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 The project proponent should put in place a state of the art Research Department that is dedicated to conduct routine Monitoring and Evaluation. Customized research, monitoring and evaluation protocols are essential.

7. What other recommendations do you have for the SEA Study Team?

STAKEHOLDER CONTACTS:

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Lake Naivasha Riparian Associ	ation
General Manager	
Naivasha (Airspray, South Lake	Rd)
November 11, 2022	
Adat	
Hours	
LAKE NA BIPARIAN AS	IVASHA ISOCIATION
	Silas Wanjala Tel/Mobile: +254 729834870 Lake Naivasha Riparian Associ General Manager Naivasha (Airspray, South Lake November 11, 2022

THANK YOU FOR YOUR TIME AND INPUTS





KenGen

STRATEGIC ENVIORNMENTAL ASSESSMENT (SEA) FOR PROPOSED KENGEN ENERGY PARK LOCATED AT OLKARIA, NAIVASHA, KENYA

STAKEHOLDER CONSULTATION

OSERIAN FARM

INTRODUCTION

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Ocoscience

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THANK YOU FOR YOUR TIME AND INPUTS



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KENGEN ENERGY PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA)

KEY STAKEHOLDERS CONSULTATION LOG

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KenGen MINUTES FOR A KEY STAKEHOLDER MEETING HELD AT HELL'S GATE EDUCATION BOARDROOM FOR THE PROPOSED KENGEN ENERGY PARK

Date: 9th December, 20222 at 11:20 am

In Attendance: List Appended

MEETING AGENDA

- 1. Opening Remarks
- 2. Summary Description of the Proposed KenGen Energy Park Impacts Identified.
- 3. Stakeholders Inputs.
- 4. Closing Remarks.

MIN 09/12/2022-01: OPENING REMARKS

The meeting was called to order at 11:20 a.m. by Senior Warden Francis Muchiri who opened the meeting with a word of prayer. He called upon members in attendance to introduce themselves. He further informed the sitting about the meeting agenda whereby he stated that the meeting was aimed at having Hell's Gate National Park management and research team inputs in reference to the proposed KenGen Energy Park. He later welcomed Cyrus Kiambati and Dickens Odeny to present a brief description of the proposed masterplan.

MIN 09/12/2022-02: SUMMARY DESCRIPTION OF THE PROPOSED KENGEN ENERGY PARK IMPACTS IDENTIFIED

Mr. Cyrus Kiambati informed the sitting that KenGen have plans in establishing an Energy Park within their Olkaria Geothermal Operations areas. The land under which the Energy Park is proposed is 1824.856 Ha in size and is located entirely within KenGen land. Some of the industries proposed in the Energy Park will include;

- Fertilisers;
- Iron & Steel;
- Plastics & Packaging;
- Fabricated Metal products;
- Pulp & Paper;

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- Wood & Wood Products;
- Textiles and Apparel;
- Food & Beverages;
- Warehousing and Logistics; and
- Supporting Light Industry.

The proposed Energy Park site will also constitute of;

- Non-Industrial areas;
- Proposed Utilities;
- Existing Utilities;
- Future Phases;
- Conservation Area;
- Open Space;
- Green Belt; and
- · Roads.

In ensuring sustainable implementation of the proposed plan, Strategic Environmental Assessment (SEA) is key. SEA is aimed at identification of all masterplan impacts. A summary of impacts of that might affect Hell's Gate National Park as presented by Dr. Dickens Odeny included;

- Barrier to wildlife movement e.g. giraffes and buffalos;
- Human-wildlife conflicts;
- Inhibited wildlife movement will reduce vegetation and grass population due to reduced rate of seeds dispersal by wildlife;
- Introduction of alien invasive species through construction machineries and vehicles;
- Increased volume of storm water leading to flooding cases leading to soil erosion, landslides, mud slides as well as affecting areas biodiversity coverage;
- Increased wildlife fatalities and accidents due to increased traffic flow if speed controls measures are not put in place;
- Environmental pollution from liquid waste and solid waste from the industries. Consumption of the liquid waste from the Energy Park by wildlife might lead to fatalities of chronic diseases;
- Air and noise pollution from the industrial operations leading to wildlife communication barrier; and

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 Visual intrusion due to introduced infrastructure in the Energy Park distorting the visual conditioning in the area that are key for wildlife navigation this is in addition visual therapy offered by the landscapes in their current state.

