

**CONSTRUCTION AND OPERATION OF A  
SOURCE-SEPARATED ORGANIC WASTE  
COMPOSTING PLANT IN ACCRA, GHANA**

**ENVIRONMENTAL AND SOCIAL IMPACT  
STATEMENT**

**MARCH, 2026**

**Proponent:** Accra Metropolitan Assembly

**Consultant:** Environmental and Health Impact Assessment Group



## EXECUTIVE SUMMARY

### 1.0 Project Background Information

The Accra Metropolitan Assembly (AMA), with support from the C40 Cities Finance Facility (CFF), is initiating a municipal solid waste (MSW) source separation and composting project to address Accra's growing waste management issues. This project aims to convert organic waste (over 50% of the city's total waste) into valuable compost, reducing methane emissions and supporting Accra's Climate Action Goals of 15% Greenhouse gas (GHG) emission reduction by 2030 and 45% by 2050.

The project will serve as a model for resource use efficiency, producing compost to enhance agriculture, prolonging landfill life, and generating livelihood opportunities, particularly for informal waste workers. It aligns with AMA's climate resilience strategy and national and international environmental commitments.

The CFF, funded by multiple international development agencies, supports this project to ensure it meets high environmental and social standards, including those of the International Finance Corporation (IFC), and complies with relevant national and international regulations, including those of the International Labour Organization (ILO).

An Environmental and Social Impact Assessment (ESIA) was conducted to evaluate and mitigate potential adverse impacts, ensuring the project's environmental and social acceptability and sustainability, while also satisfying legal obligations and meeting the requirements of international financiers. The project offers numerous environmental, economic, social, and institutional benefits, and supports broader climate action objectives. The project is categorized as schedule 2, Category C projects by Ghana Environmental Protection Authority (EPA) and as Category B + according to the International Finance Corporation (IFC) Performance Standards (PS) for which an Environmental and Social Impact Assessment (ESIA) is required.

### 2.0 Project Description

The source-separated and composting plant project proposes source separation of municipal solid waste in Accra Metropolitan Assembly (AMA) and adjoining sub-metros (Osu Klottey, Korle Klottey, Okaikwei North, Okaikwei South, Ayawaso Central, Ayawaso East, Ayawaso North, Ayawaso West, Ablekuma Central, Ablekuma North, Ablekuma South, Ablekuma West) and the construction of a composting facility for source-separated organic waste treatment.

The location of the proposed composting facility will be in Jamestown, Ashiedu Keteke Sub-Metro of AMA (Lat. 5.543507° Long. -0.226150°), within the Greater Accra Region of Ghana. It will be located on a 1.77 ha land and adjacent to the Korle Lagoon to the west. The main inflows/inputs into the project will be raw material (organic waste and bulking materials), energy and water supplied by different actors in the downstream supply/value chain while the main outflows will be compost, treated effluent, residual solid waste and gases expected to

impact the upstream value chain. The proposed project will be done in phases as indicated below, and their timelines are shown in Table 1.

## 2.1 Project Phases

The implementation of the project spans four phases as follows:

- **Pre-Construction:** Feasibility studies, environmental and social impact assessment (ESIA), land acquisition, site preparation, stakeholder engagement, awareness creation, and implementation of three-stream source separation.
- **Construction:** Development of composting plant infrastructure and access roads, stakeholder engagement.
- **Operation:** Operation and maintenance of the composting plant and its associated activities such as implementation of the environmental and social management plan; and
- **Decommissioning:** Rehabilitation of the land post-project.

**Table 1: Project Timeline and Key Activities**

| Phase            | Proposed Duration      | Key Activities                                                 |
|------------------|------------------------|----------------------------------------------------------------|
| Pre-Construction | 6 months               | Land acquisition, Environmental and Social surveys             |
| Construction     | 18 months              | Compost plant and auxiliary facilities construction, roadworks |
| Operation        | To be determined (TBD) | Maintenance, Compost production                                |
| Decommissioning  | To be determined (TBD) | Site rehabilitation                                            |

## 2.2 Analysis of Alternatives

The ESIA considered five (5) project alternatives as well as their E&S implications, in line with the AfDB ISS and IFC PS. Table 2 presents the range of alternatives assessed and the preferred options, with the selected options indicated.

**Table 2: Summary of Project Alternatives Analysed**

| Alternatives                                | Assessment of Alternatives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Location Alternatives</b>                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Gbegbeyise                                  | <ul style="list-style-type: none"> <li>• Located ~320m from the seashore in western AMA, occupying a 1.47ha uncontrolled waste disposal site</li> <li>• Situated in a depression with poor drainage, resulting in persistent groundwater accumulation</li> <li>• High risk of flooding</li> <li>• Surrounded by high-density residential areas with narrow, unpaved access roads and requires resettlement to accommodate storm drains</li> <li>• Extensive remediation is required due to ~55,000 m<sup>3</sup> of legacy waste and unstable alluvial soils</li> <li>• The site is not suitable due to environmental vulnerability, insufficient land area, high flood risk, close residential proximity, and excessive site preparation costs</li> </ul> |
| Korle Lagoon Ecological Restoration Project | <ul style="list-style-type: none"> <li>• Located ~1.5 km from the coastline, directly adjacent to the IRECOP MBT plant</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

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| (KLERP), adjacent to IRECORP                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>• Total area of 2.94 ha, with 1.77 ha usable after applying environmental buffers (30 m from the river, 5 m from the roads)</li> <li>• No significant residential settlement nearby; direct access via well-paved road network connected to Ring Road</li> <li>• Although classified as a former uncontrolled dump, the site offers feasible conditions for maturation and screening phases of composting</li> <li>• Further development (e.g., for splitting and intensive composting) would require geotechnical stabilization and leachate control infrastructure</li> <li>• <b><i>Selected option – suitable and hence selected for the current project phase focusing on maturation. The site meets location, access, emission buffer, and cost-effectiveness criteria</i></b></li> </ul> |
| Adedenkpo                                                                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li>• Located in the heart of Jamestown, ~1.5 km from the seashore, covering 0.81ha</li> <li>• Densely surrounded by residential and informal commercial activities, including ongoing recycling operations</li> <li>• Access is via narrow, congested roads</li> <li>• Paving would require extensive resettlement and infrastructure development</li> <li>• Limited land availability and unstable ground conditions making the site unsuitable for any composting infrastructure</li> <li>• Not suitable due to land size limitations, excessive environmental remediation needs, and incompatible land use context</li> </ul>                                                                                                                                                                  |
| <b>Composting Technology Alternatives</b>                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Windrow composting                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>• Suitable for large volumes; simple operation</li> <li>• Requires significant land area, which is limited in Accra</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Aerated static pile composting                                                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>• Allows for controlled aeration and temperature management, ensuring faster and higher-quality composting Higher initial costs compared to windrow systems</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Covered aerated static pile composting                                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>• Superior odour management, moisture control, and suitability for urban areas</li> <li>• Covered systems enhance odour control and protect compost from rain, critical for urban areas</li> <li>• Minimizes leachate formation and greenhouse gas emissions</li> <li>• Meets stringent environmental regulations by controlling odours and runoff</li> <li>• While the initial investment is higher, long-term operational savings and improved compost quality offset costs</li> <li>• <b><i>Selected option – operationally effective, environmentally compatible, allows for space optimisation, easily scalable and adaptable to feedstock variability and provides benefits which outweigh the initial investment costs</i></b></li> </ul>                                               |
| In-vessel composting                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>• Compact and fast processing</li> <li>• Very high capital and operational costs, making it less feasible for the current scale</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Anaerobic digestion                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>• Biogas production alongside compost</li> <li>• Requires specialized feedstock management and infrastructure, making it unsuitable for mixed waste streams</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Alternative Sources of Raw Materials</b>                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <i>All options selected, with specific exclusions as follows: meat, dairy oily foods, treated wood, synthetic materials and pesticide contaminated waste due to pest, odour and contamination concerns; non-biodegradable items such as plastics, metals and glass.</i> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Food waste                                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>• Includes kitchen scraps like vegetable peels, fruit cores, coffee grounds, eggshells, and leftover food</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

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|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                             | <ul style="list-style-type: none"> <li>• Has high nitrogen content, essential for microbial activity, and high moisture content, aiding in maintaining the optimal compost pile environment</li> <li>• Usually shredded or chopped to increase surface area and ensure efficient microbial decomposition</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Green waste                                 | <ul style="list-style-type: none"> <li>• Comprises yard trimmings such as grass clippings, leaves, branches, and other garden debris which contains a balanced mix of nitrogen and carbon</li> <li>• Fibrous in nature, green waste support structural integrity and aeration in compost piles.</li> <li>• May be shredded to expedite decomposition and improve pile uniformity</li> <li>• Helps regulate moisture levels and supports aeration</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Agricultural residues                       | <ul style="list-style-type: none"> <li>• Include crop residues comprising stalks, husks, straw, and leaves left after harvesting. They have a high carbon content, critical for balancing nitrogen-rich materials</li> <li>• Bulky and fibrous, enhancing aeration within the compost pile</li> <li>• Typically shredded to increase decomposition efficiency by exposing more surface area to microbes.</li> <li>• Nutrients in them such as potassium, phosphorus, and trace minerals, are recycled, enriching the compost</li> </ul>                                                                                                                                                                                                                                                                                                                                                                               |
| Market waste                                | <ul style="list-style-type: none"> <li>• Contains spoiled fruits, vegetables, and other organic matter sourced from local markets</li> <li>• High nitrogen and moisture content, suitable for composting and is often available in large quantities</li> <li>• Inspected and sorted to remove non-organic contaminants</li> <li>• Requires careful management to prevent anaerobic conditions due to high moisture.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Road Access Alternatives</b>             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Use of existing IRECORP access road         | <ul style="list-style-type: none"> <li>• The road is paved, designed for heavy-duty trucks, and connects directly to Accra's Ring Road</li> <li>• Provides a direct, reliable route that avoids residential neighbourhoods</li> <li>• Requires no new construction, significantly reduces cost, and aligns with AMA's zoning for waste infrastructure within the Korle Lagoon Ecological Restoration Project (KLERP) area</li> <li>• Allows logistical coordination with IRECOP's existing traffic flow while maintaining adequate separation between operations</li> <li>• <b><i>Selected option – minimizes environmental and social impacts, avoids residential disturbance, and supports the safe and efficient operation of the composting facility. This access route will be complemented by on-site traffic management measures to further reduce nuisance and enhance operational safety.</i></b></li> </ul> |
| Construction of a new dedicated access road | <ul style="list-style-type: none"> <li>• Offers operational independence</li> <li>• Would likely require land acquisition, potentially displacing economic activities</li> <li>• High capital cost</li> <li>• May also disturb urban settlement and water drainage systems, increasing environmental and social risks</li> <li>• Not suitable</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Use of local community roads                | <ul style="list-style-type: none"> <li>• Roads are narrow, frequently unpaved, and pass through densely populated areas, making them unsuitable for heavy truck traffic</li> <li>• Using these roads would pose serious safety risks to residents, increase dust and noise levels, and likely generate opposition from affected communities</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Project Implementation Alternatives</b>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

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|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Project implementation | <ul style="list-style-type: none"> <li>• The project is expected to convert organic waste (over 50% of the city's total waste) into valuable compost, reducing methane emissions and supporting Accra's Climate Action Goals of 15% Greenhouse gas (GHG) emission reduction by 2030 and 45% by 2050</li> <li>• The project is expected to serve as a model for resource use efficiency, producing compost to enhance agriculture, prolonging landfill life, and generating livelihood opportunities, particularly for informal waste workers</li> <li>• It aligns with AMA's climate resilience strategy and national/international environmental commitments</li> <li>• <b><i>Selected option – a proactive approach, such as the proposed source separation and composting project, is essential to mitigate environmental and social risks while improving long-term waste management practices in the city</i></b></li> </ul> |
| No action              | <ul style="list-style-type: none"> <li>• The existing waste management system, if left unchanged, will continue to contribute to environmental degradation, including the accumulation of organic waste in landfills and potential contamination of surrounding areas.</li> <li>• Additionally, air pollution from waste disposal, and the negative impact on nearby communities due to improper waste handling, may worsen over time, especially during periods of heavy rainfall or increased waste generation</li> <li>• Not a sustainable or viable option for addressing waste management issues</li> </ul>                                                                                                                                                                                                                                                                                                                  |

### 3.0 Legal, Regulatory and Institutional Framework

The project aligns with Ghana's Environmental Assessment (EA) Regulations. It also adheres to international standards, including the AfDB ISS. The project is required to obtain an environmental permit from the EPA before proceeding.

#### ***Key National Constitutional and Governance Requirements***

The relevant constitutional and governance requirements include:

- Constitution of Ghana, 1992 – Provides the overarching right to a healthy environment and protects property rights. The Constitution also governs compulsory land acquisition by the State, ensuring that prompt, fair and adequate compensation is paid for property; and
- Local Governance Act, 2016 (Act 936) – Establishes the local government system by empowering Regional Coordinating Councils (RCCs) and District Assemblies to guide development and manage municipal services. It empowers District Assemblies to oversee physical development and planning, vital for approving resettlement locations.

#### ***Key National Environmental Requirements***

The relevant environmental and related requirements include:

- Environmental Protection Act, 2025 (Act 1124) – Governs environmental protection in Ghana. It ensures that Environmental Impact Assessments (EIAs) include compensation plans/policies, including resettlement action plans for projects affecting communities.
- Environmental Protection (Environmental Assessment) Regulations, 2025 (LI 2504) – Governs Ghana's environmental assessment process. It mandates that activities with

potential adverse effects undergo assessment and obtain permits, enabling the EPA to monitor the levels of environmental impact for sustainable development;

- National Environmental Policy, 2012 – Aims to enhance living conditions and quality of life for all citizens by promoting sustainable development that balances economic growth with natural resource conservation; and
- National Climate Change Policy, 2013 – Drives adaptation, social development, and mitigation for sustainable growth by promoting low-emission energy, renewable power, and waste management to reduce greenhouse gas emissions.

### ***Key National Water and Sanitation Requirements***

The relevant requirements include:

- National Environmental Sanitation Policy, 2010 – Outlines strategies for addressing Ghana’s sanitation issues through sustainable waste management and enhanced services. It promotes environmental health, infrastructure upgrades, waste minimization, segregation, recycling, and composting of organic waste; and
- Water Resources Commission Act, 1996 (Act 522) – Controls water usage and pollution;
- Water Use Regulations, 2001 (LI 1692) – Provide guidelines for the abstraction and use of groundwater for commercial or industrial purposes; and
- National Water Policy – Promotes sustainable water resource management, efficient use of water, and protection of water quality.

### ***Key National Health Related Requirements***

The relevant health and related requirements include:

- Public Health Act, 2012 (Act 851) – Consolidates laws to prevent disease, promote health, and protect human and animal well-being; and
- National HIV/AIDS Policy – Provides the overall framework for Ghana’s response to HIV/AIDS, including prevention, treatment, care, support, public awareness, and protection of the rights of people living with HIV/AIDS.

### ***Key National Land Governance and Resettlement Related Requirements***

The relevant requirements include:

- Land Act, 2020 (Act 1036) – Consolidates existing laws on land and land administration in Ghana. Its goal is to harmonize these laws for sustainable land management and effective land tenure. Section 265 of the Act provides that a land acquisition and resettlement plan is to be prepared, in consultation with the affected inhabitants and must include an environmental impact assessment;
- Land Use and Spatial Planning Authority Act, 2016 (Act 925) – Establishes the framework for land use planning, zoning, and spatial development in Ghana;
- Lands (Statutory Wayleaves) Act, 1963 (Act 186) – Provides for the creation of statutory rights of way for public infrastructure such as roads, drainage systems, pipelines, and utility corridor; and

- Alternative Dispute Resolution Act, 2010 (Act 798) – Establishes a framework for resolving disputes through mediation, arbitration, and customary arbitration rather than through formal court proceedings. Often used in conjunction with the Land Act to resolve land disputes.

### ***Key National Labour and Related Requirements***

The relevant requirements include:

- Labour Act, 2003 (Act 651) – Consolidates labour laws, defining rights and duties for employers, workers, and trade unions while mandating safe, healthy working conditions through training and supervision and establishes the National Labour Commission (NLC) for dispute resolution. It establishes the rights and obligations of employers and employees and provides the foundation for labour standards of enforcement. It mandates written contracts, protects against discrimination, and requires safety standards, enforced by the NLC;
- Labour Regulations, 2007 (LI 1833) – Details procedures for implementing Act 651;
- Factories, Offices and Shops Act, 1970 (Act 328) – Sets and enforces health and safety standards;
- Workmen’s Compensation Act, 1987 (PNDCL 187) – Includes provisions regarding compensation for injuries;
- National Pensions Act, 2008 (Act 766) – Regulates pension schemes; and
- National Workplace HIV/AIDS Policy – Provides a framework for preventing HIV transmission in the workplace, protecting the rights of workers living with HIV/AIDS, and reducing stigma and discrimination.

### ***Key National Gender and Social Protection Requirements***

The relevant requirements include:

- Domestic Violence Act, 2007 (Act 732) – The primary legislation covering physical, sexual, economic, and psychological abuse, allowing for protection orders. It also establishes a victims’ support fund;
- Human Trafficking Act, 2005 (Act 694) – Focuses on prevention, protection, and prosecution related to trafficking;
- Criminal Offences Act, 1960 (Act 29) – Defines sexual offenses including rape, defilement, and indecent assault;
- Children’s Act, 1998 (Act 560) and Juvenile Justice Act, 2003 (Act 653) – Protects children from violence and neglect and provides the legal framework for the protection of children against economic exploitation and hazardous labour;
- Domestic Violence Regulations, 2016 (LI 2237) – Provides guidelines for the implementation of Act 732;
- National Gender Policy, 2015 – Aims at mainstreaming gender concerns into national development; and
- Affirmative Action (Gender Equity) Act, 2024 (Act 1121) – Promotes gender equality and protection against discrimination.

The regulations on gender-based violence are strengthened by national initiatives such as the Boame SGBV Mobile Application for reporting abuse.

### ***Key National Energy Requirements***

The relevant requirements include:

- Renewable Energy Act, 2011 (Act 832) – Promotes renewable energy investments;

### ***Key National Environmental Quality Requirements***

The relevant environmental quality standards include:

- GS 1236:2019 Environment and Health Protection – Requirements for Ambient Air Quality and Point Source/Stack Emissions;
- GS 1219:2018 Environment and Health Protection – Requirements for Motor Vehicle Emissions;
- GS 1222:2018 Health Protection – Requirements for Ambient Noise Control;
- GS 1253:2018 Acoustics Guide for Measurement of Outdoor A-Weighted Sound Levels; and
- GS 1212:2019 Environment Protection – Requirements for Effluent Discharge.

### ***Key International Environmental and Social Frameworks***

#### ***IFC Performance Standards***

The IFC applies its Performance Standards (PS) to manage social and environmental risks while enhancing developmental opportunities in project financing. These standards serve as an international benchmark for best practices in environmental and social management. For the proposed project, the IFC Performance Standards are adopted/applied to ensure sustainability throughout the project lifecycle. The proposed project triggers seven (7) out of the eight (8) IFC Performance Standards as follows:

- PS 1: Assessment and Management of Environmental and Social Risks and Impacts;
- PS 2: Labour and Working Conditions;
- PS 3: Resource Efficiency and Pollution Prevention;
- PS 4: Community Health, Safety, and Security;
- PS 5: Land Acquisition and Involuntary Resettlement;
- PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources; and
- PS 8: Cultural Heritage.

#### ***AfDB Integrated Safeguards System***

The AfDB's ISS is an integral part of the Bank's support system for promoting socioeconomic growth and environmental sustainability across Africa. It is expected that all programs and projects funded by the Bank adhere to the requirements outlined in the ISS framework, which consists of ten (10) environmental and social Operational Safeguard (OS) areas. The framework is designed to prevent/reduce adverse effects on the environment and people. The project will comply with the ISS throughout the project's life cycle, ensuring that all projects

meet the safeguard requirements. As such, this ESIA has been prepared in alignment with the ISS.

The Operational Safeguards applicable to the project include:

- **OS 1: Assessment and Management of Environmental and Social Risk and Impact** – The proposed project impacts on both the biophysical environment and socio-cultural factors such as livelihoods. This ESIA identifies and evaluates the potential E&S risks and impacts associated with the project and proposes a feasible plan for managing these risks and impacts to ensure project sustainability;
- **OS 2: Labour and Working Conditions** – The proposed project will employ direct workers for the construction phase and operational activities as well as indirect workers such as informal waste collectors and other value chain actors. The project by complying with the National Employment Policy 2012 and Labour Act 2003 (Act 651) aligns well or also complies with OS 2 on workers' safety and work conditions which is key to the successful project implementation. The ESIA also addresses issues of child labour and forced labour;
- **OS 3: Resources Efficiency and Pollution Prevention and Management** – The proposed project will pose risks of air and water pollution, hence the need for efficient resource utilization. The project is designed to reduce greenhouse gas emissions, a key objective of OS 3;
- **OS 4: Community Health, Safety and Security** – The proposed project poses potential health and safety impacts on host and adjoining communities through waste handling, transportation, and facility operations. This ESIA provides measures for ensuring public health and safety of communities during project activities;
- **OS 5: Land Acquisition, Restriction on Access to Land and Land Use, and Involuntary Resettlement** – The project involves state-owned land that serves as an existing dumpsite, where informal waste collectors (scrap dealers) are operating. Although these individuals may not have formal ownership of the land, OS 5 recognizes that their livelihoods depend on the site, and the project may cause economic displacement by disrupting their activities. A Resettlement Action Plan, together with a Livelihood Restoration Plan, will be prepared to ensure that the scrap dealers are adequately compensated for the loss of access to the land for their work;
- **OS 6: Habitat and Biodiversity Conservation, and Sustainable Management of Living Natural Resources** – The project will be implemented close to a river body, though polluted still support biodiversity. It is also within a coastal area which presents unique biodiversity and ecosystem services. Biodiversity studies show that the project construction activities will not threaten biodiversity resources as the site only hosts plant and animal species typical of abandoned wastelands. Though already degraded, there will be vegetation loss during site preparation which could potentially affect local species;
- **OS 7: Vulnerable Groups** – The ESIA identified the following vulnerable groups within the project communities: informal waste pickers/workers (scrap dealers), women-headed households and migrants. The project will implement measures to reduce any potential adverse impacts on these groups;

- **OS 8: Cultural Heritage** – The people of the project area have rich cultural values and norms and also celebrate the Homowo festival. They also have value systems and taboos which would be respected throughout project implementation. The project will implement chance find procedures and engage relevant traditional authorities and regulatory agencies in the event of any cultural heritage discoveries during excavation; and
- **OS 10: Stakeholder Engagement and Information Disclosure** – The project will comply with OS 10 by implementing the Stakeholder Engagement Plan, disclosing project information in accessible formats, conducting regular consultations, and maintaining a functional grievance redress mechanism to address concerns from project-affected persons and other stakeholders.

### *Key Institutional Framework and Mechanisms*

The roles and responsibilities of key institutions regarding the implementation of the project are as follows:

- **Environmental Protection Authority** – Ensure compliance with environmental impact assessment procedures as well as compliance with conditions under the environmental permit, including monitoring and reporting requirements;
- **Accra Metropolitan Assembly** – The AMA is the project proponent and is responsible for the overall management of the project;
- **Greater Accra Regional Coordinating Council** – Coordinate the participation of other municipal assemblies regarding the collection and transportation of organic waste;
- **Lands Commission, particularly the Land Valuation Division** – Will play an important role in relation to land acquisition, valuation of affected assets, and compensation arrangements for scrap dealers and informal waste workers who may be displaced from the project site;
- **National Labour Commission** – May play a role if disputes arise between workers and contractors or between workers and the plant operator regarding wages, working conditions, termination of employment, or other labour-related matters;
- **Department of Labour** – Responsible for monitoring compliance with labour laws and ensuring acceptable working conditions;
- **NADMO National Disaster Management Organisation** – Can support emergency preparedness planning, response to major incidents such as fire outbreaks or flooding, and coordination with other emergency services if significant emergencies occur at the facility;
- **Department of Factories Inspectorate** – Responsible for enforcing occupational health and safety standards in factories, industrial facilities, and workplaces;
- **Ghana National Fire Service** – Responsible for fire prevention, fire safety inspections, emergency response;

- **Domestic Violence and Victims’ Support Unit (DOVVSU)** – May become involved if there are cases of sexual harassment, gender-based violence, abuse of workers, or violence affecting community members in connection with project activities;
- **Domestic Violence Secretariat** – May provide guidance on prevention of gender-based violence, support for affected persons, and integration of appropriate grievance and reporting systems within the project; and
- **Child-Friendly Gender-Based Violence Courts (CF-GBVC)** – May become involved if cases of child abuse, sexual exploitation, harassment, or gender-based violence associated with workers, contractors, or affected communities require formal legal action

### *Key Regulatory Approvals*

Table 3 below presents the regulatory approvals/permits required for the project.

**Table 3      Relevant Regulatory Approvals/Permits**

| <b>License/Permit</b>                                                                                  | <b>Regulatory Body</b>                                                                       | <b>Project Phase/Remarks</b>                                                    |
|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Environmental permit                                                                                   | Environmental Protection Authority                                                           | Following Acceptance of ESIS. Prior to construction                             |
| Environmental Certificate                                                                              |                                                                                              | After 24 months. Following preparation of ESMP                                  |
| Waste disposal permits                                                                                 | Local Authorities within project corridor                                                    | For a designated waste disposal site                                            |
| Fire Permit/ Certificate                                                                               | Ghana National Fire Service                                                                  | Construction of office buildings/ facilities                                    |
| Development and Building permit                                                                        | Accra Metropolitan Assembly                                                                  | Prior to construction of facilities                                             |
| Site Acquisition                                                                                       | Ministry of Local Government / Accra Metropolitan Assembly                                   | Prior to construction of facilities                                             |
| Plants Protection Regulatory Services Directorate (PPRSD)                                              | Ministry of Food and Agriculture                                                             | Prior to compost production for the organic fertiliser product and the producer |
| Certificate of Registration of Fertilizer Product & Certificate of Registration of Fertilizer Producer | Plants Protection Regulatory Services Directorate (PPRSD) - Ministry of Food and Agriculture | Prior to compost production for the organic fertiliser product and the producer |
| Certificate of registration                                                                            | Department of Factories Inspectorate                                                         | Construction and the operation phase                                            |
| Standards for compost quality                                                                          | Ghana Standards Authority/MoFA - PPRSD                                                       | Operation phase – Quality standards for the compost                             |

## **4.0      Project Influence Area**

### **4.1      Site**

The proposed composting plant will be located in Jamestown, within the Ashiedu Keteke Sub-Metro of Accra Metropolitan Assembly, in the Greater Accra Region of Ghana. The facility will be located on a 1.77 ha parcel of land situated adjacent to the Korle Lagoon to the west (Figure 1).

The proposed project area is occupied by informal activities (scrap dealers, livestock keeping and informal settlers) that reflect the urbanised and densely populated nature of the area.

