Environmental & Social Impact Assessment Study Report

PROPOSED ASBESTOS DISPOSAL SITE ON PLOT NO. 2018/KALUMANI/MNYENZENI ADJUDICATION SECTION

SITE GPRS CORDINATES:

Latitude: -3.6931944, Longitude: 39.3888501

https://gps-coordinates.org/my-location.php?lat=-3.6931944&lng=39.3888501

PROPONENT

ASBE CONTRACTORS LIMITED

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Consulting EIA/EA Experts:

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Lead Expert: Edgar Eredi (NEMA Reg. No. 1921)

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June, 2025

CERTIFICATION

This Comprehensive Project Report has been prepared and is submitted to National Environment Management Authority (NEMA), in conformity with the requirement of Environmental Management and Coordination (Amendment) Act, 2015 and the Environmental Impact assessment and audit (Amendment) Regulations, 2019. We, the undersigned certify that to the best of our knowledge and belief, this report is correct and true reflection of the findings on the anticipated environmental impacts of the proposed asbestos disposal site.

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ESIA ASBE CONTRACTORS

CERTIFICATION BY PROPONENT

ASBE contractors limited hereby confirms that this environmental impact assessment study report has been prepared and submitted to NEMA with my authority as the proponent.

Proponent contact details:

ASBE CONTRACTORS LIMITED

P.O.Box 5050- 00200

Nairobi

Representative Name: Naeman Navai

Signature:

Date: 16/06/25

EXECUTIVE SUMMARY

This Environmental Impact Assessment study was conducted for and on behalf of the proponent in compliance with the Environment Management and Co-ordination (Amendment) Act 2015 and National Guidelines on Safe Management and Disposal of Asbestos, which requires that an Environmental Impact Assessment (EIA) be carried out for developments such as the proposed. Provisions of the Environmental Management and Coordination

Impact Assessment and Audit Regulations (Amendment), 2019 also dictate the submission of such an assessment to the National Environment Management Authority (NEMA).

The assessment examined the potential impact of the proposed project on the immediate surroundings with due regard to all the phases of removal through to final disposal and decommissioning. It encompassed all aspects pertaining to the physical, economical, ecological, socio-cultural, health and safety conditions at the site and its environs. The assessment was based on laid down scientific qualitative procedures with the most recent methodologies and analysis required in EIA and strictly adheres to the relevant legislative framework governing the asbestos management. Where possible, the report has provided annexes such as site maps, development plans and applications to relevant Authorities to support our findings or show the in depth of its investigations.

The project site

The proposed asbestos disposal site will be located on Plot No.2018/ KALUMANI/MYENZENI
Ndatani IV village, Tsangatsini sub-location, Tsangatsini location, Kaloleni Sub-county in Kilifi County. It's located off Mombasa – Nairobi Highway. The proposed site is approximately 8.7 acres and is currently in an area mostly undeveloped and unoccupied and far from residential areas. The activities of the project include wrapping, transportation and disposal of asbestos roofing.

Asbestos type

Asbestos is a group of six fibrous minerals that occur naturally in metamorphic deposits located around the world. Of the hydrous magnesium silicate variety, the six types include tremolite, actinolite, anthophyllite, chrysotile, amosite and crocidolite. The major producers of asbestos include Canada, Kazharkstan, Ukraine, Russia, India, South Africa and Zimbabwe. Asbestos used to be mined in Kenya in the past but was stopped. Asbestos is a hazardous material with extremely fine fibres and can remain suspended in air for hours. If handled without caution, it may cause serious chronic health problems such as asbestosis, lung cancer and mesothelioma. The diseases cause long term serious social, economic and emotional problems.

Project description

The proponent proposes to develop an asbestos disposal site. This is in line with its commitment achieve its environmental performance of its environmental management systems as well as enhancing the safety of its workers. The entire process will include construction of a boundary wall, digging and construction of disposal pits and transport and disposal of asbestos sheets in a manner prescribed by the National Guidelines on Safe Management and Disposal of Asbestos. In Kenya, the establishment and operation of an asbestos disposal site are governed by environmental regulations and safety standards to ensure safe handling, disposal, and minimal environmental impacts.

EIA objectives

The proponent is mandated to conduct a comprehensive EIA as per the Environmental Management and Coordination Act (EMCA), 1999. One must obtain approval from the National Environment Management Authority (NEMA) before establishing the facility. EIA aims to promote environmentally sustainable, safe, and compliant asbestos disposal practices in Kenya, safeguarding human health and the environment throughout the project lifecycle. The main objectives are:

*Identify and Assess Environmental and Health Risks

*Ensure Regulatory Compliance

*Promote Sustainable Waste Management Practices

*Protect Public and Worker Safety

*Determine Mitigation Measures

*Enhance Community Awareness and Involvement

*Facilitate Responsible Land Use Planning

*Ensure Long-term Environmental Management

Public participation

An extensive public consultation process was engaged in gauging the sentiments of a variety of stakeholders in the development of this project. Besides the fact that this is a regulatory requirement under the Environmental Management and Coordination (EIA/EA) Regulations (2003), it was an excellent opportunity to offer the public an opportunity to ventilate their fears and concerns. The public participation process engaged for this study demonstrates the project stakeholders' wish to see the actualization of the proposed EMP and their recognition of environmental safety which this project represents. Public participation was implemented using a community public participation meeting which included the ACC, the area chief, the lead expert and the proponent representative. A copy of the minutes has been attached to the report.

Environmental impacts and mitigation

Both positive and negative impacts will result from the implementation of the proposed project. The environmental impacts arising from the project have both ecological and socio-economic dimensions. The overall aim of the project is ensuring an environmentally friendly environment free of asbestos and the environmental impacts caused by various aspects arising from its existence within the proposed site. It expected that there will be negative impacts during handling of asbestos, among them occupational health & safety issues. Appropriate mitigation measures have been discussed and an elaborate EMP outlined. All the negative impacts will be mitigated to the highest degree.

Conclusion

Asbestos is a hazardous material that requires proper handling and safe disposal. Considering that the entire Mombasa County does not have a designated and NEMA licensed asbestos disposal site, the disposal and transportation must be handled properly to ensure the safety of the environment as well as workers. Mitigation measures and Environmental Management Plan have been proposed to address the scope of the predicted adverse environmental impacts to the highest degree.

Recommendations

This report recommends issuance of an EIA license subject to the conditions that NEMA may impose during the decision-making process. The following recommendations should however be considered:

- The current NEMA guidelines do not impose any specific litigation fines but it is in good will and the business commitment to have an Asbestos Containing Materials Management Plan (ACMP) to render The premises compliant/safer

- The proponent should implement the EMP in line with other conditions that NEMA may impose during the decision-making process;
- The proponent should use the EMP as monitoring and evaluation tool
- The proponent should undertake all the operations within the applicable legal limits.

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ABBREVIATIONS AND ACRONYMS

CBD	Central Business District
CFCs	Chlorofluorocarbons
EA	Environmental Audit
ECSR	Environmental Corporate Social Responsibility
EHS	Environmental Health and Safety
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Coordination Act (1999)
EMP	Environmental Management Plan
EMS	Environmental Management System
F & B	Food and beverages
LPG	Liquefied Petroleum Gas
M & E	Monitoring and Evaluation
NEC	National Environmental Council
NEMA	National Environmental Management Authority
OHS	Occupational Health & Safety
PPE	Personal Protective Equipment
SERC	Standards and Enforcement Review Committee
SEA	Strategic Environmental Assessment

DEFINITION OF TERMS

1. **Asbestos** is the term used to describe a group of naturally occurring fibrous mineral silicates
2. **Asbestos-containing material:** A manufactured article or other material, other than vermiculite insulation, that would be determined to contain at least 0.5% asbestos
3. **Asbestosis** is a chronic lung disease resulting from prolonged exposure to asbestos dust. The fibres gradually cause the lung to become scarred and stiff, making breathing difficult.
4. **Analysis** means the testing or examination of any matter, substance or process for the purpose of determining its composition or qualities or its effect (whether physical, chemical or biological) on any segment of the environment or examination of emissions or recording of noise or sub-sonic vibrations to determine the level or other characteristics of the noise or sub-sonic vibration or its effect on any segments of the environment;
5. **Containment:** An isolation system designed to effectively contain asbestos fibres within a designated work area where asbestos-containing materials are handled, removed, encapsulated, or enclosed.
6. **Effluent** means gaseous waste, water or liquid or other fluid of domestic, agricultural, trade or industrial origin treated or untreated and discharged directly or indirectly into the aquatic environment;
7. **Enclosure:** A physical barrier that isolates asbestos-containing materials from adjacent occupied areas in a building, using means such as gypsum board, plywood, or metal sheeting to prevent the release of asbestos fibres into those areas.
8. **Friable asbestos**-containing material Asbestos-containing material that is crumbled or powdered or can be crumbled or powdered, by hand pressure.
9. **Environment** includes the physical factors of the surroundings of human beings including land, water, atmosphere, climate, sound, odour, taste, the biological factors of animals and plants and the social factor of aesthetics and includes both the natural and the built environment;
10. **Environmental Impact Assessment** means a systematic examination conducted to determine whether or not a programme, activity or project will have any adverse impacts on the environment;
11. **Hazardous substance** means any chemical, waste, gas, medicine, drug, plant, animal or micro-organism which is likely to be injurious to human health or the environment;
12. **Hazardous waste** means any waste which has been determined to be hazardous waste
13. **High-risk work activity**: A work activity that involves working with or in proximity to asbestos containing material if a high level of control is necessary to prevent worker exposure to airborne asbestos fibres.
14. **Low-risk work activity:** A work activity that involves working with or in proximity to asbestos containing material, if the material is not being: Cut, sanded, drilled, broken, ground down, or otherwise fragmented or Disturbed in such a way that asbestos fibres may be released
15. **Moderate-risk work activity** :A work activity, other than a high-risk work activity, that involves working with or in proximity to asbestos-containing material that is being cut, sanded, drilled, broken, ground down or otherwise fragmented, or otherwise disturbed, where it is necessary to use personal protective equipment (PPE) or engineering controls to prevent worker exposure to airborne asbestos fibres.
16. **Noise** means any undesirable sound that is intrinsically objectionable or that may cause adverse effect on human health or the environment;
17. **Pleural thickening** is a condition that may develop after heavy asbestos exposure. The lining of the lung (pleura) thickens and swells, causing shortness of breath and discomfort in the chest.

