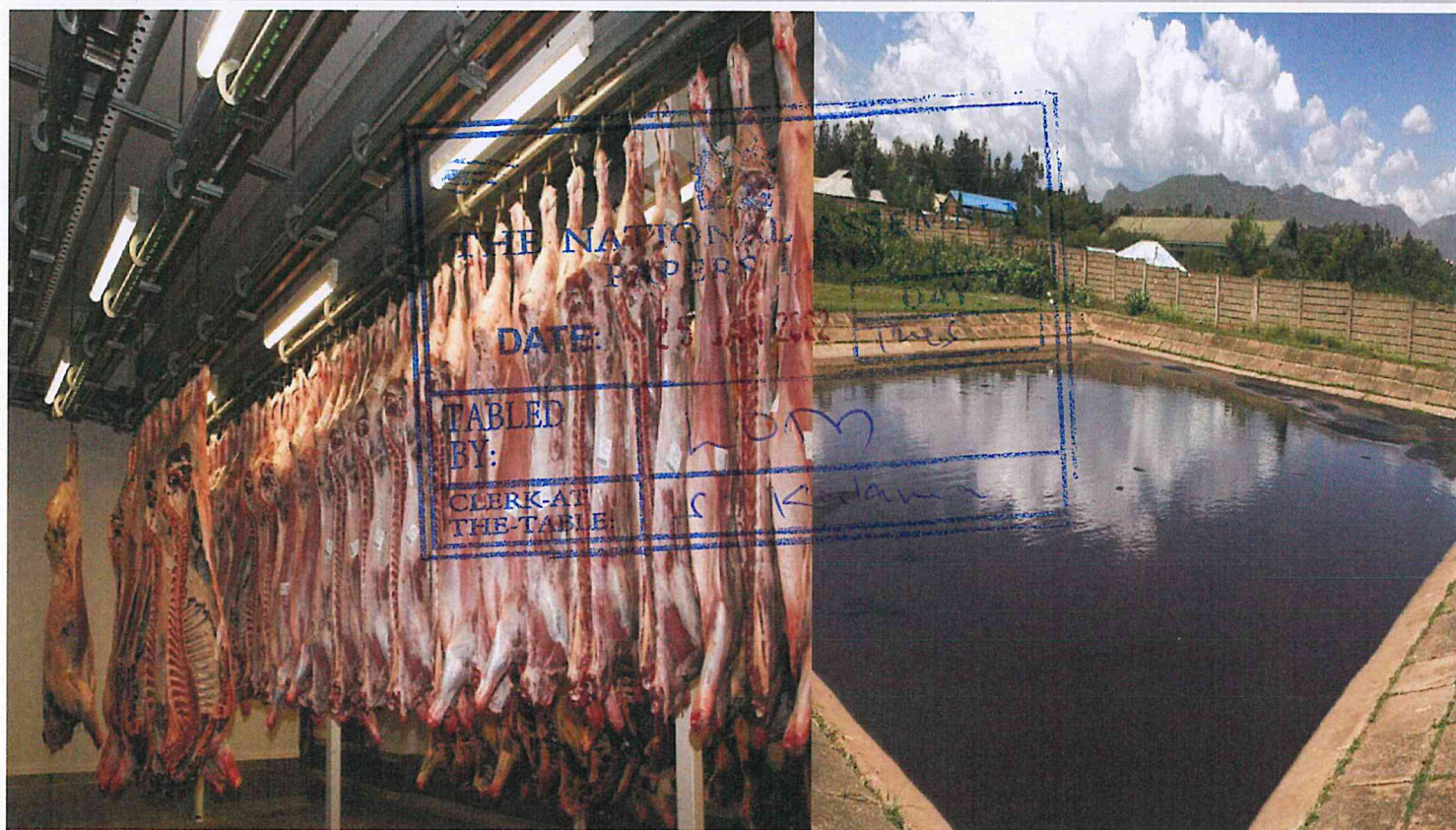


**PERFORMANCE AUDIT REPORT ON
ENFORCEMENT OF ENVIRONMENTAL
REGULATIONS ON EFFLUENT MANAGEMENT IN
SLAUGHTERHOUSES**

BY

THE NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY



NOVEMBER 2021

VISION

Making a difference in the lives and livelihoods of Kenyan People.

MISSION

Audit Services that impact on effective and sustainable service delivery

CORE VALUES

Independence

Credibility

Relevance

Accountability

Integrity

MOTTO

Enhancing Accountability

Foreword by the Auditor – General

I am pleased to present this performance audit report on the Management of effluent from slaughterhouses by the National Environmental Management Authority (NEMA). My Office carried out the audit under the mandate conferred on me by Section 36 of the Public Audit Act, 2015. The Act mandates the Office of the Auditor - General to examine the economy, efficiency and effectiveness with which public money has been expended pursuant to Article 229 of the Constitution of Kenya, 2010.

Performance, financial and compliance audits form the three-pillar audit assurance framework that I have established to give focus to the varied and wide scope of the audit work done by my Office. The framework is intended to provide a high level of assurance to stakeholders that public resources are not only correctly disbursed, recorded and accounted for, but their use results in positive impacts on the lives of all citizens. The main goal of our performance audits is to ensure effective use of public resources and promote service delivery to citizens.

The audit has an environmental perspective on management of effluent from slaughterhouses. I am hopeful that corrective action will be taken in line with recommendations in the report. This will contribute towards the realisation of the provision of Article 42, 69 and 70 of our Constitution, which calls for better management of the environment for the benefit of all Kenyans.

The report is submitted to Parliament in accordance with Article 229 (7) of the Constitution of Kenya, 2010 and Section 39 (1) of the Public Audit Act, 2015. In addition, I have submitted copies of the report to the Principal Secretary, Ministry of Environment and Forestry, the Chief Executive Officer, National Environmental Management Authority, the Principal Secretary, National Treasury and the Secretary, President's Delivery Unit.


CPA Nancy Gathungu, CBS
AUDITOR – GENERAL

10 November, 2021


 THE NATIONAL ASSEMBLY PAPERS LAID	
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CLERK-AT THE-TABLE:	LOM S. Kalama

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EXECUTIVE SUMMARY

Background of the Audit

1. Meat consumption in Kenya was reported to be 593,000 metric tonnes in 2010 and rose to 721,000 metric tonnes in 2019. It is estimated that this will rise to 1,523,000 metric tonnes in the year 2050. The continuous drive to increase meat production in slaughterhouses for nutritional needs of the ever-increasing population, contributes to pollution problems. Pollution arises from activities in meat production as a result of failure to adhere to good manufacturing practices and good hygiene practices.
2. Slaughterhouse waste consists of high organic strength, sufficient organic biological nutrients, adequate alkalinity, toxic materials and relatively high temperature of between 20°C to 30°C. Slaughterhouse waste just like any other waste, can be detrimental to humans and the environment in general where precautions are not taken. Effluent from slaughterhouses is known to contaminate both surface and groundwater, since during slaughterhouse operations, meat tissue, fat, blood, manure and urine drain into natural water passages. This causes air, soil, and water pollution, as well as infestation of flies and other disease vectors.
3. The National Environment Management Authority (NEMA) is mandated to ensure sustainable management of the environment, by supervising and coordinating all matters relating to the environment. This includes ensuring proper management of slaughterhouse waste.

Audit Objective and Scope

4. The audit assessed whether NEMA ensures compliance and enforcement of environmental regulations on effluent management in slaughterhouses. In order to achieve this objective, the audit assessed:
 - i) Whether NEMA ensures compliance with Effluent Discharge Licencing (EDL) conditions;
 - ii) Whether NEMA ensures compliance with Environmental Impact Assessment (EIA) Licencing and Environmental Audit (EA) reports submission requirements;

- iii) The extent to which NEMA monitors the management of effluent by slaughterhouse operators; and
 - iv) Whether NEMA ensures lead experts produce environmental audit reports as per the set standards.
5. The audit assessed enforcement and compliance with effluent discharge licensing conditions, Environmental Impact Assessment (EIA) applications and Environmental Audit (EA) report submission, as well as monitoring of slaughterhouses. The audit covered the period 2014/2015 to October 2019. The audit sampled forty-six (46) slaughterhouses in seven (7) counties. These counties are Nairobi, Nyeri, Embu, Nakuru, Kakamega, Kisumu and Kisii.

Summary of Findings

A. Inadequate Compliance and Enforcement of Effluent Discharge Licensing Conditions

6. According to Section 74 (1) of the Environmental Management and Coordination Act (EMCA), 1999, proponents discharging effluent into the sewer line should apply for an Effluent Discharge Licence (EDL) from the local authority (now County) operating the sewerage system. Further, Section 75 of EMCA, 1999, specifies that no local authority operating a sewerage system or operator of any industrial undertaking shall discharge any effluents into the environment without an Effluent Discharge Licence from NEMA. The issued EDL conditions include, among others; construction of wastewater treatment plant, quarterly analysis of effluent waste and annual renewal of the Effluent Discharge License.
7. The audit revealed that there was non-application and renewal of EDL by slaughterhouse operators. Analysis of data collected from the sampled slaughterhouses revealed that only 8% of the slaughterhouses required to have an EDL from NEMA were in possession of the license.

8. The non-application and renewal of an Effluent Discharge Licence was attributed to:
 - i. Lack of awareness by slaughterhouse operators on the obligation to have a valid EDL;
 - ii. Inadequate enforcement of EDL application and renewal; and
 - iii. Non-standardized requirement on who should apply for an EDL.
9. The audit revealed that there was a variation in the number of slaughterhouses in NEMA's inventory as compared to the inventory at the Department of Veterinary Services. NEMA did not have an explanation on the discrepancy in numbers. This indicated that the Authority could only enforce EDL application on slaughterhouses that were in their inventory.
10. The audit revealed that there was inefficient treatment of effluent waste. All wastewater is supposed to be directed into a wastewater treatment plant before discharge into the environment. However, field verification and analysis of data collected revealed that only 30% of the slaughterhouses had constructed treatment plants. The constructed plants were not working efficiently since there was odour, leach infiltration, blood and fat contents at the final points of the treatment. Further, documentary review of lab test results revealed that waste water treatment plants were discharging effluent that did not meet the recommended standards. The inefficiencies in the treatment plants are attributed to lack of inspection and maintenance of the plants, as well as operational issues like non-segregation of slaughterhouse waste.

B. Inadequate Compliance and Enforcement of the Environmental Impact Assessment Licensing and Environmental Audit Reports Submission

11. According to Section 58 (1) of EMCA, 1999, a proponent of a project shall undertake an Environmental Impact Assessment study and prepare a report thereof. Further, Section 68 (3) states that the proponent shall keep accurate records and make annual reports to the Authority describing how far the project conforms in operation with the statements made in the Environmental Impact

Assessment study report. In addition, Section 31 3(a) and 4(b) of EIA Regulations 2003, indicate that an Initial Environmental Audit study followed by subsequent environmental control audit studies shall be conducted in case of an ongoing project (project in operation before EMCA came into force). Further, the proponent shall also conduct an Environmental Audit within 12 months of the commencement of the operations and not more than 24 months after the completion of a project.

12. Field verification of the forty- six (46) sampled slaughterhouses revealed that only one (1) slaughterhouse, out of the seventeen (17) established before the enactment of EMCA, 1999, had conducted an Initial Audit. Further, only nine (9) slaughterhouses, out of the twenty (20) established after enactment of the Act, had conducted an EIA study. Document review and interviews with the management of the sampled slaughterhouses revealed that 63% of the sampled slaughterhouses had not conducted annual environmental audits.

13. Failure to acquire an Environmental Impact Assessment license or conduct an Initial Audit and an annual Environmental Audit is attributed to laxity of slaughterhouse operators. This is as a result of lack of follow-up and leniency by NEMA. Consequently, slaughterhouses continue to operate without an EIA license, hence environmental impacts are not identified early enough for mitigation measures to be taken.