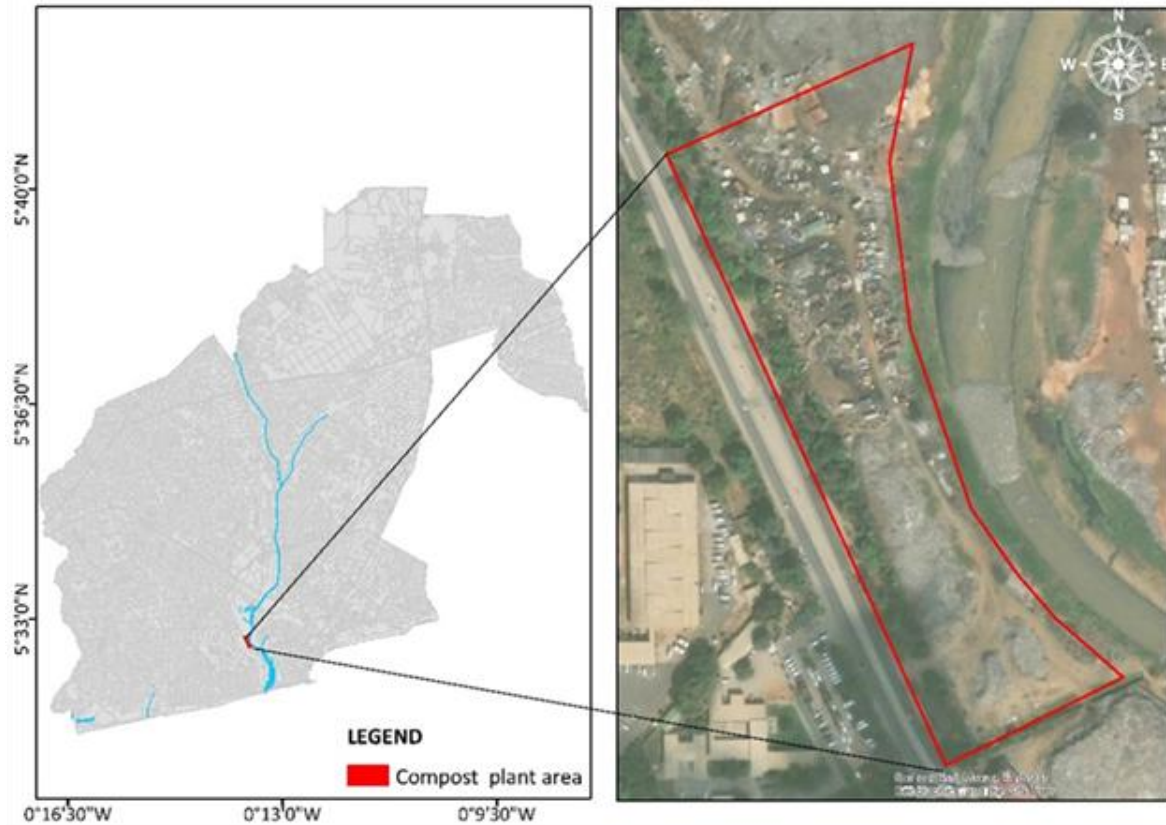


**Figure 1**      *Location of Proposed Compost Plant within the Accra Metropolitan Area*

#### **4.2      *Direct Influence Area***

The Area of Influence (AoI) for the proposed project includes both the project footprint and its broader impact zone. The primary AoI consists of the 1.77-hectare site, where all core project activities will be operated, managed, or occur.

#### **4.3      *Indirect/Wider Affected Area***

Beyond the project footprint, the AoI extends to a 1-kilometre radius surrounding the site boundary. This includes areas that may experience indirect or unplanned but predictable impacts resulting from the project's development such as associated infrastructure or facilities that would not otherwise have been developed in the absence of the project. The AoI accounts for direct and indirect environmental (physical and biological), social, and cultural impacts, and incorporates neighbouring communities, sensitive receptors, and potential interaction zones.

Additionally, the AoI includes the broader administrative areas of the Accra Metropolitan Assembly, Ablekuma Central, Ablekuma North, Ablekuma South, Ablekuma West, Ayawaso Central, Ayawaso East, Ayawaso North, Ayawaso West, Okaikwei North, Okaikwei South, Korle Klottey and Osu Klottey from which source-separated organic waste will be collected and transported to the composting facility (Figure 2). This broader catchment is considered relevant for understanding upstream impacts and logistical implications related to waste sourcing and transportation.

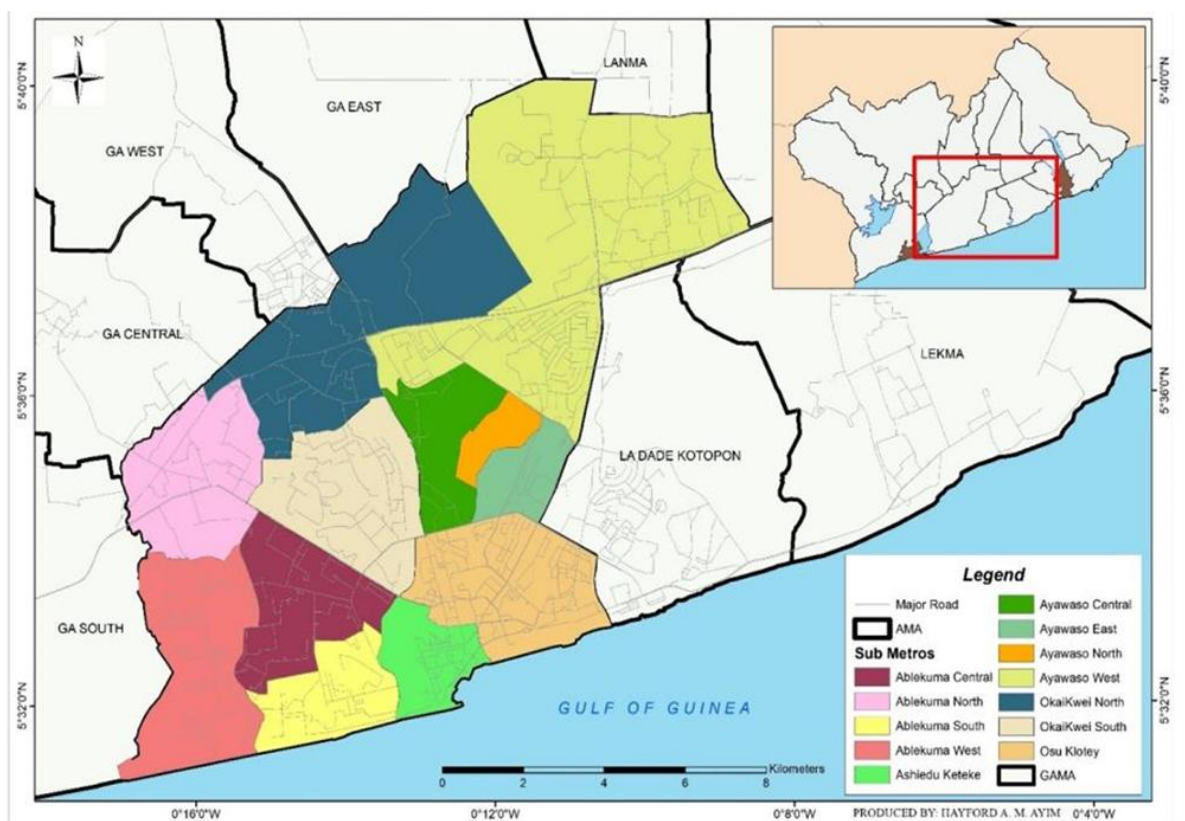


**Figure 2** Project Area (colour code) as defined by the Area of influence (Accra Metropolitan Assembly) (Source: City of Accra’s Waste Management Department, 2023)

## 5.0 Baseline Environmental and Social Conditions

A comprehensive baseline assessment was conducted to evaluate the current environmental and socio-economic conditions of the project area. This section covers aspects such as land use, water quality, soil composition, air quality, and the socio-economic profile of the local communities.

### 5.1 Physical Environment

On-site observations confirmed predominantly south-westerly wind directions and open exposure across the project site. Quarterly analysis of Ghana Meteorological Agency (GMet) data from 2014 to 2023 confirms significant inter-annual and intra-annual variability. A similar data analysis for minimum and maximum temperatures from 2014 to 2023 established that both daytime and nighttime temperatures have increased across all seasons, though with varying

intensities. Ghana Meteorological Agency records show persistently high morning humidity across all years, with some decline in afternoon values in recent years. Accra receives high solar intensity throughout the year, particularly between January and April.

The air quality within and around the proposed project site is significantly influenced by multiple sources of pollution, both historical and ongoing. The site lies within a heavily burdened urban corridor, bounded by informal waste management activities, stagnant water bodies, and active infrastructure. Air quality monitoring results with asterisk exceeded their applicable permissible levels specified in the Ghana Standard for Environment and Health Protection – Requirements for Ambient Air Quality and Point Source/Stack Emissions (GS 1236:2019). Apart from SO<sub>3</sub> readings from the western and northern ends which were slightly above the IFC guideline levels, values for all other monitoring points were below the IFC/WHO guideline levels. Noise levels exceeded Ghana's daytime permissible limit of 75 dB(A) for commercial areas at three of the four locations.

The baseline water quality levels of the Odaw River were generally above both Ghana EPA and international standard guideline limits, indicating high pollution. Monitoring results indicate that levels of Arsenic (As), Chromium (Cr), Mercury (Hg) and Nickel (Ni) were lower than their permissible level for all areas sampled.

## **5.2 Socio-Economic Conditions**

### **5.2.1 Demographics**

The Municipal Solid Waste (MSW) value chain in the Greater Accra Metropolitan Area is largely male-dominated, especially among informal sector workers and recycling industries, though women are slightly more represented among waste pickers and intermediate buyers. Most participants are young, with over 80% of informal service providers and waste pickers aged 18-37, while intermediate buyers and recyclers are generally older, with 28% between 38-47. Educational levels are low, with many ISPs and waste pickers lacking formal education; primary school is most common among buyers and processors, and tertiary education is rare. Ghanaians make up the majority across roles, but Nigeriens and Nigerians are notable among waste pickers and buyers, while Chinese nationals dominate end-user recycling industries, alongside smaller groups of Lebanese and Indians.

### **5.2.2 Health**

Health services in Accra are mainly delivered by government institutions like Korle Bu Teaching Hospital (which is the nearest health facility to the project site, about 100m away) with support from private clinics (such as Jonotobia Healthcare Services, which is about 485m from the project site). The city continues to face challenges with communicable diseases, exacerbated by poor sanitation and poverty, alongside rising non-communicable diseases such as hypertension and diabetes. Rapid population growth and informal settlements strain healthcare resources, and the COVID-19 pandemic exposed system weaknesses, highlighting the need for more government investment. Maternal mortality fell significantly from 484 to 277 per 100,000 live births between 2017 and 2020 due to improved reproductive health services. Infant mortality rates remained low, aided by facility upgrades and clinic renovations.

HIV/AIDS prevalence dropped from 2.6% in 2018 to 0.2% in 2020, thanks to enhanced education and treatment. Despite these gains, Accra still faces persistent issues in disease control, infrastructure, and emerging health risks.

### **5.2.3. *Public Health and Safety***

Waste management in Accra poses significant risks, especially for informal waste collectors who are regularly exposed to hazardous materials and airborne pollutants and suffer frequent injuries due to demanding work and lack of proper PPE. For example, most women collectors in Old Fadama and Jamestown do not use PPE, while only one-third in Manhean Community wear gear provided through the Pick It project (Seureca, 2019). Poor hygiene further leads to stomach illnesses, and roadside collection raises accident risks. The project aims to improve safety by introducing structured protocols, targeted training, and sufficient PPE for all workers.

### **5.2.4 *Economy and Employment***

Accra's economy is primarily driven by its service sector, including retail, hospitality, finance, and public services, making it a major financial centre. Most jobs are in the informal service and sales sector, with industry employing around 22% of the workforce. The city's commodity sector features fishing and urban agriculture, with notable vegetable farming groups and livestock production. Fishing is mostly local but faces challenges like overfishing and pollution. Security remains a priority; authorities implement safety measures through collaboration between city officials and police, though issues such as theft and fraud persist. Despite these challenges, Accra maintains its reputation as a stable, economically important, and attractive business hub.

There are about 200 informal waste collectors (specifically members of the mortuary road scrap dealer's association) as well as waste pickers who currently occupy the site, for their livelihood, where they undertake various waste management activities. As the project will result in the displacement of these informal waste workers, a Resettlement Action Plan (together with a Livelihood Restoration Plan) will be prepared in order to resettle and/or compensate them. The RAP will provide further details about these waste workers including demographic characteristics and other relevant information.

### **5.2.5 *Current Waste Management and Disposal***

The city generates a total of about 2,038 metric tons of waste per day. Out of this, approximately 1,858 metric tons is collected daily leaving a back log of about 180 metric tons. The performance/output of waste collection is about 91%. The Assembly has no available landfill site for the disposal of waste thus making the Assembly to rely on that of Kpone landfill site (approximately 74km round trip), Nsumia landfill (approximately 70km round trip), Achimota transfer station operated by Zoompark Limited and an integrated recycling and compost plant of installed capacity of 400 metric tons daily.

The Assembly has three Septage plants for liquid waste management. The Sewage Septage Treatment Plant has an installed capacity of 2,500m<sup>3</sup> / day and receives average daily volume

of 1,500m<sup>3</sup>, the Mudor Septage Treatment Plant has an installed capacity of 18,000 m<sup>3</sup> / day and the Slamson Septage Treatment Plant which has an installed capacity of 800 m<sup>3</sup> / day.

#### **5.2.6 Other Infrastructures (access roads, energy, telecommunication, drinking water, etc.)**

The total road network within the metropolis is about 123.1 km. This is made up 98.5 km of paved roads, with 55% in good condition, 7% in fair condition and 38% in poor condition. The remaining 24.6 km consist of unpaved roads, with 10% in good condition, 11% in fair condition and 79% in poor condition. The site is accessible via two major urban roads, Ring Road West to the west and Guggisberg Avenue to the south, as well as informal roads arising out of convenience. However, traffic congestion and poor road conditions pose significant challenges in the project area.

All communities in the metropolis are connected to the national grid, with 100% coverage. Electricity is supplied by the Electricity Company of Ghana.

The metropolis falls within the Accra West distribution lines of the Ghana Water Limited. The major source of water to the area is from the Weija Treatment Plant. About 130,160 cubic meters/day of the water from Weija is retained in Accra West Region for distribution. Water demand within the metropolis is mainly for domestic purposes and limited quantity for industrial purposes.

## **6.0 Stakeholder Consultations**

Stakeholder participation is a vital component of environmental assessments. In Ghana, public consultation during project preparation is mandated under the LI 2504, which requires engagement with individuals or communities likely to be affected by the project. Similarly, PS 1 and OS 10 emphasise the importance of engaging with stakeholders throughout the project lifecycle.

A stakeholder mapping exercise was conducted to identify key individuals and interest groups based on the following criteria:

- Those directly and indirectly involved in project implementation and value chain
- Those whose independent activities overlap with the Project
- Those potentially impacted directly or indirectly by the Project
- Those with an interest or influence over the Project
- Any other relevant stakeholders

The assessment involved meaningful engagement with local communities, government agencies, and civil society organizations in consultations to ensure transparency and inclusiveness. The consultations took place between 25<sup>th</sup> November, 2024 and 6<sup>th</sup> May, 2025. More than 50 individuals were consulted, over 19 of meetings. These included:

- Representatives of the Accra Metropolitan Assembly;
- GIZ Project Team;
- Environmental Protection Authority;

- Department of Community Development of the Ministry of Local Government Decentralisation and Rural Development;
- Forest Services Division and Wildlife Division of the Forestry Commission;
- Water Research Institute (under the Council for Scientific and Industrial Research);
- Fisheries Commission;
- Ghana National Fire Service, Korle Bu Divisional Office;
- Zoomlion – IRECOP;
- Jekora Ventures;
- Environmental Service Providers Association (ESPA);
- Accra Compost and Recycling Plant (ACARP);
- Triple C Company;
- Bukom Boxing Arena;
- Waste Pickers Association;
- Sempe Korle-Bu Mantse (Chief) and his elders;
- Gbese Mantse (Chief) and his elders;
- Korle Wulormor (traditional priest);
- Scrap dealers; and
- Residents, youth and women's groups, market traders, food vendors of Amamomo/Jamestown, Korle Gonno, Korle Budor, Holy Fadama, Agogbloshie, Mamprobi, Bukom, Mudor, Korle Wokon and Adadienkpo communities.

A Grievance Redress Mechanism (GRM) will be established to allow stakeholders to promptly voice concerns and receive timely responses.

During the consultations with the various stakeholders, diverse issues/concerns were raised by the participants. The table below (Table 4) presents highlights of the main concerns raised by participants and responses given:

**Table 4: Highlights of Concerns Raised and Responses**

| Areas                                                                                   | Concerns                                                                                                                                                                                                                                                   | Responses / Commitments of the developer                                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Waste Generation, Collection and Segregation Programmes/Space & Waste Handling Concerns | <ul style="list-style-type: none"> <li>• Jekora Ventures Ltd's existing source-segregation program with clients provides a valuable case study for the proposed project and a potential partnership opportunity</li> </ul>                                 | <ul style="list-style-type: none"> <li>• The project will identify potential synergies with Jekora Ventures Ltd's existing program. This will be addressed during further stakeholder engagement at the project implementation stage</li> </ul>       |
|                                                                                         | <ul style="list-style-type: none"> <li>• Concerns regarding space availability at the proposed site, including its capacity to accommodate all organic waste and the need for appropriate measures to handle by-products and operational waste.</li> </ul> | <ul style="list-style-type: none"> <li>• The project will ensure sufficient space allocation for waste storage and processing by exploring space-sharing arrangements with IRECOP and other facilities. This will be addressed in the ESMP</li> </ul> |

|                                                                          |                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                          | <ul style="list-style-type: none"> <li>• Proper waste segregation and collection systems are crucial for effective waste management</li> <li>• Households may not segregate waste properly</li> </ul>                                            | <ul style="list-style-type: none"> <li>• The project will establish clear waste acceptance criteria.</li> <li>• Colour-coded bins within communities to facilitate waste segregation, coupled with incentives to encourage participation.</li> <li>• Extensive public education on waste segregation will be conducted.</li> </ul>                                                                                                                                                   |
| Displacement and loss of livelihood of waste pickers                     | <ul style="list-style-type: none"> <li>• Potential displacement of existing waste pickers and how they will be integrated into the new waste management system</li> </ul>                                                                        | <ul style="list-style-type: none"> <li>• The project will identify potential synergies with existing waste pickers and integrate their activities into the project</li> <li>• Fair salaries and compensations will be ensured for all staff</li> <li>• Waste pickers, including scrap dealers will be resettled to a suitable area</li> <li>• Clear integration guidelines will be developed and members will be at liberty to decide whether to be on the project or not</li> </ul> |
| Odour & Community Health & Safety, Occupational Health & Safety Concerns | <ul style="list-style-type: none"> <li>• Stench/odour is a major concern. Delayed waste collection can result in unpleasant odours and create unsanitary conditions, emphasizing the need for timely waste disposal services</li> </ul>          | <ul style="list-style-type: none"> <li>• The project will implement structured collection schedules to minimise waste decay and odours. This will be addressed in the ESMP</li> </ul>                                                                                                                                                                                                                                                                                                |
|                                                                          | <ul style="list-style-type: none"> <li>• Deterioration of access roads due to truck movement</li> </ul>                                                                                                                                          | <ul style="list-style-type: none"> <li>• The project will collaborate with relevant departments/authorities responsible for road maintenance.</li> </ul>                                                                                                                                                                                                                                                                                                                             |
|                                                                          | <ul style="list-style-type: none"> <li>• Direct exposure to public; e.g., uncovered waste transport causing environmental and health risks</li> </ul>                                                                                            | <ul style="list-style-type: none"> <li>• The project will strengthen odour management systems; implement measures to control pollution/houseflies and other health hazards. This will be addressed in the ESMP.</li> </ul>                                                                                                                                                                                                                                                           |
| Biodiversity Conservation                                                | <ul style="list-style-type: none"> <li>• A green buffer should be established between the project and surrounding areas</li> </ul>                                                                                                               | <ul style="list-style-type: none"> <li>• A green buffer will be established</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                               |
|                                                                          | <ul style="list-style-type: none"> <li>• The Korle Lagoon is degraded but still supports adapted bird species. Adopt conservation-friendly policies, avoid further pollution and support lagoon restoration</li> </ul>                           | <ul style="list-style-type: none"> <li>• Management measures will be implemented to avoid further pollution, support lagoon restoration and support adapted bird species. This will be addressed in the ESMP.</li> </ul>                                                                                                                                                                                                                                                             |
|                                                                          | <ul style="list-style-type: none"> <li>• Risk of hunting protected species (e.g., sea turtles, Hooded Vultures, Cattle Egrets) by staff. Enforce strict no-hunting policies and provide staff with education on wildlife co-existence</li> </ul> | <ul style="list-style-type: none"> <li>• The project will implement ‘no-hunting rule’ within the project implementation area for both staff and non-staff. This will be addressed in the ESMP.</li> </ul>                                                                                                                                                                                                                                                                            |
| Social and Community Engagement & Support/Employment                     | <ul style="list-style-type: none"> <li>• Local content must be factored into employment</li> </ul>                                                                                                                                               | <ul style="list-style-type: none"> <li>• The project will implement inclusive hiring policies, prioritizing local communities and marginalized groups</li> </ul>                                                                                                                                                                                                                                                                                                                     |
|                                                                          | <ul style="list-style-type: none"> <li>• Inclusion of Persons With Disability in employment: design inclusive roles and</li> </ul>                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

|                                       |                                                                                                                        |                                                                                                                                                                                  |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| and Inclusion/<br>Awareness Creation. | consider skills of PWDs in workforce integration.                                                                      |                                                                                                                                                                                  |
|                                       | <ul style="list-style-type: none"> <li>Community development should be integrated in project implementation</li> </ul> | <ul style="list-style-type: none"> <li>Equitable trainings and capacity development programmes will ensure all staff have the needed capacity to work on the project.</li> </ul> |

## 7.0 Assessment of Potential Environmental and Social Risks and Impacts

The ESIA assessed potential positive and negative environmental and social risks and impacts that may arise from the proposed municipal solid waste (MSW) source separation and composting project. This included assessing the potential impacts on biodiversity, water resources, occupational health and safety, community health and safety, waste management, among others.

Potential risks were identified through community consultations, which allowed stakeholders to raise unique and sensitive local issues. Primary baseline data were also collected and reviewed to inform the impact identification process. Site visits were conducted at the proposed project and the immediate communities of the proposed site.

### 7.1 Positive/Beneficial Impacts

The positive impacts associated with the project include:

- Reduced Landfill Waste** – Diverting organic materials from landfills will significantly reduce the volume of waste requiring disposal by about 50%. For example, in 2019, Ghana's two main landfills in Kpone and Nsumia received a total of 688,482.65 metric tons of solid waste (with 346,633.17 metric tons and 341,849.50 metric tons, respectively) meaning that only 344,241.33 metric tons would have reached the two landfills. This will extend the lifespan of the landfills and minimize the environmental problems associated with them.
- Methane Reduction** – Organic waste decomposing in landfills under anaerobic (oxygen-deprived) conditions produces methane, a potent greenhouse gas. Composting, an aerobic process, significantly reduces methane emission with reductions ranging from 38% to 84%. Composting offers a powerful strategy for mitigating methane emissions and promoting a more sustainable waste management approach. In 2019, the Kpone and Nsumia landfills produced 28,303 tonnes of methane (CH<sub>4</sub>) and 77,833 tonnes of biogenic Carbon. Additionally, a study on the Tamale landfill site estimated that approximately 77% of the disposed waste could decompose to generate methane. This landfill site was projected to reach a peak methane generation rate of 2222 m<sup>3</sup>/hr in 2036.
- Job Creation** – Composting plants will create employment opportunities along the waste management value chain, including collection, processing, maintenance, and administration. This can be especially beneficial in the Ashiedu Keteke Sub-Metropolitan areas which has an unemployment rate of about 12.5% among people 15 years and above.

- **Improved Public Health** – By reducing waste in landfills, composting plants will help minimize the spread of disease vectors (e.g., rodents, flies) and improve overall public health.

## 7.2 *Adverse Environmental and Social Risks and Impacts*

The adverse environmental and social risks and impacts assessed included:

- Displacement of scrap dealers and informal waste pickers;
- Risk of conflict associated with resettlement of scrap dealers;
- Community health and safety risks;
- Occupational health and safety risks;
- Improper waste handling and disposal risks;
- Threat to biodiversity;
- Impacts on soil and water resources
- Traffic and accident risks;
- Inefficient use of resources;
- Climate risks; and
- Labour rights infringement risks.

These risks and impacts were assessed for the pre-construction, construction and operation phases of the project. The table below (Table 5) presents a summary of the risks/impacts with high/medium significance.

**Table 5: Summary of Environmental and Social Risks and Impacts**

| <b>Risk/Impact</b>                                             | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Likelihood</b> | <b>Effect</b> | <b>Significance</b> |
|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------|---------------------|
| <b><i>Pre-Construction Phase</i></b>                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                   |               |                     |
| Displacement of scrap dealers and informal waste pickers       | The project site is currently occupied by approximately 200 informal waste collectors whose livelihoods depend on scrap recovery activities, creating an existing layer of social and livelihood dependence on the land. Project implementation will require formal land acquisition by AMA, and if this process does not adequately involve relevant traditional authorities and stakeholders, it may trigger disputes over resettlement and compensation among affected groups. Impacts are primarily experienced by these informal workers and nearby communities, manifesting as livelihood loss, disruption of informal economic activities, and potential tension linked to land-use changes and planning uncertainties in the area. These effects are localised, of moderate to high magnitude due to livelihood dependence and competing interests, potentially medium to long-term in duration depending on resettlement outcomes, and partially reversible through structured compensation, stakeholder engagement, and livelihood restoration measures. | High (3)          | High (3)      | High (9)            |
| Risk of conflict associated with resettlement of scrap dealers | The primary conflict risk arises from the planned resettlement of scrap dealers and informal waste workers who currently depend on the site for their livelihoods, making them vulnerable to displacement-related grievances. Potential tensions may stem from disputes over compensation eligibility, perceived inadequacy of compensation, unclear resettlement arrangements, and lack of formal recognition of informal activities, which may also fuel mistrust if communication is poorly managed. The impacts are concentrated within the project site but affect a specific vulnerable group, manifesting as livelihood loss, social tension, and potential resistance to relocation. These effects are high in magnitude, short-to-medium term in duration, partially reversible through effective compensation and livelihood restoration, and overall assessed as high significance.                                                                                                                                                                     | High (3)          | High (3)      | High (3)            |
| <b><i>Construction Phase</i></b>                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                   |               |                     |
| Risk of conflict associated with resettlement of scrap dealers | Conflict risks may persist if resettlement processes remain incomplete or are perceived as unfair, leading affected individuals to attempt re-entry of the site or disrupt construction activities. These tensions may manifest as protests, obstruction of access routes, disputes with contractors, and intra-group grievances driven by perceptions of unequal treatment. The impacts remain localised to the site and immediate surroundings, affecting workers, contractors, and displaced groups, and are medium-term in duration with intensity that may reduce as mitigation measures take effect. These effects are of medium to high                                                                                                                                                                                                                                                                                                                                                                                                                     | Medium (2)        | Medium (2)    | Medium (4)          |

|                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |            |            |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|------------|
|                                                | magnitude, partially reversible through grievance mechanisms and continued engagement, and overall assessed as medium significance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |            |            |
| Community & Occupational Health & Safety Risks | Intensive activities involving heavy machinery, excavation, and material handling generate dust, noise, and vibration that affect both workers on-site and nearby communities. Dust emissions manifest as increased airborne particulate matter and dust deposition on surrounding buildings and businesses, while noise and vibration from equipment and generators create disturbances and potential wellbeing impacts in adjacent urban areas. Construction activities also introduce occupational safety risks such as slips, falls, and machinery-related injuries, alongside localized pest increases from waste and stagnant water around the site. These impacts are site-specific to surrounding urban areas, medium-term in duration, of medium to high magnitude overall (particularly for occupational safety), and partially reversible once construction ceases or through mitigation measures. | High (3)   | Medium (2) | High (6)   |
| Improper Waste Handling and Disposal Impacts   | Construction waste such as concrete debris, packaging materials, scrap metal, and wood off-cuts, as well as domestic waste and wastewater from workers will be generated. If poorly managed, these wastes may accumulate on-site or be improperly disposed of in surrounding areas, leading to localized land contamination, visual pollution, and obstruction of drainage channels that could contribute to flooding, especially given the proximity to the Korle Lagoon and Odaw River system. Receptors include the construction site, nearby communities, drainage networks, and downstream water bodies, where waste leakage could worsen already degraded environmental conditions and create occupational and public health hazards. These impacts are localized, medium-term, of medium magnitude overall, and largely reversible through proper waste segregation, collection, and disposal systems. | Medium (2) | Medium (2) | Medium (4) |
| Impacts on Soil and Water Resources            | Excavation, grading, and infrastructure development will expose soils, increasing the risk of erosion and sediment runoff into nearby drainage channels that ultimately discharge into the Korle Lagoon. Impacts may also arise from accidental spills of fuel, lubricants, and hydraulic fluids, as well as poorly managed construction wastewater, which could contaminate soil and affect nearby surface water systems. The main receptors include site soils, urban drainage networks, and downstream water bodies such as the already polluted Korle Lagoon, where additional sediment or contaminants could worsen existing conditions. These impacts are localised, medium-term, of medium magnitude, and largely reversible through erosion control, spill prevention, and proper wastewater management.                                                                                              | Medium (2) | Medium (2) | Medium (4) |
| Traffic and Accident Risks                     | Increased movement of trucks delivering construction materials and equipment will interact with dense urban traffic conditions in Jamestown, where roads are shared by pedestrians, informal traders, and various                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Medium (2) | Medium (2) | Medium (4) |