18. **Pollution** means any direct or indirect alteration of the physical, thermal, chemical, biological, or radio-active properties of any part of the environment by discharging, emitting, or depositing wastes so as to affect any beneficial use adversely, to cause a condition which is hazardous or potentially hazardous to public health, safety or welfare, or to animals, birds, wildlife, fish or aquatic life, or to plants or to cause contravention of any condition, limitation, or restriction which is subject to a license under this the Environmental Management and Coordination Act (1999)
19. **Project** includes any project, programme or policy that leads to projects which may have an impact on the environment;
20. **Project report** means a summary statement of the likely environmental effect of a proposed development
21. **Proponent** means a person proposing or executing a project, programme or an undertaking;
22. **Respirator:** A device worn to prevent the inhalation of hazardous airborne substances. There are two basic types of respirators: air purifying and air supplying. So-called “single-use” or “disposable” respirators are not acceptable for working with asbestos.
23. **Risk of exposure to asbestos fibers:** The likelihood of being exposed to airborne asbestos fibres when using or handling materials containing asbestos or being in proximity to such work. There is a much greater risk of exposure to asbestos fibres when handling friable asbestos materials than when handling hard, well bonded asbestos materials such as vinyl-asbestos floor tile or asbestos cement products.
24. **Waste** includes any matter prescribed to be waste and any matter, whether liquid, solid, gaseous, or radioactive, which is discharged, emitted, or deposited in the environment in such volume composition or manner likely to cause an alteration of the environment.

CHAPTER ONE

1.0 Introduction and Background

For a long time, the world over, policy makers have been directing all their efforts in economic development without due regard to the nature of the resource base on which the economic development depend on. As a result, there has been unprecedented environmental degradation, during project implementation and operation stages, due to lack of integration of environmental concerns into the project design, planning and management, thereby resulting into unsustainable development. To ensure sustainability and revitalization of the degraded environment, all proposed development projects' activities and their subsequent operations are now required to be critically examined to evaluate the impacts (both positive and negative) they would have on the environment before they are implemented and to enhance Sustainable Environmental Management as well as controlling and revitalizing the much – degraded environment.

Some of the environmental management tools used to achieve this is the Environmental Impact Assessment (EIA) study, done before the implementation of a new project and an Environmental Audit (EA) done on existing projects. All these are emphasized in the Environmental Management and Coordination Act (EMCA) of 1999. An EIA identifies both negative and positive impacts of the proposed project, how it affects people, their property and the general environment. Environmental Experts registered by the National Environmental Management Authority (NEMA) should conduct the EIA study of new projects and Environmental Audits (EAs) for the already existing projects pursuant to requirements of EMCA, Environmental Impact Assessment and Audit Regulations, 2003 and the World Bank Guidelines.

The key conditions for asbestos disposal site approved site are

1. Site Selection and Location- The site should be located in a designated industrial or waste disposal zone, away from residential areas, water bodies, and wildlife habitats.
2. Environmental Impact Assessment (EIA) and Approval
3. Proper Design and Engineering

-The site must have secure fencing to prevent unauthorized access.

-Use of impermeable liners and containment systems to prevent leachate infiltration into the ground

-Design of covered, ventilated, and sealed facilities for asbestos handling and storage

4. Handling and Disposal Procedures

-Strict adherence to safety protocols for asbestos handling, including PPE (Personal Protective Equipment).

-Use of approved disposal methods such as encapsulation, secure landfilling in designated asbestos disposal cells, or other approved technologies.

-Avoid crushing or breaking asbestos materials during handling to prevent fibre release.

5. Waste Management and Record Keeping

-Maintain detailed records of asbestos waste generation, transportation, and disposal.

-Proper labelling and documentation for all asbestos waste streams.

6. Community Engagement and Safety

Inform and educate local communities about safety measures.

Establish emergency response plans for accidental fibre releases or spills.

7. Environmental and Safety Monitoring

-Regular environmental monitoring around the site for asbestos fibers in air, soil, and water.

-Health surveillance for workers handling asbestos materials.

8. Post-Closure Plans

-Develop and implement closure and rehabilitation plans for the site once operations cease.

-Ensure long-term containment and environmental protection

1.1 Asbestos

Asbestos is a group of six fibrous minerals that occur naturally in metamorphic deposits located around the world. Of the hydrous magnesium silicate variety, the six types include tremolite, actinolite, anthophyllite, chrysotile, amosite and crocidolite. The major producers of asbestos include Canada, Kazharkstan, Ukraine, Russia, India, South Africa and Zimbabwe. Asbestos used to be mined in Kenya in the past but was stopped. Asbestos is a hazardous material with extremely fine fibres and can remain suspended in air for hours. If handled without caution, it may cause serious chronic health problems such as asbestosis, lung cancer and mesothelioma. The diseases cause long term serious social, economic and emotional problems.

Asbestos is a hazardous material with extremely fine fibres and can remain suspended in air for hours. If handled without caution, it may cause serious chronic health problems such as asbestosis, lung cancer and mesothelioma. The diseases cause long term serious social, economic and emotional problems. When left intact and undisturbed, asbestos materials do not pose a health risk. It becomes a problem when, due to damage, disturbance, or deterioration over time, the material releases fibres into the air. Exposure to air containing the fibres increases the risk of inhaling the fibres and developing the associated diseases.

1.2 Location

The proposed asbestos disposal site will be located on Plot No.2018/ KALUMANI/MYENZENI

Ndatani IV village, Tsangatsini sub-location, Tsangatsini location, Kaloleni Sub-county in Kilifi County. It's located off Mombasa – Nairobi Highway. The proposed site is approximately 8.7 acres and is currently in an area mostly undeveloped and unoccupied and far from residential areas. The GPS Coordinates to the site are Latitude: -3.6931944, Longitude: 39.3888501.

Figure 1 road leading to the project location

1.3 Suitability of the project site

The choice of site is influenced by the following factors;

- The presence of asbestos as roofing material which poses an occupational safety & health risk
- Geological and Soil Conditions: The site should have impermeable or low-permeability soils that prevent fiber migration and reduce the risk of environmental contamination.
- Location Away from Human Settlements: The site is situated a safe distance from residential, commercial, and institutional areas hence minimizing exposure risks

1.4 Scope and criteria

The study has been conducted to evaluate the environmental impacts of the proposed development. Upon evaluation, recommendations are made on the accentuation of positive impacts and the mitigation of negative ones. The scope for the assessment dwelled on impacts the project will have on the following:

a) Physical environment;
b) Socio-cultural environment;
c) Flora and fauna;
d) Land use;
e) Socio-economic aspects;
f) Occupational safety & health issues

1.5 EIA objectives

The EIA process purposes to ensure that environmental concerns are integrated in all phases of the project cycle in order to contribute to sustainable development. In this regard therefore, the specific objectives of this EIA report are outlined as follows:

- To provide a description of the project cycle activities and the required legislative compliance;
- To predict and/or determine the potential impacts of the development in terms of the economic, social and environmental considerations;
- To propose appropriate mitigation measures to minimize or eliminate the environmental challenges associated with the development;
- To analyze project alternatives; and,
- To undertake a public consultative process aimed at obtaining the views of project stakeholders so as to mainstream their concerns and impact mitigation proposals into the Environmental Management Plan (EMP) developed for the project cycle.

1.6 Assessment methodology

Various tools and instruments were utilized during the initial survey to collect data and information on the site.

- Site visits whereby the consultants utilized a pre-determined checklist developed on the basis of the scoping and screening exercise.
- Observable details were recorded using a note book and a camera.
- Baseline information for the site was further obtained through literature review of site documentation.
- A public participation meeting was used to obtain comments from neighbours.
- Desktop reviews were conducted using the internet and other EIA reports of similar nature in the area by the consultants.

The information gathered using the above strategies was evaluated and data analyzed to determine the required level of environmental performance and make recommended environmental action plans for the development proposal.

1.7 Terms of reference

The environmental impact assessment study has covered the following activities:

- Description of the proposed project;
- Baseline information;
- A review of the policy, legal, legislative and administrative framework;
- Public participation;
- Assessment of potential environmental impacts on the project area;
- Ensuring the health and safety of workers and neighbouring residents; and
- Development of mitigation measures and monitoring and plans.

CHAPTER TWO

2.0 Environmental Baseline

This section presents a status report on the situation of the facility within the context of Mombasa County as a whole. The environmental baseline offers both the present and future states of the environment. It takes into account changes which might be occasioned by natural and anthropogenic activities.

2.1 Administrative location and size

Kilifi County is located in the Coastal Region of Kenya. Its administrative headquarters is situated in the town of Kilifi. The county covers an area of approximately 12,245 square kilometres. The sub-counties in Kilifi County include: Kilifi North, Kilifi South, Malindi, Kaloleni, Rabai, Ganze, Bamba and Boda. Kilifi County has a total of approximately 227 sub-locations. These sub-locations are smaller administrative units within the sub-counties, used for local governance, administrative purposes, and resource distribution. The County lies between latitude 2020” and 400” south, and between longitude 39005” and 40014” East. It borders Kwale County to the South West, Taita Taveta County to the West and Tana River County to the North, Mombasa County to the South and Indian Ocean to the East.