C. Inadequate Monitoring and Inspection of Slaughterhouses

14. In NEMA's Strategic Plan 2013-2018, the second strategic objective is to ensure compliance with environmental legislations and policies in order to maintain a clean, healthy and sustainable environment by monitoring compliance with conditions of licenses and permits issued. Further, Section 69 (1) of EMCA 1999, requires NEMA to monitor in consultation with other lead agencies; (a) all environmental phenomena with a view to assessing any possible changes in the environment and their possible impacts; or (b) the operation of any industry, project or activity with a view to determining its immediate and long-term effects on the environment. Further, Section 117(2a) of EMCA,1999, states that "An

Environmental Inspector shall monitor compliance with the environmental standards”.

15. Interviews with NEMA officers revealed that the Authority has not been carrying out regular monitoring of slaughterhouses. For instance, Nairobi and Nyeri Counties reported that slaughterhouses were monitored once a year, while in Kisumu, monitoring was conducted twice every year. Further, an analysis of interviews with the management of sampled slaughterhouses on the extent of interactions with NEMA, revealed that 14 had not interacted with NEMA, 11 had minimal interaction and 18 often interacted with NEMA.
16. The inadequate monitoring of slaughterhouses is attributed to NEMA’s failure to prioritize slaughterhouses, as the Authority is more focused on other sectors like petrol stations and residential constructions. Further, NEMA does not have monitoring plans for monitoring slaughterhouses. Monitoring and inspection was also affected by inadequate resources in terms of vehicles and personnel, given the areas the officers are required to cover.
17. Inadequate inspection and monitoring has led to continued environmental pollution by activities generating effluent from slaughterhouses. Without regular monitoring, NEMA cannot establish the extent of environmental degradation caused by operations of slaughterhouses.

D. Submission of Substandard Environmental Impact Assessment and Environmental Audit Reports by Licensed Experts

18. According to Section 13(3) of the Environmental Impact Assessment Regulation (2003), a person undertaking an EIA study shall conduct themselves in accordance with an established code of practice issued by NEMA. In addition, Section 11 of the Code of Practice and Professional Ethics for Lead Experts states that an Environmental Assessment Expert shall, based on the Terms of Reference, include all matters as required, by relevant statutory provisions, before submitting such reports to the project proponent or operator. Further, the Expert shall, in undertaking an environmental assessment or audit, bear in mind any previous environmental assessments or audits of a similar project made

under the relevant regulations, but shall not copy the previous documents wholesale.

19. Review of Environmental Impact Assessment and Environmental Audit reports revealed instances where experts duplicated previous reports, contrary to the code of ethics. Submission of substandard reports could be attributed to NEMA not having stringent measures against experts generating sub-standard reports. In addition, NEMA has not been reviewing the submitted reports and taking note of such discrepancies. This indicated that expert verification by NEMA through reports has not been effective.

Conclusion

20. The audit concludes that, although the National Environmental Management Authority (NEMA) has developed regulations that should ensure proper effluent management in slaughterhouses, it has not been able to adequately enforce these regulations. Specifically:

- i) Although NEMA has developed effluent management conditions, the Authority has not been able to consistently enforce these conditions within the slaughterhouses. This was evidenced by a majority of the sampled slaughterhouses not having an Effluent Discharge License, waste treatment plants and not conducting annual Environmental Audits;
- ii) The Authority has not adequately enforced the requirement of the Environmental Management and Co-ordination Act, 1999, for conducting an initial environmental audit for slaughterhouses established before enactment of the Act. In addition, NEMA has not been able to ensure that all the slaughterhouses established after enactment of the Act submit an Environmental Impact Assessment report as required;
- iii) The National Environment Management Authority has not been able to carry out adequate monitoring of slaughterhouses. Therefore, slaughterhouses are still operating without NEMA establishing the extent to which environmental degradation is caused by meat processing operations.

- iv) The National Environment Management Authority, as the licensing Authority for the environmental experts, has not been able to regulate and enforce the code of practice that requires disciplinary measures to be taken against experts submitting sub-standard reports.

Recommendations

21. In view of the findings and conclusions of this audit, the Auditor-General proposes the following recommendations to improve the conditions of effluent discharge by slaughterhouses.

22. The National Environment Management Authority should:

- i. Prioritize monitoring and inspection of slaughterhouses. In addition, NEMA should have a structured collaboration with the Department of Veterinary Services on monitoring of waste management by slaughterhouses;
- ii. Develop guidelines on construction of standard and efficient treatment plants to be adopted by slaughterhouse operators;
- iii. Create awareness on the need for application and renewal of Effluent Discharge Licenses by the slaughterhouses. Further, NEMA should enhance the enforcement processes against slaughterhouses operating without an EDL. Effluent Discharge Licence application requirements for slaughterhouse operators should also be standardized;
- iv. Enhance enforcement processes against slaughterhouse operators without EIA or initial audits. In addition, the Authority should take stringent measures against experts submitting sub-standard reports, as well as slaughterhouse operators who fail to submit annual Environmental Audits; and
- v. Together with the Environment Institute of Kenya, develop and enforce a code of ethics for environmental auditors.

1. BACKGROUND TO THE AUDIT

Introduction

- 1.1 Meat consumption in Kenya was reported to be 593,000 metric tonnes in 2010 and rose to 721,000 metric tonnes in 2019. It is estimated that this will rise to 1,523,000 metric tonnes in the year 2050. The continuous drive to increase meat production at slaughterhouses, for nutritional needs of the ever-increasing population, contributes to pollution problems. Pollution arises from activities in meat production due to failure to adhere to good manufacturing practices and good hygiene practices.
- 1.2 Slaughterhouse waste consists of high organic strength, sufficient organic biological nutrients, adequate alkalinity, toxic materials and relatively high temperature of between 20°C to 30°C. Slaughterhouse waste just like any other waste, can be detrimental to humans and the environment in general where precautions are not taken. Effluent from slaughterhouses is known to contaminate both surface and groundwater, since during slaughterhouse operations, meat tissue, fat, blood, manure and urine drain into natural water passages. This causes air, soil, and water pollution, as well as infestation of flies and other disease vectors.
- 1.3 For hygiene reasons, slaughterhouses use large amounts of water in processing operations, leading to production of large amount of wastewater. The major environmental problem associated with slaughterhouse wastewater is the large volume of suspended solids and liquid waste, as well as noxious odour generation.
- 1.4 The National Environment Management Authority (NEMA) is mandated to ensure sustainable management of the environment by supervising and coordinating all matters relating to the environment. This includes enforcing proper management of slaughterhouse waste.

Motivation of the Audit

1.5 The Auditor- General authorized the audit after considering the following factors:

i) According to an article in the Standard Newspaper dated 25 April, 2018, there has been a public outcry regarding the state of the environment in areas surrounding slaughterhouses in the country.

The article stated that NEMA was to shut down Kiamaiko slaughterhouses over river pollution. Further, contaminated water, according to the World Health Organization (WHO), is a breeding ground for cholera, dysentery, typhoid and diarrhoea, one of the main killers of children under the age of five. It was therefore necessary to assess whether slaughterhouse waste is managed as required.

ii) Article 42 of the Constitution of Kenya, 2010, states that: "every person has a right to a clean and healthy environment". Similarly, the Environmental Management and Coordination Act (EMCA), 1999, requires that the environment be safeguarded and enhanced.

iii) Target 6.3 of the Sustainable Development Goal 6 is on improving water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials to the environment. It was therefore necessary to ascertain whether NEMA was working towards meeting the target.

2. DESIGN OF THE AUDIT

Audit Objective

- 2.1 The audit assessed whether NEMA ensures compliance and enforcement of environmental regulations on effluent management in slaughterhouses.
- 2.2 In order to achieve this objective, the audit assessed;
- i) Whether NEMA ensures compliance with Effluent Discharge Licencing (EDL) conditions.
 - ii) Whether NEMA ensures compliance with Environmental Impact Assessment (EIA) Licencing and Environmental Audit (EA) reports submission requirements.
 - iii) The extent to which NEMA monitors the management of effluent by slaughterhouse operators.
 - iv) Whether NEMA ensures lead experts produce environmental audit reports as per the set standards.

Audit Scope

- 2.3 The audit focused on NEMA's activities that are designed to ensure compliance and enforcement of environmental regulations on waste management in slaughterhouses.
- 2.4 The audit assessed enforcement and compliance with effluent discharge licencing conditions, Environmental Impact Assessment applications and Environmental Audit report submissions as well as monitoring of slaughterhouses. The audit covered the period 2014/2015 to October 2019.

Selection of the Audit Sample

- 2.5 The audit used purposive sampling to select the counties to be audited. Seven (7) out of the forty-seven (47) counties in Kenya were purposively selected. These were; Nairobi, Nyeri, Embu, Nakuru, Kakamega, Kisumu and Kisii. Nyeri, Embu, Nakuru and Kakamega were sampled because they were among the counties with the highest number of slaughterhouses while Nairobi, Kisumu and

Kisii were among the counties with the least number of slaughterhouses as shown in **Appendix 1(a)**. Forty-six (46) slaughterhouses, outlined in **Appendix 2**, were then purposively chosen from the seven (7) sampled counties, to form the units of observation.

Methods Used to Gather Audit Evidence

2.6 The audit was conducted in accordance with International Standards of Supreme Audit Institutions (ISSAIs) issued by the International Organization of Supreme Audit Institutions (INTOSAI), which states that the auditor and the Supreme Audit Institutions must be independent, possess required competence and exercise due care to provide a guide on execution and reporting of audit findings. Further, the audit team adhered to audit policies and procedures established by the Office of the Auditor-General Kenya.

2.7 Audit evidence was gathered through document review, interviews and physical verification.

a) Documentary Review

2.8 To understand compliance with effluent waste management requirements and assess compliance levels, the audit team reviewed; Environmental Impact Assessment reports, Effluent Discharge Licences and their renewals, NEMA effluent registers, Environmental Audit reports, as well as operation procedures and monitoring reports. The list of documents reviewed is outlined in **Appendix 3**.

b) Interviews

2.9 The audit team conducted interviews with NEMA staff who were directly involved in the management of slaughterhouses' waste, both at the headquarters and the sampled counties. In addition, the team interviewed the sampled slaughterhouses' management. **Appendix 4** provides details of the interviews conducted.

c) Observation

2.10 To verify on-site operations of slaughterhouses, the audit team visited 46 sampled slaughterhouse, as shown in **Appendix 2**.

Sources of Assessment Criteria

2.11 The audit assessment criteria were drawn from; the Constitution of Kenya, 2010, the Environmental Management and Coordination Act (EMCA), 1999, the Water Quality Regulations, 2006, the Waste Management Regulations, 2006, the Environmental (Impact Assessment and Audit) Regulations, 2003, and the Code of Practice and Professional Ethics for Integrated Environmental Assessment and Audit Experts, among others. The criteria are discussed in detail in **Appendix 5**.