|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |            |            |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|------------|
|                                  | vehicles. This may result in traffic congestion, temporary obstruction of access roads during loading and unloading, and increased risk of accidents from vehicle manoeuvring, reversing in confined spaces, and interaction with vulnerable road users. Key receptors include pedestrians, motorists, public transport users, and nearby roadside vendors along access routes and intersections serving the project site. The impacts are localised to surrounding roads, medium-term in duration, and of medium magnitude, and they are reversible once construction activities and associated heavy vehicle movements cease.                                                                                                                                                                                                                          |            |            |            |
| Inefficient Use of Resources     | Resource efficiency risks arise from the intensive use of construction materials (cement, steel, aggregates, piping), energy (fuel for machinery and generators), and water for mixing, dust suppression, and sanitation. Inefficiencies may manifest through material wastage from poor storage or handling, excessive fuel consumption from idle or poorly maintained equipment, and unnecessary water losses from leaks or overuse. The main receptors are upstream resource supply systems and the broader environment linked to extraction and production of these materials, with impacts indirectly extending beyond the site. These effects are medium-term, site-centred but with upstream supply chain implications, of medium magnitude, and largely reversible through improved procurement, storage, and construction management practices. | Medium (2) | Medium (2) | Medium (4) |
| Climate Risks                    | Climate-related risks arise mainly from seasonal rainfall and high temperatures, which can disrupt excavation, concrete works, and transport of materials. Heavy rainfall may lead to water accumulation in trenches, delays in construction schedules, and increased erosion or sediment runoff from exposed soils, while high temperatures may cause heat stress for workers and reduce productivity. These effects manifest as work interruptions, safety risks for labourers, and potential minor material losses due to altered curing or evaporation conditions. The impacts are localised to the construction site and logistics routes, medium-term in duration, of medium magnitude, and largely reversible through adaptive scheduling, drainage management, and worker protection measures.                                                   | Medium (2) | Medium (2) | Medium (4) |
| Labour Rights Infringement Risks | These risks may manifest as unfair wages, excessive working hours, informal or unclear employment contracts, and inconsistent hiring practices, particularly for casual or short-term labourers. Workers may also be exposed to weak grievance handling systems or discriminatory practices if oversight is inadequate. The impacts are confined to the construction workforce, medium-term in duration, of medium magnitude, and largely reversible through proper contract enforcement, labour monitoring, and grievance mechanisms.                                                                                                                                                                                                                                                                                                                   | Medium (2) | Medium (2) | Medium (4) |
| <b>Operation Phase</b>           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |            |            |

|                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |            |            |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|------------|
| Community & Occupational Health & Safety Risks | Risks arise from continuous processing of large volumes of organic waste, resulting in emissions such as particulate matter, methane, hydrogen sulphide, ammonia, VOCs, and other greenhouse gases that contribute to air pollution and climate change. These effects manifest as odour generation, bioaerosol exposure, and long-term occupational health risks for workers, particularly during early composting stages when microbial activity is highest, alongside persistent exposure to endotoxins in organic materials. Noise and vibration from shredders, conveyors, and truck movements create ongoing disturbances for nearby communities, while pest infestations from flies and rodents may occur if waste is not properly managed. These impacts are long-term, continuous throughout plant operations, of medium magnitude across most receptors, and generally reversible through effective operational controls, though some health-related effects may persist without proper mitigation. | High (3)   | Medium (2) | High (6)   |
| Improper Waste Handling and Disposal Impacts   | Impacts may manifest as improper feedstock sorting leading to contamination of compost, odour and pest proliferation from decomposing waste, occupational exposure to bioaerosols, and water pollution risks if leachate or treated effluent is not adequately managed. These effects can extend to nearby communities and connected drainage systems, particularly the Korle Lagoon, potentially worsening existing sanitation and water quality challenges. While worker-generated waste is relatively minor, it can still create localized sanitation issues if unmanaged. Overall, these impacts are long-term, site-specific but with potential downstream effects, of medium magnitude for most waste streams, and reversible through strong operational controls, effective treatment systems, and consistent monitoring.                                                                                                                                                                             | High (3)   | High (3)   | High (9)   |
| Impacts on Water Resources                     | Organic waste generates leachate that may affect both soil and water resources if not properly contained and treated. These effects may manifest as nutrient-rich discharges entering drainage systems, increased eutrophication in the Korle Lagoon, and localized soil contamination from runoff or equipment-related spills. Key receptors include facility soils, internal drainage systems, and downstream water bodies connected through urban drainage channels, particularly the lagoon. These impacts are long-term, site-specific but with potential downstream extension, of medium magnitude, and largely reversible with effective leachate treatment, controlled drainage systems, and strong operational monitoring and maintenance.                                                                                                                                                                                                                                                          | Medium (2) | Medium (2) | Medium (4) |
| Traffic and Accident Risks                     | Daily delivery of up to 466 tonnes of organic waste by collection trucks will generate sustained traffic flows along access routes to the facility and within the plant itself. These movements may manifest as increased congestion on nearby roads, heightened interaction between trucks and pedestrians, and operational safety risks within the facility during unloading, including reversing accidents and collisions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Medium (2) | Medium (2) | Medium (4) |

|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |            |            |
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|                                  | with workers or equipment. Receptors include surrounding communities, road users, informal vendors, and plant workers who may be exposed to both external traffic hazards and internal site movement risks. The impacts are long-term, localised to the immediate transport network and facility, of medium magnitude, and reversible if operations cease or if effective traffic management and safety controls are implemented.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |            |            |
| Inefficient Use of Resources     | Resource efficiency risks are associated with continuous energy use for shredders, conveyors, aeration systems, pumps, and leachate treatment, as well as ongoing water use for processing, cleaning, and sanitation. Inefficiencies may manifest through excessive electricity consumption, water wastage from leaks or poor controls, and reduced process efficiency due to contaminated or poorly sorted organic feedstock, which can increase processing time and reduce compost yield. Key receptors include regional energy and water supply systems, as well as the broader waste management value chain that depends on effective organic waste recovery into usable compost. These impacts are long-term, extend beyond the site through utility networks and material flows, of medium magnitude, and largely reversible through strong operational controls, maintenance systems, and improved waste segregation and process management. | Medium (2) | Medium (2) | Medium (4) |
| Climate Risks                    | Climate risks are mainly associated with rainfall intensity, flooding potential, and high temperatures affecting composting efficiency and facility operations. These may manifest as increased moisture in compost piles slowing decomposition, higher leachate volumes requiring treatment, temporary flooding or waterlogging of operational areas, and increased water demand for moisture control during hot conditions. Key receptors include facility operations, workers, and waste processing systems, with indirect effects on broader waste management efficiency in Accra if operations are disrupted. These impacts are long-term, site-specific but linked to wider waste system performance, of medium magnitude, and largely reversible through effective drainage design, leachate management, and adaptive operational controls.                                                                                                  | Medium (2) | Medium (2) | Medium (4) |
| Labour Rights Infringement Risks | Risks may manifest as inadequate wages, weak job security for contract staff, unequal treatment or discrimination, and limited access to effective grievance mechanisms, potentially affecting worker welfare over an extended period. The impacts are limited to facility employees and associated contractors, but may indirectly extend to linked waste collection workers in the broader system. These effects are long-term, of medium magnitude, and largely reversible through strong labour policies, enforcement of national labour standards, and continuous worker protection and grievance systems.                                                                                                                                                                                                                                                                                                                                     | Medium (2) | Medium (2) | Medium (4) |

## 8.0 Environmental and Social Management Plan (ESMP)

The ESMP outlines the strategies for managing and mitigating environmental and social impacts throughout the project lifecycle. The plan includes a monitoring framework, reporting requirements, and responsibilities for implementing mitigation measures.

The primary objectives of this ESMP are:

- To ensure compliance with national environmental legislation and international best practices;
- To mitigate adverse environmental and social impacts and enhance positive impacts; and
- To provide a monitoring framework to ensure effective implementation of mitigation measures.

### 8.1 Management Arrangement

The successful implementation of the ESMP requires the involvement of various stakeholders, including government agencies, contractors, and local communities. The roles and responsibilities of each party are outlined below:

- **Accra Metropolitan Assembly (project proponent)** Responsible for ensuring overall compliance with the ESMP, including financing and oversight of mitigation measures.
- **Project Implementation Unit:** A Project Implementation Unit (PIU) will be established within the Ministry of Local Government, Decentralisation and Rural Development. The PIU, which will consist of an Environmental Safeguards Specialist and Social Safeguards Specialist, will oversee the implementation of the project and be responsible for monitoring the projects activities.
- **Construction Contractor:** Responsible for implementing the mitigation measures outlined in the ESMP during the construction phase. The contractor's team will have an E&S Specialist to oversee E&S issues.
- **Supervising Consultant:** Supervise the Construction Contractor. There will be an E&S Specialist on the Supervising Consultant's team.
- **Operation Contractor:** A private contractor will be retained to manage the facility and oversee its day-to-day operations. The contractor will have an E&S Specialist on the team to oversee E&S issues.
- **Environmental Protection Authority (EPA):** Provides regulatory oversight and ensures that the project complies with national environmental standards.
- **Lands Commission:** Will oversee the resettlement of the scrap dealers

## 8.2 Management Plan

**Table 6: Proposed Management Plan**

| Risks/Impacts                                            | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Objective                                                                | Target                                                      | Budget (GHS)               | Time frame                                           | Responsibility | Monitoring                               |
|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------------------------------------------|----------------------------|------------------------------------------------------|----------------|------------------------------------------|
| <b>Pre-Construction Phase</b>                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                          |                                                             |                            |                                                      |                |                                          |
| Displacement of scrap dealers and informal waste pickers | <ul style="list-style-type: none"> <li>• Preparation of RAP and LRP</li> <li>• A census &amp; socio-economic survey will be conducted to identify affected persons, assets, and livelihoods.</li> <li>• The existing occupants of the site (scrap dealers) will be resettled in line with Ghana's legal framework, IFC PS5 and AfDB OS 5.</li> <li>• Fair compensation at full replacement cost will be delivered without depreciation for lost assets (structures, equipment, materials).</li> <li>• Access to alternative business sites for displaced scrap dealers will be facilitated.</li> <li>• Livelihood restoration programmes, including skills training, will be considered for implementation where necessary.</li> <li>• Legal &amp; Regulatory Compliance (IFC PS1 &amp; PS5; AfDB OS 5)</li> <li>• Land ownership and tenure will be verified with relevant authorities (Lands Commission, AMA).</li> <li>• Due diligence will be conducted to confirm that land is free of encumbrances or informal claims.</li> <li>• The land acquisition process will adhere to the Land Act 2020 (Act 1036) and IFS PS5.</li> </ul> | To have access to the land with minimal effect on existing scrap dealers | 5% loss of livelihood of existing scrap dealers on the land | 5 Included in project cost | Prior to commencement of pre-construction activities | E AMA          | E&S Specialist of Supervising Consultant |

CONSTRUCTION & OPERATION OF A SOURCE-SEPARATED ORGANIC WASTE COMPOSTING PLANT – ESIS

| Risks/Impacts                                                                                            | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Objective                                                                                                          | Target                                                                                                                   | Budget (GHS)                 | Time frame                           | Responsibility                            | Monitoring                                 |
|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------|--------------------------------------|-------------------------------------------|--------------------------------------------|
|                                                                                                          | <ul style="list-style-type: none"> <li>An environmental permit will be obtained from the EPA in line with LI 2504).</li> <li>Stakeholder Engagement &amp; Grievance Management</li> <li>Prior engagement has been held with scrap dealers to discuss project impacts, alternatives, and mitigation measures. This will be continued to ensure participatory resettlement considerations for the affected persons.</li> <li>A transparent GRM will be established to help address concerns in line with IFC PS1</li> </ul> |                                                                                                                    |                                                                                                                          |                              |                                      |                                           |                                            |
| Risk of conflict associated with resettlement of scarp dealers                                           | <ul style="list-style-type: none"> <li>Implement the grievance redress mechanism</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                               | Settle disputes                                                                                                    | All disputes settled                                                                                                     | Included in grievance budget | Throughout project lifecycle         | AMA                                       | Environmental Safeguards Specialist of PIU |
| <ul style="list-style-type: none"> <li>Community &amp; Occupational Health &amp; Safety Risks</li> </ul> | <ul style="list-style-type: none"> <li>Same mitigation measures as for the construction phase</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                  | Reduce dust generation and protect workers and nearby communities                                                  | <ul style="list-style-type: none"> <li>Same as for construction phase</li> </ul>                                         | a 150,000                    | During the pre-construction phase    | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant   |
| <ul style="list-style-type: none"> <li>Improper waste handling and disposal impacts</li> </ul>           | <ul style="list-style-type: none"> <li>Develop and implement a site waste management plan prior to mobilization</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                | Ensure proper procedures are in place for handling and disposing of all waste streams generated during the project | <ul style="list-style-type: none"> <li>Waste Management Plan prepared and approved before construction begins</li> </ul> | 5,000                        | Prior to pre-construction activities | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant   |

CONSTRUCTION & OPERATION OF A SOURCE-SEPARATED ORGANIC WASTE COMPOSTING PLANT – ESIS

| Risks/Impacts                                                                         | Proposed mitigation action                                                                                                                                                                                                                                                              | Objective                                                                                                                                                                   | Target                                                                                                                                                                              | Budget (GHS)          | Time frame                                                                                                         | Responsibility                            | Monitoring                               |
|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------|------------------------------------------|
|                                                                                       | <ul style="list-style-type: none"> <li>Provide clearly designated waste collection points and bins</li> </ul>                                                                                                                                                                           | Prevent indiscriminate disposal of waste by workers                                                                                                                         | <ul style="list-style-type: none"> <li>Waste bins available and used; no visible litter on site</li> </ul>                                                                          | 5,000                 | Throughout pre-construction activities                                                                             |                                           |                                          |
| <ul style="list-style-type: none"> <li>Threat to biodiversity</li> </ul>              | Refer to construction phase                                                                                                                                                                                                                                                             |                                                                                                                                                                             |                                                                                                                                                                                     |                       | Throughout pre-construction activities                                                                             | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |
| <ul style="list-style-type: none"> <li>Impacts on soil and water resources</li> </ul> | <ul style="list-style-type: none"> <li>Maintain existing vegetation where possible and stabilise exposed soil surfaces</li> <li>Diversion channels or retention/detention ponds will be constructed to control and treat stormwater runoff during excavation of legacy waste</li> </ul> | To prevent water quality deterioration, soil erosion and sedimentation                                                                                                      | <ul style="list-style-type: none"> <li>Exposed soils stabilised; no visible sediment runoff from site</li> </ul>                                                                    | 10,000                | Throughout the project lifecycle                                                                                   | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |
| <ul style="list-style-type: none"> <li>Traffic and accident risks</li> </ul>          | <ul style="list-style-type: none"> <li>Develop and implement a site access and traffic management plan prior to mobilisation</li> <li>Install warning signage and clearly mark entry and exit points to the project site</li> </ul>                                                     | <p>Ensure safe entry and exit of vehicles and minimise disruption to surrounding road users</p> <p>Alert road users and pedestrians to the presence of project vehicles</p> | <ul style="list-style-type: none"> <li>Traffic management plan prepared and implemented before site mobilisation</li> <li>Traffic warning signs installed and maintained</li> </ul> | <p>-</p> <p>8,000</p> | <p>Prior to commencement of pre-construction activities</p> <p>Prior to and during pre-construction activities</p> | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |
| <ul style="list-style-type: none"> <li>Inefficient use of resources</li> </ul>        | <ul style="list-style-type: none"> <li>Develop and implement a mobilisation plan that optimises vehicle movements and equipment use to minimise fuel consumption</li> </ul>                                                                                                             | Minimise unnecessary fuel use during                                                                                                                                        | <ul style="list-style-type: none"> <li>Mobilisation plan implemented; fuel consumption records maintained</li> </ul>                                                                |                       | Developed prior to pre-construction activities                                                                     | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |

CONSTRUCTION & OPERATION OF A SOURCE-SEPARATED ORGANIC WASTE COMPOSTING PLANT – ESIS

| Risks/Impacts                                                                      | Proposed mitigation action                                                                                                                                                                                                                                                                                               | Objective                                                                                                                                                            | Target                                                                                                                                                                                               | Budget (GHS) | Time frame                                                                                                                       | Responsibility                            | Monitoring                               |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|------------------------------------------|
|                                                                                    | <ul style="list-style-type: none"> <li>Procure only required quantities of materials and store them in designated protected areas to prevent loss or damage</li> </ul>                                                                                                                                                   | <p>project mobilisation</p> <p>Prevent wastage of materials during site preparation</p>                                                                              | <ul style="list-style-type: none"> <li>Evidence of controlled procurement; designated storage areas established</li> </ul>                                                                           |              | <p>commence and maintained throughout pre-construction phase</p> <p>Throughout pre-construction phase and construction phase</p> |                                           |                                          |
| <ul style="list-style-type: none"> <li>Climate risks</li> </ul>                    | <ul style="list-style-type: none"> <li>Schedule site preparation and mobilisation activities taking seasonal rainfall patterns into account to minimise weather-related disruptions</li> <li>Minimise vegetation clearing until construction is ready to begin and stabilise exposed surfaces where necessary</li> </ul> | <p>Ensure climate conditions do not significantly disrupt site mobilisation and preparation</p> <p>Prevent soil erosion and runoff during early site preparation</p> | <ul style="list-style-type: none"> <li>Work schedule reflects seasonal weather planning; minimal weather-related delays</li> <li>Limited exposed soil areas; no visible erosion or runoff</li> </ul> |              | Throughout pre-construction phase                                                                                                | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |
| <ul style="list-style-type: none"> <li>Labour rights infringement risks</li> </ul> | <ul style="list-style-type: none"> <li>Ensure all workers engaged during mobilisation receive written contracts outlining roles, wages, and working conditions</li> </ul>                                                                                                                                                | <p>Ensure fair and transparent labour engagement</p>                                                                                                                 | <ul style="list-style-type: none"> <li>All workers have written employment agreements</li> <li>Worker orientation sessions conducted;</li> </ul>                                                     |              | Throughout pre-construction phase                                                                                                | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |

| Risks/Impacts                                                                                                            | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Objective                                                       | Target                                                                                                                               | Budget (GHS) | Time frame                | Responsibility                            | Monitoring                               |
|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------------|-------------------------------------------|------------------------------------------|
|                                                                                                                          | <ul style="list-style-type: none"> <li>● Provide orientation for all mobilised workers on labour rights, working conditions, and reporting procedures</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Promote awareness of labour rights and project labour standards | attendance records available                                                                                                         |              |                           |                                           |                                          |
| <b>Construction Phase</b>                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                 |                                                                                                                                      |              |                           |                                           |                                          |
| Community & Occupational Health & Safety Risks<br><ul style="list-style-type: none"> <li>● Dust and emissions</li> </ul> | <ul style="list-style-type: none"> <li>● Dust generating areas will be controlled by water dousing under dry weather conditions.</li> <li>● Gas (Methane, NOx, SOx, CO2) emission will be monitored regularly to ensure they are within Ghana Standards permissible limit during site preparation.</li> <li>● On-site speed limits will be applied and enforced for trucks travelling on unpaved surfaces (10 km/h)</li> <li>● Trucks transporting waste materials off-site will be secured with tarpaulins before leaving the site.</li> <li>● Stockpiles will be planned and sited to minimise potential dust generation, considering prevailing wind directions and the locations of sensitive receptors. They will be protected against windblown dust by windshields, or by covering them, or by water spraying in dry periods.</li> </ul> | To prevent, minimize and control air quality deterioration      | To meet Environment and Health Protection Standard (GS 1236: 2019, GS 1219:2018) and IFC Environmental, Health and Safety guidelines | 150,000      | During construction phase | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |

| Risks/Impacts                                                         | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Objective                                                    | Target                                                         | Budget (GHS) | Time frame               | Responsibility                            | Monitoring                               |
|-----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------|--------------|--------------------------|-------------------------------------------|------------------------------------------|
| <ul style="list-style-type: none"> <li>Noise and vibration</li> </ul> | <ul style="list-style-type: none"> <li>The drop height of potentially dust generating materials will be kept as low as reasonably practicable.</li> <li>Maintenance procedures will be carried out to ensure that equipment remains in optimal condition, thereby reducing exhaust emissions caused by reduced performance</li> <li>Dust-related grievances will be investigated and managed as part of the Grievance Mechanism.</li> <li>Construction vehicles will be prohibited from keeping engines running while waiting to enter the site or while stationed on-site.</li> <li>Adopt noise-suppressing construction methods to meet Ghana ambient noise standards and WBG EHS Guidelines. This may involve installing noise barriers at sensitive points, such as the entrance of the Korle Bu mortuary and the estate opposite the project site</li> <li>Excavations and other noise-generating activities will be limited to the hours of 7:00am to 5:00 pm weekdays and 7:30am to 5:00pm on Saturdays and Sundays. Contractors will be permitted to conduct essential construction activities during off-</li> </ul> | To prevent, reduce and control noise pollution and vibration | Below 55dB LAeq 1 hour of GS 1222:2018 and IFC EHS guidelines. |              | Throughout project cycle | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |

CONSTRUCTION & OPERATION OF A SOURCE-SEPARATED ORGANIC WASTE COMPOSTING PLANT – ESIS

| Risks/Impacts                                                            | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Objective                                                | Target                                | Budget (GHS)                 | Time frame                   | Responsibility                            | Monitoring                                 |
|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|---------------------------------------|------------------------------|------------------------------|-------------------------------------------|--------------------------------------------|
| <ul style="list-style-type: none"> <li>Occupational accidents</li> </ul> | <p>hours if required to address unforeseen emergencies that threaten life or property.</p> <ul style="list-style-type: none"> <li>Noise-generating equipment will be fitted with sound control devices, and every exhaust will be properly muffled.</li> <li>Regular monitoring of noise levels during construction</li> </ul> <ul style="list-style-type: none"> <li>Provide PPEs to workers and site visitors</li> <li>Develop and implement Occupational Health and Safety (OHS)</li> <li>Conduct periodic toolbox meetings for workers</li> <li>Provide adequate and visible safety signage and warnings on site</li> <li>Provide first aid facilities and trained first aiders on site</li> <li>Handwashing stations, restricted eating/drinking areas, and periodic health checks will be conducted to protect workers from pathogens</li> </ul> | To protect occupational health and safety of all workers | To have 100% incident free activities | 3,000,000                    | Throughout project cycle     | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant   |
| Pests                                                                    | Same as for operation phase                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Same as for operation phase                              | Same as for operation phase           | R 30,000                     | During the project lifecycle |                                           |                                            |
| Risk of conflict associated with resettlement of scarp dealers           | Implement the grievance redress mechanism                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Settle disputes                                          | All disputes settled                  | Included in grievance budget | Throughout project lifecycle | AMA                                       | Environmental Safeguards Specialist of PIU |

CONSTRUCTION & OPERATION OF A SOURCE-SEPARATED ORGANIC WASTE COMPOSTING PLANT – ESIS

| Risks/Impacts                                | Proposed mitigation action                                                                                                                                                                    | Objective                                                                                            | Target                                                                                       | Budget (GHS) | Time frame                                                        | Responsibility                            | Monitoring                               |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|--------------|-------------------------------------------------------------------|-------------------------------------------|------------------------------------------|
| Improper waste handling and disposal impacts | <ul style="list-style-type: none"> <li>Develop and implement a Construction Waste Management Plan covering segregation, storage, transportation and disposal of construction waste</li> </ul> | Ensure construction debris and materials are properly handled and disposed of at approved facilities | Waste management plan implemented; waste disposed of at approved municipal landfill sites    | 5,000        | Before construction begins and maintained throughout construction | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |
|                                              | <ul style="list-style-type: none"> <li>Segregate construction waste (metal, wood, concrete, packaging materials) and encourage reuse or recycling where possible</li> </ul>                   | Reduce the volume of waste requiring final disposal and prevent indiscriminate dumping               | Percentage of construction waste segregated or reused; no uncontrolled waste dumping on site | 30,000       | Throughout construction period                                    | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |
|                                              | <ul style="list-style-type: none"> <li>Provide adequate sanitary facilities (toilets and washing facilities) for construction workers</li> </ul>                                              | Prevent open defecation and uncontrolled disposal of wastewater on site                              | Functional sanitation facilities available and maintained for workers                        | 40,000       | Throughout construction period                                    |                                           |                                          |
|                                              | <ul style="list-style-type: none"> <li>Establish routine waste collection and off-site disposal through collaboration with municipal waste services</li> </ul>                                | Ensure proper disposal of solid waste generated by workers                                           | Waste removed from site regularly; no waste accumulation on site                             | 25,000       | Throughout construction period                                    |                                           |                                          |

CONSTRUCTION & OPERATION OF A SOURCE-SEPARATED ORGANIC WASTE COMPOSTING PLANT – ESIS

| Risks/Impacts                       | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Objective                                                                                                             | Target                                                                                                                                                                                             | Budget (GHS) | Time frame                                                                                                    | Responsibility                            | Monitoring                               |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------------------------------------------------------------------------------------------------|-------------------------------------------|------------------------------------------|
| Threat to biodiversity              | <ul style="list-style-type: none"> <li>Limit vegetation clearance to only the footprint required for the plant and access roads</li> <li>Establish buffer zone between project site and Korle Lagoon with native vegetation</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>Minimise loss of native vegetation and habitat</p> <p>Protect riparian habitat and maintain ecosystem services</p> | <p>Area of vegetation cleared restricted to project footprint (m<sup>2</sup>)</p> <p>Width of buffer zone maintained (<math>\geq 10-15</math> m) and number of native trees/plants established</p> | 30,000       | <p>During site preparation and earthworks</p> <p>During site preparation and first 6 months post-planting</p> | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |
| Impacts on soil and water resources | <ul style="list-style-type: none"> <li>Periodic water quality testing will be conducted to ensure any negative changes are detected early and remedied.</li> <li>Construct diversion channels or retention/detention ponds to control and treat stormwater runoff, reducing the volume and velocity of water reaching the river.</li> <li>Site drainage systems will be designed to withstand extreme rainfall and prevent waterlogging</li> <li>Construct a vegetation buffer between the project and the Odaw River with native plants to reduce siltation.</li> <li>Use biodegradable mats or mulches, and install geotextile fabrics to stabilize disturbed soils and stockpiles to minimize erosion</li> <li>Install silt fences, sedimentation basins, or swales to capture and contain soil particles before they enter the Odaw River</li> <li>Continuously monitor water quality and sediment levels downstream to enable</li> </ul> | To prevent water quality from deteriorating                                                                           | To contain all stormwater and manage runoff adequately to meet effluent discharge guidelines GS1212:2019 and IFC EHS guidelines                                                                    | 500,000      | Throughout project cycle                                                                                      | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |

| Risks/Impacts              | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                                              | Objective                                                                                                                                                                                                                                                                           | Target                                                                                                                                                                                                                                                                                                                              | Budget (GHS) | Time frame                    | Responsibility                            | Monitoring                               |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-------------------------------|-------------------------------------------|------------------------------------------|
|                            | <p>prompt adjustments such as enhancing structural controls if pollutant threshold levels are exceeded.</p> <ul style="list-style-type: none"> <li>Minor critical infrastructure and waste storage areas will be elevated above flood-prone levels</li> </ul>                                                                                                                                           |                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                     |              |                               |                                           |                                          |
| Traffic and accident risks | <ul style="list-style-type: none"> <li>Continue implementing traffic management plan</li> <li>Provide trained traffic marshals at the site entrance during peak delivery periods</li> <li>Require all construction vehicle drivers to undergo safety briefings and adhere to site speed limits</li> <li>Ensure construction materials transported by trucks are properly covered and secured</li> </ul> | <p>Ensure safe entry and exit of vehicles and minimise disruption to surrounding road users</p> <p>Ensure safe movement of trucks entering and leaving the site</p> <p>Promote safe driving behaviour and reduce accident risks</p> <p>Prevent road hazards and reduce accident</p> | <ul style="list-style-type: none"> <li>Traffic management plan prepared and implemented before site mobilisation</li> <li>Traffic marshals present during peak construction traffic periods</li> <li>Driver safety training conducted; speed limits enforced</li> <li>All trucks transporting materials properly covered</li> </ul> | -            | Throughout construction phase | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |

CONSTRUCTION & OPERATION OF A SOURCE-SEPARATED ORGANIC WASTE COMPOSTING PLANT – ESIS

| Risks/Impacts                | Proposed mitigation action                                                                                                                                                                             | Objective                                                                            | Target                                                                                                                                   | Budget (GHS) | Time frame                    | Responsibility                            | Monitoring                               |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|--------------|-------------------------------|-------------------------------------------|------------------------------------------|
|                              |                                                                                                                                                                                                        | risks on surrounding roads                                                           |                                                                                                                                          |              |                               |                                           |                                          |
| Inefficient use of resources | <ul style="list-style-type: none"> <li>Implement proper material storage and handling procedures, including covered storage for cement and organised storage areas for aggregates and steel</li> </ul> | Reduce wastage of construction materials                                             | <ul style="list-style-type: none"> <li>Material storage areas established and maintained; periodic site inspections conducted</li> </ul> |              | Throughout construction phase | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |
|                              | <ul style="list-style-type: none"> <li>Maintain construction equipment regularly and enforce a no-idling policy for vehicles and machinery when not in use</li> </ul>                                  | Improve energy efficiency of construction machinery and vehicles                     | <ul style="list-style-type: none"> <li>Equipment maintenance records available; fuel consumption monitored</li> </ul>                    | 20,000       |                               |                                           |                                          |
|                              | <ul style="list-style-type: none"> <li>Implement water conservation measures such as controlled water use for concrete mixing and dust suppression, and repair leaks promptly</li> </ul>               | Promote efficient water use during construction activities                           | <ul style="list-style-type: none"> <li>Water usage monitoring records maintained; absence of leaks from supply systems</li> </ul>        | 20,000       |                               |                                           |                                          |
| Climate risks                | <ul style="list-style-type: none"> <li>Provide temporary drainage channels and pumps where necessary to prevent water accumulation in excavation areas</li> </ul>                                      | Maintain safe and efficient construction operations during periods of heavy rainfall | <ul style="list-style-type: none"> <li>Drainage channels installed where needed; absence of standing water in work areas</li> </ul>      |              | Throughout construction phase | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |

CONSTRUCTION & OPERATION OF A SOURCE-SEPARATED ORGANIC WASTE COMPOSTING PLANT – ESIS

| Risks/Impacts                                                                                                                        | Proposed mitigation action                                                                                                                                                                                                                                                                                                                           | Objective                                                                                                                                                                                                       | Target                                                                                                                                                                                                                                                                  | Budget (GHS)                    | Time frame                       | Responsibility                            | Monitoring                                 |
|--------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|----------------------------------|-------------------------------------------|--------------------------------------------|
|                                                                                                                                      | <ul style="list-style-type: none"> <li>Implement heat management measures such as provision of shaded rest areas, drinking water, and scheduled rest breaks</li> </ul>                                                                                                                                                                               | Protect worker health and maintain safe working conditions                                                                                                                                                      | <ul style="list-style-type: none"> <li>Availability of shaded areas and drinking water; no reported heat stress incidents</li> </ul>                                                                                                                                    |                                 |                                  |                                           |                                            |
| Labour rights infringement risks                                                                                                     | <ul style="list-style-type: none"> <li>Implement wage monitoring procedures and require contractors to maintain payment records for all workers</li> <li>Establish labour management procedures specifying working hours, rest periods, and overtime arrangements</li> <li>Establish and communicate a worker grievance redress mechanism</li> </ul> | <p>Ensure timely and fair payment of workers</p> <p>Ensure compliance with national labour laws and acceptable working conditions</p> <p>Provide workers with accessible channels to report labour concerns</p> | <ul style="list-style-type: none"> <li>Wage payment records available; no wage-related complaints</li> <li>Labour management procedures implemented; compliance checks conducted</li> <li>Grievance mechanism established; grievances recorded and addressed</li> </ul> |                                 | Throughout construction phase    | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant   |
| <b>Operation Phase</b>                                                                                                               |                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                         |                                 |                                  |                                           |                                            |
| <p>Community &amp; Occupational Health and Safety Risks</p> <ul style="list-style-type: none"> <li>Occupational accidents</li> </ul> | <ul style="list-style-type: none"> <li>Same as in construction phase. Covered under construction phase</li> </ul>                                                                                                                                                                                                                                    | Covered under construction phase                                                                                                                                                                                | <ul style="list-style-type: none"> <li>Covered under construction phase</li> </ul>                                                                                                                                                                                      | <p>C 15,000</p> <p>C 15,000</p> | Throughout the project lifecycle | E&S Specialist of Operation Contractor    | Environmental Safeguards Specialist of PIU |

| Risks/Impacts                                                                         | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Objective                                                                                                                           | Target                                                                                                                                                                                                                                 | Budget (GHS) | Time frame                                                                                                                   | Responsibility                         | Monitoring                                 |
|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|--------------------------------------------|
| <ul style="list-style-type: none"> <li>Noise and vibrations</li> <li>Odour</li> </ul> | <ul style="list-style-type: none"> <li>Same as in construction phase. Covered under construction phase</li> <li>Implement proper compost management practices (turning, aeration, moisture control)</li> <li>Odour-neutralising agents (e.g., caustic soda, lime, activated charcoal) or biofilters will be applied on exposed organic matter and disturbed soils</li> <li>The project will install biofilters at the site</li> <li>Temporary windbreaks or barriers (e.g., shade nets, fencing) will be installed to limit odour dispersion toward sensitive receptors</li> <li>Odour levels will be continuously monitored in sensitive areas (Korle Bu Teaching Hospital and nearby communities) to ensure compliance with EPA regulations.</li> <li>Where thresholds are exceeded, adaptive measures (such as additional spraying or further sealing) will be implemented promptly.</li> </ul> | <ul style="list-style-type: none"> <li>Covered under construction phase</li> <li>To minimize odour generation and spread</li> </ul> | <ul style="list-style-type: none"> <li>Covered under construction phase</li> <li>To meet Environment and Health Protection standard (GS 1236: 2019, GS 1219:2018) and IFC Environmental, Health and Safety (EHS) guidelines</li> </ul> | 100,000      | <ul style="list-style-type: none"> <li>Throughout the project lifecycle</li> <li>Throughout the project lifecycle</li> </ul> | E&S Specialist of Operation Contractor | Environmental Safeguards Specialist of PIU |

CONSTRUCTION & OPERATION OF A SOURCE-SEPARATED ORGANIC WASTE COMPOSTING PLANT – ESIS

| Risks/Impacts                                                  | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                                                 | Objective                                                                                                                                                                                                                 | Target                                                                                                                                                                                                                                                                                      | Budget (GHS)                 | Time frame                   | Responsibility                         | Monitoring                                 |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------------------------------|----------------------------------------|--------------------------------------------|
| Pest                                                           | Implement pest management measures including keeping good sanitation and periodic pest control                                                                                                                                                                                                                                                                                                             | Prevent pest infestations and protect worker health                                                                                                                                                                       | At least 1 pest control activities carried out each quarter; no visible pest levels on site                                                                                                                                                                                                 | 10,000                       | Throughout project lifecycle | E&S Specialist of Operation Contractor | Environmental Safeguards Specialist of PIU |
| Risk of conflict associated with resettlement of scarp dealers | Implement the grievance redress mechanism                                                                                                                                                                                                                                                                                                                                                                  | Settle disputes                                                                                                                                                                                                           | All disputes settled                                                                                                                                                                                                                                                                        | Included in grievance budget | Throughout project lifecycle | AMA                                    | Environmental Safeguards Specialist of PIU |
| Improper waste handling and disposal impacts                   | <ul style="list-style-type: none"> <li>● Implement a feedstock acceptance and inspection protocol to ensure only appropriate organic waste is accepted for composting</li> <li>● Provide personal protective equipment (PPE) and training for workers handling organic waste</li> <li>● Maintain dedicated areas for sorting and temporary storage of rejected materials removed from feedstock</li> </ul> | <p>Maintain compost quality and protect workers from hazardous contaminants</p> <p>Protect workers from biological hazards and physical injuries during waste handling</p> <p>Prevent accumulation of non-compostable</p> | <ul style="list-style-type: none"> <li>● Percentage of incoming waste inspected; rejected contaminated loads documented</li> <li>● Workers equipped with PPE and trained in waste handling procedures</li> <li>● Designated storage areas maintained and waste removed regularly</li> </ul> | -                            | Throughout operation phase   | E&S Specialist of Operation Contractor | Environmental Safeguards Specialist of PIU |

CONSTRUCTION & OPERATION OF A SOURCE-SEPARATED ORGANIC WASTE COMPOSTING PLANT – ESIS

| Risks/Impacts | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                         | Objective                                                                                                                                                                                                                                                                                     | Target                                                                                                                                                                                                                                                                                                  | Budget (GHS)            | Time frame                 | Responsibility                         | Monitoring                                 |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|----------------------------|----------------------------------------|--------------------------------------------|
|               | <ul style="list-style-type: none"> <li>• Operate and maintain the leachate collection and treatment system, including constructed wetlands and treatment facilities</li> <li>• Provide adequate waste collection and sanitation facilities for plant workers</li> <li>• Maintain regular housekeeping and cleaning schedules within waste handling and processing areas</li> </ul> | <p>waste and ensure proper disposal</p> <p>Prevent untreated leachate or effluent from entering drainage systems or nearby water bodies</p> <p>Prevent unsanitary conditions and pest attraction at the facility</p> <p>Reduce pest attraction, odour generation, and contamination risks</p> | <ul style="list-style-type: none"> <li>• Effluent quality meets national discharge standards; treatment system functioning properly</li> <li>• Waste bins and sanitation facilities provided and maintained</li> <li>• Routine cleaning records maintained; no visible accumulation of waste</li> </ul> | <p>250,000</p> <p>-</p> | Throughout operation phase | E&S Specialist of Operation Contractor | Environmental Safeguards Specialist of PIU |

CONSTRUCTION & OPERATION OF A SOURCE-SEPARATED ORGANIC WASTE COMPOSTING PLANT – ESIS

| Risks/Impacts                       | Proposed mitigation action                                                                                                                                                                                                                                                                                         | Objective                                                                                                                                                                                       | Target                                                                                                                                                                                                                                                                                                  | Budget (GHS)                                     | Time frame                                                                      | Responsibility                         | Monitoring                                 |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------|--------------------------------------------|
| Threat to biodiversity              | <ul style="list-style-type: none"> <li>Implementation of strict no hunting/persecution rule</li> <li>Education of staff and subcontractors to understand the need to cohabit with wildlife</li> <li>Maintain green buffer and tree cover around the site</li> </ul>                                                | <p>To prevent habitat loss and reduce wildlife disturbances and pest risks</p> <p>Sustain biodiversity, reduce dust and noise, improve aesthetics</p>                                           | <ul style="list-style-type: none"> <li>No increase in rodent/bird populations around the facility; vegetative cover maintained at <math>\geq 80\%</math> post-planting</li> <li>Survival rate of planted trees/plants (<math>\geq 80\%</math>) and buffer area maintained (<math>m^2</math>)</li> </ul> | 10,000 (year maintenance, watering, replacement) | <p>Throughout the operation phase</p> <p>Ongoing throughout plant operation</p> | E&S Specialist of Operation Contractor | Environmental Safeguards Specialist of PIU |
| Impacts on soil and water resources | <ul style="list-style-type: none"> <li>Ensure all operational surfaces are paved and connected to the drainage and leachate collection system</li> <li>Establish spill prevention and response procedures and maintain spill response equipment</li> <li>Conduct routine monitoring of effluent quality</li> </ul> | <p>Prevent infiltration of contaminated runoff into soil and nearby drainage systems</p> <p>Rapidly contain and clean spills to prevent soil contamination</p> <p>Ensure effluent discharge</p> | <ul style="list-style-type: none"> <li>Operational surfaces maintained; runoff captured and treated</li> <li>Spill response equipment available and staff trained in spill response</li> </ul>                                                                                                          | 60,000                                           | Throughout operational phase                                                    | E&S Specialist of Operation Contractor | Environmental Safeguards Specialist of PIU |

| Risks/Impacts              | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                              | Objective                                                                                                                                                                                                                | Target                                                                                                                                                                                                                                                                | Budget (GHS) | Time frame                                          | Responsibility                         | Monitoring                                 |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------------------------------------------|----------------------------------------|--------------------------------------------|
|                            | <ul style="list-style-type: none"> <li>Implement routine housekeeping and inspection of waste handling areas</li> </ul>                                                                                                                                                                                                                                                                 | <p>complies with environmental standards and does not degrade water quality</p> <p>Prevent accumulation of organic residues that could contaminate soil</p>                                                              | <ul style="list-style-type: none"> <li>Effluent monitoring results within regulatory limits</li> <li>Routine inspection records maintained; no accumulation of waste residues</li> </ul>                                                                              |              |                                                     |                                        |                                            |
| Traffic and accident risks | <ul style="list-style-type: none"> <li>Develop and implement an operational phase traffic management plan for waste collection vehicles</li> <li>Schedule waste deliveries during designated daytime hours and avoid peak traffic periods where possible</li> <li>Establish clearly marked internal traffic routes, pedestrian walkways and speed limits within the facility</li> </ul> | <p>Ensure efficient and safe movement of waste trucks to and from the facility</p> <p>Reduce congestion and accident risks in surrounding communities</p> <p>Improve traffic organisation and reduce collision risks</p> | <ul style="list-style-type: none"> <li>Traffic management procedures implemented and communicated to drivers</li> <li>Waste deliveries occur only within approved daytime operating hours</li> <li>Internal road markings installed; speed limits enforced</li> </ul> |              | Prior to commencement of operation phase activities | E&S Specialist of Operation Contractor | Environmental Safeguards Specialist of PIU |

CONSTRUCTION & OPERATION OF A SOURCE-SEPARATED ORGANIC WASTE COMPOSTING PLANT – ESIS

| Risks/Impacts                | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Objective                                                                                                                                                                                                | Target                                                                                                                                                                                                                                                                                                           | Budget (GHS)                | Time frame                                                                             | Responsibility                         | Monitoring                                 |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|----------------------------------------------------------------------------------------|----------------------------------------|--------------------------------------------|
|                              | <ul style="list-style-type: none"> <li>● Provide traffic safety training for workers and ensure high-visibility PPE is worn in operational areas</li> <li>● Ensure regular inspection and maintenance of waste transport vehicles</li> </ul>                                                                                                                                                                                                                                                           | <p>Protect workers from vehicle-related accidents</p> <p>Maintain vehicle safety and reduce risk of mechanical failure</p>                                                                               | <ul style="list-style-type: none"> <li>● Workers trained and wearing high-visibility PPE</li> <li>● Vehicle inspection and maintenance records maintained</li> </ul>                                                                                                                                             |                             |                                                                                        |                                        |                                            |
| Inefficient use of resources | <ul style="list-style-type: none"> <li>● Install energy-efficient equipment where feasible and implement routine maintenance of shredders, conveyors, aeration systems, and pumps</li> <li>● Implement water management procedures including controlled water use, regular inspection of water supply systems, and prompt repair of leaks</li> <li>● Implement standard operating procedures for feedstock preparation, moisture control, aeration, and monitoring of composting parameters</li> </ul> | <p>Promote efficient energy use in facility operations</p> <p>Ensure efficient use of water resources at the facility</p> <p>Maintain optimal composting conditions for efficient compost production</p> | <ul style="list-style-type: none"> <li>● Equipment maintenance records available; periodic monitoring of energy consumption</li> <li>● Water consumption records maintained; regular inspections conducted</li> <li>● Compost process monitoring records maintained (temperature, moisture, aeration)</li> </ul> | <p>30,000</p> <p>10,000</p> | <p>Prior to commencement of operation activities</p> <p>Throughout operation phase</p> | E&S Specialist of Operation Contractor | Environmental Safeguards Specialist of PIU |

CONSTRUCTION & OPERATION OF A SOURCE-SEPARATED ORGANIC WASTE COMPOSTING PLANT – ESIS

| Risks/Impacts                    | Proposed mitigation action                                                                                                                                                                                                                                                                                                                        | Objective                                                                                                                                                                              | Target                                                                                                                                                                                                                                          | Budget (GHS)     | Time frame                 | Responsibility                         | Monitoring                                 |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------------------|----------------------------------------|--------------------------------------------|
|                                  | <ul style="list-style-type: none"> <li>Implement quality control procedures for compost production including periodic laboratory testing of compost quality</li> </ul>                                                                                                                                                                            | Ensure production of high-quality compost products                                                                                                                                     | <ul style="list-style-type: none"> <li>Compost quality testing reports available</li> </ul>                                                                                                                                                     |                  |                            |                                        |                                            |
| Climate risks                    | <ul style="list-style-type: none"> <li>Maintain functional stormwater drainage and leachate collection systems within the facility</li> <li>Regular inspection and maintenance of site drainage infrastructure and stormwater channels</li> </ul>                                                                                                 | <p>Ensure effective management of stormwater and leachate</p> <p>Improve climate resilience of plant operations</p>                                                                    | <ul style="list-style-type: none"> <li>Drainage and leachate systems operational and regularly inspected</li> <li>Drainage inspections conducted regularly; no operational shutdown due to flooding</li> </ul>                                  | 10,000           | Throughout operation phase | E&S Specialist of Operation Contractor | Environmental Safeguards Specialist of PIU |
| Labour rights infringement risks | <ul style="list-style-type: none"> <li>Develop and implement a facility labour management policy consistent with national labour regulations</li> <li>Maintain a worker grievance redress mechanism accessible to all plant employees</li> <li>Implement transparent recruitment procedures and equal opportunity employment practices</li> </ul> | <p>Ensure fair and consistent labour management practices</p> <p>Promote fair treatment and accountability in the workplace</p> <p>Promote fair and inclusive employment practices</p> | <ul style="list-style-type: none"> <li>Labour policy adopted and communicated to staff</li> <li>Grievances logged and resolved within specified timeframes</li> <li>Recruitment procedures documented; workforce diversity monitored</li> </ul> |                  | Throughout operation phase | E&S Specialist of Operation Contractor | Environmental Safeguards Specialist of PIU |
|                                  |                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                        | <b>Total</b>                                                                                                                                                                                                                                    | <b>4,538,000</b> |                            |                                        |                                            |

### 8.3 Proposed Monitoring Plan

The Monitoring Plan provides a framework for tracking the implementation of mitigation measures and assessing their effectiveness. Monitoring activities will be carried out during all project phases, with specific indicators for each environmental and social aspect (Table 7).

**Table 7: Monitoring Plan with Budget**

| No | What to monitor (parameter)   | When to monitor (frequency)                                                   | How to monitor (methods)                                                  | Who monitors               | Budget           |
|----|-------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------|----------------------------|------------------|
| 1  | Ambient Noise and Air Quality | Bi-Weekly                                                                     | Air and noise meter                                                       | Project manager/contractor | 1,700,000        |
| 2  | Water Quality                 | Quarterly monitoring, with additional checks after significant rain events    | laboratory analysis                                                       | Project manager/contractor | 600,000          |
| 3  | Biodiversity                  | Bi-annually                                                                   | Fauna and flora diversity assessment                                      | Project manager/contractor | 200,000          |
| 4  | Waste                         | Monthly                                                                       | Assessment of waste generation volumes and management effectiveness       | Project manager            | 2,450,000        |
| 5  | GBV, SEA, SH Risks            | Continuous monitoring, with quarterly reporting on GBV, SEA, and SH incidents | Establishment of a GRM and Community & stakeholder engagements            | Project manager            | 300,000          |
| 7  | Community Health and Safety   | Weekly monitoring during <b>construction</b> , post-construction check-ins    | Number of near misses/accidents both onsite and other project ancillaries | Project manager            | 3,600,000        |
|    |                               |                                                                               |                                                                           | <b>Total</b>               | <b>8,850,000</b> |

#### Key Components of the ESMP

- **Water Quality Monitoring:** Regular testing of water sources to detect changes in turbidity, nutrient levels, and contaminants;
- **Air Quality Monitoring:** Regular monitoring of dust and gas emissions during construction and operational phases to ensure that air emissions are kept within the acceptable limit; and

- **Community Engagement:** Continuous stakeholder consultations to address concerns and grievances, ensuring local participation in project decisions.

#### 8.4 *Grievance Redress Mechanism (GRM)*

The project will adopt and enhance the existing grievance redress structure for MMDAs in Ghana. At the district assembly level in Ghana, complaint resolution involves a multi-tiered approach, leveraging established structures and community engagement to address grievances effectively. This includes community-level committees, collaboration with local authorities, and the formal mechanisms of the Assembly itself. Grievances are resolved or referred to the following levels depending on the nature of the complaint or dispute:

- Community Grievances and Surveillance Committees (CGSCs)
- Collaboration with Local Authorities and Stakeholders
- Formal Assembly Structures

The contractors who will be involved in both the pre-construction and construction phases will be required to develop simple GRMs that align or feed into the existing GRM structures of the AMA. Construction and operational staff at the project level will maintain a grievance and conflict resolution log and report outcomes to the AMA and finally to the Greater Accra Regional Coordinating Council (GARCC) if required.

In line with IFC PS 1 and 2, the project GRM will be accessible to all project-affected persons. Contractors will be required to establish worker-specific grievance mechanisms for their employees, coordinated with the project GRM to ensure oversight and consistency. All other external stakeholders, including informal waste pickers and affected community members, will access the project GRM directly. Both the worker and community channels will ensure confidentiality, protection against retaliation, and transparent resolution of concerns. The transparent nature of resolving grievances and active involvement of local structures, i.e., CGSCs and MMDAs supported by the GARCC at the regional level will enable the GRM to address grievances amicably. This proven mechanism would be followed to facilitate all grievances or complaints at any point during the various phases of the project. The CGSCs within the various beneficiary MMDAs will be empowered to address any issues that may arise within their jurisdictions during the implementation of the project (especially with regards to the upstream activities i.e., source segregation, waste collection and haulage). Where a CGSC cannot resolve any grievance at the local MMDA level, it would be escalated to the GARCC who would coordinate with the relevant MMDA to find a solution to the complaint. The Public Relations and Social Welfare & Community Development Officers at the AMA will play a key role in coordinating the resolution of all grievances which will then be logged for record-keeping and tracking purposes.

**Table 8**      ***Grievance Redress Roles***

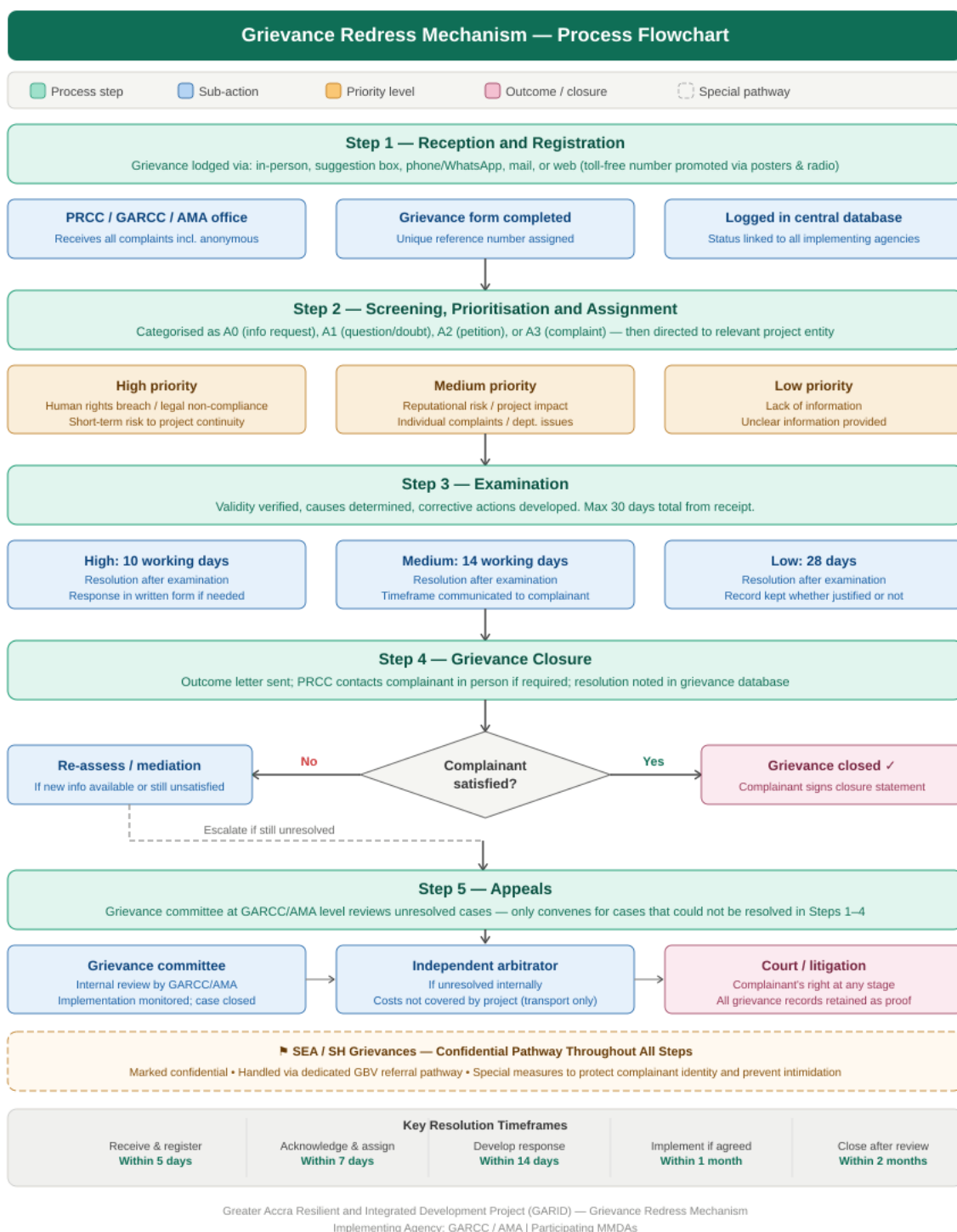
| Level              | Agency/Individual                                    | Grievance Redress Role                                                                                                                                                                                                                                                                  |
|--------------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Regional, District | GARCC, AMA and other beneficiary/participating MMDAs | <ul style="list-style-type: none"> <li>● Establish GRMs via circulars and memoranda</li> <li>● Provide operational guidelines for GRMs, e.g., source segregation and waste collection activities</li> <li>● Designate necessary funds and staff to facilitate GRM operations</li> </ul> |

|                     |                      |         |                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------|----------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                      |         | <ul style="list-style-type: none"> <li>● Maintain databases on the status of grievance handling by Contractors and CGSCs</li> <li>● Participate in GRM activities</li> <li>● Monitoring grievance-handling processes by Contractors and CGSCs</li> <li>● Coordinate the functions of CGSCs</li> <li>● Provide capacity-building training to CGSC members</li> </ul> |
| Contractors / CGSCs | Grievance Committees | Redress | <ul style="list-style-type: none"> <li>● Maintaining a list of those who are directly or indirectly affected by construction, operations, and maintenance work</li> <li>● Addressing grievances excluding issues of GBV/SEA/SH</li> </ul>                                                                                                                           |

The grievance resolution framework consists of six key steps:

- Step 1: Reception and Registration
- Step 2: Screening, Prioritization and Assignment
- Step 3: Examination
- Step 4: Grievance Closure
- Step 5: Appeals

The schematic below shows the grievance process for the project:



The budget for operationalising the Grievance Mechanism is estimated at GHS 72,500 per year, including:

- Staffing – GHS 45,000
- Communication – GHS 10,000

- Training – GHS 4,000
- Record-keeping – GHS 5,000
- Awareness and M&E – GHS 6,000
- Contingency – GHS 2,500

#### **8.4.1 Referral Channels for Gender-based violence, Sexual Exploitation and Abuse, and Sexual Harassment (GBV/SEA/SH) cases**

The project GRM will establish alternative referral channels for cases of Gender-based violence, Sexual Exploitation and Abuse, and Sexual Harassment (GBV/SEA/SH), recognizing that these sensitive cases require specialized intervention beyond standard procedures. Relevant state and non-state agencies, such as the Domestic Violence Victims Support Unit of the Ghana Police Service and the Department of Social Welfare, will serve as entry points and referral agencies, integrated into the GBV/SEA/SH response system.