MIN 09/12/2022-03: STAKEHOLDERS INPUTS

Below is a summary of the key issued raised by the Kenya Wildlife Service (KWS) and Wildlife Research and Training Institute (WRTI) representation.

- Impacts analysis should also include the operation phase of the Energy Park;
- The Energy Park implementation will also impact on birds' flight path;
- Increased population due to the required workforce in the Energy Park implementation should be captured in the SEA assessment. This is in in addition to social facilities provision in support of the increase in population;
- KenGen should consider planning beyond the proposed site as development will extend beyond;
- SEA mitigation measures and monitoring plan should be shared with KWS team;
- There should be continuous monitoring of impacts of the proposed Energy Park;
- KWS and WRTI should be park of the KenGen Energy Park environmental monitoring team during the masterplan implementation;
- Naivasha as a whole is wildlife are based on the location of Longonot and Hell's Gate National parks outlining the sensitivity of the proposed plan. In view of this, KenGen should introduce an eco-aspect;
- Implementation of the Energy Park will isolate Maasal community from Nalvasha area due to lack of access;
- Implementation of the proposed Energy Park will lead to diminished grazing land forcing residents to graze along the road corridors;
- With an increase in traffic along the Kongoni-Mol South Lake Road, expansion of the road should be considered;
- The Energy Park site surroundings are mainly constituted of the native Maasai community whereby minimal development are in place. Implementation of the Energy Park therefore puts the Maasai community cultural practices at risk if appropriate measures are not put in place;
- The proposed KenGen Energy Park should be incorporated in Hell's Gate-Longonot National Parks Management Plans;

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- The proposed Energy Park will contribute to increased poaching if appropriate measures are not put in place. To mitigate this, more enforcement through deployment of more vehicles should be recommended as part of the Energy Park monitoring plan;
- The source of water for Energy Park operations should be covered in the SEA report;
- Waste water management from the Energy Park operation should be adequately covered; and
- SEA should also come up with mitigation measures in preventing possible emergence of informal settlements due to increase demand for housing for Energy Park workers.

MIN 09/12/2022-03: CLOSING REMARKS

Having no any other matter of discussion the Senior Warden; Francis Muchiri Adjourned the meeting at 12:45 p.m.

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Appendix 8: Public Meetings Minutes

Narasha Village Meeting

KenGen MINUTES OF THE PUBLIC CONSULTATION MEETING ON SEA FOR THE PROPOSED KENGEN ENERGY PARK PROGRAMME HELD ON 2ND SEPTEMBER 2022 AT NARASHA VILLAGE, HELL'S GATE LOCATION, NAIVASHA SUB-COUNTY IN NAKURU COUNTY

IN ATTENDANCE

List appended

AGENDA

- 1. Introductions
- 2. KenGen Energy Park Presentation
- 3. SEA Process Presentation
- 4. Plenary Session
- 5. Closing Remarks

MIN 02/09/2022-01: INTRODUCTION

The meeting was opened by the Area Chief at 3.00 PM who invited Pastor Brian to open the meeting with prayer. He invited the assistant chief and the Assistant County Commissioner to introduce themselves. The Assistant County Commissioner proceeded to state the agenda of the meeting as a public participation meeting and invited the KenGen team and the Consultant team to take over the meeting.