2.2 Climate

Kilifi's climate is generally characterized as tropical, with warm temperatures and distinct wet and dry seasons which are conducive to tourism, agriculture, and fishing, with warm temperatures year-round and predictable rainy seasons that support local livelihoods. It has a tropical coastal climate characterized by warm temperatures and high humidity throughout the year. Temperatures typically range between 24°C and 32°C (75°F to 90°F). The county experiences two main rainy seasons: the long rains from April to June and the short rains from October to December, with annual rainfall averaging between 900mm and 1200mm. Humidity levels are generally high, especially during the rainy periods, influenced by proximity to the Indian Ocean. The climate supports agriculture, tourism, and fishing activities, with coastal areas being quite hot and humid, while inland parts may be slightly cooler.

2.3 Topography and geology

Kilifi's topography transitions from flat coastal plains and mangroves to hilly inland areas, with geological formations reflecting sedimentary, coral, and ancient crystalline rocks. The geology influences land use, agriculture, and coastal processes. The topography is characterized by low-lying coastal plains along the Indian Ocean, with sandy beaches and mangrove swamps. Inland, the terrain gradually rises into gentle hills and low plateaus, reaching elevations of approximately 200 to 300 meters. The landscape features river valleys, floodplains, and some inland hills, with the Sabaki River being a prominent feature. Geologically, the coastal areas mainly consist of recent marine sediments—sands, clays, and coral reef deposits—while the inland regions contain older basement rocks such as granite, gneiss, and other crystalline rocks. The coastal zone is also influenced by coral reefs and limestone formations, shaping both the land and offshore features. Kilifi's geology reflects a mix of sedimentary deposits and ancient crystalline rocks, influencing land use, agriculture, and coastal processes.

2.4 Socio-economic setting

Kilifi County's economy is deeply intertwined with its coastal resources. The Mijikenda people, particularly the Giriama, are known for their traditional livelihoods, including fishing, salt mining, and agriculture. The county's extensive coastline supports a vibrant tourism sector, attracting visitors to its beaches, historical sites, and cultural

festivals. The County has made strides in expanding educational infrastructure. As of 2014, the county had 1,071 Early Childhood Development Education (ECDE) centers, 757 primary schools, 178 secondary schools, 13 youth polytechnics, and 280 adult education centers. The health sector in Kilifi County comprises 235 health facilities, including hospitals, health centers, and dispensaries. The county referral hospital serves as a critical healthcare provider. Key health indicators show a total fertility rate of 3.4%, with contraceptive use among married women at 49%, slightly below the national average.

Its infrastructure includes a network of 3,678.6 km of roads, with varying surface types. The county is served by mobile telephone providers and has several post offices. Plans are underway to expand Malindi Airport and local airstrips to boost tourism and economic activities. Over 80% of households rely on wood fuel, though efforts are being made to promote renewable energy sources and improve electricity connectivity.

Kilifi County's cultural heritage is rich, with the Mijikenda people practicing traditional crafts, agriculture, and community-based activities. Community development initiatives focus on empowering women and youth, promoting sustainable livelihoods, and preserving cultural practices.

2.4.1 Water Resources

The Coast Water Services Board (CWSB) is a parastatal responsible for the provision of Water and Sewerage Services in the Coast region. The county is endowed with tremendous wealth of both surface and underground water resources. River Sabaki which is the largest river within the Athi River Catchment, along with Rare, Kombeni, Mwandeje and Nzovuni Rivers drain into the Indian Ocean at various points along the coastline. Water pans and earth dams are mostly found in the arid and semi-arid parts of the county such as Kaloleni, Ganze and Magarini sub-counties with 19.1% of the population in the county depending directly on water pans and earth dams for their water needs. There are two water supply schemes in the County. These are Baricho well field, which is located in Langobaya location, along River Sabaki in Malindi Sub County. The other scheme is located in Mzima Springs, TaitaTaveta County. Collectively, the two schemes supply a total of 22,920m3 of water per day to different parts of the county.

2.4.2 Energy supply.

Kilifi County’s energy supply is a mix of grid electricity, renewable sources, and traditional fuels. The national grid, supplied by Kenya Power, reaches some parts of the county, especially urban centers and towns, but many rural areas still experience limited or no access to reliable electricity. Renewable energy, particularly solar power, is increasingly important in Kilifi, especially for off-grid communities. Solar panels and solar-powered devices help improve access to electricity for homes, schools, and small businesses, promoting sustainable development. Many residents still rely on traditional fuels like firewood and charcoal for cooking and heating, which can contribute to deforestation and environmental degradation. Kerosene is used for lighting in areas without grid access. Key energy infrastructures in the county are Rabai Thermal Power Station, Malindi Solar Power Station, Mombasa Cement Wind Power Station and Sabaki Substation.

2.4.3 Sewage management infrastructure

Kilifi County's sewage management infrastructure is currently characterized by limited centralized treatment facilities, with most urban areas relying on on-site sanitation systems such as pit latrines and septic tanks. Urban centers like Kilifi town and Malindi have some basic sewage infrastructure, but coverage remains inadequate, especially in rural and peri-urban areas. The sewerage system in Kilifi County is managed through a combination of government agencies, local authorities, and private operators. The County Government of Kilifi oversees sanitation policies and

coordinates efforts to improve sewage infrastructure and services. The management of existing sewerage facilities is typically delegated to licensed private operators or contractors responsible for operation, maintenance, and sanitation compliance. The site is managed on a decentralized basis, relying on on-site sanitation solutions such as septic tanks, with occasional involvement from local artisans or private service providers.

2.5 Soil characteristics

Kilifi County exhibits a variety of soil types influenced by its coastal and inland geography. The main soil characteristics include:

- Ferralsols (Lateritic soils): Found inland, these soils are reddish, heavily weathered, and rich in iron and aluminum oxides. They tend to be low in nutrients and require fertilization for agriculture.
- Alluvial soils: Located along river valleys and floodplains, these soils are generally fertile, well-drained, and suitable for farming.
- Sandy soils: Common in coastal areas and beaches, these soils drain quickly, are low in nutrients, and are less suitable for agriculture without amendments.
- Mangrove soils: Found along estuaries and coastal zones, these are saline, waterlogged, and support mangrove forests.
- Clay soils: Present in some flood-prone areas, they have high water retention but can lead to waterlogging issues.

The soils in Kilifi are diverse, with inland areas having more weathered, nutrient-poor soils, while riverine zones tend to have more fertile, alluvial deposits suitable for cultivation.

2.6 Land Use Systems

The main economic activity includes tourism which contributes to 68% of the wage employment. Others are fishing, farming of sisal, sugarcane, cashewnuts, and coconuts and livestock farming. Various manufacturing firms have set up base in the County including Bamburi Cement Company at Bamburi. Other industries include petroleum refining, food processing, salt and sand. The CBD is a hub of various commercial activities.

Kilifi County's land use systems are predominantly agricultural, supplemented by fishing, forestry, tourism, and urban development. The distribution of these systems aligns with the county's varied ecological zones, from coastal plains to inland highlands. The main economic activities are

1. Agricultural Land Use Crop Farming: smallholder farming of subsistence crops such as maize, cassava, millet, sorghum, and legumes. Cash crops like cashew nuts, coconut, and mangoes are also cultivated. Horticulture: Growing vegetables, fruits, and spices in both small-scale and commercial farms, especially near urban centers and along rivers. Plantation Agriculture: Some large-scale plantations, especially for cashew, coconuts, and sisal, are found in certain areas.
2. Livestock Keeping
3. Marine and Fisheries Activities
4. Urban and Infrastructure Land Use
5. Tourism and Recreational Land Use
6. Protected Areas and Conservation:

2.7. Solid Waste

The main sources of waste in Kilifi County are household refuse, commercial activities (markets, hotels), fishing and marine activities, healthcare facilities, and small industries generate waste. Many areas, especially in rural and peri-urban parts, practice open dumping or burning, which leads to environmental pollution and health risks. Urban centers like Kilifi and Malindi have some organized collection and disposal systems, but these are often limited by infrastructure and resources.

2.8 Demography

2.8.1 Population

The county is predominantly inhabited by the Mijikenda community. Nevertheless, county residents constitute a representation of Kenya's forty four (44) tribes and a small population of foreigners. The population of the county is estimated to be 1,498,647 in 2018 as projected from the Kenya Population and Housing Census of 2009, composed of 723,204 male and 775,443 Female. The population is projected to rise to 1,591,901 (out of which 45% are male and 55% female) and 1,841,958 out of which 47.8% males and 52.2% females in 2020 and 2025, respectively, at a mean inter-censual annual growth rate of 3.05 percent. The males represent 46.5 percent while the females represent 53.6 percent of the total population indicating a male: female ratio of 1:1.15. The county's dependency ratio stands at 101.45 per cent.

2.9 Flora and fauna

We established that there are no dominant or threatened fauna at the site. Kilifi County has a rich diversity of flora and fauna due to its coastal, wetland, and savannah ecosystems. Flora (Plant Life) mostly consists of mangrove forests along estuaries and the shoreline, Coconut palms and casuarina trees which are common along beaches, acacia trees, reeds and papyrus growing along rivers and wetlands and farm crops like maize, cassava, millet, and fruit trees.

Fauna consists of marine life, bird species and wild animals such as monkeys. Kilifi is rich in birdlife, including flamingos, pelicans, herons, kingfishers, and migratory birds, especially in wetlands and coastal areas.