For GBV/SEA/SH cases, the project GRM will primarily (i) refer complainants to appropriate service providers and (ii) record case resolution. The GRM will treat all information confidentially, only collecting minimal details: nature of the complaint, whether the perpetrator is project-associated, survivor's age and sex if possible, and service referral status. Identifiable information about survivors will not be stored. Multiple reporting channels - including local organizations, healthcare providers, and toll-free helplines the Orange Support Centre - will be available. When a complaint is received, the GRM operator will promptly refer the survivor to support services and ensure the case is recorded. If reported through other channels, the case will still be logged in the GRM system. With survivor consent, information on resolution options and mandatory legal requirements will be provided. Resolution plans and disciplinary actions will be agreed upon swiftly to minimize further trauma. Once resolved, the case will be closed in the GRM system and the World Bank notified.

## **9.0 Conclusion**

The MSW source segregation and composting project is expected to have substantial positive impacts on sustainable waste management, climate resilience, agricultural productivity, food security, and local livelihoods. While there are environmental and social risks and impacts associated with the project, these have been thoroughly assessed, and mitigation measures have been developed to address impacts of odour, water pollution, loss of livelihood and competition for resources. The implementation of the Environmental and Social Management Plan (ESMP) combined with continuous monitoring and stakeholder engagement will ensure that the project proceeds in an environmentally sustainable and socially responsible manner. The project aligns with national development goals and international sustainability standards and IFC PS, making it a key driver of economic growth and environmental protection in Jamestown, Ashiedu Keteke Sub-Metro of Accra Metropolitan Assembly, within the Greater Accra Region of Ghana

## **Core ESIA Team**

The environmental assessment for the project was undertaken by a team of Independent Consultants from Environmental and Health Impact Assessment Group (EHG). Table 1 includes reference to all team members responsible for this ESIA.

**Table 9      Team Composition**

| <b>Name</b>             | <b>Position</b>        | <b>Contact</b>            |
|-------------------------|------------------------|---------------------------|
| Thomas Gyimah           | Team Lead              | gyimthom@gmail.com        |
| Dr Eric Gbenatey Nartey | Composting Expert      | gbenartey@gmail.com       |
| Rexford Newton-Akpor    | Social Expert          | r01newton.akpor@gmail.com |
| Ruben Yao Deku          | Environmental Expert   | dekuruben@yahoo.com       |
| Ebenezer Quadzie        | Air Quality Specialist | equadzie@yahoo.com        |
| Kingsford Cudjoe        | Biodiversity Assistant | kingsford.joe@outlook.com |

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## ABBREVIATIONS AND ACRONYMS

|               |                                                                                                                                  |                 |                                                      |
|---------------|----------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------------------------|
| <b>ACARP</b>  | Accra Compost and Recycling Plant                                                                                                | <b>IUCN</b>     | International Union for the Conservation of Nature   |
| <b>AERs</b>   | Annual Environmental Reports                                                                                                     | <b>IFC</b>      | International Financial Corporation                  |
| <b>AFD</b>    | Agence Française de Développement                                                                                                | <b>IRECOP</b>   | Integrated Recycling and Compost Plant               |
| <b>ALARP</b>  | As low as reasonably practicable                                                                                                 | <b>ISPs</b>     | Informal Service Providers                           |
| <b>AMA</b>    | Accra Metropolitan Assembly                                                                                                      | <b>JHS</b>      | Junior High School                                   |
| <b>AMA</b>    | Accra Metropolitan Assembly                                                                                                      | <b>KBTH</b>     | Korle Bu Teaching Hospital                           |
| <b>AoI</b>    | Area of Influence                                                                                                                | <b>KG</b>       | Kindergarten                                         |
| <b>BMZ</b>    | Bundesministerium für Wirtschaftliche Zusammenarbeit und Entwicklung (Federal Ministry for Economic Cooperation and Development) | <b>LC</b>       | Lands Commission                                     |
| <b>CAI</b>    | Climate Action Implementation                                                                                                    | <b>LDPE</b>     | Low-Density Polyethylene                             |
| <b>CAP</b>    | Climate Action Plan                                                                                                              | <b>LEAP</b>     | Local Empowerment Against Poverty                    |
| <b>CASP</b>   | Covered Aerated Static Pile                                                                                                      | <b>LI</b>       | Legislative Instrument                               |
| <b>CBD</b>    | The Convention on Biological Diversity                                                                                           | <b>LMICs</b>    | Lower- and Middle-Income Countries                   |
| <b>CCRA</b>   | Climate Change Risk Assessment                                                                                                   | <b>LUSPA</b>    | Land Use and Spatial Planning Authority              |
| <b>CFF</b>    | Cities Finance Facility                                                                                                          | <b>METASI P</b> | Medium Term Agricultural Sector Investment Plan      |
| <b>CGSCs</b>  | Community Grievances and Surveillance Committees                                                                                 | <b>MLNR</b>     | Ministry of Lands and Natural Resources              |
| <b>CSO</b>    | Civil Society Organization                                                                                                       | <b>MMDAs</b>    | Metropolitan, Municipal, and District Assemblies     |
| <b>DOVVSU</b> | Domestic Violence and Victims Support Unit                                                                                       | <b>MoFA</b>     | Ministry of Food and Agriculture                     |
| <b>EA</b>     | Environmental Assessment                                                                                                         | <b>MSDS</b>     | Material Safety Data Sheets                          |
| <b>ECG</b>    | Electricity Company of Ghana                                                                                                     | <b>MSW</b>      | Municipal Solid Waste                                |
| <b>EHG</b>    | Environmental and Health Impact Assessment Group                                                                                 | <b>MSWM</b>     | Municipal Solid Waste Management                     |
| <b>EIA</b>    | Environmental Impact Assessment                                                                                                  | <b>NCCP</b>     | National Climate Change Policy                       |
| <b>EIS</b>    | Environmental Impact Statement                                                                                                   | <b>NSRs</b>     | Noise Sensitive Receptors                            |
| <b>EMP</b>    | Environmental Management Plan                                                                                                    | <b>NGO</b>      | Non-governmental organization                        |
| <b>EP</b>     | Environmental Permit                                                                                                             | <b>PIC</b>      | Prior Informed Consent                               |
| <b>EPA</b>    | Environmental Protection Authority                                                                                               | <b>PM</b>       | Particulate Matter                                   |
| <b>ESHO</b>   | Environment, Safety and Health Officer                                                                                           | <b>NTS</b>      | Non-Technical Summary                                |
| <b>ESIA</b>   | Environmental and Social Impact Assessment                                                                                       | <b>PAPs</b>     | Project Affected Persons                             |
| <b>ESIS</b>   | Environmental and Social Impact Statement                                                                                        | <b>PEA</b>      | Preliminary Environmental Assessment                 |
| <b>ESMP</b>   | Environmental and Social Management Plan                                                                                         | <b>PESMP</b>    | Provisional Environmental and Social Management Plan |
| <b>FASDEP</b> | Food and Agriculture Sector Development Project                                                                                  | <b>PP</b>       | Polypropylene                                        |
| <b>FCDO</b>   | Foreign, Commonwealth & Development Office                                                                                       | <b>PPRSD</b>    | Plant Protection Regulation Service Directorate      |
| <b>FSPs</b>   | Formal Service Providers                                                                                                         | <b>PPE</b>      | Personal Protective Equipment                        |
| <b>GAMA</b>   | Greater Accra Metropolitan Area                                                                                                  | <b>POPs</b>     | Persistent Organic Pollutants                        |

|                 |                                                                  |               |                                                                      |
|-----------------|------------------------------------------------------------------|---------------|----------------------------------------------------------------------|
| <b>GAMA</b>     | Greater Accra Metropolitan Area                                  | <b>PVC</b>    | Polyvinyl chloride                                                   |
| <b>GARCC</b>    | Greater Accra Regional Coordinating Council                      | <b>PWDs</b>   | Persons with Disabilities                                            |
| <b>GBV</b>      | Gender Based Violence                                            | <b>PPP</b>    | Public-Private Partnerships                                          |
| <b>GH-NDC</b>   | Ghana's Updated Nationally Determined Contribution               | <b>PRA</b>    | Participatory Rural Appraisal                                        |
| <b>GHS</b>      | Ghana Health Service                                             | <b>PS</b>     | Performance Standard                                                 |
| <b>GIZ</b>      | Deutsche Gesellschaft für Internationale Zusammenarbeit          | <b>QAQC</b>   | Quality Assurance and Quality Control                                |
| <b>GMet</b>     | Ghana Meteorological Authority                                   | <b>RCC</b>    | Regional Coordinating Council                                        |
| <b>GoG</b>      | Government of Ghana                                              | <b>SDGs</b>   | Sustainable Development Goals                                        |
| <b>GPI</b>      | Gender Parity Index                                              | <b>SEA</b>    | Sexual Exploitation and Abuse                                        |
| <b>GRM</b>      | Grievance Redress Mechanism                                      | <b>SEP</b>    | Stakeholder Engagement Plan                                          |
| <b>GSA</b>      | Ghana Standards Authority                                        | <b>SH</b>     | Sexual Harassment                                                    |
| <b>GSS</b>      | Ghana Statistical Service                                        | <b>SHS</b>    | Senior High School                                                   |
| <b>GWCL</b>     | Ghana Water Company Limited                                      |               |                                                                      |
| <b>HDA</b>      | High-density aerobic                                             | <b>ToR</b>    | Terms of Reference                                                   |
| <b>HDPE</b>     | High-Density Polyethylene                                        | <b>UNESCO</b> | The United Nations Educational, Scientific and Cultural Organization |
| <b>HIV/AIDS</b> | Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome | <b>SWCES</b>  | Single Window Citizens Engagement Service                            |
| <b>HSE</b>      | Health Safety and Environment                                    | <b>UNFCCC</b> | United Nations Framework Convention on Climate Change                |
| <b>ICGC</b>     | International Central Gospel Church                              | <b>USAID</b>  | United States Agency for International Development                   |

## 1.0 INTRODUCTION

### 1.1 Project Background

The Accra Metropolitan Assembly (AMA), with technical assistance from the C40 Cities Finance Facility (CFF), intends to implement a Municipal Solid Waste (MSW) Source Separation and Composting project as a strategic response to Accra's growing waste management challenges. With organic waste comprising more than 50% of total municipal waste generated in the city (according to a 2021 study conducted by the Greater Accra Resilient and Integrated Development Project), this initiative presents a transformative opportunity to adopt sustainable practices by converting organic waste into valuable compost. Prioritising composting is critical to reducing methane emissions, a potent greenhouse gas generated by decomposing organic matter in landfills and diverting organic materials from landfills to prolong their lifespan. Composting organic will significantly reduce the volume of waste requiring disposal by about 50%. For example, in 2019, Ghana's two main landfills in Kpone and Nsumia received a total of 688,482.65 metric tons of solid waste, (with 346,633.17 metric tons and 341,849.50 metric tons, respectively) meaning that only 344,241.33 metric tons would have reached the two landfills if composting was in place. It will extend the lifespan of the landfills and minimize the environmental problems associated with them. This initiative aligns with the city's climate action goal to reduce greenhouse gas emissions by 15% by 2030 and 45% by 2050, as outlined in the City's Climate Action Plan (CAP).

The proposed project will serve as a model for resource efficiency by transforming organic waste into nutrient-rich compost and prolonging the lifespan of landfills as well as creating additional livelihood opportunities for the urban poor. The compost product will enhance agricultural productivity, restore soil fertility, and reduce dependence on inorganic fertilizers, creating a direct link between urban waste management and agricultural resilience. The project is expected to create job opportunities across the waste supply chain, particularly for informal waste workers, by formalizing their roles in a more efficient and regulated waste management system. The project may also disrupt the existing waste supply chain, particularly with regards to organic waste from markets, which have been the constant source of animal feed for livestock farmers in and around AMA. The project will lead to the diversion of these wastes, causing shortfalls or competition between the project and livestock farmers. In addition to addressing waste management challenges, this initiative directly supports AMA's broader climate resilience strategy, contributing to the city's commitments under national and international frameworks for environmental sustainability.

The Accra Metropolitan Assembly (AMA), through the Ministry of Local Government, Chieftaincy and Religious Affairs (MLGCRA), is seeking financial support from the African Development Bank to implement the Municipal Solid Waste (MSW) Source Separation and Composting Project in Accra. In this regard, AMA aims to ensure that the project meets high environmental and social standards, aligning with financiers' expectations and complying with relevant international standards, including the African Development Bank's Integrated Safeguards System (ISS), the International Finance Corporation (IFC) Performance Standards

(PS), applicable guidelines, national and international legislation, and the labour conventions of the International Labour Organization (ILO).

In compliance with environmental permitting requirements as stipulated under the Environmental Protection (Environmental Assessment) Regulations 2025 (L.I.2504) of Ghana, IFC PS 1 and AfDB Integrated Safeguards System (ISS), the proposed project was registered with the Environmental Protection Authority (EPA). Under the provisions of the LI 2504, waste management projects of this nature are categorized as schedule 2, Category C projects for which an Environmental Impact Assessment (EIA) is required as the basis for granting an environmental permit by the EPA. An Environmental Impact Statement (EIS) is developed after the assessment and submitted to EPA for an environmental permit prior to the start of such projects. The EIS includes an environmental management plan (EMP) that spells out explicitly how each of the identified impacts will be mitigated. The EIS has already been submitted to the Ghana EPA who has reviewed, approved and issued an environmental permit for the construction of the MSW source separation and composting project (Appendix 5). In addition, for the purpose of seeking international funding, this project classified as Category A according to the AfDB ISS, required an Environmental and Social Impact Assessment (ESIA). To conform to internationally accepted terminologies: ESIA, Environmental and Social Impact Statement (ESIS) and Environmental and Social Management Plan (ESMP) will be used in places of the locally approved EIA, EIS and EMP, respectively

In this regard, the Environment and Health Impact Assessment Group has been contracted by AMA to undertake an Environmental and Social Impact Assessment (ESIA) of the Municipal Solid Waste (MSW) source separation and composting project following an initial scoping process in January 2025. The ESIA will address all potential environmental, social and economic impacts associated with the construction and operation of the MSW source separation and composting project and its ancillary activities. This will include all potential impacts associated with waste separation at the sources, holding and transporting of waste to the plant and transporting and distribution of the final product. This will ensure that significant adverse impacts are avoided, minimised, remedied or compensated where applicable.

### ***1.1.2 Social and Institutional Benefits***

The proposed project aims to improve employment opportunities and working conditions for approximately 1,475 informal waste workers by integrating them into a regulated waste management system. This will contribute to poverty reduction, social inclusion, and align with SDG 5 by actively involving women and youth in the waste value chain. The production of compost will enhance local agriculture by improving soil fertility and reducing reliance on chemical fertilizers, thus improving food security and supporting rural agricultural resilience. Additionally, the project aims to build partnerships with various stakeholders, strengthen governance, and create a model for other municipalities, aligning with SDG 17. It includes capacity-building for local authorities and waste service providers, fostering community engagement in waste segregation, and enhancing public-private cooperation in waste management services.

### **1.1.3 Economic Benefits**

Economically, the project offers an innovative and sustainable approach to waste management by reducing the costs associated with landfilling and waste transportation. The project will produce nutrient-rich compost that can support urban agriculture, thereby decreasing reliance on chemical fertilizers. Additionally, the composting plant aims to enhance resource efficiency and sustainability by lowering waste disposal expenses and creating a value chain for organic waste. The project's economic advantages include fostering entrepreneurship and innovation within the waste management sector. Upstream economic benefits involve increased household participation in waste segregation through incentive-based programmes, while downstream advantages include improved market access for local farmers using compost, enhanced food security, and economic resilience. Overall, the project seeks to contribute to long-term economic sustainability by reducing environmental clean-up costs, stimulating green job creation, and promoting a circular economy within Accra's waste management framework.

## **1.2 Scope and Purpose of the ESIA Study**

The ESIA includes field investigations and desk-based analyses to evaluate potential environmental and social impacts. It involves stakeholder engagement and reviews of feasibility studies, designs, performance standards, and legal frameworks. The assessment covers air quality, water resources, soil and land use, noise and vibration, waste management, ecological impacts, socio-economic impacts, health and safety, traffic and transportation, climate change, and regulatory compliance. Issues examined include physical, biological, and social environments. The purpose is to assess and mitigate the direct, indirect, and cumulative impacts of the project to ensure environmental and social sustainability. This meets legal and institutional requirements under the Environmental Protection Act, 2025 (Act 1124) and the Environmental Protection (Environmental Assessment) Regulations, 2025 (LI 2504), as well as the IFC PS, AfDB ISS, WBG/IFC General Environmental, Health and Safety (EHS) Guidelines, and ILO labour conventions. This is also necessary for obtaining international financing.

The project has potential adverse environmental or social risks and/or impacts that are generally beyond the site boundaries, largely reversible through relevant mitigation measures; hence, its classification under IFC PS as Category B+.

## **1.3 Relevant Standards for the ESIA**

Consultants based its assessment of the project in terms of its alignment with a defined reference framework of international standards. The combined national/international “Applicable Standards” for the ESIA are listed below:

- Ghana’s laws, regulations, and permits (including regional/local directives) that pertain to environmental and social issues (including compensation);
- Good International Industry Practices;

- IFC General EHS Guidelines; and
- IFC Performance Standards.

## 1.4 ESIA Process, Approach and Methodology

### 1.4.1 Introduction

The ESIA for the proposed Municipal Solid Waste Source Separation and Composting plant to be located in Jamestown, Accra was undertaken in accordance with the IFC Performance Standards, the Terms of Reference (ToR), and relevant national environmental legislations such as the Environmental Protection (Environmental Assessment) Regulations, 2025 (LI 2504), the Environmental Protection Act, 2025 (Act 1124). The approach integrated both qualitative and quantitative data through a structured sequence of field investigations, stakeholder consultations, environmental quality monitoring, participatory social assessments, and policy reviews to evaluate the project's potential impacts and establish mitigation measures.

### 1.4.2 Screening and Gap Analysis

The ESIA process was structured around five interrelated tasks, each contributing critical data and analysis to inform project planning and decision-making:

1. Project definition and streamlining of the terms of reference (TOR): The parameters for the project were defined and the TOR streamlined for the study.
2. Study area definition: The study area for the ESIA was defined in three spatial zones to reflect the expected range and intensity of project impacts:
  - Project footprint area: This was the physical location within Jamestown where the proposed compost facility and associated infrastructure (sorting units, waste reception areas, access roads) will be developed. This area will bear the most immediate and concentrated impacts from construction and operational activities.
  - Core and buffer zones: The core zone include a 500-meter radius around the project site and is expected to experience secondary impacts such as increased noise levels, traffic congestion, and odour emissions. The buffer zone extends from 500 meters to 2 kilometres and encompasses neighbourhoods that may experience tertiary impacts.
  - Area of influence (AoI): A broader spatial delineation of up to 10 kilometres around the project site. This area included communities, ecological zones, and institutions (ICGC - Christ Temple, Abossey Okai Central Mosque, Bukom boxing arena, Industries to the south-eastern boundaries of the proposed site) that may be indirectly affected through economic linkages (e.g., waste collectors, compost users), transport activities, or cumulative environmental and social changes. The environmental and social area of influence is shown in Table 1.1.

**Table 1.1 Environmental and Social Area of Influence**

| Issue                     | Distance (AoI) | Justification                                                                                                                                                                                                                   |
|---------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Air Quality               | 1 km           | Emissions of odorous compounds (e.g., ammonia, H <sub>2</sub> S) and particulate matter from composting, waste sorting, and transport trucks are likely to disperse within this radius, especially during dry windy conditions. |
| Noise Pollution           | 500 m          | Continuous operation of mechanical equipment and increased traffic during construction and operations will generate noise that can be perceived within this distance.                                                           |
| Water Environment         | 500 m          | Potential for leachate infiltration and surface runoff carrying organic contaminants into open drains and the Korle Lagoon ecosystem.                                                                                           |
| Land Environment          | 500 m          | Soil in and around the site may be affected by poor handling of waste materials, spillages, and organic waste degradation.                                                                                                      |
| Socio-economic Conditions | 5 km           | Project may influence the livelihoods of waste pickers, job seekers, transporters, and compost retailers; social dynamics and traffic patterns may shift.                                                                       |
| Biodiversity/<br>Ecology  | 2 km           | Disturbance to urban bird species, including Hooded Vultures, and risk of habitat loss in green pockets and along drainage corridors.                                                                                           |

3. Reconnaissance and Field Investigations: Initial site visits were carried out at the proposed project location, surrounding communities, and along drainage pathways leading to the Korle Lagoon. These visits allowed the team to observe existing land uses, topographical and infrastructural features, as well as areas of environmental sensitivity. The reconnaissance helped frame the spatial and thematic scope of the ESIA.
4. Review of Policy and Legal Framework: The process included a comprehensive review of applicable national policies, legal statutes, and international standards. This was essential to ensure the project aligned with regulatory requirements and international good practices:
  - National Instruments: Environmental Protection (Environmental Assessment) Regulations, 2025 (LI 2504), Environmental Protection Act, 2025 (Act 1124), and Labour Act 2003 were reviewed to understand legal obligations related to environmental protection, worker rights, and health and safety.
  - IFC Performance Standards: These standards were referenced to guide assessment and management of environmental and social risks and impacts including pollution, labour, resettlement, and biodiversity impacts.
  - Technical Guidelines: The Ghana Landfill Guidelines (2002) were consulted for minimum technical specifications for organic waste handling and compost operations.

A legal and policy gap analysis was conducted to identify areas where Ghanaian legislation diverged from IFC standards. Where necessary, bridging strategies were proposed to ensure full compliance.

5. **Secondary Data Collection and Literature Review:** A wide range of existing data and reports were reviewed to establish an environmental and socio-economic baseline. Sources included waste management records/data from AMA, air and water quality reports by EPA, epidemiological data from Ghana Health Service (GHS), meteorological data from Ghana Meteorological Services (GMet), and census data from Ghana Statistical Service (GSS). This review helped to identify trends, gaps, and areas requiring primary data collection.
6. **Primary Data Collection:** Fieldwork and data collection conducted between January - March 2025 included environmental quality monitoring and socio-economic surveys. Monitoring was done using calibrated equipment for air (particulates and gases), water (chemical and microbiological parameters), soil (nutrient content and contaminants), and noise (day/night levels). Socio-economic surveys targeted residents, traders, institutions, and informal waste workers, gathering information on demographics, livelihoods, health, land use, and perceptions of the proposed compost facility.

### ***1.4.3 Primary Environmental Data Collection***

Field sampling in March 2025 was targeted to establish environmental quality benchmarks under dry-season conditions. Sampling locations were strategically selected based on proximity to the project site and population density. The data collection included:

- **Air Quality:** Measurements of PM<sub>2.5</sub>, PM<sub>10</sub>, SO<sub>3</sub>, NO<sub>2</sub>, were recorded at the proposed facility site, a nearby residential cluster, and a busy roadside junction (Sempe and Palladium).
- **Noise Levels:** Day and night noise monitoring was conducted at market and residential zones to capture variability in decibel levels due to human and vehicular activity.
- **Water Quality:** Grab samples were collected from two open surface drains and one borehole, with tests for BOD, COD, total suspended solids, pH, nitrate, ammonia, total/faecal coliforms, and heavy metals.
- **Soil Quality:** Samples taken at the project site and adjacent plots were analysed for pH, nutrient content (NPK), organic matter, heavy metal contamination, and microbial activity.
- **Biodiversity surveys** (flora and fauna).

### ***1.4.4 Methodological Approach to Social Baseline Data Collection***

#### ***1.4.4.1 Socio-Economic and Livelihoods Assessment***

A baseline socio-economic survey was conducted among a statistically valid sample of 10% of Project-Affected Persons (PAPs; these are individuals or groups who may be negatively affected by the project's activities). The survey targeted diverse groups to ensure representation of vulnerable populations and informal sector actors. These included:

- Households within a 500-meter radius of the project site;
- Informal waste pickers operating in Jamestown;
- Informal scrap dealers using the project site for their work;
- Traders at Jamestown Market and surrounding commercial areas;

- AMA sanitation staff, health institutions (e.g., Korle Bu Teaching Hospital), and educational facilities;
- Traditional leaders, youth representatives, and women's associations; and
- Persons with disability, farmers, fishermen group.

Survey tools included structured questionnaires, participatory rural appraisal (PRA) techniques, and direct interviews.

Themes explored:

- Income generation activities and dependency on waste economy;
- Gender roles in household and economic decision-making;
- Land tenure arrangements and exposure to displacement risks;
- Access to public services and basic infrastructure;
- Perceptions of composting, willingness to participate in waste separation, and acceptability of compost use; and
- Community priorities for benefit sharing and employment opportunities.

#### ***1.4.5 Landscape and Visual***

Land Use and Land Cover (LULC) Classification and Geographic Information System (GIS) Analysis: GIS tools were used to assess topography, slope, elevation, and land use patterns. A transitional matrix analysis of LULC changes helped understand past and current development trends within the project area. This supported the assessment of land availability, terrain suitability, and potential conflicts with existing land uses.

#### ***1.4.6 Development of Environmental and Social Management Plan (ESMP)***

The ESMP was designed as a dynamic and actionable framework for managing environmental and social risks throughout the project lifecycle. It consists of:

- Mitigation Measures: Odour suppression (biofilters), containment and treatment of leachate, construction of vegetative buffer strips, traffic control during peak hours, community outreach, and the preparation of a Resettlement Action Plan (RAP), together with a Livelihood Restoration Plan, to address the scrap dealers' loss of access to the project site which is vital to their livelihood;
- Monitoring Plan: Periodic sampling for air, noise, water, and soil quality; indicators for social performance including employment metrics, grievances received, and resettlement progress;
- Institutional Roles: Clear delineation of responsibilities for AMA, EPA, MoFA, project contractors, and NGOs;
- Budget and Resources: Costed implementation plan covering equipment, personnel, training, and contingency;
- Capacity Building: Structured training for waste workers, AMA officials, and local community champions on composting technology, health and safety, and environmental monitoring; and

- Grievance Redress Mechanism (GRM): Multi-level mechanism allowing PAPs and stakeholders to lodge complaints and receive timely resolution, including escalation options and feedback loops.

## 1.5 Structure of the Report

This Report's structure is aligned with EPA's instructions and includes as follows:

A Non-Technical Executive Summary that summarises all aspects and findings of the Environmental and Social Impact Assessment. The structure of the report has been presented in Table 1.2.