MIN 02/09/2022-02: KENGEN ENERGY PARK PRESENTATION

Mr. Joseph Njeru gave a summary of the proposed Industrial Park (KenGen Energy Park) which KenGen had plan of setting up through leasing of land to different industries who are heavy power consumers. KenGen in turns seeks to leverage its geothermal power capacity at Olkaria to serve as an additional source of revenue generation – from both the sale of power (and other derivatives such as steam/water, geothermal brine, condensate etc. as applicable) to the said industries.

The industries would be zoned depending on potential impact which would include Light industries, Medium Industries and Heavy Industries

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Narasha Village Public Consultative Meeting Minutes-September 2022

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MIN 02/09/2022-03: SEA PROCESS

 Ecoscience representative explained that the Environmental Management and Coordination Act (EMCA), 1999, (amended in 2015) is the framework law on environmental management in Kenya and gives the guidelines for the SEA process and the projects that require the undertaking SEA. He explained the difference between SEA and EIA in relation to the proposed project.

 The SEA process entails screening a programme to determine whether SEA is required or not, and if needed, the level of scrutiny (environmental assessment) that the programme should be subjected to. Screening is following by a baseline and scoping study to determine the nature and magnitude of anticipated environmental and social impacts

 The KenGen Energy Park Plan was being subjected to SEA to enable an in-depth identification and analysis of potential impacts, and subsequent devising of appropriate mitigation and enhancement measures. This was determined by way of consideration of the nature of anticipated environmental and social impacts in terms of severity, ease of reversibility, longevity and the geographical scope which may be impacted by the programme,

 Stakeholder consultation is a key aspect of the SEA and, is anchored in the Constitution of Kenya 2010 and also supported by the Public Participation Bill of 2018. It is therefore crucial that stakeholders in any given development are identified and engaged at various levels with an aim of obtaining their views, concerns, suggestions and recommendations, to be incorporated in the project. Ecoscience explained that was the reason that stakeholder's engagement was being carried out with various parties including the national government institutions, county government, professional bodies, Local communities, religious leaders and the private sector.

 Impact prediction and analysis paves way for the development of the ESMP whereby appropriate mitigation measures are devised for anticipated adverse impacts and enhancement measures are suggested for positive impacts

 The SEA Consultant will prepare an elaborate ESMP to cater for all anticipated programme impacts. Some of the mitigations measures to be proposed will largely be informed by best industry practice that programme workers abide by a stringent code of conduct to curtail adverse impacts to the neighbouring communities.

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 Once the Draft SEA Report is submitted to NEMA, the Authority despatch's the draft SEA report to the stakeholders for comments to be received within forty-five (45) days. The draft report is published for two successive weeks in both the Kenya Gazette and a newspaper with a nationwide circulation for comments to be received.

 After the expiry of the commenting and public disclosure period, the institution will engage the stakeholders in reviewing and validation of the draft SEA report under the coordination of NEMA. The Authority may constitute a TAC to review and provide independent technical comments for consideration

 The final SEA report is prepared by the SEA expert(s) (incorporating the comments from all stakeholders and TAC) and duly endorsed by the ministry/institution/proponent for submission to the Authority

MIN 02/09/2022-04: INTERACTIVE SESSION WITH PARTICIPANTS

The meeting then progressed to an interactive session whereby the participants were given the opportunity to ask questions, make comments, seek clarification, air their views, concerns and recommendations for incorporation into the programme development

Participant	Issue / comment	Responses
Jacob Kiano	Enquired on the exact location of the industrial park	Maps were distributed to the members showing the exact location for the proposed park
David Odupoi	Raised the issue of previous projects by KenGen not really benefiting the community and what would be different this time around	There was need to separate previous projects with the current one The community will have a chance to engage the different industries setting up on how the community can benefit through the implementation