3. DESCRIPTION OF THE AUDIT AREA

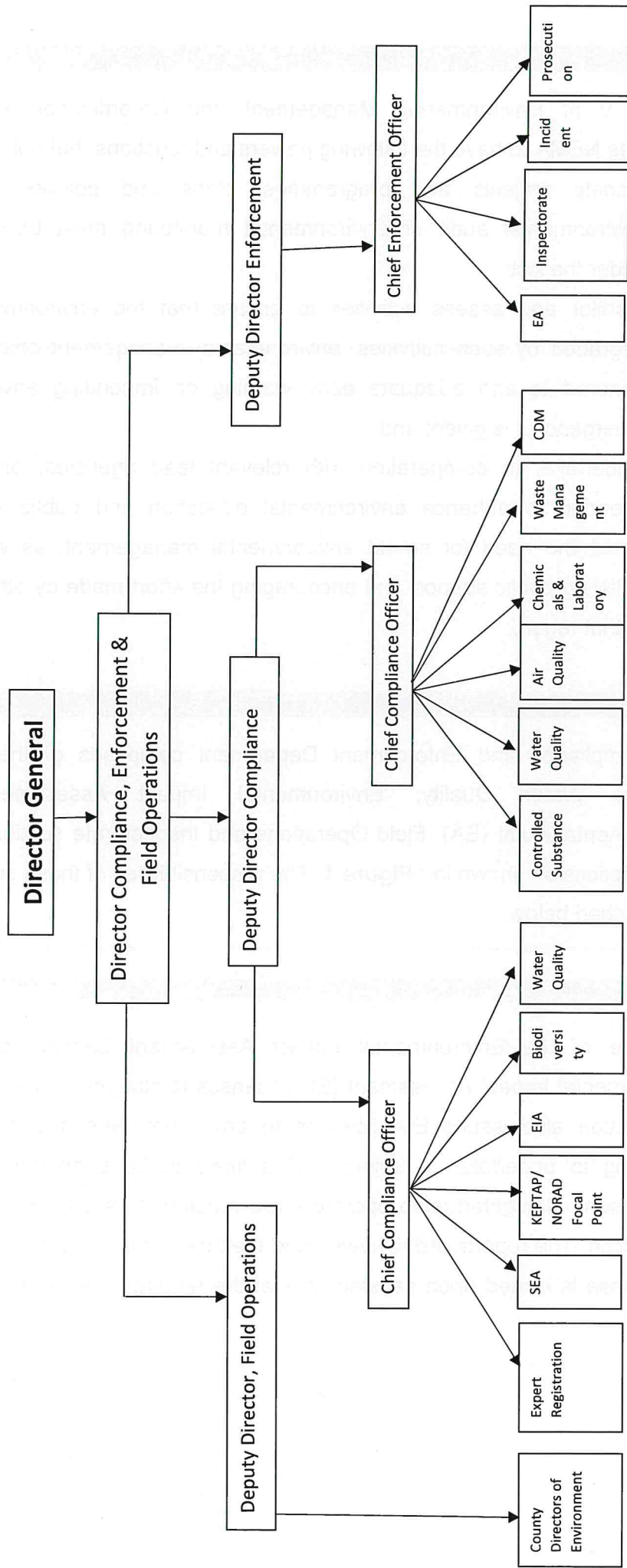
Statutory Mandate of the National Environment Management Authority

- 3.1 The National Environment Management Authority (NEMA), was established under the Environmental Management and Co-ordination Act (EMCA), No. 8 of 1999, as the Government principal instrument for the implementation of all policies relating to the environment. The Authority is a semi-autonomous government agency under the Ministry of Environment and Forestry. The Authority has been in operation since 01 July, 2002.
- 3.2 The National Environment Management Authority has the mandate to monitor and enforce proper effluent management by industries, slaughterhouses being one of them.
- 3.3 The National Environment Management Authority vision is to be a world class environment management authority. Its mission is to safeguard the quality of the environment through coordination, research, facilitation and enforcement while encouraging responsible individuals, corporates, and collective participation towards sustainable development.

The National Environment Management Authority's Organizational Structure

- 3.4 The National Environment Management Authority is headed by a Director-General. The Director-General is assisted by Directors in charge of Legal Services, Environmental Services, Human Resource and Administration, as well as Compliance, Enforcement and Field Operations. Effluent waste management is under the Director, Compliance, Enforcement and Field Operations, who is assisted by three Deputy Directors in charge of Compliance, Enforcement and Field Operations. The organizational structure is illustrated by the organogram in **Figure 1**.

FIGURE 1: ORGANOGRAM FOR THE COMPLIANCE, ENFORCEMENT AND FIELD OPERATIONS DEPARTMENT



Source: NEMA's procedures file (File: NEMA/1300/07)

Functions of the National Environment Management Authority

3.5 Section 9 of Environmental Management and Co-ordination Act, 1999, mandates NEMA to have the following powers and functions, but not limited to:

- i) Identify projects and programmes, plans and policies for which environmental audit or environmental monitoring must be conducted under the Act;
- ii) Monitor and assess activities to ensure that the environment is not degraded by such activities, environmental management objectives are adhered to and adequate early warning on impending environmental emergencies is given; and
- iii) Undertake, in co-operation with relevant lead agencies, programmes intended to enhance environmental education and public awareness about the need for sound environmental management, as well as for enlisting public support and encouraging the effort made by other entities in that regard.

The Compliance and Enforcement Department

3.6 The Compliance and Enforcement Department comprises of the following sections; Water Quality, Environmental Impact Assessment (EIA), Environmental Audit (EA), Field Operations and Inspectorate sections, among other sections as shown in **Figure 1**. The responsibilities of these sections are as described below.

A. The Environmental Impact Assessment Section

3.7 The role of the Environmental Impact Assessment Section is to issue Environmental Impact Assessment (EIA) licenses to slaughterhouse operators.

The section also issues EIA licenses to any other person undertaking or proposing to undertake a project that is likely to have an impact on the environment. Slaughterhouse operators are required to submit EIA reports to this section. The reports are reviewed and then the project site is inspected. An EIA license is issued upon satisfaction that the required standards have been met.

B. The Environmental Audit Section

3.8 The Environmental Audit (EA) section is tasked to receive EA reports, acknowledge receipt and give a reference number. Once reports are received, they are classified and then desk review is done to identify issues which are verified through a site visit. The reports are reviewed in accordance with the provisions of the Environmental (Impact Assessment and Audit) Regulations, 2003.

C. The Water Quality Section

3.9 The Water Quality Section is tasked with the issuance of Effluent Discharge Licenses (EDLs) to slaughterhouse operators and other proponents. A slaughterhouse operator is required to pay an application fee of Ksh. 5,000 as well as submit among other documents; a copy of an Environmental Impact Assessment license or Environmental Audit submission acknowledgement letter, as indicated in **Appendix 6**. The submitted documents are reviewed and upon payment of the prescribed fee, an EDL is issued.

D. The Inspectorate Section

3.10 The Inspectorate Section carries out various types of inspections, among them being compliance evaluation, compliance sampling, control audit and follow-up. When a violation is detected, an enforcement officer may initiate an action that compels the violator adhere to compliance requirements. This is done either through issuing a verbal warning, an improvement notice, environmental restoration order, closure or cancelation of a license. The officer may also opt for civil court or criminal court action depending on the nature and severity of the environmental offence.

The Directorate of Veterinary Services

3.11 According to the First Schedule of the Meat Control (Local Slaughterhouse) Regulation, 2010, the Directorate of Veterinary Services' role, in control of effluent waste management from slaughterhouses, include but is not limited to:

- i) Issuance of approval for construction of a slaughterhouse, after receiving drawings that indicate the slaughterhouse arrangements, for the safe disposal of waste;
- ii) Ensuring that slaughterhouses have, among others, a waste treatment and disposal system that is adequate in size and one that complies with general and local regulations; and
- iii) Ensuring that slaughterhouses comply with the provisions of the Environmental Management Coordination Act, 1999, on acceptable slaughterhouses environmental pollution control, effluent treatment systems and solid wastes disposal.

3.12 According to the Meat Control (Local Slaughterhouses) Regulations, 2010, the Director of Veterinary Services may order the closure of any slaughterhouse, in the event of non-compliance.

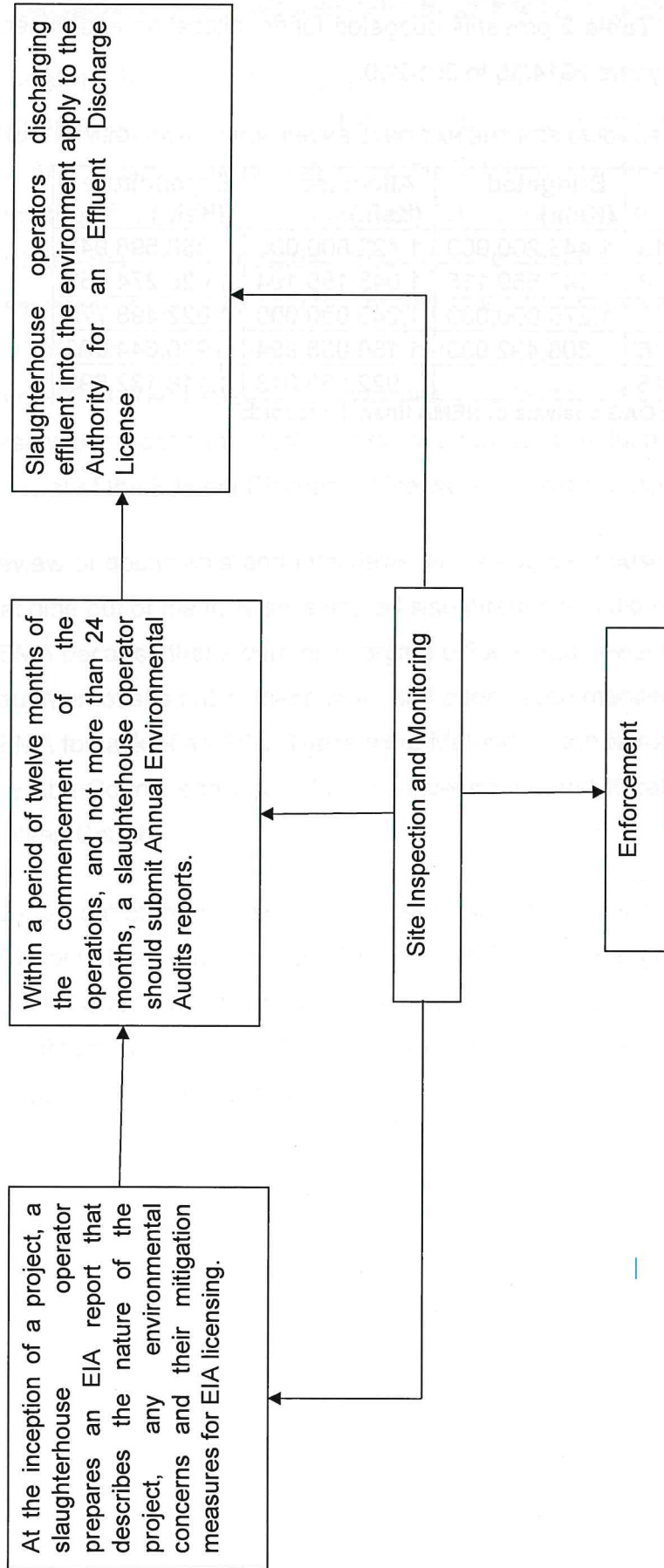
Process Description for Effluent Discharge Management

3.13 Management of effluent waste begins from the inception of a slaughterhouse project. A slaughterhouse operator is required to prepare an EIA report that describes the nature of the project, environmental concerns that are likely to occur and their mitigation measures. The National Environment Management Authority environmental inspectors carry out site verification inspections to confirm that the report submitted is a true reflection of the project described. Upon confirmation, the slaughterhouse operator is issued with an EIA license.

3.14 After commencement of operations, the operator is required to carry out annual environmental audits and submit the report to NEMA. The Authority's environmental inspectors carry out inspection and monitoring of slaughterhouse to ascertain the environmental conditions within the facility.

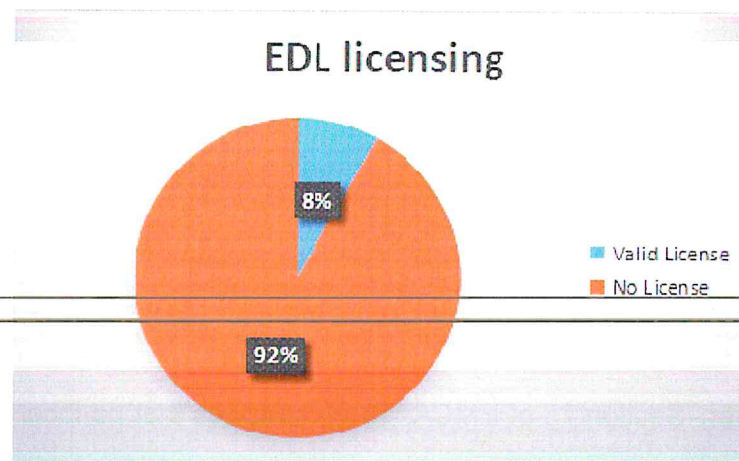
3.15 Every slaughterhouse operator discharging effluent into the environment is required to apply and obtain an Effluent Discharge License which is to be renewed annually. Environmental Inspectors enforce compliance to the licensing conditions issued with the EDL. The process description is illustrated in **Figure 2**.