**Table 1.2**      *Structure of Report*

| Chapter   | Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chapter 1 | Introduces the ESIA, providing the background of the proposal, the aims and alternatives and the methods by which information and data were obtained.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Chapter 2 | Provides an overview of relevant policy, legislative and regulatory framework and an indication of how each of these relate to the undertaking.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Chapter 3 | Presents the project description and alternative to include proposed location, adjoining land-uses and land use requirement, constructional activities, physical characteristics, scale and design, quantities of material needed during construction and operation, description of the production processes. It also describes the operational phases and other development of the project, number of workers involved, the types and quantities of waste generation and alternative sites, processes, designs and operating conditions where these are practicable and available to the developer. The main socioeconomic and environmental advantages of these should be discussed and the reasons for final choice given. |
| Chapter 4 | Discusses the biophysical and socio-cultural environment of the proposed undertaking (project)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Chapter 5 | Summarizes the stakeholder engagement activities undertaken to date and outlines Project participation and consultation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Chapter 6 | Identified environmental and social impacts to include key issues identified in the terms of reference (from the scoping report).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Chapter 7 | Outlines the various Mitigation and enhancement measures to mitigate the impacts identified.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Chapter 8 | Presents a Provisional Environmental and Social Management Plan (PESMP).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Chapter 9 | Summary and conclusion of the findings from the study                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## 1.6 ESIA Team

The environmental and social assessment for the project was undertaken by a team of independent consultants from the Environmental and Health Impact Assessment Group (EHG). Table 1.3 includes reference to all team members responsible for this report.

**Table 1.3**      *Team Composition*

| Name                    | Position          | Contact             |
|-------------------------|-------------------|---------------------|
| Thomas Gyimah           | Team Lead         | gyimthom@gmail.com  |
| Dr Eric Gbenatey Nartey | Composting Expert | gbenartey@gmail.com |

|                      |                                   |                           |
|----------------------|-----------------------------------|---------------------------|
| Rexford Newton-Akpor | Social Expert                     | r01newton.akpor@gmail.com |
| Ruben Yao Deku       | Environmental Expert              | dekuruben@yahoo.com       |
| Ebenezer Quadzie     | Air Quality Specialist            | equadzie@yahoo.com        |
| Kingsford Cudjoe     | Support with Biodiversity Studies | kingsford.joe@outlook.com |

## 2.0 POLICY, LEGAL AND REGULATORY FRAMEWORK

### 2.1 National and Sector Policies and Plans

#### 2.1.1 *National Environmental Sanitation Policy, 2010*

This policy outlines strategies for addressing Ghana's sanitation issues through sustainable waste management and enhanced services. It promotes environmental health, infrastructure upgrades, waste minimization, segregation, recycling, and composting of organic waste. The policy supports community involvement, private sector engagement, and adherence to environmental standards, aligning with national goals and climate resilience efforts. The project is designed to meet the National Environmental Sanitation Policy (2010) by supporting sustainable practices and integrated waste management in urban areas.

#### 2.1.2 *National Environmental Policy, 2012*

This policy aims to enhance living conditions and quality of life for all citizens by promoting sustainable development that balances economic growth with natural resource conservation. The project supports this goal by considering economic, social, and environmental factors.

#### 2.1.3 *National Gender Policy, 2015*

The National Gender Policy aims to integrate gender equality into Ghana's development by improving social, legal, economic, and cultural conditions, especially for women, children, people with disabilities, and marginalized groups. The proposed project will avoid discrimination and help reduce disease among mothers and children by removing and treating waste in local communities.

#### 2.1.4 *National Employment Policy, 2012*

The National Employment Policy notes a 28.5% poverty rate and links employment closely to poverty. It highlights agriculture, industry, and services as key labour markets, and promotes transforming informal sector activities through formalization and corporatization. The Accra Waste Separation and Composting Project supports this approach by creating urban jobs in industrial and environmental sectors and integrating informal waste collectors through training and capacity building. This project aims to boost environmental outcomes and foster inclusive economic growth.

#### 2.1.5 *National Climate Change Policy, 2013*

The National Climate Change Policy (NCCP), established in 2013, outlines Ghana's approach to climate change by integrating adaptation, mitigation, and sustainable development across sectors. The policy prioritizes a green economy through low-emission electricity, renewable energy, and energy efficiency. Focus area 10 targets reducing greenhouse gas emissions from industry and waste. The proposed project supports this by separating organic waste from municipal solid waste and composting it into fertilizer, thereby lowering net emissions from waste.

#### 2.1.6 *Ghana's Updated Nationally Determined Contribution (GH-NDC) under the Paris Agreement, 2020-2030*

Ghana's updated GH-NDC (2020–2030) details strategies to build climate resilience, cut emissions, and help keep global temperature rise below 2°C. In line with the Paris Agreement,

it identifies economic, and population risks linked to climate change and sets out 47 adaptation and mitigation programmes across 10 sectors. Key actions include promoting alternative urban solid waste management to reduce 21,313 kt CO<sub>2</sub>e from waste by 2030. The Accra Waste Separation and Composting Project supports this by advancing sustainable waste processing and composting, lessening landfill use, and improving air quality. The ESIA will assess how the project aligns with national climate goals and manages environmental and social impacts per local and international standards.

#### ***2.1.7 Accra Climate Action Plan, 2020***

The Accra Climate Action Plan (CAP) provides a framework for reducing greenhouse gas emissions, boosting resilience, and supporting sustainable urban growth in the AMA, in line with global and national climate commitments. The CAP targets sustainable management of municipal solid waste, reduction of organic landfill waste, and emission cuts through waste-to-resource solutions and circular economy methods like composting. By improving waste management, the proposed project advances CAP's goals for lower emissions and greater urban resilience, directly contributing to 2020-2025 and future 2050 climate targets.

#### ***2.1.8 Riparian Buffer Zone Policy, 2011***

The Riparian Buffer Zone Policy aims to sustainably manage buffer zones around water bodies by protecting, restoring, and maintaining their ecological and livelihood functions. This promotes long-term benefits for surrounding communities and supports urban development planning. The proposed compost plant will be located along the Odaw river, whose buffer zones still offer ecological and economic value despite poor water quality. The ESIA will evaluate the project's impact on the riparian ecosystem, ensuring facility operations align with sustainable buffer zone management and national environmental goals through prevention, restoration, and green infrastructure measures.

#### ***2.1.9 National Land Policy, 1999***

The National Land Policy (1999) guides land acquisition, use, and management to promote environmental sustainability and social inclusion. It classifies wetlands as ecologically sensitive, banning activities like drainage, settlement development, and waste disposal in these areas requirements crucial for Accra's Waste Separation and Composting Project, which must avoid impacting wetlands. The policy also allows sustainable resource use near wetlands if it supports ecosystem productivity and biodiversity, aligning with the project's circular economy goals. For the ESIA, the policy ensures land acquisition is fair and transparent, ecological sensitivity is considered in site selection, and project activities comply with urban and land-use planning. Overall, the National Land Policy is vital for integrating environmental protection and inclusive governance in the ESIA process

#### ***2.1.10 National Social Protection Policy, 2015***

The National Social Protection Policy provides the national framework for addressing poverty, vulnerability, and livelihood insecurity in the country. Developed by the Ministry of Gender, Children and Social Protection, the policy seeks to protect vulnerable populations through social assistance, productive inclusion, and expanded access to social security and basic services. It places particular emphasis on supporting individuals and households engaged in the informal economy who may be exposed to economic shocks or loss of livelihood.

The scrap dealers currently occupying the project site depend on informal recycling activities for income and will experience physical displacement, which can affect their livelihood. Consistent with the objectives of the policy, a RAP, together with a LRP, will be prepared to mitigate adverse livelihood impacts. Measures could include including livelihood restoration strategies, potential integration of affected persons into recycling or waste management value chains associated with the project, and referral to existing social protection programmes like the Livelihood Empowerment Against Poverty (LEAP) Programme where appropriate.

#### ***2.1.11 National Water Policy, 2007***

The Policy provides a national framework for sustainable water resources management, efficient water use, and protection of water quality. The Policy promotes conservation of water resources and equitable access to water. This Policy is relevant to the project because the compost plant will require water for composting operations, dust suppression, cleaning, and sanitation, making efficient water use and groundwater protection important considerations.

#### ***2.1.12 National HIV/AIDS Policy***

The Policy provides the overall framework for Ghana's response to HIV/AIDS, including prevention, treatment, care, support, public awareness, and protection of the rights of people living with HIV/AIDS. The Policy seeks to reduce new infections, improve access to treatment and support services, and minimise the social and economic impacts of HIV/AIDS. It also promotes collaboration among government institutions, the private sector, civil society, and communities in addressing HIV/AIDS.

#### ***2.1.13 National Workplace HIV/AIDS Policy***

The Policy provides a framework for preventing HIV transmission in the workplace, protecting the rights of workers living with HIV/AIDS, and reducing stigma and discrimination. The Policy recognises HIV/AIDS as a workplace issue and promotes non-discrimination, confidentiality, equal treatment, safe working environments, awareness creation, and access to care and support services. It also discourages mandatory HIV testing for employment purposes and supports continuation of employment for affected workers. This Policy is relevant to the compost plant project because the project will employ both construction workers and long-term operational staff. The project will therefore need to ensure that workers are protected from discrimination, receive HIV/AIDS awareness education, and have access to fair and supportive workplace practices.

#### ***2.1.14 Organic Fertilizer Guidelines for Ghana, 2022***

This guideline provides a regulatory framework for setting up organic fertilizer production facilities, covering registration, testing, certification, and waste management requirements. It mandates that all entities involved in the production, importation, distribution, or retail of organic fertilizer must register with the Plant Protection Regulation Service Directorate (PPRSD) under the Ministry of Food and Agriculture (MoFA). The proposed project will comply with the stated guidelines for facility setup and waste management regulations to ensure legal operation and adherence to industry standards. Registration with the PPRSD is essential for certification and market entry. Additionally, product testing and certification, both laboratory and field-based, are required before commercial distribution. Meeting organic

fertilizer standards is crucial for establishing the credibility and market acceptance of compost products in Ghana's agricultural sector.

#### ***2.1.15 Ghana Building Code, 2018***

The Ghana Building Code, 2018 provides technical standards and requirements for the planning, design, construction, and maintenance of buildings and infrastructure. The Code addresses issues such as structural safety, fire safety, accessibility, ventilation, and sanitation. The Code is relevant to the project because all buildings and structures associated with the compost plant will need to be designed and constructed in accordance with these standards.

## **2.2 National Legal Framework**

### ***2.2.1 The Constitution of the Republic of Ghana, 1992***

The 1992 Constitution of Ghana (Section 6[41][9]) mandates the State to protect the national environment for posterity and collaborate with other nations to safeguard the global environment.

### ***2.2.2 Local Governance Act, 2016 (Act 936)***

This Act outlines the structure and responsibilities of the local government system, assigning authority to the Regional Coordinating Councils (RCCs) and District Assemblies for political and administrative functions within regions and districts. It authorizes these bodies to provide guidance, direction, and oversight over administrative authorities in their jurisdictions. The Assemblies are responsible for initiating development programmes related to basic infrastructure, delivering municipal works and services, and overseeing the development and management of human settlements and the environment. The proposed project in the Accra Metropolitan area will engage the AMA and its associated municipalities—Ablekuma Central, Ablekuma North, Ablekuma South, Ablekuma West, Ayawaso Central, Ayawaso East, Ayawaso North, Ayawaso West, Okaikwei North, Okaikwei South, Korle Klottey, and Osu Klottey—throughout implementation. The project is aligned with the mandate of the AMA and these municipalities concerning waste management and disposal. The Greater Accra RCC will coordinate with the other municipalities to support project implementation.

### ***2.2.3 Fees and Charges (Miscellaneous Provisions) Act, 2022 (Act 1080)***

Under this framework, the AMA in obtaining an environmental permit from the EPA, will be required to pay all applicable fees and charges as prescribed by Act 1080 to ensure compliance with the revised fee regime.

### ***2.2.4 Environmental Protection Act, 2025 (Act 1124)***

Environmental regulation in Ghana is governed by the Environmental Protection Authority Act, 2025 (Act 1124). This Act defines the powers of Ghana's EPA to enforce environmental standards and oversee Environmental Assessment (EA) procedures. The Act sets out a framework for waste management, prioritizing reduction, separation at source, recycling, and safe disposal, with specific protocols for hazardous and electronic waste. It encourages facilities like compost plants and mandates measures to protect public health and ecosystems. The proposed project will follow EPA assessment procedures and aligns with the Act's focus

on organic waste processing, community involvement, and public awareness in effective waste management.

#### ***2.2.5 Environmental Protection (Environmental Assessment) Regulations, 2025 (LI 2504)***

The ESIA process in Ghana is regulated by the Environmental Protection (Environmental Assessment) Regulations, 2025 (LI 2504). This regulation requires that any activities with potential adverse environmental impacts undergo an environmental assessment and obtain a permit before starting. The EPA determines the appropriate level of assessment for proposed activities. LI 2504 outlines procedures to integrate environmental considerations into development projects. The current project follows these requirements, including registering with the EPA and securing an environmental permit.

#### ***2.2.6 Hazardous, Electronic and Other Wastes (classifications) Control and Management Regulation, 2016 (LI 2250)***

This regulation concerns the management of hazardous waste; outlines responsibilities of entities involved in waste management and sets requirements for waste disposal. The purpose of this regulation is to regulate the classification, control, and management of waste, prescribe the requirements and timeframes for the management of wastes among others. The proposed project will comply with this regulation to effectively collect, transport and manage waste.

#### ***2.2.7 Management of Ozone Depleting Substances and Products Regulations, 2005 (LI 1812)***

The Ghana Management of Ozone Depletion Substances and Products Regulations, 2005 (LI1812) governs trade and handling of controlled ozone-depleting substances and products. This regulation mandates permits for import/export, restricts manufacturing using controlled substances, and enforces strict record-keeping, public awareness, and penalties to safeguard the environment. The project will not import any ozone-depleting substances or will do so in adherence with the regulation where necessary.

#### ***2.2.8 Environmental Protection (Air Quality Management) Regulations, 2025 (LI 2507)***

The Environmental Protection (Air Quality Management) Regulations, 2025 (LI 2507) provide the legal framework for managing and controlling air pollution. The regulations empower the EPA to establish and enforce emission limits for various pollution sources, including industrial and commercial facilities, motor vehicles, construction activities, and waste management operations. They also provide for the development of air quality monitoring systems, emission standards, and enforcement measures to ensure compliance and protect public health.

Waste processing activities, material handling, and vehicle movements would generate air pollutants such as dust, particulate matter, and odours. The project will implement appropriate air pollution control measures and comply with applicable emission standards and monitoring requirements established under the regulations to minimise impacts on surrounding communities and the environment.

### ***2.2.9 Water Resources Commission Act, 1996 (Act 522)***

The Act establishes the Water Resources Commission and provides the legal framework for the regulation, management, and protection of Ghana's water resources. The Act gives the Commission authority over water use permits and water resource monitoring. This Act is relevant to the project because groundwater abstraction through boreholes will require approval and oversight by the Water Resources Commission.

### ***2.2.10 Water Use Regulations, 2001 (LI 1692)***

The LI regulate the abstraction, diversion, storage, and use of water resources in Ghana. The Regulations require users to obtain permits for commercial or industrial abstraction of water, including groundwater from boreholes. These Regulations are relevant to the project because the compost plant intends to use boreholes as a water source for composting, cleaning, and sanitation activities. The project will therefore need to obtain the necessary permits for borehole development and water abstraction.

### ***2.2.11 Public Health Act, 2012 (Act 851)***

The Public Health Act, 2012 (Act 851) aims to revise and consolidate laws related to public health, with the objectives of preventing disease, promoting health, and safeguarding and protecting both human and animal health. It also addresses related matters. The Act is relevant to the proposed project. The contractor is responsible for ensuring compliance with the provisions of the Act, including ensuring that subcontractors also adhere to its requirements. The proposed project will adhere to the provisions in this Act.

### ***2.2.12 Factories, Offices and Shops Act, 1970 (Act 328)***

The Factories, Offices and Shops Act, 1970 (Act 328) regulates the health, safety, and welfare of workers in factories, offices, and shops across Ghana. It sets standards for working conditions, including safety measures, ventilation, lighting, and sanitation, and mandates the registration of factories. The Act also outlines procedures for inspections, accident reporting, and employer responsibilities to ensure a safe and healthy work environment. The proposed project will register with Factories Inspectorate Department during the construction and operation phase.

### ***2.2.13 Ghana National Fire Service Act, 1997(Act 537)***

The Act establishes the Ghana National Fire Service and provides for fire prevention, fire inspections, fire safety enforcement, and emergency response. This Act is relevant to the project because the compost plant may present fire risks associated with combustible waste materials, fuel storage, electrical systems, and machinery.

### ***2.2.14 Fire Precaution (Premises) Regulation, 2003 (LI1724)***

The LI outlines requirements for fire safety in various premises, including obtaining fire certificates, ensuring adequate means of escape, having sufficient firefighting equipment, and maintaining fire alarms. It mandates fire inspectors to prohibit uses of premises that do not have fire safety certificates and describes the role of the [District Fire Service Committee](#). In compliance with this legislation, the project will obtain fire safety certificates and install appropriate firefighting equipment as required.

### ***2.2.15 Road Traffic Act, 2004 (Act 683)***

The Road Traffic Act, 2004 (Act 683) provides the legal framework for road use, vehicle registration, driver licensing, traffic management, and road safety. The Act establishes requirements intended to reduce traffic accidents and improve road safety. This Act is relevant to the project because construction and operation of the compost plant will involve the movement of trucks, waste transport vehicles, and heavy equipment along public roads.

### ***2.2.16 Land Act, 2020 (Act 1036)***

The Land Act, 2020 (Act 1036), consolidates existing laws on land and land administration in Ghana. Its goal is to harmonize these laws for sustainable land management and effective land tenure. The Act introduces significant reforms, including electronic conveyancing, which enables the transfer, creation, or registration of land interests electronically. It also outlines the procedures for land acquisition and the transfer of land interests between parties, which apply to the land acquisition process for waste management projects.

The Act makes it a necessity for reasons of justification to be provided for causing any hardship to persons who have an interest in or right over the property, and with prompt payment of fair and adequate compensation made for the acquisition. Also, according to Section 265 of the Act, a land acquisition and resettlement plan is to be prepared, in consultation with the affected inhabitants and must include an environmental impact assessment.

### ***2.2.17 Lands Commission Act, 2008 (Act 767)***

The Lands Commission Act, 2008 restructured land administration in Ghana by merging four land sector agencies into the Lands Commission (LC) and consolidating the title and deeds registries under the Land Registration Division. This Act regulates the management of public and vested lands, as well as the certification of stool land transactions. It also aligns with the 1992 Constitution, which mandates that any disposition or development of stool land must be certified by the regional Lands Commission to ensure consistency with the area's development plan. The proposed project is in line with the objectives of the Commission for sustainable development of land.

### ***2.2.18 Land Use and Spatial Planning Authority Act, 2016 (Act 925)***

The Land Use and Spatial Planning Act, 2016 (Act 925) establishes the framework for land use planning, zoning, and spatial development in Ghana. The Act seeks to ensure that land uses are compatible with approved planning schemes and development objectives. The project is located in an area where waste management activities are permitted under the applicable land use and planning framework.

### ***2.1.19 National Building Regulations, 1996 (LI 1630)***

The National Building Regulations, 1996 (L.I. 1630) establish requirements for building permits, sanitation, structural integrity, and safe construction practices. The Regulations apply to the design and construction of buildings and other physical infrastructure. These Regulations are relevant to the project because all project facilities, including offices, storage areas, sanitary facilities, and operational structures, will need to comply with approved building and safety standards.

**2.2.20 *Lands (Statutory Wayleaves) Act, 1963 (Act 186)***

The Lands (Statutory Wayleaves) Act, 1963 (Act 186) provides for the creation of statutory rights of way for public infrastructure such as roads, drainage systems, pipelines, and utility corridors. The Act is relevant to the project where access roads, drainage infrastructure, water supply lines, or utility connections may require use of adjoining land.

**2.2.21 *Alternative Dispute Resolution Act, 2010 (Act 798)***

The Alternative Dispute Resolution Act, 2010 (Act 798) establishes a framework for resolving disputes through mediation, arbitration, and customary arbitration rather than through formal court proceedings. The Act is intended to promote faster, less adversarial, and more cost-effective approaches to dispute resolution. This Act is relevant to the compost plant project because disputes may arise regarding compensation, relocation, livelihood restoration, or access to workspaces for scrap dealers and other informal waste workers currently operating on the project site. The Act may therefore provide a useful mechanism for resolving disputes amicably through mediation and negotiated settlement processes.

**2.2.22 *Labour Act, 2003 (Act 651)***

The Labour Act, 2003 (Act 651) was established to amend and consolidate existing laws on labour, employers, trade unions, and industrial relations. It outlines the rights and duties of employers and workers, addresses the legality of strikes, guarantees trade union rights and freedom of association, and establishes the Labour Commission to mediate and resolve labour-related issues. Part XV, Section 118 of the Act requires employers to ensure that all employees work under satisfactory, safe, and healthy conditions. Employers are also obligated to provide the necessary information, instructions, training, and supervision to safeguard the health and safety of workers engaged in specific tasks. The proposed project will ensure the safety and health of its workers by providing a safe working environment and providing the required apparatus and measures to mitigate impacts.

**2.2.23 *Labour Regulations, 2007 (LI 1833)***

The Labour Regulations, 2007 (L.I. 1833) provide detailed requirements relating to recruitment, employment conditions, working hours, leave entitlements, occupational safety, and disciplinary procedures. The Regulations are relevant to the compost plant project because they will guide the management of labour during both the construction and operational phases. Compliance with the Regulations will help ensure that workers are employed under fair conditions, receive appropriate wages and benefits, and work in safe and healthy environments.

**2.2.24 *Workmen's Compensation Act, 1987 (PNDCL 187)***

The Act provides for the payment of compensation to employees and for related matters and reinforces fair compensation for all workers. The project will ensure fair compensation for all employees.

**2.2.25 *National Pensions Act, 2008 (Act 766)***

The National Pensions Act, 2008 (Act 766) establishes the legal framework for pension contributions and retirement benefits for workers in Ghana. The Act requires employers to

register eligible employees under the national pension scheme and make regular pension contributions on their behalf. This Act is relevant to the project because both construction workers and permanent operational staff will need to be enrolled in the appropriate pension scheme in accordance with national requirements.

#### ***2.2.26 Children's Act, 1998 (Act 560)***

The Children's Act, 1998 (Act 560) provides protection for the welfare and rights of children and prohibits exploitative child labour. The Act also restricts the engagement of children in hazardous work. This Act is relevant to the project because the compost plant will involve potentially hazardous activities such as waste handling, machinery operation, and construction works. The project must therefore ensure that no children are employed in any aspect of the project.

#### ***2.2.27 Persons with Disability Act 2006, (Act 715)***

The Act advances equal rights and opportunities for persons with disabilities by prohibiting discrimination across family, education, employment, and public sectors. It requires the implementation of inclusive facilities and accessible infrastructure and establishes a National Council dedicated to advocacy, upholding dignity, and ensuring compliance with disability rights. The project will align with this Act by developing infrastructure that is accessible to individuals with disabilities and by promoting equal employment opportunities.

#### ***2.2.28 Affirmative Action (Gender Equity) Act, 2024 (Act 1121)***

The Affirmative Action Act, 2024 (Act 1121) promotes equal opportunity, gender inclusion, and equitable participation in employment and decision-making. The Act seeks to address discrimination and underrepresentation of women and vulnerable groups. The project will ensure fair recruitment practices, equal access to employment opportunities, and non-discrimination in the engagement of workers during both construction and operation.

#### ***2.2.29 Domestic Violence Act, 2007 (Act 732)***

The Domestic Violence Act, 2007 (Act 732) provides protection against physical, emotional, psychological, and economic abuse. The Act establishes measures for preventing and responding to domestic violence and abuse within society. The project because will ensure the prevention of prevent gender-based violence, abuse, intimidation, and harassment within the workplace and among project-affected communities.

#### ***2.2.30 Domestic Violence Regulations, 2016 (LI 2237)***

The Domestic Violence Regulations, 2016 (L.I. 2237) provide procedures for implementing the Domestic Violence Act, including reporting, investigation, and response mechanisms for cases of abuse and violence. The Regulations are relevant to the project because they support the establishment of grievance and reporting systems that can respond to allegations of abuse, harassment, or violence involving workers, contractors, or community members.

**2.2.31 Human Trafficking Act, 2005 (Act 694)**

The Human Trafficking Act, 2005 (Act 694) prohibits trafficking in persons, forced labour, and exploitative recruitment practices. The Act establishes penalties for individuals or organisations involved in human trafficking and labour exploitation. The project will ensure that no forced labour, coercive labour practices, or exploitative recruitment arrangements occur during construction or operation.

**2.2.32 Criminal Offences Act, 1960 (Act 29)**

The Criminal Offences Act, 1960 (Act 29) establishes criminal offences and penalties relating to assault, sexual harassment, rape, intimidation, indecent assault, and other forms of abuse. This Act is relevant to the project because it reinforces the need for codes of conduct, grievance procedures, and disciplinary measures to address any incidents of sexual harassment, violence, abuse, or other criminal behaviour involving workers or contractors.

**2.2.33 Renewable Energy Act, 2011 (Act 832)**

The Renewable Energy Act, 2011 (Act 832) establishes the framework for the development, management, and promotion of renewable energy in Ghana. The Act encourages the use of environmentally sustainable technologies and renewable energy resources. This Act is relevant to the compost plant because composting supports sustainable waste management, reduces methane emissions from organic waste disposal, and may create future opportunities for resource recovery and renewable energy generation from organic waste streams.

**2.2.34 Plants and Fertilizer Act, 2010 (Act 803)**

The Act provides for the efficient conduct of plant protection to prevent the introduction and spread of pests and diseases, to regulate imports and exports of plants and planting materials, the regulation and monitoring of the exports, imports, and commercial transactions in seeds and related matters, and control and regulation of fertilizer trade. The proponents of the proposed project will ensure that all monitoring mechanisms to prevent the spread of diseases from the product and the project site to the parts of the community/country are put in place.

**2.2.35 Plants Fertilizer Regulations, 2012, (LI 2194)**

This regulation safeguards farmers against misleading fertilizer claims, nutrient deficiencies, and adulteration while promoting private sector investment in Ghana's fertilizer industry. Additionally, it ensures environmental and public health protection from potential hazards associated with fertilizer use. The proposed project will ensure that the compost product meets quality standards to avoid misleading claims about its nutrient content. Compliance with fertilizer safety measures is crucial to safeguard human health, animals, and the environment. Additionally, the regulation fosters an enabling investment environment that encourages private-sector involvement in compost production.

**2.2.34 Wildlife Resources Management Act, 2023 (Act 1115)**

The Wildlife Resources Management Act, 2023 (Act 1115) provides the legal framework for the conservation, protection, and sustainable management of wildlife resources and their habitats in Ghana. The Act regulates activities that may affect wildlife species, establishes

provisions for the protection of endangered species, and promotes the sustainable use of biodiversity resources. It also provides for the designation and management of protected areas and outlines offences and penalties related to illegal exploitation or destruction of wildlife. This Act is relevant to the compost plant project because site preparation and construction activities, including vegetation clearance and land disturbance, may affect local flora and fauna, particularly in urban ecological areas such as those surrounding the Korle Lagoon.

### ***2.2.35 Riparian Buffer Zone Policy for Managing Freshwater Bodies in Ghana***

This policy was developed by the Water Resources Commission to protect rivers, streams, lakes, wetlands, and other freshwater resources from degradation caused by activities such as illegal mining, farming near water bodies, sand winning, deforestation, construction, and improper waste disposal. The policy promotes the preservation and restoration of vegetated buffer zones along water bodies to improve water quality, reduce erosion and flooding, conserve biodiversity, and enhance climate resilience. It is guided by principles of sustainable environmental management, integrated water resources management, and community participation, with implementation involving government institutions, local authorities, traditional leaders, and local communities to ensure the sustainable use and protection of Ghana's freshwater ecosystems.

## **2.3 National Environmental Quality Requirements**

The Ghana Standard Authority (GSA) has issued standards for the environment and health protection with ambient air quality, motor vehicle emissions, ambient noise control, effluent discharges and building as follows:

- GS 1236:2019 Environment and Health Protection – Requirements for Ambient Air Quality and Point Source/Stack Emissions
- GS 1219:2018 Environment and Health Protection – Requirements for Motor Vehicle Emissions
- GS 1222:2018 Health Protection – Requirements for Ambient Noise Control
- GS 1253:2018 Acoustics Guide for Measurement of Outdoor A-Weighted Sound Levels
- GS 1212:2019 Environment Protection – Requirements for Effluent Discharge.