Narasha Village Public Consultative Meeting Minutes-September 2022

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Participant	Issue / comment	Responses
John Shaa	Raised concerns on the effect the park would have on both domestic and wildlife. Enquired whether there be sections in the park set aside for conservation considering the park will occupy a very large area	A biodiversity assessment is being conducted along the SEA to predict the impacts the project would have on wildlife and the best way to conserve them The industrial park would have designated green zones and hence not all areas would be under development
Duncan Sencho	Enquired on the measures in place to ensure the community at Rapland are protected from pollution	EIA would be conducted for every industry that would set up, this would involve consultation with the community on the impacts expected and how they would be addressed to protect the community leaving near the park
	Raised Concerns on human - wildlife conflict would be addresses considering that the industrial park will be within a Hells gate national park	Engagement with Kenya Wildlife Service will be done to ensure that the potential human -wildlife conflict can be addressed The industrial park would have a perimeter wall to restrict interaction between people and the wildlife
David Kanyike	Enquired on how the waste water from the industries will	Waste water would be treated before being re-injected in to

Narasha Village Public Consultative Meeting Minutes-September 2022

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Participant	Issue / comment	Responses
	affect the community down from the industrial park	underground recharging wells to limit pollution

MIN 02/09/2022-05; CLOSING AND ADJOURNMENT

The Assistant County Commissioner adjourned the meeting at 5.20 PM. He thanked the community for availing themselves for the meeting and requested the Pastor Brian to end the meeting with a word of prayer.

Narasha Village Public Consultative Meeting Minutes-September 2022

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KenGen Energy Park Draft SEA Report 2023

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KenGen Energy Park Draft SEA Report 2023

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Olemaiyana Village Minutes



MINUTES OF THE PUBLIC CONSULTATION MEETING ON SEA FOR THE PROPOSED KENGEN ENERGY PARK PROGRAMME HELD ON 1ST SEPTEMBER 2022 AT OLOMAIYANA KUBWA, HELL'S GATE LOCATION, NAIVASHA SUB-COUNTY IN NAKURU COUNTY

IN ATTENDANCE

List appended

AGENDA

- 1. Introductions
- 2. KenGen Energy Park Presentation
- 3. SEA Process Presentation
- 4. Plenary Session
- 5. Closing Remarks

MIN 01/09/2022-01: INTRODUCTION

The meeting was opened by the Area assistant Chief who welcomed all to the meeting and requested a pastor Karani to open the meeting with prayer. He then proceeded to state the agenda of the meeting as a public participation meeting. She invited the senior chief to address the meeting. He introduced the area leadership before inviting the KenGen team and the Consultant team.

The Senior chief invited the Assistant County Commissioner Mr. Rioba who in turn invited the KenGen and Ecoscience team to take over the meeting.

MIN 01/09/2022-02: KENGEN ENERGY PARK PRESENTATION

A summary of the proposed Industrial Park (KenGen Energy Park) was given by Mr. Joseph Njeru. KenGen proposed to lease their land to various enterprises to set up their premises. To create an industrial zone that can generate additional income from the sale of power (and other derivatives such as steam/water, geothermal brine, condensate, etc. if applicable)

High power consumers industries would be targeted to set up in the industrial park where they would be zoned into Light industries, Medium Industries and Heavy Industries zones depending

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Olomalyana Village Public Consultative Meeting Minutes-September 2022

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on potential impact. The Programme is expected to have both positive impacts and some negative impacts. He invited the Ecoscience team to elaborate on the SEA process

MIN 01/09/2022-03: SEA PROCESS

The Ecoscience representative explained on the importance of the SEA process as indicated in the Environmental Management and Coordination Act (EMCA), 1999, (amended in 2015) which is the framework law on environmental management in Kenya. To deal with collective, synergistic, secondary and long-term impacts, policies, plans and programmes (PPP) are subjected to the Strategic Environmental Assessment (SEA) process. SEA is a tool that methodically and thoroughly integrates environmental issues into policies, plans and programmes through a rigorous stakeholder engagement process.