FIGURE 2: PROCESS DESCRIPTION FOR EFFLUENT MANAGEMENT



Source: OAG analysis of NEMA documents on effluent management

FIGURE 3:STATUS OF EFFLUENT DISCHARGE LICENSE APPLICATION IN THE SAMPLED SLAUGHTERHOUSES



8% represents 3 slaughterhouses with License while 92% represent 34 slaughterhouses with no licenses.

Source: OAG analysis of EDL application data

4.4 The non-application and renewal of EDL was attributed to:

- i) Lack of awareness by slaughterhouse operators on their obligation to have an EDL. Interviews conducted with slaughterhouses management revealed that they were not aware of the requirements to have a valid EDL. This is because they had not had prior engagement with NEMA before the Rapid Response Initiative (RRI) conducted between June and September 2019. Out of the thirty-four slaughterhouses that did not have an EDL, nine did the first application after the RRI sensitisation as shown in **Appendix 2**;
- ii) Inadequate enforcement on EDL application and renewal; and
- iii) Non-standardized requirement on who should apply for an EDL.

II. Variation of the National Environment Management Authority's Slaughterhouse Inventory with that of the Department of Veterinary Services

4.5 Review of the slaughterhouse inventory from NEMA Headquarters and Department of Veterinary Services documents revealed that the number of slaughterhouses recorded by NEMA headquarters was 46 against 1,831 in the Veterinary Department inventory, as summarised in **Appendix 1(a)** and **(b)**. NEMA did not have an explanation on the discrepancy in the numbers. This

indicated that the Authority could only enforce EDL application on the 46 slaughterhouses that it had in its records.

III. Inefficient Treatment of Effluent Waste

- 4.6 According to NEMA's slaughterhouse Effluent Discharge License condition 2.1, outlined in **Appendix 7**, the owner or operator of a slaughterhouse shall ensure that all raw wastewater from the operations of the facility is directed into the wastewater treatment plant, before discharge into the environment.
- 4.7 Field visits to the 46 sampled slaughterhouses revealed that the main points of discharge were; open land, soak or septic tanks, river and sewer lines, as shown in **Table 2**. The effluent, therefore, required prior treatment before discharge into any of these points.

TABLE 2: MAIN POINTS OF EFFLUENT DISCHARGE BY SLAUGHTERHOUSES

Point of Discharge	No. of Slaughterhouses	Number of Slaughterhouses in Each County
Open land	18	Nairobi (2), Nakuru (2), Kisumu (1) Kisii (2), Kakamega (3), Nyeri (5) and Embu (3)
River	2	Kisii (2)
Septic or soak pit	17	Nairobi (1), Nakuru (3), Kisumu (3), Kisii (1), Kakamega (4), Embu (5)
Sewer line	9	Nairobi (3), Nakuru (3), Kisumu (1), Nyeri (2)
Total	46	

Source: OAG analysis of data from physical inspection

- 4.8 Field verification and analysis of slaughterhouses' management data revealed that only 14 out of the 46 sampled slaughterhouses had constructed treatment plants as shown in **Appendix 8**. However, the constructed plants were not working efficiently since there was odour, leach infiltration, blood and fat contents at the final points of the treatment as shown in **Plate 1**. Further, documentary review of lab test results revealed that waste water treatment plants were discharging effluent that did not meet the recommended standard as shown in **Table 3**.

PLATE 1: STATE OF FINAL DISCHARGE POINTS



Left: Effluent with traces of manure and lumen content at the final discharge point in Ogembo Slaughterhouse was an indication of waste infiltration and poor maintenance.

Right: Effluent with traces of blood and fat content at the final discharge point in Keroka Slaughterhouse indicated inefficient segregation of waste.

Source: Photos captured by the audit team on 9/10/2019

4.9 Inefficiencies in the treatment plants could be attributed to lack of inspection by NEMA. In addition, the plants were not well maintained by the slaughterhouses' management. Analysis of data from sampled slaughterhouses revealed that only seven out of the forty-six slaughterhouses had a designated trained waste handler, as shown in **Appendix 8**. This meant that the responsibility was left to any other person(s) chosen at random to handle slaughterhouse waste.

4.10 Waste water treatment plants functional efficiency was also affected by operational issues like non-segregation of slaughterhouse waste. Slaughterhouse waste segregation includes; separation of blood, lumen, fat contents, pieces of meat, and waste water. Analysis of data revealed that 23 out of the 46 sampled slaughterhouses did not practice waste segregation before discharging into the final collection point, as shown **Appendix 8** and in **Plate 2**. Consequently, all forms of slaughterhouse waste drained into the same point, which resulted to collection tanks filling up fast and producing foul smell. Further, the final discharge comprised of blood and fat contents that took longer to decompose, thus polluting the environment.

PLATE 2: STATE OF WASTE SEGREGATION



Left: Makutano Slaughterhouse in Embu, last collection point had traces of blood, lumen, and fat content. **Right:** Embu Municipal Slaughterhouse final effluent discharge draining to the collection soak pit with traces of blood, fat and pieces of meat.

Source: Photos taken by Auditors on 19 and 20 September, 2019

4.11 The Effluent Discharge License Condition No. 3.6 requires that slaughterhouses should conduct quarterly analysis tests, on the effluent discharged into the environment, then submit the analysis results to NEMA. The testing of the effluent is to keep slaughterhouse operators in the know on the status of the wastewater being discharged to the environment. Out of the forty-six sampled slaughterhouses, only six had conducted lab analysis test. However, the tests were not done quarterly as required. In addition, the results of the test did not meet the required standards, provided in Schedule 5 and 6 of the Water Quality Regulation, as shown in **Table 3**.

TABLE 3: EFFLUENT LAB ANALYSIS RESULTS

Parameters	Discharge into the Environment					Discharge into the Sewer line		
	Recommended Standard	Star brilliant	Itibo	Kanyage Slab	Ngangarithi	Recommended Standard	Nyongara	Neema
Biological oxygen Demand	30 (mg/L) max	2250	34	920	202	500(mg/L) max	130	150
PH	6.5 to 8.5	7.4	7.6	7	7.1	6 to 9	7.97	7.41
Chemical Oxygen Demand	50 (mg/L) Max	6610	96	1160	254	1000(mg/L) max	388	150
Temperature	3 ambient temperature	20.8	26.2	22.8	23.1	20-35 (mg/L) max	21.9	Not indicate
Total dissolved Solids	1200 (mg/L) max	3571.2	132 9.5	2320.5	2740	2000(mg/L) max	2354	791
Total Suspended solid	30(mg/L) max	132	16	800	439	250(mg/L) max	100	112

Source: OAG Analysis of lab test results

4.12 Non-application and renewal of EDL, coupled with lack of treatment and inefficient treatment of effluent, has led to slaughterhouses' continued discharge of effluent that does not meet the specified standards. This contributes to pollution of the environment and possibility of disease outbreaks.

B. Inadequate Enforcement of Environmental Impact Assessment Licensing and Environmental Audit Reports Submission

4.13 According to Section 58 (1) of EMCA, 1999, the proponent of a project shall undertake, or cause to be undertaken at his own expense, an environmental impact assessment study, prepare a report thereof and submit to NEMA. After studying the project report submitted, NEMA gives direction accordingly. Further, Section 68 (3) states that the proponent shall keep accurate records and make annual reports to the Authority, describing how far the project conforms in operation with the statements made in the Environmental Impact Assessment (EIA) report.

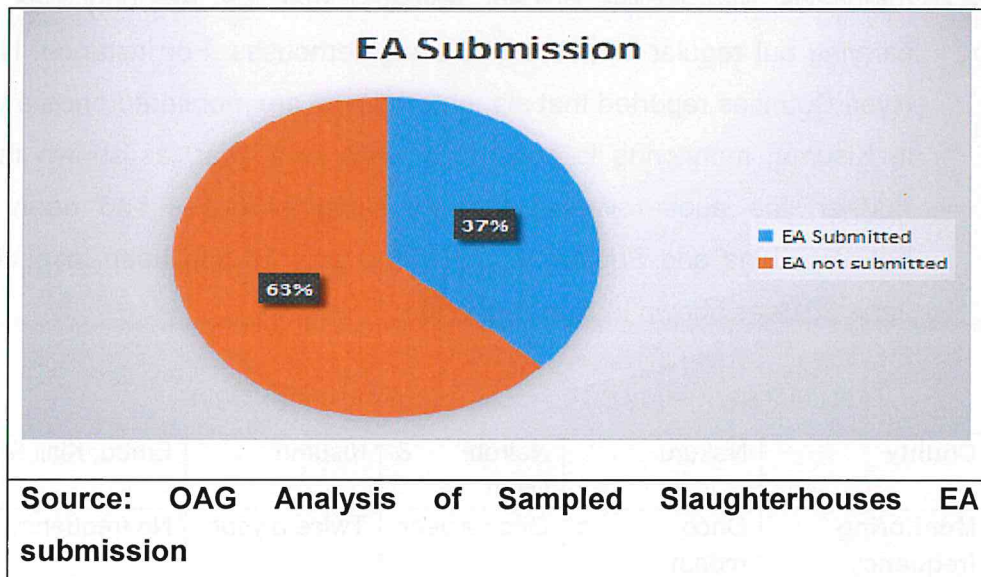
4.14 Section 31 3(a) and 4(b) of Environmental Impact Assessment Regulations, 2003, indicate that an initial environmental audit study, followed by subsequent environmental control audit studies shall be conducted in case of an ongoing project (Project in operation before EMCA, 1999 came into force). Further, the

proponent shall also conduct an environmental audit within 12 months of the commencement of the operations and not more than 24 months after the completion of a project.

4.15 Field verification of the sampled forty-six (46) slaughterhouses revealed that, out of seventeen (17) slaughterhouses established before the enactment of EMCA, 1999, only one (1) had conducted an initial audit. Further, out of twenty (20) slaughterhouses established after enactment of the Act, only nine had conducted an Environmental Impact Assessment. Nine (9) of the slaughterhouses sampled did not provide information on the exact year of establishment. The detailed analysis is shown in **Appendix 9**.

4.16 Document review and interviews with the management of the sampled slaughterhouses revealed that 63% of the 46 sampled slaughterhouses had not conducted annual Environmental Audits, as shown in **Appendix 9** and **Figure 4**;

FIGURE 4: STATUS OF ENVIRONMENTAL AUDIT SUBMISSION



4.17 Failure to acquire an Environmental Impact Assessment license or conduct an Initial Audit and an annual Environmental Audit is attributed to laxity of slaughterhouse operators. This is as a result of lack of follow-up and leniency by NEMA. Consequently, slaughterhouses continue to operate without an EIA

license, hence environmental impacts are not identified early enough for mitigation measures to be taken.

C. Inadequate Monitoring and Inspection of Slaughterhouses

4.18 In NEMA’s Strategic Plan, 2013-2018, the second strategic objective is to ensure compliance with environmental legislations and policies, in order to maintain a clean, healthy and sustainable environment, by monitoring compliance with conditions of licenses and permits issued.

4.19 In addition, Section 69 (1) of EMCA, 1999, indicates that NEMA shall, in consultation with the relevant lead agencies, monitor (a) all environmental phenomena with a view of assessing any possible changes in the environment and their possible impacts; or (b) the operation of any industry, project or activity with a view to determining its immediate and long-term effects on the environment. Further, Section 117(2a) of EMCA states that “An Environmental Inspector shall monitor compliance with the environmental standards”.

4.20 Interviews with NEMA officers revealed that the Authority has not been carrying out regular monitoring of slaughterhouses. For instance, Nairobi and Nyeri Counties reported that slaughterhouses are monitored once a year, while in Kisumu, monitoring is conducted twice in a year, as shown in **Table 4**. Further, the audit revealed that 46 slaughterhouses had been inspected between June and September 2019 and only 10 had been inspected before June 2019 as shown in **Appendix 10**.