The Watamu Marine National Park and Arabuko Sokoke Forest are important bird habitats.

2.10 Socio-economic profile

Agriculture is a cornerstone of Kilifi's economy, with both subsistence and commercial farming prevalent. Key crops include maize, cassava, coconuts, cashew nuts, sisal, citrus fruits, mangoes, and pineapples. Livestock keeping is also significant due to favorable climatic conditions. The county boasts a 300 km coastline, making fishing a vital economic activity. Both commercial and subsistence marine capture fisheries are practiced, contributing to food security and employment.

Kilifi's tourism sector thrives on tourist attractions which include the Ruins of Gedi, Watamu Marine National Park, and Arabuko Sokoke Forest. Presence of industries such as Mabati Rolling Mills and Athi River Cement Factory contribute largely to the revenue collection of the county. Kilifi has a Gini coefficient of 0.565, indicating a high level of income inequality. Economic disparities exist between rural and urban areas, with urban centers like Kilifi Town and Malindi offering more diverse income opportunities.

2.11 Housing

Housing in Kilifi County varies from traditional structures to modern developments, reflecting both cultural practices and economic growth. In rural areas, many homes are built using locally available materials like mud, thatch, and palm leaves, suited to the warm coastal climate. The traditional houses are simple, often single-room, and designed for ventilation and shade. In urban centers like Kilifi town and Malindi, you'll find more modern houses constructed with bricks, cement, and iron sheets, featuring amenities like electricity, running water, and sanitation facilities. There are also gated communities, apartments, and housing estates that cater to middle and upper-income residents.

CHAPTER THREE

3.0 Policy, Institutional and Legal Framework

3.1 Introduction

The relevant legislation which the project must comply with is intended to ensure project's sensitivity to environmental concerns, public safety, public health, physical planning regulations, County Government of Mombasa by-laws and other relevant standards. In response to environmental degradation, the Kenya parliament enacted the EMCA (amendment) 2015 to comprehensively address the challenges of environmental management in Kenya. Later Legal Notice No. 101 was gazetted in 2003 as an attendant regulation to EMCA, 1999. Under this legal framework major changes in land use are required to undergo an EIA study which is later submitted to a statutory body i.e. NEMA for approval and granting of an EIA license. Similarly existing projects with a potential to impact on the environment, health and safety of the environment are required to undergo an initial environmental audit to determine compliance with environmental legislation and integrate environmental concerns into the operational stages of the project life cycle.

Environmental degradation is a major global challenge especially in terms of how to maintain sustainable development without degrading the natural environment on which people are dependent (UNEP & ACTS, 2002). It is now accepted that development projects must be economically viable, socially acceptable and environmentally sound (Okidi and Mbote, 2001). Among the major environmental problems being experienced in Kenya today include land and habitat degradation, loss of biodiversity, environmental pollution and water management. The broad objectives of the national environmental policy include the following;

- Integrate environmental conservation and economic activities into the process of sustainable development,
- Optimal use of natural land and water resources in improving the quality of human environment,
- Undertake appropriate reviews and evaluations of developmental plans and operations to measure their progress and to ensure compliance with this policy.
- Sustainable use of natural resources to meet the needs of the present generations while preserving their ability to meet the needs of the future generations,
- Encourage concern and respect for the environment, emphasize on every Kenyan's responsibility in environmental performance and ensure appropriate operating practices and training of generations,
- Communicate with the public on environmental matters to facilitate improvements in environmental performance, and,
- Meet national goals and international obligations by conserving biodiversity, arresting desertification, mitigating effects of disasters, protecting ozone layer and maintaining ecological balance on the earth.

Under the Environmental Management and Coordination Act, regulations have been established to facilitate the process of EIA and EA studies. These are contained in the Kenya Gazette Supplement No. 56 legislatives Supplement No. 31, Legal Notice No. 101 of 13th June 2003 and are known as the Environmental (Impact Assessment and Audit) Regulations 2003. Several other statutes and national policies to enhance environmental conservation and sustainable development are in place in Kenya. Several of these policies and legal provisions are briefly described in the following subsections.

3.2 Policies

3.2.1 National Environmental Action Plan (NEAP, 1994)

According to the Kenya National Environmental Action Plan (NEAP, 1994) the government recognized the negative impacts on ecosystems emanating from industrial, economic and social development programs that disregard environmental sustainability. Following on this, establishment of appropriate policies and legal guidelines as well as harmonization of the existing ones have been accomplished and/or are in the process of development. Under the NEAP, Environmental Impact Assessments and Environmental Audits were introduced targeting the industrialists, business community and local authorities.

3.2.2 The National Environmental Policy (NEP)

The Kenya government established its central policy position on the need to conserve natural resources and improvement of environmental quality through Sessional Paper No. 10 of 1965, establishment of the National Environment Secretariat (NES) in 1974 following on the Stockholm conference and a series of four year development plans (1974-1978; 1979-1983; 1984-1988; 1989-1993). The rationale for administrative and legislative approach to the management of the environment was in part as a result of the need for the government to domesticate international instruments aimed at ensuring sustainable development especially the outcomes of the International Convention on Biological Diversity (CBD). A major national challenge however remained on how the country would achieve sustainable development goals without degrading the natural environment on which the country's population is depended on (Okidi, 1992). Land and habitat degradation, environmental pollution and destruction of water catchment areas continued to impact negatively of the country's potential to provide adequate environmental goods and services (GoK and JICA, 1992) in spite of regulations and environmental statutes spread across different government ministries (21 of them at the time).

3.2.3 National Policy on Water Resources Management and Development

While the National Policy on Water resources Management and Development (1999) enhances systematic development of facilities in all sectors for promotion of the country's socio-economic progress, it also recognizes the by-products of this process as wastewater. It therefore calls for development of appropriate sanitation systems to protect people's health and water resources from institutional pollution. Industrial and business development activities therefore should be accompanied by corresponding waste management systems to handle the wastewater and other waste emanating from their activities. The same section requires that such projects should also undergo comprehensive Environmental Impact Assessment (EIA) that will provide suitable measures to be taken to ensure environmental resources and people's health in the immediate neighborhood and further downstream are not negatively impacted by their emissions.

As a follow-up to this, EMCA 1999 requires annual environmental audits to be conducted in order to ensure that mitigation measures and other improvements identified during EIA studies are implemented. In addition, the policy provides for charging levies on waste on the basis of quantity and quality. The "polluter-pays-principle" applies in which case parties contaminating water are required to meet the appropriate cost of treatment. The policy provides for establishment of standards to protect water bodies receiving waste water, a process that has been accomplished through the gazettment of Legal Notice No. 120 of 2006 (Water Quality Regulations).

3.2.4 Policy Paper on Environment and Development

The key objectives of the Policy on Environment and Development include:

- To comply with and make provisions for effluent treatment standards that will conform to acceptable NEMA guidelines.
- To ensure that an independent environmental impact assessment (EIA) report is prepared for any industrial venture or other development before implementation; &,
- To ensure that from the onset, all development policies, programs and projects take environmental considerations into account.

3.3 Institutional Framework

3.3.1 Background and Administrative Structures

The Environmental Management and Co-ordination Act of 1999 received Presidential assent on January 6, 2000 and was gazetted on January 14, 2000. The main objectives of the Act are to:

- Provide guidelines for the establishment of a legal and institutional framework for the management of the environment in Kenya;
- Provide a framework of legislation for over 77 statutes in Kenya that contain environmental provisions; &,
- Provide guidelines for environmental impact assessment, environmental audit and monitoring, environmental quality standards and environmental protection orders.

In 2001, the Government established the administrative structure to implement the Act. The two main administrative structures are:

3.3.2 The National Environmental Council (NEC)

The National Environmental 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.

3.3.3 The National Environment Management Authority (NEMA)

The responsibility of the National Environmental Management Authority (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. In addition to NEMA, the Act provides for the establishment and enforcement of environmental quality standards to be set by a technical committee of NEMA known as the Standards and Enforcement Review Committee (SERC).

3.4 Legal Framework

The key national laws that govern the management of environment resources in the country have been briefly discussed in the following paragraphs. Note that wherever any of the laws contradict each other, the Environmental Management and Coordination Act 1999 prevail.

3.4.1 The Constitution of Kenya (2010)

The Constitution of Kenya 2010 is the supreme law of the land. Any other law that is inconsistent with the

Constitution is null and void to the extent of its inconsistency. Under Chapter IV, article 42 provides for the right to a clean and healthy environment for all. Further, Chapter V of the Constitution deals with Land and Environment. Specifically Part 2 elaborates on the following components regarding the protection of the environment.

- Enforcement of environmental rights
- Obligations in respect of the environment
- Agreements relating to natural resources
- Legislation relating to the environment

Under the Constitution the proponent is entitled to carry out the project within legal limits and a fair administrative decision making process from NEMA and other State organs. On the other hand, he is required to ensure:

- *That the development is carried out in an ecologically, economically and socially sustainable manner;*
- *That the right to a clean and healthy environment for all is upheld in all phases of the development; &,*
- *That all the applicable provisions of the Constitution are observed at all times.*

3.4.2 Environment Management and Co-ordination (Amendment) Act 2015

Environment Management and Co-ordination (Amendment) Act 2015 requires the Authority to categorize hazardous wastes on the recommendation of Standards Enforcement and Review Committee (SERC) and to issue guidelines and regulations for the management of each category of hazardous wastes. The categorization has been done under the EMC (Waste Management) Regulations, 2006, while these guidelines provide for safe management of asbestos and its wastes

3.4.2.1 The Environmental Management and Co-ordination (EIA/EA) Regulations, 2003. (Legal Notice No. 101 of 2003)

The EIA/EA Regulations are meant to ensure the implementation of Sec. 58 of EMCA. It makes it illegal for anyone to undertake developments without an EIA licence and stipulates the ways in which environmental experts should conduct the Environment Impact Assessment and Audits reports in conformity to the requirement stated. It is concise in its report content requirements, processes of public participation, licensing procedures, inspections and any possible offences and penalties under the Act.