The SEA process entails screening a programme to determine whether SEA is required or not, and if needed, the level of scrutiny (environmental assessment) that the programme should be subjected to. Screening is following by a baseline and scoping study to determine the nature and magnitude of anticipated environmental and social impacts

KenGen Energy Park Programme is being subjected to SEA as a way of consideration of the nature of anticipated environmental and social impacts in terms of severity, ease of reversibility, longevity and the geographical scope which may be impacted by the programme, to enable an in-depth identification and analysis of potential impacts, and subsequent devising of appropriate mitigation and enhancement measures

Stakeholder consultation is a key aspect of the SEA and, is anchored in the Constitution of Kenya 2010 and is also supported by the Public Participation Bill of 2018. It is therefore crucial that stakeholders in any given development are identified and engaged at various levels with an aim of obtaining their views, concerns, suggestions and recommendations, to be incorporated in the project. Ecoscience explained that it is for this reason that stakeholder engagement is being carried out with various parties including the national government institutions, county government, professional bodies, Local communities and the private sector.

Impact prediction and analysis paves way for the development of the ESMP whereby appropriate mitigation measures are devised for anticipated adverse impacts and enhancement measures are suggested for positive impacts

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Olomaiyana Village Public Consultative Meeting Minutes-September 2022

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() KenGen

The SEA Consultant will prepare an elaborate ESMP to cater for all anticipated programme impacts. Some of the mitigations measures to be proposed will largely be informed by best industry practice that programme workers abide by a stringent code of conduct to curtail adverse impacts to the neighbouring communities.

Once the Draft SEA Report is submitted to NEMA, the Authority despatch's the draft SEA report to the stakeholders for comments to be received within forty-five (45) days. The draft report is published for two successive weeks in both the Kenya Gazette and a newspaper with a nationwide circulation for comments to be received.

After the expiry of the commenting and public disclosure period, the institution will engage the stakeholders in reviewing and validation of the draft SEA report under the coordination of NEMA. The Authority may constitute a TAC to review and provide independent technical comments for consideration

The final SEA report is prepared by the SEA expert(s) (incorporating the comments from all stakeholders and TAC) and duly endorsed by the ministry/institution/proponent for submission to the Authority

The Assistant County Commissioner invited KenGen Liaison Officer to explain to the community in the local language all that the consultant had explained.

MIN 01/09/2022-04: INTERACTIVE SESSION WITH PARTICIPANTS

The meeting progressed to an interactive session where the community members were given the opportunity to ask questions, make comments, seek clarification, air their views, concerns and recommendations for incorporation into the programme development

Participant	Issue / comment	Raised Responses
Elisha Ngarariga	Enquired on the impact the project would have on the Environment, People and Animals	Different industries would have different impacts on the environment, people and animals.
	Enquired on the potential industries training the	have Environment Impact Assessment before

Olomaiyana Village Public Consultative Meeting Minutes-September 2022

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Participant	Issue / comment	Raised Responses
	community on the working of the industrial park	construction which would inform on the specific impacts associated with the specific industry.
Isaac Leshishi	Enquired on the specific benefits the industrial park will have to the community	The programme is expected have immense benefits to the community including; improved roads network, water access, waste management, employment opportunities, demand for housing creating opportunities housing and increased business opportunities Different industries have CSR programmes that would also benefit the community
Joseph Nairenyu	Enquired on issues of air pollution from all the industries, and how that would be addressed	An Air Dispersion Model would be conducted prior to the programme implementation to predict on the impact fall out areas The specific industries are obligated by law to maintain emissions at a set limit and put in place control measures
Peter Lemaruru	Enquired on increase in accidents due to high traffic	Fencing would minimize the interaction between the

Olomaiyana Village Public Consultative Meeting Minutes-September 2022

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MIN 01/09/2022-05: CLOSING AND ADJOURNMENT

The Assistant County Commissioner thanked for community for their attendance and engagement. He adjourned the meeting at 5:00 PM and requested the Pastor to end meeting with a word of prayer.