TABLE 4: FREQUENCY OF SLAUGHTERHOUSES MONITORING

County	Nakuru	Nairobi & Nyeri	Kisumu	Embu, Kisii & Kakamega
Monitoring frequency	Once a month	Once a year	Twice a year	No frequency given

Source: Analysis of sampled counties data on monitoring

4.21 An analysis of interviews with the management of the 46 sampled slaughterhouses, on their engagement or visit with NEMA, revealed that 14

had not interacted with NEMA, 11 had minimal interaction and 18 often interacted with NEMA, as shown in **Appendix 11**.

4.22 The inadequate monitoring is attributed to NEMA's failure to prioritize slaughterhouses, as the Authority is more focused on other sectors like petrol stations and residential constructions. Further, NEMA does not have monitoring plans specific to slaughterhouses.

4.23 Monitoring and inspection was affected by inadequate resources, in terms of vehicles and personnel for NEMA inspectors, given the areas the officers are required to cover. For instance, in Kisii County, interviews revealed that there were nine sub-counties with only two staff who were not able to cover their area of jurisdiction. This was the case in every other sampled county, where there was a maximum of four officers charged with receiving and reviewing Environmental Impact Assessment and Environmental Audit reports, as well as carrying out site verifications for all persons proposing or undertaking a project. In addition, the officers were also tasked with the responsibility of responding to incidences and carrying out routine inspections within their county.

4.24 Inadequate inspection and monitoring has led to continued environmental pollution, by activities generating effluent from slaughterhouses. Without regular monitoring, NEMA was not able to establish the extent of environmental degradation caused by operations of slaughterhouses. Further, NEMA did not avail information on the status of the environment around the sampled slaughterhouses.

D. Submission of Substandard Environmental Impact Assessment and Environmental Audit Reports by Licensed Experts

4.25 According to Section 13(3) of the Environmental Impact Assessment Regulation, 2003, a person undertaking an EIA study shall conduct themselves in accordance with an established code of practice, issued by NEMA. In addition, Section 11 of the Code of Practice and Professional Ethics for Lead Experts states that an Environmental Assessment Expert shall, based on the Terms of Reference, include all matters as required, by relevant statutory provisions, before submitting such reports to the project proponent or operator.

Further, the expert shall, in undertaking an environmental assessment or audit, bear in mind any previous environmental assessments or audits of a similar project made under the relevant regulations, but shall not copy the previous documents wholesale.

4.26 Review of Environmental Impact Assessment and Environmental Audit reports revealed instances where experts duplicated previous reports, contrary to the code of ethics. For instance, EA reports with reference number NEMA/EA/KMB/5/2/2698 had been duplicated from 2014 to 2017, for the same slaughterhouse. Further, two experts had word for word duplicate EA reports, with reference numbers NEMA/EA/EMB/0675 and NEMA/EA/EMB/0658. In addition, report number NEMA/EA/KSM/5/2/0285 for a slaughterhouse contained information on a school, in the report's Environmental Management Plan.

4.27 Submission of substandard reports could be attributed to NEMA not having stringent measures against experts generating sub-standard reports. In addition, NEMA has not been reviewing the submitted reports and taking note of such discrepancies. This indicated that expert verification by NEMA, through reports, has not been effective.

4.28 In view of submission of substandard reports, there is a risk that adverse environmental impacts may not be addressed by slaughterhouses' management. Further, mitigation measures may not be taken.

E. Auditee's Response to Audit Findings

4.29 After the completion of the audit, the Office of the Auditor-General sent a management letter to NEMA for comments, on the audit findings and related matters, but NEMA did not provide any comments.

5. CONCLUSIONS

5.1 The audit concludes that, although the National Environmental Management Authority (NEMA) has developed regulations that should ensure proper effluent management in slaughterhouses, it has not been able to adequately enforce these regulations. Specifically:

- i) Although NEMA has developed effluent management conditions, the Authority has not been able to consistently enforce these conditions within the slaughterhouses. This was evidenced by a majority of the sampled slaughterhouses not having an Effluent Discharge License, waste treatment plants and not conducting annual Environmental Audits;
- ii) The Authority has not adequately enforced the requirement by the Environmental Management and Co-ordination Act, 1999, for conducting an initial environmental audit for slaughterhouses established before enactment of the Act. In addition, NEMA has not been able to ensure that all the slaughterhouses established after enactment of the Act submit an Environmental Impact Assessment report as required;
- iii) The National Environment Management Authority has not been able to carry out adequate monitoring of slaughterhouses. Therefore, slaughterhouses are still operating without NEMA establishing the extent to which environmental degradation is caused by meat processing operations.
- iv) The National Environment Management Authority, as the licensing Authority for the environmental experts, has not been able to regulate and enforce the code of practice that requires disciplinary measures to be taken against experts submitting sub-standard reports.

6. RECOMMENDATIONS

6.1 In view of the findings and conclusions of this audit, the Auditor-General proposes the following recommendations to improve the conditions of effluent discharge by slaughterhouses.

6.2 The National Environment Management Authority should:

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- i. ~~Prioritize monitoring and inspection of slaughterhouses. In addition, NEMA should have a structured collaboration with the Department of Veterinary Services on monitoring of waste management by slaughterhouses;~~
 - ii. Develop guidelines on construction of standard and efficient treatment plants to be adopted by slaughterhouse operators;
 - iii. Create awareness on the need for application and renewal of Effluent Discharge Licenses by the slaughterhouses. Further, NEMA should enhance the enforcement processes against slaughterhouses operating without an EDL. Effluent Discharge Licence application requirements for slaughterhouse operators should also be standardized;
 - iv. Enhance enforcement processes against slaughterhouse operators without EIA or initial audits. In addition, the Authority should take stringent measures against experts submitting sub-standard reports, as well as slaughterhouse operators who fail to submit annual Environmental Audits; and
 - v. Together with the Environment Institute of Kenya, develop and enforce a code of ethics for environmental auditors.
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APPENDICES

Appendix 1(a): Slaughterhouses in the Directorate of Veterinary Services Records in each County

County Name	Number of slaughterhouses (A & B Category)	Number of slabs (C category)	Number of Uncategorized Slaughterhouses	Total number of Slaughterhouses	Rank
1. Makueni	3	36	106	145	1
2. Nyeri	4	133	0	137	2
3. Muranga	17	107	0	124	3
4. Meru	4	52	66	122	4
5. Machakos	13	41	57	111	5
6. Nakuru	13	88	0	101	6
7. Kiambu	33	61	0	94	7
8. Embu	1	22	71	94	8
9. Nyandarua	4	69	0	73	9
10. Kakamega	3	52	16	71	10
11. Busia	0	23	45	68	11
12. Kitui	0	12	45	57	12
13. Kirinyaga	7	46	0	53	13
14. Trans Nzoia	5	47	0	52	14
15. Uasin Gishu	2	41	0	43	15
16. Nandi	1	42	0	43	16
17. Kajiado	18	20	0	38	17
18. Laikipia	12	26	0	38	18
19. Bungoma	3	6	27	36	19
20. Kilifi	3	24	3	30	20
21. Bomet	0	29	0	29	21
22. Baringo	3	25	0	28	22
23. Kwale	7	14	6	27	23
24. Vihiga	1	21	5	27	24
25. Kericho	4	21	0	25	25
26. Narok	5	19	0	24	26
27. Taita Taveta	1	20	1	22	27
28. Tharaka Nithi	0	0	19	19	28
29. Nairobi	6	3	9	18	29
30. Elgeyo Maraket	1	17	0	18	30
31. Kisumu	5	6	0	11	31
32. Lamu	0	10	0	10	32
33. Kisii	4	5	0	9	33
34. Mombasa	3	4	0	7	34
35. Isiolo	1	4	2	7	35
36. Tana River	0	6	0	6	36
37. Turkana	1	4	0	5	37

County Name	Number of slaughterhouses (A & B Category)	Number of slabs (C category)	Number of Uncategorized Slaughterhouses	Total number of Slaughterhouses	Rank
38. West Pokot	0	5	0	5	38
39. Siaya	1	0	0	1	39
40. Homa Bay	1	0	0	1	40
41. Marsabit	0	1	0	1	41
42. Samburu	0	1	0	1	42
43. Garissa	0	0	0	0	43
44. Wajir	0	0	0	0	44
45. Mandera	0	0	0	0	45
46. Migori	0	0	0	0	46
47. Nyamira	0	0	0	0	47
Total Number of Slaughterhouses				1831	

Appendix 1(b): Slaughterhouses as in NEMA Records Per County

County	Name of Facility	No Per County
Machakos	1. Masii Slaughterhouse	2
	2. Len's Slaughterhouse	
Kakamega	1. Ekero Slaughterhouse	2
	2. Ruth Khasoa Muhuyi Slaughterhouse	
Nyandarua	1. Tumaini Slaughterhouse	6
	2. K and K slaughterhouse	
	3. Ndaragua Slaughterhouse	
	4. Kahii Slaughterhouse	
	5. Githumbata Produce Company	
	6. Rironi Slaughterhouse	
Bungoma	1. Mayanja Slaughterhouse	1
Nakuru	1. Ewaki Slaughterhouse	2
	2. Homabarakiwa Butchers	
Elgeyo Marakwet	1. Nyaru Slaughterhouse	4
	2. Kamwasor Slaughterhouse	
	3. Kapsowar Slaughterhouse	
	4. Kapcherop Slaughterhouse	
Embu	1. Done Faith Slaughterhouse	1
Kiambu	1. Juja Slaughterhouse	5
	2. Dagoretti Slaughterhouse	
	3. Thiani Slaughterhouse	
	4. Mehotoro Slaughterhouse	
	5. Farmers Choice Pig Unit	
Kwale	1. Kasemenu Slaughterhouse	1
Baringo	1. Esageri Slaughterhouse	1
Uasin Gishu	1. Farmers Choice Eldoret Pig Unit	2
	2. Moi's Bridge Slaughterhouse	
Kajiado	1. Isinya Feeds Slaughterhouse	5
	2. Peter Kanyoro Slaughterhouse	
	3. Kiserian Butcheries	
	4. Keekonyokie Butcheries	
	5. Tata Chemicals Magadi Slaughterhouse	
Meru	1. Bartholomen Slaughterhouse	1
Siaya	1. Kogelo Nyangoma Slaughterhouse	1
Nairobi	1. Nyonjoro Slaughterhouse	2
	2. Mumu Slaughterhouse	
Turkana	1. Silzha Donkey Export	1

County	Name of Facility	No Per County
Kilifi	1. Mombasa Slaughterhouse	3
	2. Uwanja wa Ndege Slaughterhouse	
	3. Rabai Slaughterhouse	
Laikipia	1. Mary Wambui Kiburi Slaughterhouse	2
	2. Ol Pejeta Slaughterhouse	
Nyeri	1. Mt. Kenya Abattoirs	1
Narok	1. East Africa Meat-Ewaso Ngiro Slaughterhouse	3
	2. Ololunga Slaughterhouse	
	3. Mara Beef Limited	
Total Number of Slaughterhouses		46