Relevance to the proposed project

Acquisition of EIA license prior commencement of the project. The operations of the project are similarly licensed since the EIA report contains an Environmental Management Plan which forms the basis for approval of the project by NEMA and imposition of conditions to safeguard the environment. Due to its transparent nature, the EIA process builds neighborhood support and sustainability into the project.

3.4.2.2 The Environmental Management and Co-ordination (Waste Management) Regulations, 2006. (Legal Notice No.121 of 2006)

Asbestos has been classified as hazardous waste under the Waste Management Regulations, 2006

- Every person who generates toxic or hazardous waste shall treat or cause to be treated such hazardous waste using the classes of incinerators prescribed in the Third Schedule to these Regulations or any other appropriate technology approved by the Authority.

- Any leachate or other by-products of such treated waste shall be disposed of or treated in accordance with the conditions laid down in the license or in National Guidelines on Safe Management and Disposal of Asbestos NEMA 2013 accordance with guidelines issued by the Authority in consultation with the relevant lead agency.
- In issuing a licence for the disposal of waste, the Authority shall clearly indicate the disposal operation permitted and identified for the particular waste

Relevance to the proposed project

Seek license to operate/own waste disposal site and ensure that vehicles delivering the waste are licensed.
Ensure that tracking documents for the waste are delivered.

3.4.2.3 The Environmental Management and Co-ordination (Excessive Noise and Vibrations Pollution Control) Regulations, 2009. (Legal Notice No. 61 of 2009)

These Regulations were gazetted to manage noise levels to levels that do not cause a disturbance to the public.
The proposed activities will however have a potential for the production of noise above the acceptable limits. Noise above 85db is not expected during the proposed project

Relevance to the proposed project

Ensure compliance with the set noise level limits for the site especially during the project. The contractor should ensure that employees are not exposed to noise levels above 85 dB (A) and in such cases provide suitable personnel protection equipment (ear protective devices).

3.4.3 The Occupational Safety and Health Act 2007, OSHA

The purpose of the Occupational Safety and Health Act (OSHA) is to provide for the safety, health and welfare of workers and all persons lawfully present at workplaces and to provide for the establishment of the National Council for Occupational Safety and Health and for connected purposes. Though not explicitly provided, the act and the rules made there under have various sections on hazardous materials that apply to Asbestos. The OSHA stipulates that an employer shall not require or permit his employee to engage in the manual handling or transportation of a load which by reason of its nature is likely to cause the employee to suffer bodily injury. National Guidelines On Safe Management And Disposal Of Asbestos. It also states that any person supplying, distributing, conveying or holding in chemicals or other toxic substances shall ensure that they are packaged, conveyed, handled and distributed in a safe manner so as not to cause any ill effect to any person or the immediate environment.

Relevance to the proposed project

. It also involves the prevention of accidents at the workplace and provision of personal protective equipment (PPE) to all workers and ensuring their use.

3.4.4 Public Health Act Cap 242 Sections 11-13

An act of parliament to make provision for securing and maintaining health Section 13 states that it shall be the duty of every health authority to take all lawful, necessary and under its circumstances reasonably practicable measures for preventing the occurrence or dealing with any outbreak, or prevalence of any infections, communicable or preventable diseases or conditions to safeguard and promote the public health and to exercise the powers and perform the duties in respect of the public health conferred or imposed on it by this act or by any other law. The Public Health Act Cap 247, Section 3 gives provisions for use of poisonous substances. It refers to regulations for protection of persons against risk

of poisoning, imposing restrictions or conditions on the importation, sale, disposal, storage, transportation or use of poisonous substances. This Act also requires persons concerned with importation, sale, disposal storage, transportation or use of poisonous substances to be registered and licensed and provides measures for detecting and investigating cases in which poisoning has occurred. The Public Health Act Sec 126 A, empowers county governments to make by laws for all or any of the following matters with regards to buildings for - controlling the construction of buildings and the materials to be used in the construction of buildings; Preventing the occupation of a new or altered building until a certificate of the fitness thereof for occupation or habitation has been issued by such local authority. To compel owners to repair order to demolish unsafe, dangerous or dilapidated buildings. The Act further gives the county governments power to require removal or alteration of work in certain cases the local authority may by notice to the owner either require him to pull down or remove the work, or if he so elects to comply with any other requirements.

Relevance to the proposed project

Applicable during the entire project cycle in ensuring those proper and hygienic methods are used. Maintain the completed structure according to standards, ensure access to safe drinking water and put measures to prevent activities that would be a nuisance to the public.

3.4.5 The Occupational Safety & Health Act (Hazardous Substances) Rules, 2007

Asbestos has been listed as a hazardous substance and its threshold limit values given, therefore these rules apply to all workplaces where asbestos is present. Asbestos has been listed as a hazardous substance and its threshold limit values given, therefore these rules apply to all workplaces where asbestos is present.

3.4.6 The Local Government Act, Chapter 265

Section 160 (a) of The Local GovernmentAct, Chapter 265 Empowers every municipal council, town council and every urban council to establish and maintain sanitary services for the removal and destruction of, or otherwise dealing with, all kinds of refuse and effluent and, where any such service is established, to compel the use of such service by persons to whom the service is available. Section 201(1) – (4) expands the jurisdiction of local authority to make by-laws in respect of all such matters as are necessary or desirable for the maintenance of the health, safety and well-being of the inhabitants of its area or any part thereof and for the good rule and government of such area or any part thereof and for the prevention and suppression of nuisances. The by-laws so made may control, regulate, prevent, prohibit or compel certain activities to be undertaken and prescribe offences in case of contravention.

3.4.7 National Guidelines on Safe Management and Disposal of Asbestos

These guidelines will apply to all persons or firms operating in facilities and premises in which asbestos materials may be handled during installation, demolition, renovation, repair or removal for disposal.

CHAPTER FOUR

4.0 Project Description and Design

The proponent proposes to develop an asbestos disposal site as per the ASBESTOS ACT. Any persons designated by the proponent shall apply common approaches on safe handling, packaging, transportation and final disposal of asbestos waste. This is to ensure that there is safe disposal of the asbestos material to avoid impacts to the environment.

4.1 Asbestos management

Asbestos is classified as hazardous in schedule IV of Legal Notice No. 121 Environmental Management and Co-Ordination (Waste Management) Regulations 2006. The project will thus follow the provisions set out in part IV of Legal Notice No. 121 as well as in the national guidelines on safe management and disposal of asbestos as discussed below.

4.1.1 Preparation for Transportation

Material containing asbestos or contaminated with asbestos must be viewed as hazardous and packaged to keep fibres from getting into the air. Containers used for packaging may be hard or flexible and must seal airtight.

The following are some of the precautions that should be observed in the packaging.

i. The waste transporting vessel must be lined with a 500 gauge double wrapped plastic sheet with every seam sealed with a tape and covered**.**

ii. The transportation vessel should be labeled **"Danger - Contains Asbestos Fibres Cancers and Lung Disease Hazard"** and contain the following information:

- The identity of the hazardous waste
- The name, physical address and telephone contact of the generator of waste

iii. The bags and stacks should be gently loaded into transportation vessel.

iv. The goose necks should not be used as handles for carrying the bags, because that might unseal the ends or tear the bags. Tossing the bags into a waste transporting vessel must be avoided because of the risk of rupture.

v. The asbestos waste should be transported to a prepared disposal site that is authorized by NEMA.

4.1.2 Transportation

i. The vehicle transporting the asbestos waste should be licensed as per the EMC (Waste Management) Regulations 2006 and must be accompanied by a tracking document

ii. The waste shall be transported to the disposal site in an enclosed vehicle or container, capable of being washed without lodgment of debris and fibres, and secure from escape of fibres to the atmosphere.

iii. The contractor should ensure that all persons involved in handling and disposal of asbestos are trained in emergency operating procedures. These procedures shall include how the waste is to be handled, services to be contacted during such an exposure, and additional personal protective equipment.

4.1.3 Disposal site

Disposal of asbestos must be at a site;

- Designated by the local authorities and licensed by NEMA;
- Privately owned disposal facility licensed by NEMA;

- Designated by the waste generator (on-site disposal)

Where a designated site by the local authorities or privately owned facility does not exist the waste generator shall identify an appropriate site, undertake an EIA and be duly licensed. The waste generator shall ensure that the following precautions are observed when disposing asbestos wastes:

i. The waste generator shall notify the Authority on commencement of disposal activities.
ii. Asbestos materials must not be reused or offered for sale.
iii. All asbestos sheets and the debris should be wrapped before it is hauled to the disposal site or transfer station in a covered vehicle.
iv. Asbestos waste must be disposed of at approved disposal sites only.
v. The depth of the disposal pit shall be as deep as practically possible to accommodate more asbestos waste but at least one (1) metre above water table.
vi. The asbestos should be lowered gently into the disposal site and should not be dropped from any height to avoid breakage.
vii. When all available asbestos has been lowered into the pit, cover with polythene paper followed by 6 inch layer of soil. Continue doing this until the pit is full or the waste is finished.
viii. The pit shall be considered full when the asbestos waste is **one meter** below the ground level or the asbestos waste is exhausted.
ix. After the pit is full, cover with 500 gauges double wrapped polythene sheet and fill the pit with layer of soil up to the ground level.
x. Disposal site should be completely fenced off with at least chain link and a lockable gate which shall be locked at all times. The fence should be at least one (1) metre from the edge of the pit.
xi. Warning notices stating **"Asbestos hazard area, keep out"** shall be placed at the disposal site. These signs, with lettering of minimum 150mm in height, are to be placed so that they are clearly visible.