Olomalyana Village Public Consultative Meeting Minutes-September 2022

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PHOTO PLATE

Photo	Description
	KenGen Liason Officer addressing the community
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	The Senior chief addressing the community
	Assistant County Commissioner addressing the community
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Olomaiyana Village Public Consultative Meeting Minutes-September 2022

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Photo	Description
	Community member giving their feedback
	Community Elder raising their views
	Community members at the meeting

Olomaiyana Village Public Consultative Meeting Minutes-September 2022

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1.	Koisikir Koleke	Olomaiyana			
2.	Kelvin Sencho	Olomaiyana			
3.	Jockson Semento	Olomaiyona			
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MINUTES OF THE PUBLIC CONSULTATION MEETING FOR THE SEA FOR THE PROPOSED KENGEN ENERGY PARK PROGRAMME HELD ON 31ST AUGUST 2022 AT RAPLAND COMMUNITY HALL, HELL'S GATE LOCATION, NAIVASHA SUB-COUNTY IN NAKURU COUNTY

IN ATTENDANCE

List appended

AGENDA

- 1. Introductions
- 2. KenGen Energy Park Presentation
- 3. SEA Process Presentation
- 4. Plenary Session
- 5. Closing Remarks

MIN 31/08/2022-01: INTRODUCTION

The meeting was opened by the Area Chief who in turn requested a pastor to open the meeting with prayer. He then proceeded to state the agenda of the meeting as a public participation meeting. The chief introduced the area leadership before inviting the community members to introduce themselves, followed by the KenGen team and the Consultant team.

The chief invited KenGen and Ecoscience team to take over the meeting.

MIN 31/08/2022-02: KENGEN ENERGY PARK PRESENTATION

Mr. Joseph Njeru provided an overview of the proposed Industrial Park (KenGen Energy Park) Programme. The proposed Programme would be located on KenGen owned land, where it would be leased to different industries to set up their premises. KenGen intends to in turn seeks to leverage its geothermal power capacity at Olkaria to develop an industrial zone that can also serve as an additional source of revenue generation – from both the sale of power (and other derivatives such as steam/water, geothermal brine, condensate etc. as applicable),

KenGen would target high power consumers industries to set up in the industrial park. The industries would then be zoned depending on potential impact, this would include Light industries, Medium Industries and Heavy Industries

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Rapland Village Public Consultative Meeting Minutes-August 2022

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The Programme is expected to have both positive impacts and some negative impacts

MIN 31/08/2022-03: SEA PROCESS

• The Ecoscience representative explained that the requirement for SEA is enshrined in the Environmental Management and Coordination Act (EMCA), 1999, (amended in 2015) which is the framework law on environmental management in Kenya. The Act provides for environmental protection through processes such as Environmental Impact Assessment, Environmental Audit and Monitoring.

 By way of consideration of the nature of anticipated environmental and social impacts in terms of severity, ease of reversibility, longevity and the geographical scope which may be impacted by the programme, it has been determined the KenGen Energy Park Programme will be subjected to SEA to enable an in-depth identification and analysis of potential impacts, and subsequent devising of appropriate mitigation and enhancement measures

 The SEA process entails screening a programme to determine whether SEA is required or not, and if needed, the level of scrutiny (environmental assessment) that the programme should be subjected to. Screening is following by a baseline and scoping study to determine the nature and magnitude of anticipated environmental and social impacts

 Stakeholder consultation is a key aspect of the SEA and, is anchored in the Constitution of Kenya 2010 and is also supported by the Public Participation Bill of 2018. It is therefore crucial that stakeholders in any given development are identified and engaged at various levels with an aim of obtaining their views, concerns, suggestions and recommendations, to be incorporated in the project. Ecoscience explained that it is for this reason that stakeholder engagement is being carried out with various parties including the national government institutions, county government, professional bodies, Local communities, religious leaders and the private sector.