Appendix 2: Summary of Sampled Slaughterhouses Visited in each county

County	Slaughterhouse Name	Point of Effluent Discharge	EDL Required	EDL Status
Nairobi	1. Kamulu Slaughterhouse	Septic Tank	Yes	No EDL
	2. Kiamaiko Slaughter slabs	Sewer line	No	N/A
	3. Nyongara Slaughterhouse	Sewer line	No	N/A
	4. Lyntano Slaughterhouse	Open Land	Yes	No EDL
	5. Neema Slaughterhouse	Sewer line	No	Had an EDL
	6. Ndumbu-ini Slaughterhouse	Open Land	Yes	No EDL
Nakuru	7. Star Brilliant Ltd Slaughterhouse	Open Land	Yes	Had an EDL
	8. Naivasha Municipal Slaughterhouse	Sewer line	No	N/A
	9. Barnabas Slaughterhouse	Soak pit	Yes	No EDL
	10. Modern Slaughterhouse	Open Land	Yes	No EDL
	11. Free Area Slaughterhouse	Sewer line	No	N/A
	12. Nakuru County Slaughterhouse	Sewer line	No	N/A
	13. Githioro Slaughter Slab	Soak Pit	Yes	No EDL
	14. Mawanga Slaughter Slab	Soak Pit	Yes	No EDL
Kisumu	15. Sondu Slaughterhouse (Kericho Side)	Open Land	Yes	No EDL-Paid Ksh 100,000 for the EDL
	16. Sondu Slaughterhouse (Kisumu Side)	Soak Pit	Yes	No EDL, Applied for EDL in July 2019
	17. Chulaimbo Modern Slaughterhouse	Soak Pit	Yes	No EDL, Applied for EDL in July 2019
	18. Mamboleo Slaughterhouse	Sewer line	No	N/A
	19. Rabuor Slaughterhouse	Soak Pit	Yes	No EDL, Applied July 2019
Kisii	20. Kisii Municipal Slaughterhouse	River	Yes	No EDL, Applied for EDL 9/7/2019
	21. Itibo Slaughterhouse	River	Yes	No EDL, Applied for EDL 10/7/2019
	22. Marani Slaughterhouse	Open Land	Yes	No EDL
	23. Ogembo Slaughterhouse	Open Land	Yes	No EDL
	24. Keroka Slaughterhouse	Soak Pit	Yes	No EDL
Kakamega	25. Shirere Slaughterhouse	Soak Pit	Yes	No EDL
	26. Khayenga Slaughter Slab	Soak Pit	Yes	No EDL
	27. Savona Slaughterhouse	Soak Pit	Yes	No EDL
	28. Ejinja Corner Slaughterhouse	Open Land	Yes	No EDL
	29. Mumias Modern Slaughterhouse	Open Land	Yes	No EDL
	30. Lubao Slaughterhouse	Open Land	Yes	No EDL
	31. Kakunga Slaughterhouse	Soak Pit	Yes	No EDL
Nyeri	32. Karatina Slaughterhouse	Sewer line		N/A Recommended for prosecution for

County	Slaughterhouse Name	Point of Effluent Discharge	EDL Required	EDL Status
			No	lack of an EDL
	33. Kanyange Slaughter Slab	Open Land	Yes	No EDL. Had applied for the EDL in 2017, 2018 and 2019
	34. Gwacucu Slaughter Slab	Open Land	Yes	No EDL
	35. Nyeri (Munjiru Investment) Slaughterhouse	sewer-line	No	N/A EDL, Applied the first one in 2019
	36. Ngangarithi Slaughterhouse (Classic Area)	Open Land	Yes	Had EDL, Application 2017, 2018,2019
	37. Kagongo-ini Slaughter Slab	Open land	Yes	No EDL, Applied for EDL on 5/7/2019
	38. Kiamariga Slaughterhouse	Open land	Yes	No EDL
Embu	39. Rukira Slaughter slab	Open Land	Yes	No EDL
	40. Karingare Karonja Slaughterhouse	Open Land	Yes	No EDL
	41. Embu Slaughterhouse	Soak Pit	Yes	No EDL
	42. Manyatta Slaughterhouse	Soak Pit	Yes	No EDL, Paid for 18/9/2019
	43. Mutunduri Slaughterhouse	Soak Pit	Yes	No EDL, Asked to apply 11/09/2019
	44. Karurina Slaughterhouse	Soak Pit	Yes	No EDL, Applied for EDL 4/09/2019
	45. Makutano Slaughterhouse	Soak Pit	Yes	No EDL
	46. Makengi Slaughter Slab	Open land	Yes	No EDL
Data Summary:		Sewerline-9 Soak Pit-17 River-2 Open Land-18	Yes-37 No-9	Had EDL-3 (2 renewals) With No EDL-34 N/A-9 Applied During the RRI-9

Key: RRI Rapid Response Initiative

Appendix 3: Documents Reviewed

Document	Information derived
The Constitution of Kenya, 2010	Rights of Kenyans in regards to clean and healthy environment, the provision of sustainable utilization and conservation of natural resources and OAG's mandate in carrying out the audit.
Environmental Management and Coordination Act, 1999	Sets precedence for compliance with environmental standards and particularly with the requirement for the application of an Effluent Discharge License.
Water Act, 2002	The need for compliance to water quality standards and the conditions for this.
Water Quality Regulations 2006	Water quality requirements for effluent emissions to either the sewer system or into the environment through attached schedules.
Waste Management Regulations, 2006	The responsibilities of a proponent as a Waste Generator.
Environmental (Impact Assessment and Audit) Regulations, 2003	The requirements for preparation, submission, review and EIA licensing.
NEMA Strategic Plan and Policies	NEMA's vision and mission to succeed as well as various initiatives that have been put in place.
Operational Manuals	The Standard Operating Procedures for compliance, as well as the roles and responsibilities of those tasked with ensuring compliance.
Environmental Impact Assessment & Audit Reports (EIA&A)	The effluent treatment facilities that would be used in slaughterhouses or conversely, the mitigation measures that would be taken in the event of any incident.
Environmental Audit Reports	Gain a better understanding of the annual progress that slaughterhouses achieve. Also important to carry out comparisons and see if indeed change has taken place.
Monitoring Reports	How well monitoring and evaluation is carried out especially with regard to compliance with Effluent Discharge Licences.
Kenya Meat Control Act, 2012 CAP 356	To gain an understanding on the categorization of slaughterhouses, as well as the role of the Directorate of Veterinary Services on environmental management.

Appendix 4: Interviews Conducted

Person Interviewed	Reasons for Interview
Environmental Audit Section Head	To understand and get more information on the mandate of the National Environmental Management Authority (NEMA), Environmental Audit section and specifically on abattoir waste management.
Head of the Environmental Impact Assessment Section	To obtain relevant information on how the EIA section is involved in supporting compliance and enforcement section, on abattoirs waste-management.
Chief Compliance Officer	To obtain relevant information on how the Enforcement section is involved in managing abattoirs waste.
Accountant	To gather information on accounts concerning revenue and expenditure of NEMA and specifically the role of finance in supporting the Compliance and Enforcement Department achieve its mandate.
Acting Director Field Operations	To understand and get more information on the role of the Field Operations Section in the Compliance and Enforcement Department
Principal Compliance Environmental Officer	To understand and get more information on the role of Labs and Chemicals Section in supporting the Compliance and Enforcement Department achieve its mandate.
Prosecutor or /Legal Officer	To obtain relevant information on how the Legal Department is involved in supporting the Compliance and Enforcement Section on abattoirs waste management.
Compliance Officers	To understand and get more information on the mandate of the National Environment Management Authority and specifically on the curriculum for training Environmental Impact Assessment (EIA) experts. To understand and get more information on the mandate of NEMA and specifically on the Water Quality Section in waste water management in abattoirs.
County Directors of Environment-Nairobi, Nyeri, Embu, Nakuru, Kakemega, Kisumu and Kisii.	To obtain relevant information on the management and the status of slaughterhouse waste, at the county level.
Slaughterhouse Managers	To obtain relevant information on slaughterhouse waste management.

Appendix 5: List of Assessment Criteria

Source of Criteria	Article/Section	Specific information
Constitution of Kenya, 2010	Article 42	Right of a Kenyan to a clean and healthy environment
	Article 70	Enforcement of environmental rights
Environmental Management and Coordination Act (EMCA), 1999	Section 58	According to EMCA, Section 58 (1), "The proponent of a project shall undertake or cause to be undertaken at his own expense an Environmental Impact Assessment (EIA) study and prepare a report". Where the Authority being satisfied, after studying the report, that the necessary environmental impacts have been addressed, shall issue an EIA License.
	Section 59	Publication of environmental impact Assessment report
	Section 60	Comments on EIA report by lead agencies
	Section 63	EIA licensing
	Section 67	Revocation, suspension or cancellation of EIA license
	Section 68	Section 68 (3) of EMCA, 1999, states that "The owner of the premises or the operator of a project for which an Environmental Impact Assessment study report has been made shall keep accurate records and make annual reports to the Authority, describing how far the project conforms in operation with the statements made in the Environmental Impact Assessment report.
	Section 69	EMCA 1999, Part VII Section 69, Part IX Section 109 (2) and Part X Section 117(2) gives NEMA the mandate to regulate discharge of pollutants into the environment. This is done through facility inspection which is the primary tool for monitoring compliance.
	Section 71	Water Quality Standards
	Section 72	Water pollution prohibition
	Section 74	According to EMCA Section 74 (1), proponents discharging effluent into the sewer line should apply for an effluent discharge license. from the local authority operating the sewerage system.
	Section 75	According to Section 75 (2) of EMCA 1999, every proponent discharging any effluent or other pollutant into the environment shall apply to the Authority for an Effluent Discharge License (EDL).
Section 76	Cancellation of Effluent Discharge License	
Section 77	Registration of Effluent Discharge Licenses	

	Section 117	Section 117(2a) of EMCA states that "An Environmental Inspector shall monitor compliance with the environmental standards"
	Section 118	Environmental Inspectors powers to prosecute
	Section 121	Records to be kept
	Section 122	Transmission of records to the Authority
	Section 137	Offenses relation to inspection
	Section-138	Offenses relating to Environmental Impact Assessment
Water Act, 2002	Section 81	Control of water pollution
	Section 82	Effluent discharge into any water resource
Water Quality Regulations, 2006	Regulation 12	Discharge into the environment
	Regulation 13	Discharge into public sewer
	Regulation 14	Discharge monitoring
	Regulation 15	Review of records
	Regulation 16	Application on EDL
	Regulation 17	EDL
Waste Management Regulations, 2006	Regulation 4	Responsibility of waste generator
	Regulation 5	Segregation of waste by generator
	Parts I to IV	
National Environmental Policy, 2013	Part 6.3	Environmental Quality and Health
Kenya Meat Control Act, 2012 CAP 356	Section 4	Categorization of slaughterhouses
The Environmental (Impact Assessment And Audit) Regulations, 2003	Part IV	Section 31 3(a) and 4(b) of EIA Regulations, 2003, indicate that an Initial Environmental Audit study followed by subsequent environmental control audit studies shall be conducted in case of an ongoing project. Further, the proponent shall also conduct an Environmental Audit within 12 months of the commencement of the operations and not more than 24 months after the completion of a project. According to Section 13(3) a person undertaking an EIA study shall conduct themselves in accordance with an established code of practice issued by the Authority.
	Part III	

NEMA Strategic Plan 2013-2018	Strategic objective	According to NEMA's Strategic Plan, 2013-2018, the second strategic objective is to ensure compliance with environmental legislations and policies in order to maintain a clean, healthy and sustainable environment through monitoring the compliance to conditions of licenses and permits issued.
Code of Practice and Professional Ethics for Lead Experts	Section 11	Section 11 of the Code of Practice and Professional Ethics for Lead Experts states that an Environmental Assessment Expert shall, based on the Terms of Reference, include all matters as required, by relevant statutory provisions, before submitting such reports to the project proponent or operator. Further, the expert shall, in undertaking an environmental assessment or audit, bear in mind any previous environmental assessments or audits of a similar project made under the relevant regulations, but shall not copy the previous documents wholesale.