4.1.5 Post - disposal

- All transportation vessels, re-useable containers or any other similar article which have been in contact with asbestos waste shall be cleaned at the disposal site.
- The disposal site should be maintained including the warning signs, the fence, the gate among others to prevent vandalism and interference.
- Human activities which might interfere with the buried asbestos waste such as construction and pitting should not be allowed at the disposal site.
- The waste generator shall notify the Authority in writing on completion of disposal of asbestos waste

4.6 Project Cost

The project implementation cost is estimated at Kshs. 8,500,000.00

CHAPTER FIVE

5.0 Public and Stakeholder Consultation

A public consultation process was engaged in gauging the sentiments of a variety of stakeholders. Besides the fact that this is a regulatory requirement under the Environmental (Impact Assessment and Audit) Regulations (2003), it was an excellent opportunity to offer the public an opportunity to ventilate their concerns and probably give recommendations.

5.1 Public consultation methodology

A public participation meeting was held in Tsangastini area within the local chief's office. Several members from the community were available including the area ACC, the chief and assistant chief and the proponent representative. They were given an opportunity to give their views and concerns on the proposed project. Full attendance list is attached in the appendices.

5.2 Stakeholder comments/concerns

The issues raised by neighbors of the site were thought to be pertinent to the eventual success of the proposed development. Such issues/views included:

- Safety of those working within the premises and neighborhood
- Creation of short-term employment
- Possible hazardous dust and noise emission during removal
- Health and safety of workers during operations;
- Process to be undertaken off operations hours

5.3 Conclusion on findings

The overwhelming majority of the members of the public and key stakeholders could see enormous benefits accruing to them and to the enhancement of the environment by the coming into being of the project. The respondents had no fears against the proposal. No major impact that could not be mitigated that was foreseen.

Figure 2 community members during the public participation meeting

CHAPTER SIX

6.0 Potential Environmental Impacts

This Chapter identifies both positive and negative environmental impacts likely to be occasioned by the project's removal, transportation and disposal phases. It discusses the nature of impacts, their magnitude, spatial and time extent and significance. The table below shows how the impacts are assessed.

Table 6.1: Scale for evaluation of project impacts

SCORE	**(-1) +1**	**(-2) +2**	**(-3) +3**	**(-4) +4**	**(-5) +5**
PARAMETER					
Magnitude	Impacts occur or are felt on site		Impacts affect more than 3 kilometers radius		Impacts affect the region
Significance	**Low** Small changes which are hardly detectable	**Moderate** Impact measurable but does not alter processes	**High** Many people, animals, plants affected. Disruption to ecosystems and social systems.	**Very high** Loss of biodiversity, property, livelihood systems	**Unknown** effects Insufficient information available. Apply precautionary principle
Probability of occurrence	**Possible** Impacts can occur but are controllable		**Probable** The impact is likely to occur but can be controlled by effective measures.		Definitely will occurs
Duration of occurrence	**Short term** During pre-removal phase only	**Medium term** Impacts will be during operational phase only		**Long term** Impacts will be there for entire operation phase	**Very Long term** For the entire operational phase and after closure

The impacts identified are discussed below:

6.1 Removal Phase Impacts

6.1.1 Positive impacts

6.1.1.1 Employment

During the project planning and design, the project proponent has already employed consultants. At NEMA licensed contractor will deploy workers to help in the project activities. This will include both skilled and unskilled personnel especially from the local population. The income obtained from the employment will help be better the lives of the persons affected.

This study recommends that during removal of asbestos only casual personnel trained in work at height and safe removal of asbestos are used by the contractor/designated waste handler.

6.1.1.2 Safety of the environment & residents

Any possible chances of asbestos finding its route to the physical environment will be eliminated. As such those staying around the proposed project site will be safe from hazardous nature of asbestos exposure.

6.1.1.3 Compliance

The compliance of Kenya Wine Agencies Limited to the asbestos regulations by safe removal of asbestos will add evidence that legally, the proponent conforms. Additionally, since the proponent implements quality and environmental management systems its environmental performance will be enhanced.

6.1.1.4 Income to the government in terms of taxes and statutory fees

The government intends to get income/revenue in terms of taxes generated during the acquisition of licenses. The transportation and disposal material to be used will also be taxable (16% VAT). Through the revenues generated, the government will be capable of financing its obligations to the country. The proponent is obliged to pay 0.1% of the total project cost to the NEMA Revenue Account prior submission of the EIA report.

6.1.2 Negative Impacts

6.1.2.1 Environmental contamination

During the removal operations there are bound to be breakages that will generate dust therefore inhalation will occur. Due to the fibrous nature of the asbestos, airborne dust is likely to be present in the environment close to the premises where asbestos is handled. All people within that vicinity are likely to be exposed to the dust in the air.

Fibres embedded in lung tissue over time may cause serious lung diseases including asbestosis, lung cancer or mesothelioma. The major health effects associated with asbestos exposure includes:

Asbestosis -- Asbestosis is a serious, progressive, long-term non-cancer disease of the lungs. Symptoms of asbestosis include shortness of breath and a dry, crackling sound in the lungs while inhaling. There is no effective treatment for asbestosis.

Lung Cancer -- People who work in the mining, milling, manufacturing of asbestos, and those who use asbestos and its products are more likely to develop lung cancer than the general population. The most common symptoms of lung cancer are coughing and a change in breathing. Other symptoms include shortness of breath, persistent chest pains, hoarseness, and anemia.

Mesothelioma --this is a rare form of cancer that is found in the lung, chest, abdomen, and heart and almost all cases are linked to exposure to asbestos. This disease may not show up until many years after asbestos exposure

Pleural thickening is a condition that may develop after heavy asbestos exposure. The lining of the lung (pleura) thickens and swells, causing shortness of breath and discomfort in the chest.

6.1.2.3 Occupational health and safety hazards

Asbestos is extremely hazardous to human health. Even small amounts of asbestos can cause serious illness and death years after exposure. During handling by designated staff hazards such as fall from height, sharp objects, noise are likely.

6.1.2.4 Solid waste generation

Considerable amounts of solid waste will be generated during the removal phase of the project including the asbestos being removed itself.

6.2 Transportation and Disposal Phase Impacts

6.2.1.4 Safe disposal of asbestos

The operation of the site will provide a safe way of asbestos disposal

6.2.2 Negative Impacts

6.2.2.1 Possible contamination of surface and ground water

The asbestos once buried runs a risk of ground water contamination if it comes into contact with the water table. This may occur due to:

- Excessive excavation of the pit into the water table.
- Poor pit lining or if the pit lining is compromised.
- Poor covering of the pits or exposure due to soil erosion.

6.2.2.2 Air pollution

Due to the fibrous nature of the asbestos, airborne dust is likely to be present in the environment where asbestos is handled. During the handling operations there are bound to be breakages that will generate dust that is harmful.

6.2.2.3 Health and safety impacts

Impacts on health and safety are expected to arise from potential exposure to asbestos and accident occurrence to workers at the disposal site or during delivery. Uncontrolled access to the site by the public may also pose similar health hazards to them.

6.3 Decommissioning Impacts

Since this is a one off activity, decommissioning is not expected as the entire study reflects a decommissioning of asbestos roofing.

CHAPTER SEVEN

7.0 Impact Mitigation

This chapter deals with the plan for the mitigation of anticipated adverse environmental impacts while enhancing beneficial impacts of the proposed project. The project's environmental mitigation plan has been drawn in accordance with legislative and regulatory frameworks on environmental and socio-economic aspects. In addition, possible treatment and prevention measures have been discussed in this chapter.

Asbestos removal mitigations measures

As articulated in the National Asbestos Management Guidelines Kenya Wines Agencies Limited must ensure that the following precautions are observed when removing asbestos materials from buildings or other structures:

- Secure the site to prevent unauthorized persons and to restrict movement
- Wet the asbestos sheets before removal. If asbestos sheets should begin to crack or crumble, immediately wet the cracked or broken areas with the pintsize spray bottle or garden pump sprayer.
- NB. Breakage releases asbestos fibres.
- Remove pieces of asbestos sheets by pulling any fasteners (nails, screws, rivets) or cutting fastener heads so as to minimize breakage. If necessary, carefully lift asbestos sheets with pry tools to expose the fasteners' heads.
- Do not slide asbestos sheet over each other.
- Carefully lower removed asbestos sheets to the ground.
- Do not throw or drop it.
- Care should be taken not to stand or sit on the asbestos sheets to avoid breakage.
- The workers removing the asbestos must have the appropriate
- Personal protective equipment which must be removed as they enter the shower room immediately after removal of the asbestos.

7.1.2 Mitigation for Temporary storage

If the asbestos must be stored before disposal they must be stored in such a way that its containers are secure from accidental or deliberate damage, access by staff and the general public. Temporary storage refers to the time between removal and final disposal of asbestos waste.

- The duration for temporary storage of asbestos waste should not exceed thirty (30) days from the time of removal.
- The temporary site should be within the premises where the asbestos are being removed.
- The removed bulky asbestos, such as roofing sheets, beams, joists, and studs, should be stacked and wrapped, into stacks which can be easily loaded into the transportation vessel, in a plastic sheet of a minimum of 500 gauge double wrapped and secured with tape and labeled
- Any debris (broken pieces) should be collected in a sealed polythene woven bag or any other air tight container
- The bags should then be wrapped, into stacks which can be easily loaded into the transportation vessel, in a polythene sheet awaiting final disposal.