• Impact prediction and analysis paves way for the development of the ESMP whereby appropriate mitigation measures are devised for anticipated adverse impacts and enhancement measures are suggested for positive impacts

 The SEA Consultant will prepare an elaborate ESMP to cater for all anticipated programme impacts. Some of the mitigations measures to be proposed will largely be

Rapland Village Public Consultative Meeting Minutes-August 2022

Page 2 of 7

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informed by best industry practice that programme workers abide by a stringent code of conduct to curtail adverse impacts to the neighbouring communities.

 Ecosience explained that the Terms of Reference for the SEA had been submitted to NEMA for review and the approval to proceed with the assessment had been granted

 Once the Draft SEA Report is submitted to NEMA, the Authority despatch's the draft SEA report to the stakeholders for comments to be received within forty-five (45) days.

 The draft report is published for two successive weeks in both the Kenya Gazette and a newspaper with a nationwide circulation for comments to be received.

 After the expiry of the commenting and public disclosure period, the institution will engage the stakeholders in reviewing and validation of the draft SEA report under the coordination of NEMA. The Authority may constitute a TAC to review and provide independent technical comments for consideration

 The final SEA report is prepared by the SEA expert(s) (incorporating the comments from all stakeholders and TAC) and duly endorsed by the ministry/institution/proponent for submission to the Authority

MIN 31/08/2022-04: INTERACTIVE SESSION WITH PARTICIPANTS

The meeting then progressed to an interactive session whereby the participants were given the opportunity to ask questions, make comments, seek clarification, air their views, concerns and recommendations for incorporation into the programme development

Participant	Issue / comment	Raised Responses
Peter Shiyanga (pastor)	Raised the concern of previous projects not fulfilling community requests during implementation (priority not given to the community for employment, local contractors and local business)	At the moment, the programme is in planning, the proponent would endeavour to involve the community through the implementation phase
Sakayan Nkamiasial	Enquired on the benefits the programme to the community	The programme is expected have immense benefits to the

Rapland Village Public Consultative Meeting Minutes-August 2022

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Participant	Issue / comment	Raised Responses
		community including; improved roads network, water access, waste management, employment opportunities Different industries have CSR programmes that would also benefit the community
Magadi	Enquired on what industries will be built at the park and what impacts would they have on the community.	EIA would be conducted for individual industry projects where the community will have an opportunity to be informed on the industry operations, benefits and impacts and to raise their concerns and comments
Richard	Raised concerns that the location of the park which is on the higher side would impact the community negatively due to waste flowing down to the communities	An Air Dispersion Model would be conducted prior to the programme implementation to predict on the impact fall out Waste water will be treated before recycling or re- injection into the recharge wells
Tatiyia Parkire	Supported the programme and requested for the community to benefit from the implementation of the programme	The industrial park will have great benefits to the community through the implementation and operation phases

Rapland Village Public Consultative Meeting Minutes-August 2022

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Participant	Issue / comment	Raised Responses
Timothy Karani	Requested that during the implementation the programme should consider building a secondary school for the community	The community should write a proposal on the request and also different industries have CSR programmes that could benefit the community
	Requested for diversity in the key stakeholders meeting representation Requested for the community representative to the key stakeholders meeting to be selected after further consultation with the community members	The 4 village should send representatives after consultation and ensure gender balance
	Raised concerns on the environmental impacts that would be brought by the establishment of the industrial park	Part of the industrial park will consist of green zones
Joseph	Enquired on the level of impacts the proposed programme would have on the environment and the people	EIA would be conducted for the industries to give the specific impacts associated with the different industries

MIN 31/08/2022-05: CLOSING AND ADJOURNMENT

The Chief adjourned the meeting at 1:40 PM. He thanked the community for availing themselves for the meeting and requested Pastor Peter to end meeting with a word of prayer.

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Rapland Village Public Consultative Meeting Minutes-August 2022

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Rapland Village Public Consultative M	Meeting Minutes-Augus	t 2022 Page 7 of 7	
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KenGen Energy Park Draft SEA Report 2023

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Venue:	RAPLAND COMMUNITY HALL
Date: 31/08/2022	Time: 11: 40 a.m.