The above standards are key Ghanaian Standards (GS) relevant to the construction and operation of the proposed composting project. Compliance with these standards is crucial for ensuring environmental protection, public health, and community acceptance of the facility. The standards address air quality, vehicle emissions, noise control, and effluent discharge, all of which are pertinent to composting activities.

### ***2.3.1 GS 1236:2019 Environment and Health Protection – Requirements for Ambient Air Quality and Point Source/Stack Emissions***

This standard establishes permissible limits for various air pollutants in ambient air and emissions from point sources, such as chimneys or stacks. It covers pollutants including particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>), nitrogen oxides (NO<sub>x</sub>), sulphur dioxide (SO<sub>2</sub>), carbon

monoxide (CO), and volatile organic compounds (VOCs). It also details monitoring methodologies and reporting obligations.

The composting processes can release odours, ammonia, and particulate matter, potentially impacting the air quality surrounding the plant. Compliance with GS 1236:2019 is essential to protect workers and nearby residents. If the plant utilizes combustion or drying systems, this standard sets critical emission limits for those processes. This standard serves as a guide for implementing effective air pollution control systems, such as scrubbers or bio filters, to mitigate emissions. Adherence to this standard will foster community trust and ensure the sustainable operation of the composting plant.

### ***2.3.2 GS 1219:2018 Environment and Health Protection – Requirements for Motor Vehicle Emissions***

This standard regulates exhaust emissions (hydrocarbons, carbon monoxide, NO<sub>x</sub>), smoke from diesel engines, and engine idling standards for motor vehicles. It applies to both gasoline and diesel engines and mandates regular vehicle testing and maintenance.

The transportation of organic waste to the plant and the distribution of finished compost involves vehicle traffic, which must comply with this standard. Internal vehicle fleets used for plant operations must also adhere to these emission regulations. Compliance with GS 1219:2018 will minimize on-site pollution and contribute to Accra's broader environmental goals.

### ***2.3.3 GS 1222:2018 Health Protection – Requirements for Ambient Noise Control***

This standard defines acceptable noise levels for various zones (residential, commercial, industrial) and time periods (day/night), specifying noise thresholds in decibels (dB), permitted hours for noisy operations, and monitoring and mitigation methods.

Composting equipment, such as grinders, turners, and sieves, can generate significant noise. Compliance with GS 1222:2018 is essential to minimize noise disturbance to surrounding communities. This standard necessitates careful scheduling of operations to reduce noise impact and the implementation of noise dampening measures, such as enclosures and vegetation buffers. Adherence to these regulations is crucial for maintaining positive community relations and protecting worker health.

### ***2.3.4 GS 1253:2018 Acoustics Guide for Measurement of Outdoor A-Weighted Sound Levels***

This technical standard provides guidelines for measuring outdoor sound levels using the A-weighting scale, which reflects human ear sensitivity to frequencies. It covers measurement protocols, instrument calibration, and data interpretation for regulatory compliance.

This standard supports the implementation of GS 1222:2018 by providing accurate methods for measuring noise generated by plant operations. The AMA and regulatory bodies to assess compliance can use the data obtained through these measurements. GS 1253:2018 ensures that

Environmental and Social Impact Assessment (ESIA) is informed by scientifically sound and credible noise data.

### **2.3.5 GS 1212:2019 Environment Protection – Requirements for Effluent Discharge.**

This standard establishes quality limits for effluents discharged into surface water bodies, public sewers, and groundwater systems. It covers parameters such as biological oxygen demand (BOD), chemical oxygen demand (COD), pH, suspended solids, heavy metals, and nutrients.

Leachate from organic waste can contaminate water sources if not properly managed. GS 1212:2019 guides the design of leachate treatment systems. It sets discharge limits to prevent environmental contamination and ensures that wastewater from cleaning and processing is treated safely. Compliance with this standard is vital for protecting Accra's water bodies and ensuring sustainable urban development.

## **2.4 International Environmental and Social Frameworks**

The proposed project is designed to align with relevant international guidelines, especially the IFC Performance Standards and AfDB ISS to ensure the project meets global best practices while addressing local environmental and social challenges effectively.

### **2.4.1 IFC Performance Standards, 2012**

The IFC applies its Performance Standards (PS) to manage social and environmental risks while enhancing developmental opportunities in project financing. These standards serve as an international benchmark for best practices in environmental and social management. For the proposed project, the IFC Performance Standards are adopted/applied to ensure sustainability throughout the project lifecycle. The proposed project triggers seven (7) out of the eight (8) IFC Performance Standards, and these are reviewed and summarized in Table 2.1.

**Table 2.1 IFC Performance Standards and Their Applicability to the Proposed Project**

| No.        | IFC Performance Standard (PS)                                           | Summary of Requirements                                                                                                                                                                                               | Applicability to the Proposed Project                                                                                                                                                                                                                                                                             |
|------------|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PS1</b> | Assessment and Management of Environmental and Social Risks and Impacts | Identify and evaluate environmental and social risks and impacts along the value chain, establish an Environmental and Social Management System (ESMS), engage stakeholders, and ensure grievance redress mechanisms. | <b>Triggered:</b> The proposed project impacts on both the biophysical environment and socio-cultural factors such as livelihoods. This ESIA identifies and evaluates the potential E&S risks associated with the project and proposes a feasible plan for managing these risks to ensure project sustainability. |
| <b>PS2</b> | Labour and Working Conditions                                           | Ensure compliance with national labour laws, fair treatment, non-                                                                                                                                                     | <b>Triggered:</b> The proposed project will employ direct workers for the construction phase and operational                                                                                                                                                                                                      |

| No.        | IFC Performance Standard (PS)                 | Summary of Requirements                                                                                                                                                                                 | Applicability to the Proposed Project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            |                                               | discrimination, safe working conditions, and grievance mechanisms for both formal and informal workers.                                                                                                 | activities as well as indirect workers such as informal waste collectors and other value chain actors. The project by complying with the National Employment Policy 2012 and Labour Act 2003 (Act 651) aligns well or also complies with IFC PS2 on workers' safety and work conditions which is key to the successful project implementation. The ESIA also addresses issues of child labour and forced labour.                                                                                                                                                                      |
| <b>PS3</b> | Resource Efficiency and Pollution Prevention  | This performance standard seeks to minimise adverse impacts on human health and the environment, promotes efficient use of resources, and reduces greenhouse gas emissions.                             | <b>Triggered:</b> The proposed project will pose risks of air and water pollution, hence the need for efficient resource utilization. The project is designed to reduce greenhouse gas emissions, a key objective of PS3.                                                                                                                                                                                                                                                                                                                                                             |
| <b>PS4</b> | Community Health, Safety, and Security        | To evaluate risks and impacts to community health and safety during the project lifecycle, establish preventive and control measures, and ensure security consistent with international best practices. | <b>Triggered:</b> The proposed project poses potential health and safety impacts on host and adjoining communities through waste handling, transportation, and facility operations. This ESIA provides measures for ensuring public health and safety of communities during project activities.                                                                                                                                                                                                                                                                                       |
| <b>PS5</b> | Land Acquisition and Involuntary Resettlement | This performance standard seeks to minimize displacement and adverse social impacts, ensures fair compensation, and promotes participatory engagement for affected communities.                         | <b>Triggered:</b> The project involves state-owned land that serves as an existing dumpsite, where informal waste collectors (scrap dealers) are operating. Although these individuals may not have formal ownership of the land, PS 5 recognizes that their livelihoods depend on the site, and the project may cause economic displacement by disrupting their activities. A Resettlement Action Plan, together with a Livelihood Restoration Plan, will be prepared to ensure that the scrap dealers are adequately compensated for the loss of access to the land for their work. |
| <b>PS6</b> | Biodiversity Conservation and Sustainable     | All clients/proponents should identify both direct and indirect project related                                                                                                                         | <b>Triggered:</b> The project will be implemented close to a river body, though polluted still support                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

| No.        | IFC Performance Standard (PS)          | Summary of Requirements                                                                                                                                                                                                                                                        | Applicability to the Proposed Project                                                                                                                                                                                                                                                                                                                                                                                               |
|------------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            | Management of Living Natural Resources | impacts that could potentially threaten biodiversity and ecosystem services. The following indicators should be used as a guide: habitat loss, degradation and fragmentation, invasive alien species, overexploitation, hydrological changes, nutrient loading, and pollution. | biodiversity. It is also within a coastal area which presents unique biodiversity and ecosystem services. Biodiversity studies show that the project construction activities will not threaten biodiversity resources as the site only hosts plant and animal species typical of abandoned wastelands. Though already degraded, there will be vegetation loss during site preparation which could potentially affect local species. |
| <b>PS7</b> | Indigenous Peoples                     | Protection of Indigenous Peoples, avoiding adverse impacts, and ensuring culturally appropriate benefits for affected communities.                                                                                                                                             | <b>Not Triggered:</b> No evidence of Indigenous Peoples in the project area.                                                                                                                                                                                                                                                                                                                                                        |
| <b>PS8</b> | Cultural Heritage                      | Protection of cultural heritage, ensuring equitable benefit-sharing, and applying chance-find procedures during construction.                                                                                                                                                  | <b>Triggered:</b> The people of the project area have rich cultural values and norms and also celebrate the Homowo festival. They also have value systems and taboos which would be respected throughout project implementation.                                                                                                                                                                                                    |

#### 2.4.2 Gap Analysis of the IFC Performance Standards and Ghanaian Environmental Assessment Regulations

A gap analysis was conducted to compare the relevant Ghanaian laws and regulations with the IFC Performance Standards. The purpose was to identify any discrepancies and align the project's implementation with international standards for environmental and social management. Based on the findings, strategies were developed to address gaps, integrate best practices, minimize environmental impacts, and enhance social benefits early in the project planning process.

Table 2.2. summarizes the key findings of the gap analysis, highlighting areas of alignment and discrepancies between the IFC Performance Standards and Ghanaian E&S regulations, along with the strategies proposed to address these differences.

**Table 2. 2** *Gap Analysis of the IFC Performance Standards and Ghanaian Environmental Assessment Regulations*

| No | Aspect                           | IFC Performance Standards                                                                                                                                                                        | Ghanaian Law and Regulation                                                                                                                              | Gap Analysis                                                                                                                                                                                    | Strategy for the Project                                                                                                                                                                                                                             |
|----|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | ESIA Requirement                 | PS 1 (Assessment and Management of Environmental and Social Risks and Impacts): Requires ESIA to assess and manage environmental and social risks and impacts, including stakeholder engagement. | Environmental Protection Act, 2025 (Act 1124): Environmental Protection (Environmental Assessment) Regulations, 2025 (LI 2504)                           | The EPA Act (Act 1124) strengthens social safeguards, including stakeholder engagement and social impact assessment, though it remains more general compared to IFC's specific focus on social. | Align ESIA scope with PS1 by integrating social risks and opportunities in the downstream and upstream value chain, stakeholder analysis, and a comprehensive Environmental and Social Management System (ESMS) in line with the EPA Act (Act 1124). |
| 2  | Resource Efficiency              | PS 3 (Resource Efficiency and Pollution Prevention): Requires a thorough Environmental and Social Impact Assessment (ESIA), with emphasis on resource efficiency and pollution prevention.       | Act 1124, LI 2504, LI 2507                                                                                                                               | Act 1124 has a stronger focus on pollution control and resource efficiency but lacks specific enforceable measures for resource optimization like IFC PS3.                                      | Enhance the ESIA to explicitly address resource efficiency, waste minimization, and pollution prevention measures aligned with Act 1124 and IFC PS3.                                                                                                 |
|    |                                  | PS 3 (Resource Efficiency and Pollution Prevention): Promotes the reduction of material and energy consumption and requires efficient use of resources like energy, water, and raw materials.    | National Climate Policy, GH-NDC, Accra Climate Action Plan (CAP) highlight general resource efficiency goals but lack binding implementation guidelines. | Lack of detailed and enforceable resource efficiency requirements in Ghanaian regulations.                                                                                                      | Incorporate quantifiable resource efficiency targets into project design, aligned with IFC PS 3 and Accra CAP goals.                                                                                                                                 |
| 3  | Pollution Prevention and Control | PS 3 (Resource Efficiency and Pollution Prevention): Requires projects to avoid or minimize pollution through control                                                                            | Act 1124, LI 2504, LI 2507 (Air Quality), LI 1692 (Hazardous Waste Management), Act 851 (Public Health Act).                                             | National laws address pollution prevention, but implementation gaps and lack of specific                                                                                                        | Develop specific pollution prevention strategies, including air quality ( $PM_{2.5} = 35(\mu g/m^3)$ and $PM_{10} = 70(\mu g/m^3)$ -GS1236-2019;                                                                                                     |

| No | Aspect                       | IFC Performance Standards                                                                                                                                                                           | Ghanaian Law and Regulation                                                                                                                                                                                                                                                                                                                            | Gap Analysis                                                                                                                                     | Strategy for the Project                                                                                                                                                                      |
|----|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                              | technologies and establish pollution prevention strategies (air, water, soil, and waste).                                                                                                           |                                                                                                                                                                                                                                                                                                                                                        | alignment with composting projects remain.                                                                                                       | SO <sub>3</sub> /NO <sub>2</sub> = 150(μg/m <sup>3</sup> ) -GS1236-2019) and leachate control, with measurable indicators aligned with the applicable IFC EHS Guidelines and Ghana Standards. |
|    | Waste Management             | PS 3 (Resource Efficiency and Pollution Prevention): Emphasizes waste minimization, reuse, and recycling; encourages proper disposal of hazardous and non-hazardous waste.                          | National Sanitation Policy, Ghana Landfill Guidelines, LI 1692 (Hazardous Waste).                                                                                                                                                                                                                                                                      | Ghanaian regulations focus on general waste disposal, with limited emphasis on composting-specific waste management or waste stream segregation. | Introduce detailed composting-specific waste management practices, including source separation and organic waste recovery, in line with IFC and Ghana Landfill Guidelines.                    |
| 4  | Stakeholder Engagement       | PS 1 (Assessment and Management of Environmental and Social Risks and Impacts): Requires continuous stakeholder engagement, including consultation and disclosure throughout the project lifecycle. | Section 27 of LI 2504 mandates stakeholder engagement during the environmental assessment process, including the development of a Stakeholder Engagement Plan for the lifecycle of the project. Section 24 of the LI 2504 also provides for public hearing in certain circumstances, including if the project will result in involuntary resettlement. | Strong provisions for continuous engagement in Ghanaian laws; focus is on stakeholder consultations and public hearings during the ESIA process. | Conduct stakeholder mapping, create an engagement plan, and ensure continuous consultation and disclosure per IFC PS1.                                                                        |
| 5  | Cumulative Impact Assessment | PS 1 (Assessment and Management of Environmental and Social Risks and Impacts): Requires assessment of cumulative impacts from project                                                              | . Required under Regulation 16(i) and 19(a) of LI 2504.                                                                                                                                                                                                                                                                                                | Ghanaian laws require cumulative impact assessment.                                                                                              | Initiate discussions with other nearby developments to assess and manage cumulative impact of projects within the project area                                                                |

| No | Aspect                            | IFC Performance Standards                                                                                                                                                                         | Ghanaian Law and Regulation                                                                                                                                                                                                                              | Gap Analysis                                                                 | Strategy for the Project                                                                                                                                                  |
|----|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                   | and external developments in the same area.                                                                                                                                                       |                                                                                                                                                                                                                                                          |                                                                              |                                                                                                                                                                           |
| 6  | Social Baseline and Inclusion     | PS 1 (Assessment and Management of Environmental and Social Risks and Impacts): Requires detailed social baseline studies, including vulnerable groups and gender considerations.                 | LI 2504 includes socio-economic assessments covering gender-based violence, child labour, sexual harassment, sexual exploitation and abuse and other social issues (Regulation 19(i)).                                                                   | Good emphasis on gender equity and social inclusion in national regulations. | Conduct comprehensive social baseline assessments to identify vulnerable populations and address gender-specific risks and opportunities, aligning with IFC requirements. |
| 7  | Grievance Redress Mechanism (GRM) | PS 1 (Assessment and Management of Environmental and Social Risks and Impacts): Requires formal, accessible, and culturally appropriate GRM for stakeholders and Project-Affected Persons (PAPs). | GRM is generally addressed informally in practice and softly mandated by LI 2504 ((i.e., not explicitly mandated in the main regulations, but listed as required content in the format for the EIS under Part B of the Third Schedule to the LI 2504). . | Minimal formalized GRM requirements in Ghanaian laws.                        | Establish a project-specific GRM aligned with IFC PS1, ensuring accessibility for all stakeholders and PAPs.                                                              |
|    |                                   | PS 2 (Labour and Working Conditions): Requires accessible grievance mechanisms for worker complaints, with timely and transparent resolution.                                                     | The Labour Act 2003 (Act 651, Part provides for grievance redress mechanisms but lacks clarity on structured timelines and resolutions.                                                                                                                  |                                                                              |                                                                                                                                                                           |
| 8  | Monitoring and Reporting          | PS 1 (Assessment and Management of Environmental and Social Risks and Impacts): Requires ongoing environmental and social monitoring, with                                                        | LI 2504 includes provisions for monitoring, but reporting is typically limited to the EPA without public disclosure requirements.                                                                                                                        | Lack of robust, transparent, and participatory monitoring frameworks.        | Establish a transparent monitoring and reporting system, with regular updates to stakeholders and public disclosure of results, as required by IFC.                       |

| No | Aspect                        | IFC Performance Standards                                                                                                                                                     | Ghanaian Law and Regulation                                                                                                 | Gap Analysis                                                                                                                                           | Strategy for the Project                                                                                                                                                                                                                                                                  |
|----|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                               | regular reporting to stakeholders and financiers.                                                                                                                             |                                                                                                                             |                                                                                                                                                        |                                                                                                                                                                                                                                                                                           |
| 9  | Risk Mitigation Hierarchy     | PS 1 (Assessment and Management of Environmental and Social Risks and Impacts): avoid-minimize-mitigate-compensate hierarchy for managing environmental and social risks.     | Ghanaian ESIA processes prioritize mitigation but lack a structured hierarchy for risk management.                          | Absence of a formalized risk mitigation hierarchy.                                                                                                     | Incorporate the risk mitigation hierarchy into the ESIA, ensuring risks are systematically avoided, minimized, and mitigated before resorting to compensation.                                                                                                                            |
| 10 | Climate Change Considerations | PS 1 (Assessment and Management of Environmental and Social Risks and Impacts): Requires incorporation of climate resilience and mitigation into project design.              | Ghana's National Climate Policy and Accra's Climate Action Plan promote climate mitigation but are not legally enforceable. | Limited enforcement of climate-related policies in project-level assessments.                                                                          | Integrate climate change mitigation and adaptation measures into project planning, referencing Ghana's NDC and the Accra Climate Action Plan to align with IFC standards.                                                                                                                 |
| 11 | Health and Safety Standards   | PS 1 (Assessment and Management of Environmental and Social Risks and Impacts): Requires identification and mitigation of health and safety risks to workers and communities. | Ghanaian Labour Act 651 and Public Health Act 851 cover worker and community health but lack comprehensive implementation.  | Implementation and enforcement of health and safety measures are inconsistent due to limited inspections and weak compliance mechanisms under Act 651. | Develop a comprehensive Health, Safety, and Environmental (HSE) management plan that addresses risks to workers and communities, ensuring compliance with IFC guidelines. Conduct thorough risk assessments, implement robust HSE measures, and establish an effective monitoring system. |
|    |                               | PS 2 (Labour and Working Conditions): Promotes safe, healthy, and conducive working conditions, aligned with ILO standards.                                                   | Labour Act 2003 (Act 651) requires employers to ensure worker safety and health but lacks rigorous enforcement.             |                                                                                                                                                        |                                                                                                                                                                                                                                                                                           |

| No | Aspect                              | IFC Performance Standards                                                                                                                                                                           | Ghanaian Law and Regulation                                                                                                                                                                 | Gap Analysis                                                                                              | Strategy for the Project                                                                                                                                                 |
|----|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                     | PS 4 (Community Health, Safety and Security): Provides for the protection of community rights, but does not explicitly cover specific environmental and social issues in project-specific contexts. | Constitution of Ghana, 1992 EPA Act, 1994 (Act 1124): General provisions for environmental protection, though specific to broader environmental impacts, not tailored for waste management. | Some gaps in specific application to environmental and social safeguards for projects.                    | Ensure the project aligns with the constitutional rights regarding the environment and social inclusion through detailed project-specific assessments and consultations. |
| 12 | Fair Treatment & Non-Discrimination | PS 2 (Labour and Working Conditions): Requires non-discrimination in employment, equal opportunity, and inclusion (e.g., gender, disability).                                                       | The 1992 Constitution (Article 17) prohibits discrimination based on gender, race, or religion.                                                                                             | Ghanaian law lacks specific enforcement mechanisms and detailed guidelines on workplace inclusivity.      | Develop clear workplace policies on non-discrimination aligned with IFC and ILO standards; provide staff training.                                                       |
| 13 | Workers' Organizations              | PS 2 (Labour and Working Conditions): Recognizes the right of workers to form and join unions.                                                                                                      | The Labour Act (Act 651, Part XII) guarantees unionization rights and collective bargaining.                                                                                                | Enforcement of union rights in private projects is weak, with limited oversight mechanisms.               | Facilitate union engagements; establish grievance mechanisms that respect IFC PS2 and Ghanaian regulations.                                                              |
| 14 | Contractor Management               | PS 2 (Labour and Working Conditions): Requires oversight of contractors to ensure compliance with labour and OHS standards.                                                                         | No specific Ghanaian regulation comprehensively addresses contractor management and adherence to labour/OHS standards.                                                                      | Absence of robust oversight mechanisms for contractor compliance.                                         | Require contractors to submit detailed compliance plans, with regular monitoring and audits by project teams.                                                            |
| 15 | Child labour                        | PS 2 (Labour and Working Conditions): Prohibits employment of children under 18 for hazardous work; aligns with ILO Conventions.                                                                    | Children's Act 1998 (Act 560) prohibits child labour under age 18, with strict penalties for hazardous work violations.                                                                     | Ghanaian law aligns broadly with IFC requirements, but implementation in informal sectors is a challenge. | Implement strict age verification systems and contractor compliance monitoring for child labour policies.                                                                |

| No | Aspect                                        | IFC Performance Standards                                                                                                                                                | Ghanaian Law and Regulation                                                                                                                                                                                                             | Gap Analysis                                                                       | Strategy for the Project                                                                                                                                                                                                                                                                                                              |
|----|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16 | Biodiversity and Ecosystem Services           | PS 6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources): conserving biodiversity and managing ecosystems sustainably.                    | The 1992 Constitution guarantees the right to a healthy environment, while the Wildlife and Forest Policy (2012) and LI 2504 address biodiversity and ecosystem protection, albeit with less stringent standards than IFC requirements. | Limited focus on ecosystem services and critical habitats in national regulations. | Conduct a detailed biodiversity assessment emphasizing ecosystem services and critical habitats and implement mitigation measures in compliance with IFC standards. Align the ESIA with constitutional provisions on environmental rights, ensuring public participation and community consultations as mandated by the constitution. |
|    |                                               | PS 1 (Assessment and Management of Environmental and Social Risks and Impacts): Emphasizes protection of biodiversity, critical habitats, and ecosystem services.        |                                                                                                                                                                                                                                         |                                                                                    |                                                                                                                                                                                                                                                                                                                                       |
| 17 | Land Acquisition and Involuntary Resettlement | PS 5 (Land Acquisition and Involuntary Resettlement): Focuses on land acquisition, resettlement, and social impacts                                                      | National laws (e.g., 1992 Constitution, Act 1036, Act 767): general rights are protected, provide compensation for displacement but focus less on livelihood restoration.                                                               | Limited focus on livelihood restoration                                            | Develop a Resettlement Action Plan (RAP)/Livelihood Restoration Plan (LRP) that aligns with IFC Performance Standard 5, including stakeholder consultation and grievance mechanisms.                                                                                                                                                  |
|    |                                               | PS 1 (Assessment and Management of Environmental and Social Risks and Impacts): Avoid or minimize displacement; ensure livelihood restoration where resettlement occurs. |                                                                                                                                                                                                                                         |                                                                                    |                                                                                                                                                                                                                                                                                                                                       |

| No | Aspect                  | IFC Performance Standards                                                                                                                                                                                  | Ghanaian Law and Regulation                                                                                                                                                                                                                                                               | Gap Analysis                                                                                                                                                                                                                                   | Strategy for the Project                                                                                                                                                                                                                             |
|----|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18 | Vulnerability           | PS 7 (Indigenous Peoples): Safeguards the rights of indigenous peoples, respecting their culture, lands, and knowledge, and mandates free, prior, and informed consent (FPIC) for projects affecting them. | The 1992 Constitution grants broad environmental rights, including the protection of natural resources, while the EPA Act 1124 establishes the framework for environmental protection.                                                                                                    | The 1992 Constitution provides no detailed guidance on social sustainability or environmental management, while the EPA Act 1124 lacks specific social safeguards, human rights considerations, and clear stakeholder engagement requirements. | Align with constitutional goals by integrating relevant laws and frameworks, emphasizing social safeguards, consultations, and human rights in accordance with Ghanaian and IFC standards.                                                           |
| 19 | Cultural heritage sites | PS 8 (Protection of cultural heritage, ensuring equitable benefit-sharing, and applying chance-find procedures during construction)                                                                        | Ghana Museums and Monuments Board Act, 1994 (Act 481) establishes framework to survey, document, preserve, and protect national monuments and the National Commission on Culture Act, 1999 (Act 595) also ensures the protection of both tangible and intangible cultural assets in Ghana | The local laws have no clear-cut guidelines on benefit sharing from cultural heritage and chance find                                                                                                                                          | The communities have beautiful culture and customs including festivals (Homowo) and traditional customs including pouring of libation. PS 8 will be triggered to protect these customs and festivals as well as any chance find during construction. |

### 2.4.3 AfDB Integrated Safeguards System

The AfDB's ISS is an integral part of the Bank's support system for promoting socioeconomic growth and environmental sustainability across Africa. It is expected that all programs and projects funded by the Bank adhere to the requirements outlined in the ISS framework, which consists of ten (10) environmental and social Operational Safeguard (OS) areas. The framework is designed to prevent/reduce adverse effects on the environment and people. The project will comply with the ISS throughout the project's life cycle, ensuring that all projects meet the safeguard requirements. As such, this ESIA has been prepared in alignment with the ISS.

Nine (9) out of the ten (10) Operational Safeguards are applicable to the project and these are reviewed and summarized in Table 2.3.