- The bags should be considered full when half full and should be tightly sealed or when filled up to a level where the open neck can be twisted tightly, folded over into a"gooseneck," and the ends sealed to the side of the bag with heavy plastic tape such as duct tape.
- Care should be taken to ensure that sharp pieces do not puncher the bags/ wrappers
- Removed asbestos sheets should not be allowed to lie about the site where they may be further broken or crashed by machinery or site traffic.
- The storage area must have restricted entrance and locked or secured on a 24 hour basis.
- Warning label ("Asbestos hazard area, keep out") and danger signs should be affixed to each wrapped stack or storage area using English, Swahili and Local language.

7.1.3 Occupational health and safety & PPEs to be used

To ensure the health and safety of workers at the site, the contractor and the proponent must establish an Occupational Health and Safety Management System (OHSMS) which will be managed and operated for the proposed asbestos disposal activities. The system will basically contain the following features;

a. Occupational Health and Safety Policy,
b. Organizational Framework of the OHSMS. This includes:
   - Staffing of OHSMS,
   - Competence requirements,
   - Operating procedures,
   - Training programmes,
   - System documentation,
   - Communication.
c. OHSMS objective,
d. Hazard prevention. This involves:
   - Risk assessment
   - Prevention and control
   - Management of changes
   - Emergency preparedness and response
   - Procurement (tools, equipment, services, contractors)
e. Performance monitoring and measurements. This includes:
   - Hazard prevention measures
   - Ambient working environment
   - Occurrence of work related injuries, ill health, disease and injuries
   - Record keeping with regard to occurrence of incidents and actions taken.
f. Evaluation
   - Formative and summative evaluation
   - Feedback
   - Remedial actions
   - Incident re-occurrence prevention plan (IRPP)
   - Performance improvement

Personal Protective Equipment (PPE)

Refers to clothing and respiratory apparatus designed to shield or protect individuals from chemical, physical or biological hazards. PPE assists in providing preventive measures when used correctly. All PPE must be suitable for the person using it and provide effective protection for its intended purpose

The following are some of the protective equipment that can be used:

• Respirators - half-face, dual-cartridge respirators, each equipped with a pair of High Efficiency Particulate Air filters (HEPA).

• Coveralls – should be with built-in booties and disposed off properly in sealed asbestos disposal bags after use.

• Rubber boots - These are highly recommended so that coverall booties do not wear through. Rubber boots can be washed off later or disposed of as contaminate debris.

• Eye protection - Each person removing asbestos materials should wear non-fogging goggles or safety glasses

7.1.3.1 Transportation of Asbestos Mitigation Measures

Material containing asbestos or contaminated with asbestos must be viewed as hazardous and packaged to keep fibres from getting into the air. Containers used for packaging may be hard or flexible and must seal airtight. The following are some of the precautions that should be observed in the packaging.

a) The waste transporting vessel must be lined with a 500 gauge double wrapped plastic sheet with every seam sealed with a tape and covered**.**

b) The transportation vessel should be labeled **"Danger - Contains Asbestos Fibres.**

Cancers and Lung Disease Hazard "and contain the following information: (i) the identity of the hazardous waste.

(ii) The name, physical address and telephone contact of the generator of waste

c) The bags and stacks should be gently loaded into transportation vessel.

d) The goosenecks should not be used as handles for carrying the bags, because that might unseal the ends or tear the bags. Tossing the bags into a waste transporting vessel must be avoided because of the risk of rupture.

e) The asbestos waste should be transported to a prepared disposal site that is authorized by NEMA

Transportation Mitigation Measures

- The vehicle transporting the asbestos waste should be licensed as per the EMC (Waste Management) Regulations 2006 and must be accompanied by a tracking document
- The waste shall be transported to the disposal site in an enclosed vehicle or container, capable of being washed without lodgment of debris and fibres, and secure from escape of fibres to the atmosphere.
- The contractor should ensure that all persons involved in handling and disposal of asbestos are trained in emergency operating procedures. These procedures shall include how the waste is to be handled, services to be contacted during such an exposure, and
- additional personal protective equipment as provided in annex five of the asbestos regulation

  -Provide for security services at the site.

7.1.3.3 Disposal Mitigation Measures

As part of its contractor management programme, Kenya Wine Agencies Limited, Mombasa will ensure that the contractor meets all compliance obligations appertaining to disposal including but not limited to the following:
Disposal of asbestos must be at a site;

- Designated by the local authorities and licensed by NEMA;
- Privately owned disposal facility licensed by NEMA;
- Designated by the waste generator (on-site disposal).

Where a designated site by the local authorities or privately owned facility does not exist the waste generator shall identify an appropriate site, undertake an EIA and be duly licensed.

7.1.3.4 First aid

The following should be adhered to;

- It will be the responsibility of the contractor to ensure that first-aid services are provided to employees at all times,
- An appropriately equipped first aid station to be easily accessible at the during the temporary works,
- There shall be a well-trained first aider on site at all times
- An eye-wash station and/or emergency shower shall be provided where the recommended first aid response is immediate flushing with water,
- The first aid station shall be equipped with gloves, gowns and masks for protection against direct contact with blood and other body fluids,
- A written emergency response plan will be in place and drills conducted to familiarize employees.

7.1.2 Workforce sanitation

The proponent will procure portable toilets for use by the workforce. These will be emptied regularly and appropriately as required. The emptying entity should be licensed by the relevant authorities.

7.2.3 Health and safety impacts

- Workers should be provided with appropriate PPE and their use enforced
- Secure the area and install warning signs '**Asbestos Hazard'** to discourage tresspass and possible exploration of undergound water, e.g digging wells, sinking bore holes, etc. Public access may only access the site under strict guidance
- The workers should be trained on asbestos handling.
- Comply with the requirements of the Occupational Safety and Health Act No. 15 of 2007.

Ensure that waste transporting vehicles adhere to stipulations set in Part II Sections 7 to 10 of Legal Notice 121 EMCA (Waste Management) Regulations of 2006 which make provisions for waste transportation license, mode of transporting waste, waste transportation by a licensed transporter and transitional provision of transporting waste, respectively.

7.2 Decommissioning Phase Impact Mitigation

- Being as asbestos roof decommissioning proposal, the above mitigation measures apply.

CHAPTER EIGHT

8.0 Environmental Management Plan

8.1 Introduction

The objectives of the Environmental Management Plan are:

- To guide the project implementers in project planning,
- To guide the Project implementers on the likely impacts of the project and when they are likely to occur.
- To give an assessment of the capacity requirements for the implementation of the EMP,
- To guide the project implementers to allocate adequate resources for the implementation of the mitigating measures.

8.2 Plan Period

The EMP provided here is to cover the first two years year the proposed operations. It is then expected that a several internal/ external surveys will be undertaken at the end of the project to evaluate conformity to the EMP as well as identify any gaps and recommend corrective adjustments to the plan. This will then be addressed through a loop mechanism from pre-removal phase to disposal phase to identify the success of the project versus the failures. This should be analyzed through the environmental management criteria of impact and mitigation.

8.3 EMP Outline

The tables below outline the environmental management plans for the proposed development cycle. The plan considers the following;

- Predicted environmental impact
- Proposed mitigation measures
- Responsible party / parties
- Timeframe
- Costs

8.4 EMP for the Asbestos disposal

Management Aspect	Mitigation measures	Time frame	Responsibility	Cost (Kshs)	Remarks
1. General Conditions	• Notify workers about the upcoming activity • Prepare appropriate PPE complying with international good practice • Post appropriate signpost of the site that will inform the workers of key rules and regulations to follow	During preparation for the proposed activity	Manager	100,000	This will help prepare the workers for the asbestos disposal and cleaning process
2. Waste Management	• Inform cleaning and disposal workers of their responsibilities in terms of the EMP. • Ensure that all waste removal workers comply with the Waste Mgt Regulations of 2006 and National Guidelines for Safe management, and disposal of Asbestos. • Collect waste paper	During the cleaning and disposal process	Manager	90,000	To ensure a clean and healthy environment

	generated at the work site in scrap paper bins. Notify the waste paper removal worker /contractor when the temporary scrap paper storage area reaches capacity, for removal of the scrap paper to a recycling facility. • Place all general / domestic waste in refuse bins.				
• Asbestos management	• Asbestos disposal site shall be marked clearly as hazardous material in accordance with the Asbestos National Guidelines • The asbestos will be appropriately contained and sealed to minimize exposure • The asbestos prior to removal should be treated with a wetting agent to minimize asbestos dust • Asbestos should be handled and disposed by skilled & experienced	Preparation and disposal of the asbestos	Manager	350,000	To prevent asbestos dust from becoming airborne; To minimize personal exposure to asbestos fibers To ensure good environmental and health status of the facility

	professionals • If asbestos material is being stored temporarily, the wastes should be securely enclosed inside closed containments and marked appropriately. Security measures will be taken against unauthorized removal from the site. • The removed asbestos will not be reused				
4.Traffic and Pedestrian Safety	• Signposting, warning signs, barriers and traffic diversions: site should be clearly visible and the workers warned of all potential hazards • Provision of safe passages and crossings for pedestrians be made • Active management by trained and visible staff at the site, if required for safe and convenient passage for the workers. • Ensuring safe and continuous access to office	At preparation stages	Manager	80,000	To avoid the spread of asbestos dust To reduce the potential to contaminate, as asbestos fibers can be spread through various mediums including living persons To eliminate risks of exposure to asbestos fibers

	facilities, shops and residences during disposal and cleaning activities, if the facility is in operation during this activity				
5.Air Quality	• Establish air quality monitoring systems and implement operational management plans to ensure that the system is being maintained properly and that the outputs of the monitoring system are providing suitable data on air quality. • Appoint a dust monitoring system to monitor and analyze dust and air quality • Air monitoring should be done continuously in areas related to asbestos removal works.	At preparation and disposal stages of the disposal	Manager	250,000	To minimize air pollution To prevent asbestos fibers from being airborne
6. Storm water Management	Ensure all storm water from the site is directed towards the established water drains	During disposal process	Manager	20,000	To ensure that there is no ponding on the disposal site or flowing water