KENGEN ENERGY PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA)

PUBLIC PARTICIPATION	ATTENDANCE REGISTER
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Venue:	RAPLAND COMMUNITY HALL
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KENGEN ENERGY PARK STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA)

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2	Jecold of Tent	Culland Cathe	9855877	0722171247	橋子					
3.	Mayion Neamadini	Acres 201	117097714	0731607373	30					
4.	Icatori Nomential	Clonenzel	A COUNT PARA	07403716 11	640.					
5.	Statesini the minery	Glassin-had		075801353	-					
	C 1	Clamanana ndeas		2195227915	al					
6,	Charly Nerrunye				22.					
6. 7.	Grace Deper	Olemaniena adago	30767188	0740797685	Sec.					
6. 7. 8.	Grece Deperinge Rose Natura	Olemanyana admo Gultral cartle	"30767188	0740197685	85. 103.					

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Appendix 9: Sample Water Quality Results



	Power Plant chemistry - Lab		Lab								
Analysing Laboratory: Olkaria V Powerplant Chemistry Lab.								K	enGen		
									iten den		
		Result	Limit	Result	Limit	Result	Limit	Result	Limit	Result	Limit
Date	Sampling Point	pH (at 25 °C)		Electrical conductivity (µS/cm)		TDS(ppm)		Turbidity (NTU)		Fluoride (ppm)	
21.9.2021	Lakeview	7.118	6.5 - 8.5	270	500µS/cm	135	500ppm	2.81	5NTU	1	1.5 ppm
23.9.2021	Lakeview	7.215		296		148		1.07		0.94	
28.9.2021	Lakeview	7.131		295		147.5		1.27		0.94	
30.9.2021	steam quality monitoring f	7.32		306		153		1.12		0.79	
19.10.2021	Lakeview	7.118		305		152		7.34		0.88	
22.10.2021	Lakeview	7.193		302		151		5.33		0.89	
25.10.2021	Lakeview	7.205		272		136		2.07		0.96	
25.10.2021	Lakeview	7.339		301		150.5		5.24		0.94	
27.10.2021	Lakeview	7.207		297		148.5		3.12		0.89	
28.10.2021	Lakeview	7.269		287		143.5		3.51		0.9	
2.11.2021	Lakeview	7.354		286		143		6.98		1.01	
6.11.2021	Lakeview	7.309		296		148		2.31		0.97	
		Result	Limit	Result	Limit	Result	Limit	Result	Limit	Result	Limit
Raw Wate	r Sources		5.5 - 9.5		500µS/cm		500ppm		25NTU		1.5 ppm
6.11.2021	Karagita Beach	7.503		281		140		10.3		1.04	
6.11.2021	Kamere Beach	7.11		282		141		16.2		1.08	
6.11.2021	Geothermal Club intake	7.244		272		136		14		1.07	
6.11.2021	Highlift	7.613		284		142		7.77		1.17	
6.11.2021	Lake Oloiden	8.621		768		384.5		18.8		4.8	





Appendix 10: KEP Masterplan Strategies



Gateway Entrance/ Park

Mood Images for Green Network & Gateway Structures

Park with Retention Pond



Green Link (Linear Park)





Proposed Gateway and Green Network

28 Consultancy Services to Update the Feasibility Study of the Kengen Energy Park at Olkaria, Naivasha - Kenya KE22057-0100D-RPT-PM 03 REV 0 | Deliverable 3: Final Report







Proposed Character Areas

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Proposed Pedestrian and Cycle Route

30 Consultancy Services to Update the Feasibility Study of the Kengen Energy Park at Olkaria, Naivasha – Kenya KE22057-01000-RPT-PM 03 REV 0 | Deliverable 3: Final Report







Proposed Road Hierarchy

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Appendix 11: Biodiversity Summary Report