Appendix 6: List of Effluent Discharge License Application Requirements

1. Application Requirements for Effluent Discharge License (EDL)

- a) Evidence of land ownership;
 - b) Copy of EIA license or EA submission acknowledgement letter;
 - c) Current Effluent Quality Analytical Report from NEMA designated laboratories, collected from two NEMA sampling points marked the treatment plant site;
 - d) Detailed site layout plan indicating sampling and discharging points clearly marked;
 - e) Indicate the number of animals slaughtered per day;
 - f) Describe the receiving environment; land, river, canal, among others; and
 - g) NEMA official receipt for effluent discharge application fee of Ksh. 5,000.
-

2. Prescribed EDL fee as per the corrigenda

Fees charged per category	Amount (Ksh.)
Category (i) ≥ 40 animals per day	100,000
Category (ii) $\geq 20 < 40$ animals per day	75,000
Category (iii) $\geq 6 \leq 20$ animals per day	50,000
Category (iv) $<$ animals per day	20,000

Appendix 7: Effluent Discharge Licensing Conditions

1. General Conditions

- 1.1. This licence is valid for a period of 12 months from the date hereof.
- 1.2. The owner or operator is licensed to discharge effluent from the wastewater treatment plant marked on the site layout plan attached to the licence application.
- 1.3. The owner or operator shall display a copy of the Effluent Discharge Licence at the facility offices at all times.
- 1.4. The owner or operator shall submit an annual Environmental Audit together with the application for renewal of this licence.
- 1.5. Without prejudice to the other conditions of this licence, the owner or operator shall implement and maintain an environmental management system, organizational structure and allocate resources that are sufficient to achieve compliance with the requirements and conditions of this licence.
- 1.6. This licence shall not be taken as statutory defence against charges of pollution in respect of any manner of pollution not specified herein.
- 1.7. The Authority shall reserve the right to cancel this licence, in the event of breach of any of the conditions stated herein or any contravention to the Environmental Management and Co-ordination Act, 1999 and regulations thereunder.

2. Operational Conditions

- 2.1 The owner or operator shall ensure that all raw wastewater from the operations of the facility is directed into the wastewater treatment plant, before discharge into the environment.
- 2.2 The owner or operator shall install, operate and maintain a flow measuring device at the entry and exit of the wastewater treatment plant, as per the requirements of the lead agency.
- 2.3 The owner or operator shall recruit competent personnel to operate the wastewater treatment plant.
- 2.4 The owner or operator shall ensure that all staff working at the plant are provided with appropriate Personal Protective Equipment (PPE).
- 2.5 The owner or operator shall provide and display operational procedure for the wastewater treatment plant.
- 2.6 The owner or operator shall ensure that various wastewater streams are segregated and are pre-treated before discharge into wastewater treatment plant.
- 2.7 The owner or operator shall ensure that the wastewater shall be free of solid waste by providing screens before directing into the wastewater treatment plant.
- 2.8 The owner or operator shall treat the effluent to the standards set out in the Third Schedule and monitor as guided by the Fourth Schedule of the Environmental Management and Co-ordination (Water Quality) Regulations, 2006.
- 2.9 The owner or operator shall ensure that condemnation pits, blood tank, ingestor pit and waste disposal pits are impermeable to prevent effluent infiltration from pits.

- 2.10 owner or operator shall provide roofed shed for storing manure (offal waste) and drainage channels for purposes of collecting leachate.
- 2.11 The owner or operator shall ensure that the wastewater from skins and hides treatment unit is discharged into a conservancy tank.
- 2.12 The owner or operator shall discharge within the works design capacity.
- 2.13 The owner or operator shall manage any other solid waste generated in accordance with the Environmental Management and Co-ordination (Waste Management) Regulations 2006.
- 2.14 ~~The owner or operator shall manage the facility strictly in accordance with the Environmental Management Plan (EMP) developed for the operations in accordance with the Environmental Impact Assessment or Environmental Audit Regulations, Legal Notice no.101 of 2003.~~
- 2.15 The owner or operator shall ensure that operations of the facility are managed in accordance with the EMP developed for the operations in accordance with the approved Environmental Audit.
- 2.16 The owner or operator shall maintain the facility grounds for ease of inspection.
- 2.17 The owner or operator shall ensure that the facility is secured or fenced and grounds maintained.

3. Monitoring Conditions

- 3.1. The owner or operator shall ensure that sampling points are appropriately marked (NEMA sampling points) and maintained as indicated on the site layout plan attached to the licence application.
- 3.2. The owner or operator shall carry out laboratory analysis of water samples collected at the discharge point, upstream and downstream of receiving river within a distance of 50m from the effluent discharge point.
- 3.3. The owner or operator shall compare the obtained results of the parameters against the limits specified in the Third Schedule of the Environmental Management and Co-ordination (Water Quality) Regulations 2006.
- 3.4. The owner or operator shall carry out daily tests and analysis for the following effluent characteristics: Temperature, PH, and Electrical Conductivity (EC).
- 3.5. The owner or operator shall ensure tests and analysis of at least the following effluent parameters: E-coli, Total Coliforms, Biological Oxygen Demand (BOD₅), PH, Temperature, colour, Total Suspended Solids, Total Nitrogen, Total Phosphorous, and Surfactants are carried out *on* Quarterly (three-months) basis by NEMA designated laboratories.
- 3.6. The owner or operator shall submit records of effluent quality and flow on a Quarterly basis to the Authority in the prescribed format (Sixth Schedule) and as guided by condition 3.5 above.
- 3.7. The owner or operator shall give access to Environmental Inspectors from the Authority upon identification, even without prior notice, and provide information, reports, records and data during inspection.

- 3.8. The owner or operator shall develop a pollution incident response plan covering the wastewater treatment plant and allied infrastructure.
- 3.9. The owner or operator shall develop and implement a routine inspection plan for the wastewater treatment plant and allied infrastructure.
- 3.10. The owner or operator shall keep record of environmental pollution related complaints and action taken thereof.

4. Notifications

- 4.1. The owner or operator shall seek written approval from the Authority of any operational changes under this licence.
- 4.2. The owner or operator shall notify the Authority three (3) months in advance, prior to decommissioning of the wastewater treatment plant.
- 4.3. The owner or operator shall report all pollution incidents arising from the effluent treatment facility and allied infrastructure to the Authority, through the incident hotline 0704846019, **0786101100**, email: - **incidence@nema.go.ke** or at the nearest NEMA office within **6 hours**.
- 4.4. The owner or operator shall inform the Authority of the mitigation measures put in place within **18 hours** and submit the same in writing within **24 hours**.

5. Decommissioning Conditions

- 5.1. The owner or operator shall submit a decommissioning plan at least three months prior to decommissioning, for approval by the Authority.
- 5.2. The owner or operator shall decommission wastewater treatment works in accordance with the decommissioning plan approved by the Authority.

Appendix 8: Compliance with EDL Conditions

Name of slaughterhouse	Treatment plant in place	Treatment plant handler existence	Segregation and pre-treatment of waste before discharge into the treatment plant
1. Ndumbu-ini Slaughterhouse	Yes	Yes	No
2. Lyntano Slaughterhouse	Yes	Yes	No
3. Nyonjoro Slaughterhouse	Yes	No	—
4. Kiamaiko Slaughterhouse	No	No	No
5. Nyongara Slaughterhouse	Yes	Yes	Yes
6. Neema Slaughterhouse	Yes	No	Yes
7. Keroka Slaughterhouse	No	No	No
8. Ogembo Slaughterhouse	No	No	No
9. Marani Slaughterhouse	No	No	No
10. Municipal Slaughterhouse	No	No	Yes
11. Itibo Slaughterhouse	Yes	No	Yes
12. Sondu Slaughterhouse	Yes	No	Yes
13. Sondu Slaughterhouse-Kericho Side	No	No	No
14. Chulaimbo Slaughterhouse	No	No	No
15. Rabuor Slaughterhouse	Yes	No	Yes
16. Mamboleo Slaughterhouse	Yes	Yes	Yes
17. Kakunga Slaughter Slab	No	No	Yes
18. Lubao Slaughterhouse	No	No	Yes
19. Mumias Modern Slaughterhouse	No	No	Yes
20. Ejinja Corner Slaughterhouse	No	No	Yes
21. Savona Slaughterhouse	No	No	No
22. khayega Slaughter Slab	No	No	No
23. Shirere Slaughterhouse	No	No	Yes
24. Star Brilliant Ltd Slaughterhouse	Yes	Yes	Yes
25. Naivasha Municipal Slaughterhouse	No	No	Yes
26. Barnabas Slaughterhouse	No	No	No
27. Modern Slaughterhouse	No	No	Yes
28. Free Area Slaughterhouse	Yes	No	No
29. Nakuru-County Slaughterhouse	No	No	No
30. Githioro Slaughter Slab	No	No	Yes
31. Mawanga Slaughter Slab	No	No	Yes
32. Karatina Slaughterhouse	No	No	No
33. Kanyange Slaughter slab	Yes	Yes, but not trained	No
34. Kiamariga Slaughterhouse	No		
35. Gwacucu Slaughter slab	No	No	No
36. Nyeri Slaughterhouse	No	No	No

Name of slaughterhouse	Treatment plant in place	Treatment plant handler existence	Segregation and pre-treatment of waste before discharge into the treatment plant
(Munjiru Investment)			
37. Kagongo-ini Slaughter Slab	No	No specific handler	No
38. Ngangarithi Slaughterhouse	Yes	Yes, but not trained	Yes
39. Mutunduri Slaughterhouse	No	No	Yes
40. Karingare Karonja Slaughterhouse	No	N/A	Yes
41. Rukira Slaughter slab	No	No	Yes
42. Makutano Slaughterhouse	No	N/A	No
43. Makengi Slaughter Slab	No	N/A	No
44. Manyatta Slaughterhouse	No	No	Yes
45. Embu County Slaughterhouse	Yes. May not be fully functional	No	Yes
46. Karurina Slaughterhouse	No	No	N/A
Total	14	7	23

Annexure 9: Compliance and Enforcement of EIA and EA Reports Submission

COUNTY	NAME OF THE SLAUGHTERHOUSE	Slaughterhouses year of establishment	EIA/IA submission	EA submission
Nakuru	1. Star Brilliant Slaughterhouse	2016	Yes	Yes
	2. Naivasha Municipal Slaughterhouse	Not provided	No	No
	3. Barnabas Slaughterhouse	2015	Yes	No
	4. Modern Slaughterhouse	Not provided	No	No
	5. Free Area Slaughterhouse	1980	No	No
	6. Nakuru County Slaughterhouse	1974	No	No
	7. Githioro Slaughter Slab	2017	Yes	No
	8. Mawanga Slaughter Slab	Not provided	No	Yes
Kisumu	9. Sondu Slaughterhouse-Kericho Side	2015	Yes	No
	10. Sondu Slaughterhouse-Kisumu Side	1980	No	Yes
	11. Chulaimbo Modern Slaughterhouse	2011	Yes	Yes
	12. Mamboleo Slaughterhouse	1991	No	No
	13. Rabuor Slaughterhouse	1991	No	No
Kisii	14. Kisii Municipal Slaughterhouse	1985	No	No
	15. Itibo Slaughterhouse	2014	Yes	Yes
	16. Marani Slaughterhouse	2012	Yes	No
	17. Keroka Slaughterhouse	Not provided		No
	18. Ogembo Slaughterhouse	2009	No	No
Kakamega	19. Shirere Slaughterhouse	2014	No	No
	20. Khayenga Slaughterhouse	1999	No	No
	21. Savona Slaughterhouse	2002	No	No
	22. Ejinja Corner Slaughterhouse	2014	No	No
	23. Mumias Modern Slaughterhouse	2013	No	Yes
	24. Lubao Slaughterhouse	2019	No	Yes
	25. Kakunga Slaughterhouse	1997	No	No
Nairobi	26. Kamulu Slaughterhouse	2017	Yes	YES
	27. Kiamaiko Slaughterhouse	1996	No	Yes
	28. Nyongara Slaughterhouse	1970	No	Yes
	29. Lyntano Slaughterhouse	1969	Yes	Yes
	30. Neema Slaughterhouse	2014	Yes	Yes
	31. Ndumbu-Ini Slaughterhouse	1970	No	Yes
Nyeri	32. Karatina Slaughterhouse	1974	No	Yes
	33. Kanyange Slaughter Slab	1996	NO	Yes
	34. Gwacucu Slaughter Slab	2000	No	No
	35. Nyeri Slaughterhouse (Munjiru Investment)	Not provided	No	Yes

	36. Kiamariga Slaughterhouse	Not provided		No
	37. Kagongoini Slaughter Slab	Not provided		No
	38. Ngangarithi Slaughterhouse	2001	No	Yes
Embu	39. Rukira Slaughterhouse Slab	2002	No	No
	40. Karingare Karonja Slaughterhouse	1984	No	No
	41. Embu county Slaughterhouse	1972	No	No
	42. Manyatta Slaughterhouse	1999	No	No
	43. Mutunduri Slaughterhouse	2000	No	No
	44. Karurina Slaughterhouse	2017	No	No
	45. Makutano Slaughterhouse	Not provided		No
	46. Makengi Slaughter Slab	Not provided		No
				Yes =17 No = 29

Environmental Impact Assessment or Initial Audit Submission Summary

	Slaughterhouse Established before 1999	Slaughterhouse Established after 1999
Required to conduct EIA	17	20
Conducted EIA	1	9

Note: Nine slaughterhouses did not provide information on the exact year of established.