7. Management of temporary waste storage sites	• Ensure management of temporary waste storage sites is in line set procedures and legal requirements. • Register and monitor waste volumes at the temporary waste storage site • Oversee the physical removal of the waste from the temporary waste storage sites	During preparation and disposal stages	Manager	80,000	To ensure that the wastes are removed effectively and in time
8.Affected flora and fauna	Preserve as possible indigenous trees and other surrounding vegetation that need not be removed	During preparation and disposal stages	Manager	20,000	To ensure environmental management and proper ecological balance
9. Information and training	Training on the potential health risk caused by exposure to asbestos and how to reduce these risks	Before the disposal process commences	Manager	40,000	To provide awareness on the risks of asbestos
10. Asbestos exposure	The company shall not permit any person to work in an environment in which he or she would be exposed to asbestos in excess of the prescribed occupational exposure limit.	At, during and after the disposal and cleaning process	Manager	80,000 (Air quality monitoring)	To minimize risks of contracting diseases associated with exposure to asbestos fibers, e.g. cancer
11. Medical surveillance	Ensure medical surveillance of an	After the disposal	Manager	100,0000	To minimize incidents of occurrence of occupational diseases, notably those caused by

	occupational medical practitioner after the disposal exercise	exercise			exposure to asbestos fibers
12. Cleanliness of premises and plant	workplaces are maintained in a clean state and are free of asbestos waste	After the disposal process	Manager	40,000	To eliminate workplace contamination
13. Disposal Scheduling and Hours	The disposal and cleaning activities should be limited from 7 am or sunrise (whichever is later) to 5 pm or sunset	During the disposal and cleaning exercise	Manager		To prevent risk of inhaling asbestos fibers, which is possible if one does not clearly see the area of work due to darkness
14. Clearance Inspections	Inspections should be done to ensure that temporary storage site is cleaned to a satisfaction standard.	After the cleaning work	Manager	50,000	To eliminate risk of future contamination and exposure to asbestos

Project Decommissioning

In the event that the proposed disposal site lifetime is limited as a result of any unforeseen factors, then at some point, the asbestos containing site must be decommissioned or redeveloped to keep up with changes in land use and legislation on environmental impact.

An initial site assessment will have to be undertaken before an acquisition is made and a change of site usage is proposed. Environmental assessment is a key part of the due diligence process and ensuring that all surveys and assessments identify potential decommissioning hazards and risks and how to conserve resources and reduce the instances of environmental liability. In extreme situations, the decommissioning process may involve the safe handling and disposal of hazardous asbestos, material and waste and the cleanup of a site that has been contaminated by previous disposal operations.

Exposure to asbestos may be fatal: the fibers can lodge in the lungs, thus causing the onset of a number of types of lung cancer. This may be prevented if suitable protective clothing is worn. The site may carry more risks through the decommissioning process. The cost of the decommissioning process may be high, but the safety implications of contamination are so severe that each step of the process needs to be planned and executed to perfection.

Ultimately, the purpose of decommissioning of the site will be to reclaim the land, making it safe for people and vegetation. The introduction of vegetation to the site is less likely to have any severe impact. Environmental impact assessment will ensure that environmentally responsible decommissioning and redevelopment is a priority and that introduction of right vegetative species offsets any damage that may have been previously caused. The regeneration of this site will aim at protecting the health of the people that work on or are near the site and provide protection for the land for any other future developments with minimal negative impact.

CHAPTER NINE

9.0 Analysis of Alternatives

9.1 Introduction

Investigating the available alternatives to the development proposal is an important aspect of the EIA process that could invariably help in mitigating the impacts predicted in the preceding chapters of this report. In this analysis, the EIA/EA experts considered alternatives on the following basis.

- The arguments for or against the implementation of the project i.e. the "No" versus the "Yes" project alternatives
- Siting of the project
- Technological alternatives
- Design alternatives.
- Scale and extent.

9.2 The 'No Project' alternative

This alternative implies that the status quo of having the asbestos roofing on the staff quarters persists

9.2.1 Health Risks

Asbestos is extremely hazardous to human health. Even small amounts of asbestos can cause serious illness and death years after exposure.

Fibres embedded in lung tissue over time may cause serious lung diseases including asbestosis, lung cancer or mesothelioma.

The major health effects associated with asbestos exposure includes:

Asbestosis -- Asbestosis is a serious, progressive, long-term non-cancer disease of the lungs. Symptoms of asbestosis include shortness of breath and a dry, crackling sound in the lungs while inhaling. There is no effective treatment for asbestosis.

Lung Cancer -- People who work in the mining, milling, manufacturing of asbestos, and those who use asbestos and its products are more likely to develop lung cancer than the general population. The most common symptoms of lung cancer are coughing and a change in breathing. Other symptoms include shortness of breath, persistent chest pains, hoarseness, and anaemia.

Mesothelioma --this is a rare form of cancer that is found in the lung, chest, abdomen, and heart and almost all cases are linked to exposure to asbestos. This disease may not show up until many years after asbestos exposure

9.2.2 Environmental Contamination

Exposure to the asbestos roof to intense sunlight and rainfall could pose a risk of the fibres entering into the ecosystem.

9.3 The "Yes Project" alternative

This option was considered as the most viable because of the following reasons;

- There will be employment creation,
- Proper disposal of asbestos,

- Commitment to environmental performance
- The proposal is consistent with the existing national guidelines on asbestos management and disposal.

CHAPTER TEN

10.0 ENVIRONMENTAL MONITORING PROGRAMME

10.1 Overview of monitoring programme

Throughout the operation phase, regular monitoring intended for proper safety and protection of the environment will be undertaken. The monitoring system will assist in observation, evaluation, assessment and reporting on the performance of different/various variables with regard to the environment.

10.2 Environmental Management System

An environmental management system (EMS) is a comprehensive approach to managing environmental issues, integrating environment-oriented thinking into every aspect of development management. An EMS ensures environmental considerations are a priority with other concerns such as costs, product quality, investments, productivity and strategic planning.

The proposed development will require that a c

omprehensive safety, occupational and public health and environmental system be formulated and maintained in accordance with the relevant legislative and regulatory requirements.

10.3 Environmental Institutional Framework

The project proponent will work with EIA/EA experts in identifying ways to improve environmental performance of the disposal setting objectives and targets, monitoring and evaluating implementation.

10.4 Monitoring schedule

The proponent or property manager will follow the monitoring schedule that will assist in observation, evaluation assessment and reporting on the performance of different/various variables. The following table summarizes the suggested monitoring schedule of the disposal activities

Table 10.1: Summary of monitoring schedule

Description of parameter	Method of monitoring	Monitoring schedule and duration
Compliance by contractor and contractor staff to HSE requirements	Visual inspections against checklists containing requirements	Review daily to determine impact on quality
Public health and safety	Visual inspection and complaints from neighbors/workers	Daily

10.5 Waste tracking

As per the Waste Management Regulations of 2006 and the National guidelines on Management and Disposal of asbestos, the proponent, the NEMA licensed contractor and the authority must ensure that tracking documents are in place and that necessary notifications to the authority are done.

CHAPTER ELEVEN

11.0 Conclusions and Recommendations

11.1 Conclusion

As a result of the current potential health risk posed by the presence of the asbestos waste at Steen Agencies Limited premises and the long period of time that the asbestos has been present at the temporary site, it is recommended that the license and authorization for the potential asbestos disposal and clean-up at the proposed site within the premises be granted by NEMA, subject to the a specific mitigation measures contained in this report and the EMP, when handling and disposing of asbestos waste. The presence of asbestos at the current site within the premises grounds poses a long term environmental and human health risk to people who operate on the site, and therefore the need and urgency to undertake the disposal and clean-up in order to eliminate any further environmental risks at contaminated area within the premises is imperative. It is therefore recommended that the asbestos disposal and clean-up be undertaken by the premises management as a matter of urgency to avoid or reduce any future health risks to workers and people that operate at the premises.

11.2 Recommendations

This report recommends issuance of an EIA license subject to the conditions that NEMA may impose during the decision-making process. The following recommendations should however be considered:

- The asbestos materials in the facility are not, friable. Though not friable they pose a potential risk due to ageing, possible disturbances and the fact that learner's staff, public and the environment are exposed. Thus, this study recommends removal.
- The current NEMA guidelines do not impose any specific litigation fines but it is in good will and the business commitment to have an Asbestos Containing Materials Management Plan (ACMP) to render Kenya Wines Agencies Limited premises compliant/safer
- The proponent should implement the EMP in line with other conditions that NEMA may impose during the decision-making process;
- The proponent should use the EMP as monitoring and evaluation tool
- The proponent and assigned contractor should undertake all the operations within the applicable legal limits

12.0. REFERENCES

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20. The Public Health Act – Laws of Kenya, Chapter 242.
21. The Water Act No. 8 of 2002 (Effective implementation of provisions in 2003).

13.0 APPENDICES

1. Copy of EIA /EA experts practising licenses
2. Copy of land ownership documents
3. Copy of Proponent's PIN certificate and Certificate of incorporation
4. Public participation minutes