Annexure 10: Improvement and Closure Notices Issued

County	Name of the Slaughterhouse	Date of issue
Nairobi	Quality Meat packers	01/12/2016
	Farmers Choice	11/07/2017
	Nyongara Slaughterhouse	25/06/2018
	Dema Slaughterhouses	06/09/2018
	Kamulu Slaughterhouses	04/09/2019
	Ndumboini Slaughterhouse	05/09/2019
Nyeri	Ngangarithi Slaughterhouses	18/06/2018
	Karatina Slaughter Slab	01/08/2019
	Kanyange Slaughterhouse	30/02/2016
Embu	Karurina Slaughterhouse	03/08/2019
	Siakago Slaughterhouse	28/08/2019
	Kibugu Slaughterhouse	03/08/2019
	Maruna Slaughterhouse	28/08/2019
	Ishiara Slaughterhouse	29/08/2019
	Gikuni Slaughterhouse	29/08/2019
	Kivue Slaughterhouse	03/09/2019
	Kithimo Slaughterhouse	03/09/2019
	Njiru Mvunjia Slaughterhouse	05/09/2019
	Muchangi Slaughterhouse	05/09/2019
	Rukira Slaughterhouse	11/09/2019
	Joseph Nyaga Slaughterhouse	05/09/2019
	Nickson Njeru Slaughterhouse	11/09/2019
	Elias Karembio Slaughterhouse	03/09/2019
	Eunice Makengi Slaughterhouse	11/09/2019
	Martin Nyaga Slaughterhouse	11/09/2019
E.K Karanja Slaughterhouse	11/09/2019	
Grace Wanjiru Slaughterhouse	11/09/2019	
Mutunduuri Slaughterhouse	11/09/2019	
Manyatta Slaughterhouse	11/09/2019	
Kangaru Slaughterhouse	11/09/2019	
Embu County Government Slaughterhouse	16/09/2019	
Kimangaru Slaughterhouse	03/09/2019	
Nakuru	Mwangaza Slaughterhouse	11/12/2017
	Githioro Slaughterhouse	07/06/2019
	Brotherhood Slaughterhouse	19/09/2019
	Nakuru County Slaughterhouse	19/09/2019
	Mawanga Slaughterhouse	19/09/2019
	Free Area Slaughterhouse	19/09/2019
	Rongai Slaughter Slab	24/09/2019
	Salgaa Slaughterhouse	24/09/2019

County	Name of the Slaughterhouse	Date of issue
	Nakuru County Butchers Company	19th/09/2019
	Modern Slaughterhouse	01/10/2019
	Hollywood Slaughterhouse	19/09/2019
	Kampi ya Moto Slaughterhouse	24/09/2019
Kakakemga	Mumias Modern Slaughterhouse	17/01/2017
	Khayenga Slaughterhouse	21/02/2018
	Kakuunga Slaughter slab	01/10/2019
	Lubao Slaughterhouse	01/10/2019
	Ejinja Corner Slaughterhouse	01/10/2019
Kisumu	Chulaimbo Slaughterhouse	05/07/2019
	Rabuor Slaughterhouse	08/07/2019
	Ahero Slaughterhouse	26/09/2019
	Awasi Slaughterhouse	27/09/2019
Kisii	Itibo Slaughterhouse	03/07/2019
	Keroka Slaughterhouse	10/09/2019
	Kisii County Government Slaughterhouse	3/07/2019, 06/05/2019
Data Summary	Improvement Notices issued before June 2019	10
	Improvement Notices issued after June 2019	<u>46</u>
	Total Notices Issued	56

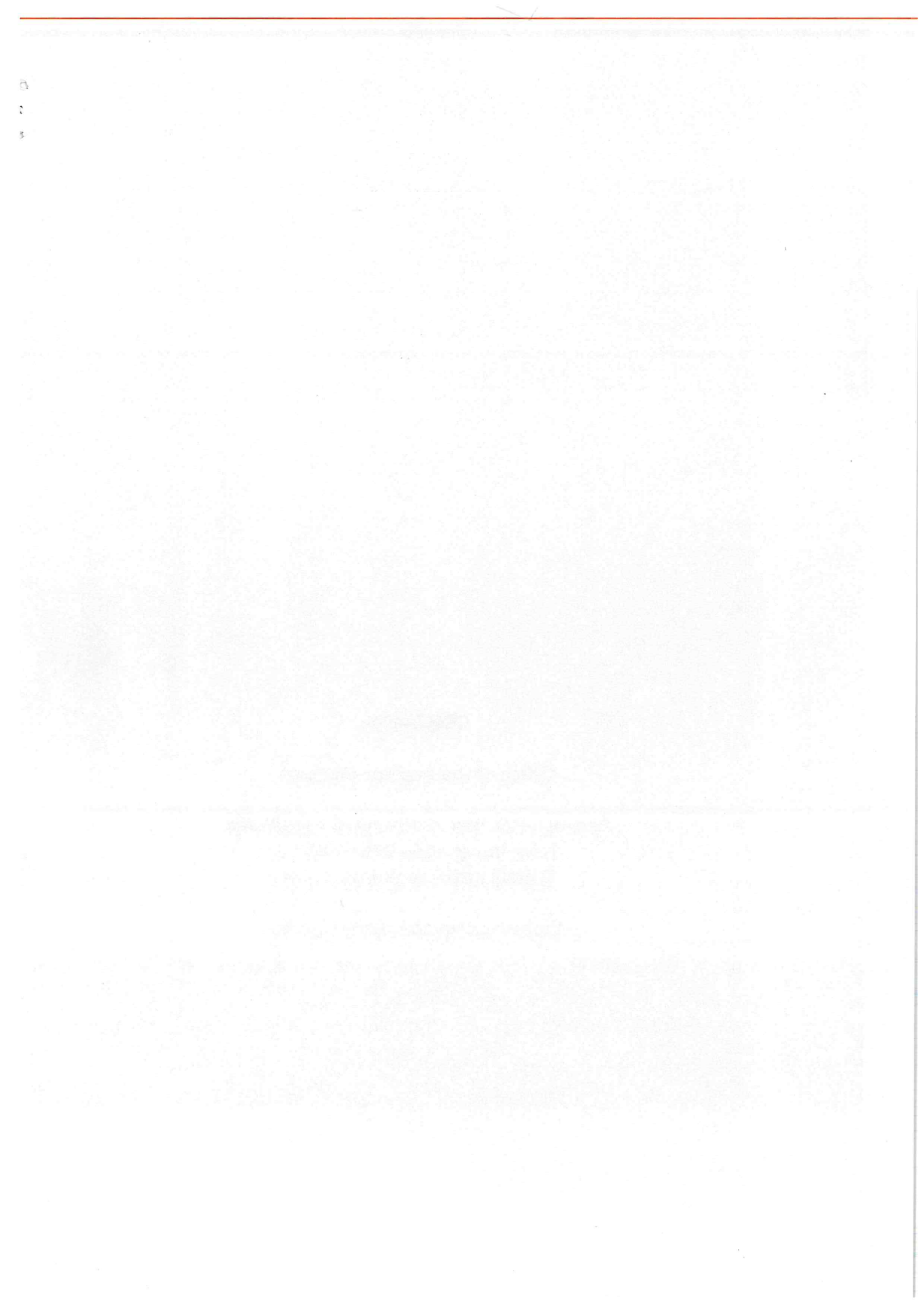
Appendix 11: Interaction with the National Environment Management Authority

Name of The Slaughterhouse	Year of Establishment	Frequency of NEMA visiting or mode of communication between proponent and NEMA
1. Star Brilliant Slaughterhouse	2016	They communicate with NEMA staff
2. Naivasha Municipal Slaughterhouse	1980	No communication
3. Barnabas Slaughterhouse	2015	Last visited in 2018
4. Modern Slaughterhouse		No communication
5. Free Area Slaughterhouse	1980	Often visited by NEMA
6. Nakuru County Slaughterhouse	1974	Visited four times in 2019
7. Githioro Slaughter Slab	2017	Have contacts with NEMA
8. Mawanga Slaughter Slab		Often visited by NEMA
9. Sondu Slaughterhouse (Kericho side)	2015	Visited three times in 2019
10. Awasi Slaughterhouse	Closed By NEMA	
11. Ahero Slaughterhouse	Closed By NEMA	
12. Sondu Slaughterhouse (Kisumu side)	1980	Visited in 2016 and two times in 2019
13. Chulaimbo Modern Slaughterhouse	2011	Visited by NEMA and closed in July 2019
14. Mamboleo Slaughterhouse	1991	Often visited by NEMA
15. Rabuor Slaughterhouse	1991	Often visited by NEMA
16. Kisii Municipal Slaughterhouse	1985	Visited two times between August and October in 2019
17. Itibo Slaughterhouse	2014	Visited a number of times in 2019
18. Marani Slaughterhouse	2012	1st time seeing NEMA (October 2019)
19. Ogembo Slaughterhouse	2009	1st visited on 10th Sept 2019, not visited before
20. Shirere Slaughterhouse	2014	NEMA had visited two times in 2019
21. Khayenga Slaughterhouse	1999	Communicate with NEMA through the phone
22. Savona Slaughterhouse	2002	Visited three times in 2019

23. Ejinja Corner Slaughterhouse	2014	No communication exists between NEMA and the slaughterhouse
24. Mumias Modern Slaughterhouse	2013	Have had no visit with NEMA
25. Lubao Slaughterhouse	2019	Deals directly with expert
26. Kukena Slaughterhouse	1997	Have no direct contact with NEMA
27. Kamulu Slaughterhouse	2017	Through phone calls
28. Kiamaiko Slaughterhouse	1996	The slaughterhouses have tried to comply with the required regulation, Challenge is the slum environments.
29. Nyongara Slaughterhouse	1970	Meetings have been held with NEMA
30. Lyntano Slaughterhouse	1969	The frequency of interaction is minimal
31. Neema Slaughterhouse	2015	The relationship is good, a lot of interactions since inception. NEMA has provided guidance.
32. Ndumbu-ini Slaughterhouse	1970	No contacts for communication, NEMA has not visited the facility.
33. Karatina Slaughterhouse	1974	There have been interactions through visits
34. Kanyange Slaughter Slab	1996	There is communication
35. Gwacucu Slaughter Slab	2000	Communicate with NEMA when visited
36. Nyeri Slaughterhouse	N/A	The NEMA office is accessible
37. Ngangarithi Slaughterhouse	2001	Inspection by NEMA is done twice in a year
38. Rukira Slaughterhouse	2002	NEMA has never ever visited the slaughterhouse
39. Karingare Karonja Slaughterhouse	1984	Have communicated with NEMA only once
40. Embu County Slaughterhouse	1972	NEMA has visited once in 2019
41. Manyatta Slaughterhouse	1999	NEMA carries out inspection once a month
42. Mutunduri Slaughterhouse	2000	There has not been prior engagement prior to the last visit of 11/09/2019 when an improvement notice was issued.
43. Karurina Slaughterhouse	2017	There has been engagement with NEMA officers.

1. Status of Proponent interaction with National Environment Management Authority

Status of Monitoring Frequency			
Interaction status	Frequency count of interviewees	Total number interviewed	%
No interaction with NEMA	14	43	33
Minimal interaction	11	43	25
Often interaction	18	43	42
Total	43		100



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