**Table 2.3 AfDB Operational Safeguards and Their Applicability to the Project**

| No.         | AfDB Operational Safeguard                                            | Summary of Requirements                                                                                                                                                                                                                     | Applicability to the Proposed Project                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OS 1</b> | Assessment and Management of Environmental and Social Risk and Impact | Identify and evaluate environmental and social risks and impacts along the value chain, establish an Environmental and Social Management System (ESMS), engage stakeholders, and ensure grievance redress mechanisms.                       | The proposed project impacts on both the biophysical environment and socio-cultural factors such as livelihoods. This ESIA identifies and evaluates the potential E&S risks and impacts associated with the project and proposes a feasible plan for managing these risks and impacts to ensure project sustainability.                                                                                                                                                                                  |
| <b>OS 2</b> | Labour and Working Conditions                                         | The objective of OS 2 is to promote fair treatment, non-discrimination, and equal opportunity for project workers, and to ensure safe and healthy working conditions, in line with national labour laws and international labour standards. | The proposed project will employ direct workers for the construction phase and operational activities as well as indirect workers such as informal waste collectors and other value chain actors. The project by complying with the National Employment Policy 2012 and Labour Act 2003 (Act 651) aligns well or also complies with OS 2 on workers' safety and work conditions which is key to the successful project implementation. The ESIA also addresses issues of child labour and forced labour. |
| <b>OS 3</b> | Resources Efficiency and Pollution Prevention and Management          | OS 3 aims to promote the sustainable use of natural resources, including water and energy, and to avoid or minimise pollution arising from project activities, including emissions, effluents, waste, and hazardous materials.              | The proposed project will pose risks of air and water pollution, hence the need for efficient resource utilization. The project is designed to reduce greenhouse gas emissions, a key objective of OS 3.                                                                                                                                                                                                                                                                                                 |

| No.         | AfDB Operational Safeguard                                                                    | Summary of Requirements                                                                                                                                                                                                 | Applicability to the Proposed Project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OS 4</b> | Community Health, Safety and Security                                                         | The objective of OS 4 is to protect communities from potential health, safety, and security risks arising from project activities and to ensure that such risks are anticipated and effectively managed.                | The proposed project poses potential health and safety impacts on host and adjoining communities through waste handling, transportation, and facility operations. This ESIA provides measures for ensuring public health and safety of communities during project activities.                                                                                                                                                                                                                                                                                       |
| <b>OS 5</b> | Land Acquisition, Restriction on Access to Land and Land Use, and Involuntary Resettlement    | OS 5 seeks to avoid or minimise involuntary resettlement and economic displacement, and where unavoidable, to ensure that affected persons are fairly compensated and assisted to restore or improve their livelihoods. | The project involves state-owned land that serves as an existing dumpsite, where informal waste collectors (scrap dealers) are operating. Although these individuals may not have formal ownership of the land, OS 5 recognizes that their livelihoods depend on the site, and the project may cause economic displacement by disrupting their activities. A Resettlement Action Plan, together with a Livelihood Restoration Plan, will be prepared to ensure that the scrap dealers are adequately compensated for the loss of access to the land for their work. |
| <b>OS 6</b> | Habitat and Biodiversity Conservation, and Sustainable Management of Living Natural Resources | The objective of OS 6 is to protect and conserve biodiversity and natural habitats, maintain ecosystem services, and promote the sustainable management of living natural resources.                                    | The project will be implemented close to a river body, though polluted still support biodiversity. It is also within a coastal area which presents unique biodiversity and ecosystem services. Biodiversity studies show that the project construction activities will not threaten biodiversity resources as the site only hosts plant and animal species typical of abandoned wastelands. Though already degraded, there will be vegetation loss during site preparation which could potentially affect local species.                                            |
| <b>OS 7</b> | Vulnerable Groups                                                                             | OS 7 aims to ensure that vulnerable and marginalised groups are not disproportionately affected by project impacts and that they equitably benefit from project interventions.                                          | The ESIA identified the following vulnerable groups within the project communities: informal waste pickers/workers (scrap dealers), women-headed households and migrants. The project will implement measures to reduce any potential adverse impacts on these groups.                                                                                                                                                                                                                                                                                              |

| No.          | AfDB Operational Safeguard                        | Summary of Requirements                                                                                                                                                            | Applicability to the Proposed Project                                                                                                                                                                                                                                                                                                                                                                     |
|--------------|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OS 8</b>  | Cultural Heritage                                 | The objective of OS 8 is to protect tangible and intangible cultural heritage from adverse impacts of project activities and to promote respect for cultural values and practices. | The people of the project area have rich cultural values and norms and also celebrate the Homowo festival. They also have value systems and taboos which would be respected throughout project implementation. The project will implement chance find procedures and engage relevant traditional authorities and regulatory agencies in the event of any cultural heritage discoveries during excavation. |
| <b>OS 10</b> | Stakeholder Engagement and Information Disclosure | OS 10 seeks to ensure transparent information disclosure, meaningful stakeholder engagement, and effective grievance redress throughout the project lifecycle.                     | The project will comply with OS 10 by implementing the Stakeholder Engagement Plan, disclosing project information in accessible formats, conducting regular consultations, and maintaining a functional grievance redress mechanism to address concerns from project-affected persons and other stakeholders.                                                                                            |

## 2.5 Applicable International Conventions and Requirements

Ghana is a signatory to several international and regional conventions and agreements related to industry development and environmental management. These conventions provide a legal and policy framework that complements Ghana's national regulations and guides the environmental and social management of the proposed project. Below is an overview of the key conventions and their relevance to the project.

### 2.5.1 United Nations Framework Convention on Climate Change (UNFCCC)

The United Nations Framework Convention on Climate Change (UNFCCC) establishes a foundation for international efforts to address climate change. The Convention outlines an overall structure for government collaboration to address issues related to changes in the climate system, which is recognized as a shared resource affected by emissions from industrial and other sources, including carbon dioxide and other greenhouse gases. Ghana participates in the UNFCCC through initiatives such as the proposed Municipal Solid Waste Source Separation and compost plant project. This project aims to decrease reliance on landfill disposal, consistent with the UNFCCC's objective of reducing greenhouse gas emissions. Organic waste left in landfills decomposes anaerobically and produces greenhouse gases. The project applies composting technologies and methods designed to treat organic waste efficiently while preventing methane emissions. When operating at full capacity (466 tonnes per day), the plant is expected to process 170,090 tonnes of organic waste annually and achieve a greenhouse gas reduction of about 197,490 tCO<sub>2</sub>eq, or 25,513.5 tonnes of CO<sub>2</sub> equivalent per year if operated year-round. Even under ramp-up conditions, the plant's average annual waste processing would result in significant emission reductions, illustrating Ghana's alignment with its Nationally Determined Contributions (NDCs) under the UNFCCC.

### **2.5.2 Paris Agreement**

The Paris Agreement aims to limit global temperature rise below 2°C, striving for 1.5°C. This project supports Ghana's commitments by implementing climate-smart waste management, using resource-efficient and low-emission technologies to cut methane emissions. By diverting organic waste from landfills, the facility can reduce GHG emissions by an average of 8,479.1 tonnes of CO<sub>2</sub>e annually when processing 56,527.5 tonnes of waste. As capacity grows, climate mitigation benefits increase. The project also promotes a circular economy by converting organic waste into compost, improving soil fertility and reducing chemical fertilizer use, thus supporting sustainable development.

### **2.5.3 Convention on Biological Diversity (CBD)**

The Convention on Biological Diversity (CBD) is an international treaty focused on conserving biodiversity, promoting sustainable use of biological resources, and ensuring fair benefit-sharing from genetic resources. Established at the 1992 Earth Summit and effective since 1993, it stresses protecting biodiversity for ecological balance and ecosystem resilience. The proposed project supports CBD objectives by adopting the Covered Aerated Static Pile (CASP) composting system, which reduces environmental contamination and prevents habitat loss associated with landfills. This system produces nutrient-rich compost to boost soil health and promote sustainable agriculture. Baseline and ongoing monitoring of soil and water quality further demonstrate the project's commitment to biodiversity conservation.

### **2.5.4 ILO Conventions**

The Convention Concerning the Protection of Workers against Occupational Hazards in the Working Environment due to Air Pollution, Noise, and Vibration (ILO No. 148) requires minimizing workplace risks from air pollution, noise, and vibration, primarily through technical or organizational measures. The project aligns with key ILO Conventions on occupational health and safety, such as Nos. 187, 161, 87, 98, 102, 111, and 182, by using advanced technologies, operational best practices, and compliance with national labour laws. The CASP system reduces workers' exposure to hazardous substances per ILO No. 148. Additional support through PPE provision, worker training, and integrating informal sector workers into formal waste management further reinforces ILO standards for safe, fair, and inclusive labour environments.

### **2.5.5 Basel Convention**

The Basel Convention governs the transboundary movement and disposal of hazardous waste, providing guidelines for identifying, classifying, and managing such materials—including spent chemicals, fertilizers, contaminated soils, and construction waste. It requires prior informed consent from importing and transit countries and emphasizes environmentally sound management to protect health and the environment. The composting plant project will comply with the Convention by implementing protocols for safe storage, transport, disposal, and regular audits of hazardous waste. Advanced technologies like biofilters and pollution controls will minimize environmental impact, ensuring adherence to international standards and fulfilling Ghana's obligations under the Basel Convention.

### **2.5.6 *Stockholm Convention***

The Stockholm Convention on Persistent Organic Pollutants (POPs) is a global treaty that aims to protect health and the environment by eliminating or restricting harmful chemicals that persist and accumulate in ecosystems. Adopted in 2001 and effective since 2004, it targets the production, use, and release of specific POPs, aiming to reduce pollution from industry, waste, and agriculture. The CASP composting project supports these goals by preventing methane generation and limiting POPs emissions like dioxins and furans, ensuring compost remains free of hazardous substances and promoting sustainable development and public health.

### **2.5.7 *Rotterdam Convention***

The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade is an international treaty designed to foster shared responsibility and collaborative efforts regarding the global movement of hazardous chemicals and pesticides. The Convention ensures the systematic exchange of information among member countries pertaining to the properties, associated risks, and safe management practices of these substances. This project aligns with the principles of the Convention by advancing informed decision-making in the management of chemicals and hazardous materials. Through rigorous testing and certification of compost products—including adherence to quality assurance protocols and the provision of material safety data sheets (MSDS)—the project guarantees that end-users receive comprehensive and accurate information about the characteristics of the compost.

### **2.5.8 *African Union Agenda 2063***

The proposed composting plant is aligned with Agenda 2063: The Africa We Want, particularly in relation to specific aspirations. Under Aspiration 1, which focuses on inclusive growth and sustainable development, the project aims to promote environmentally sustainable growth by reducing greenhouse gas emissions, improving agricultural productivity, and restoring soil fertility through composting. It provides waste management solutions intended to minimize environmental degradation and support climate-resilient economies. Aspiration 3, which relates to governance, democracy, human rights, justice, and the rule of law, is addressed through the project's approach to stakeholder engagement and accountability, including the development of public-private partnerships (PPPs) and efforts to involve communities and stakeholders in its planning and implementation.

The project addresses Aspiration 4 by aiming to mitigate environmental risks and decrease reliance on landfills, which can contribute to resource conflicts. For Aspiration 6, which focuses on fostering a people-driven Africa by utilising the potential of its population, the project seeks to include marginalized groups—such as women and informal waste workers—by formalizing their roles and providing economic opportunities within the waste value chain. Additionally, the project supports Aspiration 7, which promotes a strong, united, resilient, and influential Africa on the global stage. Through alignment with international frameworks like the Paris Agreement and the UNFCCC, the composting plant signals participation in global sustainability efforts and positions Ghana within ongoing climate action and waste management initiatives.

### 2.5.9 *Applicable Sustainable Development Goals*

The composting plant project aligns with several Sustainable Development Goals (SDGs) established by the United Nations, demonstrating its commitment to fostering environmental sustainability, social inclusion, and economic growth. The SDGs particularly relevant to the project has been presented in Table 2.4.

**Table 2. 4** *Applicable Sustainable Development Goals (SDGs) and Their Relevance to the CFF Composting Plant Project*

| SDG    | Goal                                   | Relevance to the Project                                                                                           |
|--------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| SDG 3  | Good Health and Well-Being             | By reducing air pollution, odours, and waste-borne diseases, the project improves community health and well-being. |
| SDG 6  | Clean Water and Sanitation             | Leachate treatment systems and controlled waste management minimize water contamination and promote sanitation.    |
| SDG 8  | Decent Work and Economic Growth        | Creates jobs along the waste value chain, including formalizing the roles of informal sector workers.              |
| SDG 11 | Sustainable Cities and Communities     | Reduces landfill dependency, enhances waste management, and promotes circular economy principles.                  |
| SDG 12 | Responsible Consumption and Production | Promotes recycling and composting, encouraging waste segregation and reducing reliance on chemical fertilizers.    |
| SDG 13 | Climate Action                         | Reduces methane emissions from landfills and contributes to Ghana's climate commitments under the Paris Agreement. |
| SDG 15 | Life on Land                           | Supports soil fertility restoration and biodiversity conservation by replacing chemical fertilizers with compost.  |

### 2.5.10 *Other Applicable Treaties and Conventions*

A summary of other treaties and conventions applicable to the project have been presented in Table 2.5.

**Table 2. 5** *Treaties and Conventions Applicable to the Project*

| Name of the Convention                                                                                                                          | Date of Ratification by Ghana | Objective of the Convention                                                                                                                | Aspects Related to the Project                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), also known as the Washington Convention, March 3, 1973 | April 28, 1975                | Treaty developed to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species. | Protection of the biodiversity in the surrounding area of the Project. |

| Name of the Convention                                                      | Date of Ratification by Ghana | Objective of the Convention                                                                                                                                                                                                                                                                                                                                                                                | Aspects Related to the Project                                        |
|-----------------------------------------------------------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| International Union for Conservation of Nature and Natural Resources (IUCN) | May 17, 1969                  | Founded in 1948, the International Union for Conservation of Nature and Natural Resources (IUCN) is an international organisation working on natural resources protection and sustainable use. The IUCN is the world's main authority on the conservation status of species. IUCN established a red list set upon precise criteria to evaluate the extinction risk of thousands of species and subspecies. | Protection of the biodiversity in the surrounding area of the Project |

## 2.6 Institutional Framework and Mechanisms

Key waste management sector agencies, as well as other stakeholder institutions whose statutory functions relate to the sector or activities thereof include the following:

- **AMA** – The AMA is the project proponent and is responsible for the overall management of the project.
- **Greater Accra Regional Coordinating Council** – Coordinate the participation of other municipal assemblies regarding the collection and transportation of organic waste.
- **EPA** – The EPA is responsible for regulating environmental matters and implementing government policies related to the environment. The Authority's functions include:
  - Overseeing compliance with environmental impact assessment procedures during the planning and execution of development projects, including existing projects.
  - Supporting effective planning in environmental management.
  - Imposing and collecting environmental protection levies as outlined by the Environmental Protection Act 2025 (Act 1124), or relevant regulations.
  - Collaborating with government agencies, District Assemblies, and other organizations to control pollution and protect the environment.
- The project proponent will adhere to all EPA procedures throughout the project's implementation.
- **Lands Commission, especially Land Valuation Division** – Will play an important role in relation to land acquisition, valuation of affected assets, and compensation arrangements for scrap dealers and informal waste workers who may be displaced from the project site. The Land Valuation Division is responsible for assessing the value of land, structures, and other assets that may be affected by public projects. In the context of the compost plant project, the Division may support the determination of fair compensation rates for affected persons, including compensation for lost

structures, temporary workspaces, loss of livelihood, or other economic assets. The Commission may also provide guidance on documentation, valuation procedures, and resolution of disputes relating to compensation and resettlement.

- **National labour Commission** – Responsible for promoting fair labour practices and resolving labour disputes in Ghana. Its mandate includes addressing complaints related to unfair treatment, wrongful dismissal, discrimination, and non-compliance with labour laws. In relation to the compost plant project, the Commission may play a role if disputes arise between workers and contractors or between workers and the plant operator regarding wages, working conditions, termination of employment, or other labour-related matters. The Commission may also provide mediation services and guidance on compliance with labour legislation.
- **Department of Labour** – Responsible for monitoring compliance with labour laws and ensuring acceptable working conditions. The Department oversees matters relating to contracts of employment, wages, working hours, occupational safety, child labour, and labour inspections. For the compost plant project, the Department may conduct inspections during both the construction and operation phases to verify that workers are employed under lawful conditions and that the project complies with labour standards relating to wages, hours of work, occupational health and safety, and prohibition of child labour.
- **Department of Factories Inspectorate** – Responsible for enforcing occupational health and safety standards in factories, industrial facilities, and workplaces. Its mandate includes inspection of machinery, equipment, workplace conditions, and worker safety practices to ensure compliance with national health and safety requirements. In relation to the compost plant project, the Department may inspect the construction site and operational facility to verify that machinery, composting equipment, electrical systems, and working conditions are safe for workers. The Department may also provide guidance on accident prevention, safe handling of equipment, use of personal protective equipment, and compliance with workplace safety requirements.
- **Ghana National Fire Service** – Responsible for fire prevention, fire safety inspections, emergency response, and public education on fire risks. The Service reviews fire safety arrangements in buildings and industrial facilities and may issue fire safety recommendations or approvals where necessary. In relation to the compost plant project, the Service may inspect the facility during both the construction and operation phases to ensure that adequate fire prevention and response measures are in place. This may include review of fire extinguishers, water supply for firefighting, emergency exits, electrical systems, fuel storage areas, and procedures for responding to fire outbreaks involving machinery, fuel, or combustible organic waste.
- **National Disaster Management Organisation (NADMO)** – Responsible for coordinating disaster preparedness, response, and recovery activities in Ghana. The organisation manages emergencies such as floods, fires, storms, industrial accidents, and other hazards that may affect communities or infrastructure. In relation to the compost plant project, the organisation may support emergency preparedness planning,

response to major incidents such as fire outbreaks or flooding, and coordination with other emergency services if significant emergencies occur at the facility.

- **Domestic Violence and Victims' Support Unit (of the Ghana Police Service)** – Responsible for investigating cases involving domestic violence, sexual abuse, harassment, assault, child abuse, and other forms of violence. In the context of the compost plant project, DOVVSU may become involved if there are cases of sexual harassment, gender-based violence, abuse of workers, or violence affecting community members in connection with project activities. DOVVSU may support investigations, victim protection, and referral of cases for prosecution where necessary.
- **Domestic Violence Secretariat** – Responsible for coordinating implementation of policies and programmes relating to domestic violence prevention and victim support. The Secretariat promotes public awareness, institutional coordination, and support services for victims of abuse. In relation to the compost plant project, the Secretariat may provide guidance on prevention of gender-based violence, support for affected persons, and integration of appropriate grievance and reporting systems within the project.
- **Child-Friendly Gender-based Violence Courts** – Specialised courts established to handle cases involving gender-based violence, child abuse, sexual offences, and related matters in a manner that is sensitive to victims, particularly children. These courts are designed to reduce trauma for victims during legal proceedings and ensure more effective handling of such cases. In the context of the compost plant project, these courts may become relevant if cases of child abuse, sexual exploitation, harassment, or gender-based violence associated with workers, contractors, or affected communities require formal legal action.
- **Ghana Standards Authority** – The Ghana Standards Authority (GSA) establishes and enforces quality, safety, and environmental standards within Ghana. Certification by the GSA for the composting project confirms that both compost products and operational processes comply with national regulatory requirements. This certification contributes to improved public health, increased consumer confidence, and the advancement of sustainable waste management practices.
- **Ministry of Employment and Labour Relations** – Responsible for formulating, coordinating, and implementing policies related to employment, labour administration, occupational safety and health, and industrial relations in Ghana. The Ministry provides oversight of labour institutions, promotes decent work, and ensures compliance with national labour laws and international labour standards.
- **Ministry of Local Government, Chieftaincy and Religious Affairs** – The Ministry of Local Government Chieftaincy and Religious Affairs aims to create a strong decentralized local government system in Ghana to ensure good governance and balanced rural development. It oversees metropolitan, municipal, and district assemblies. Key roles include developing and coordinating governance reform policies, strengthening local governments for resource mobilization, promoting community participation, supporting clean environments and horticulture, improving demographic data, and encouraging organized settlement growth. The proposed project is based in

Accra and led by the AMA, with input from the Greater Accra Regional Coordinating Council.

- **Ministry of Food and Agriculture** – The Ministry is Ghana's lead agency for agricultural policy, coordinating sector-wide plans to support national socio-economic development. It has overseen key initiatives such as FASDEP II, METASIP (2010-15), Planting for Food and Jobs (I & II), and the National Agriculture Investment Plan (IFJ). The Ministry aims to modernize agriculture, supporting food security, job creation, and poverty reduction through sustainable practices, research, technology, extension services, and support for agribusinesses. Additionally, through PPRSD, it certifies compost sales and provides extension services to ensure product quality and sustainability for farmers.
- **Ministry of Gender, Children and Social Protection** – The Ministry of Gender, Children and Social Protection (MoGCSP) is responsible for coordinating social protection interventions and safeguarding the welfare of vulnerable populations in Ghana. The Ministry will play a supportive role by facilitating the linkage of the scrap dealers to national social protection programmes such as the LEAP Programme and other social assistance initiatives where feasible.
- **Metropolitan, Municipal and District Assemblies** –
  - Accra Metropolitan Assembly (AMA)
  - Ashiedu Keteke Sub-Metro
  - Ablekuma South Sub-Metro
  - Ablekuma Central Municipal Assembly
  - Okaikwei South Sub-Metro
  - Okaikwei North Municipal Assembly
  - Ayawaso Central Municipal Assembly
  - Ayawaso East Municipal Assembly
  - Ayawaso North Municipal Assembly
  - Ayawaso West Municipal Assembly
  - Osu Klotey Municipal Assembly
- **Resource Management Institutions** –
  - Water Resources Commission
  - Wildlife Division of Forestry Commission – Department of Wetlands
  - Fisheries Commission under the Ministry of Food and Agriculture
  - Ghana Wildlife Society
  - Water Research Institute of Council for Scientific and Industrial Research
  - Environmental Service Providers Association (ESPA)

## 2.7 Relevant Legal Approvals – Permits and Licenses

The project requires revised by-laws to enforce source-separated waste collection, ensuring proper segregation of organic, recyclable, and residual waste. The city's existing by-laws permit franchise agreements with private Formal Service Providers (FSPs) for MSW collection but do not mandate source separation. To address this gap, the city is revising its by-laws under

the C40 Climate Action Implementation (CAI) project to make source separation compulsory. The updated regulations will be enacted before the commencement of source-separated MSW collection.

Additionally, franchise agreements will be established for FSPs, incorporating performance-based incentives and penalties to ensure compliance with the project's waste management standards. The franchise agreement structure assigns each FSP an exclusive geographic collection zone, ensuring clear operational boundaries and accountability. Compensation models vary, including fixed fees per household served, payments based on the tonnage of waste collected, or remuneration tied to collection frequency (e.g., weekly or biweekly). Funding sources comprise municipal subsidies or direct payments from households and businesses. These regulatory measures will support the effective and sustainable operation of the compost plant. The relevant approvals for the project are outlined in Table 2.1. This list is indicative and will be updated as the project design evolves.

**Table 2. 6      Key Regulatory Approvals**

| License/Permit                                                                                         | Regulatory Body                                                                              | Project Phase/Remarks                                                           |
|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Environmental permit                                                                                   | Environmental Protection Authority                                                           | Following Acceptance of ESIS. Prior to construction                             |
| Environmental Certificate                                                                              |                                                                                              | After 24 months. Following preparation of ESMP                                  |
| Waste disposal permits                                                                                 | Local Authorities within project corridor                                                    | For a designated waste disposal site                                            |
| Fire Permit/ Certificate                                                                               | Ghana National Fire Service                                                                  | Construction of office buildings/ facilities                                    |
| Development and Building permit                                                                        | Accra Metropolitan Assembly                                                                  | Prior to construction of facilities                                             |
| Site Acquisition                                                                                       | Ministry of Local Government / Accra Metropolitan Assembly                                   | Prior to construction of facilities                                             |
| Plants Protection Regulatory Services Directorate (PPRSD)                                              | Ministry of Food and Agriculture                                                             | Prior to compost production for the organic fertiliser product and the producer |
| Certificate of Registration of Fertilizer Product & Certificate of Registration of Fertilizer Producer | Plants Protection Regulatory Services Directorate (PPRSD) - Ministry of Food and Agriculture | Prior to compost production for the organic fertiliser product and the producer |
| Certificate of registration                                                                            | Factories Inspectorate Department                                                            | Construction and the operation phase                                            |
| Standards for compost quality                                                                          | Ghana Standards Authority/MoFA - PPRSD                                                       | Operation phase – Quality standards for the compost                             |

### **3.0 PROJECT DESCRIPTION AND ALTERNATIVES**

#### **3.1 Project Location and Adjoining Land Uses**

The proposed composting plant will be located in Jamestown, within the Ashiedu Keteke Sub-Metro of Accra Metropolitan Assembly, in the Greater Accra Region of Ghana. The facility will be located on a 1.77 ha parcel of land (refer to Appendix 4 for the site plan), situated adjacent to the Korle Lagoon to the west (Figure 3.1).

In line with IFC PS 1, the Area of Influence (AoI) for the proposed project includes both the project footprint and its broader impact zone. The primary AoI consists of the 1.77-hectare site, where all core project activities will be operated, managed, or occur.

Beyond the project footprint, the AoI extends to a 1-kilometre radius surrounding the site boundary. This includes areas that may experience indirect or unplanned but predictable impacts resulting from the project's development such as associated infrastructure or facilities that would not otherwise have been developed in the absence of the project. The AoI accounts for direct and indirect environmental (physical and biological), social, and cultural impacts, and incorporates neighbouring communities, sensitive receptors, and potential interaction zones.

Additionally, the AoI includes the broader administrative areas of the Accra Metropolitan Assembly, Ablekuma Central, Ablekuma North, Ablekuma South, Ablekuma West, Ayawaso Central, Ayawaso East, Ayawaso North, Ayawaso West, Okaikwei North, Okaikwei South, Korle Klottey and Osu Klottey from which source-separated organic waste will be collected and transported to the composting facility (Figure 3.2). This broader catchment is considered relevant for understanding upstream impacts and logistical implications related to waste sourcing and transportation.

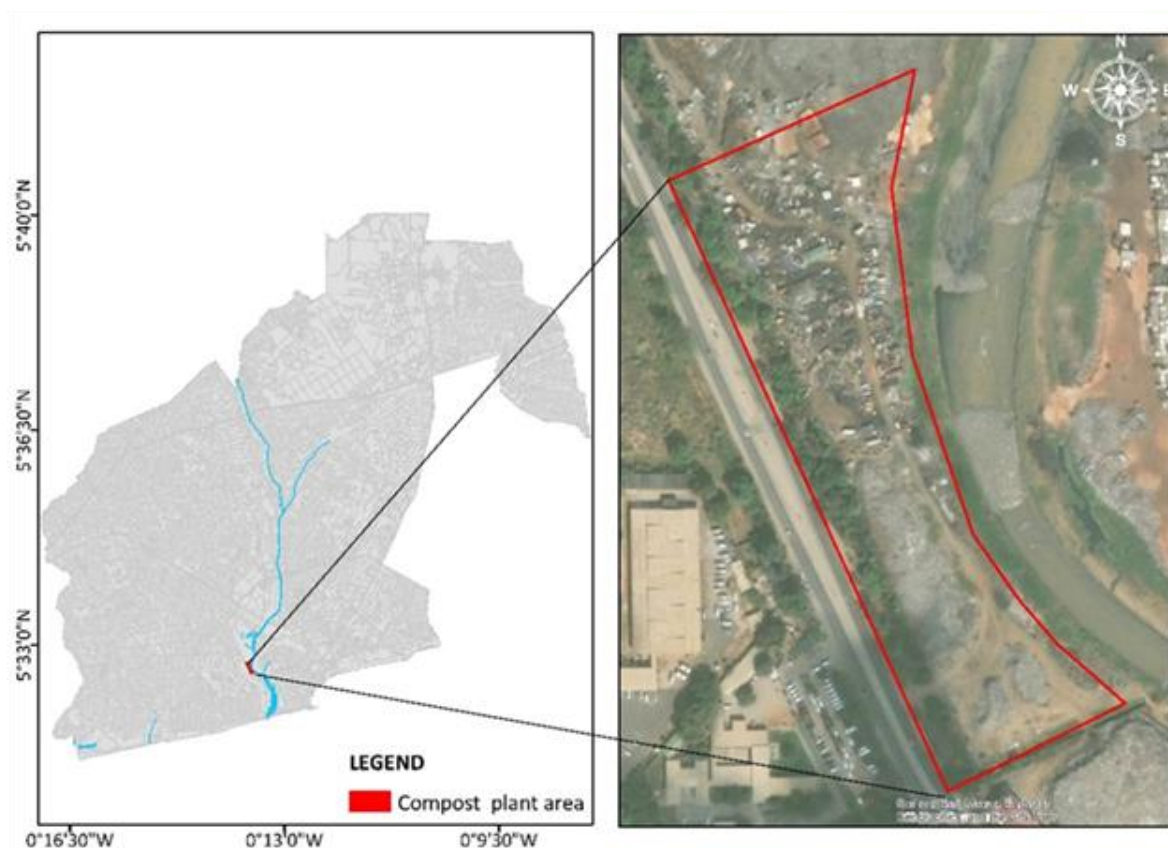


**Figure 3.1** *Location of Proposed Compost Plant within the Accra Metropolitan Area*

For specific environmental considerations such as ecology, air quality, and noise, a 500-meter AoI is defined to evaluate potential localized impacts on flora, fauna, ecosystems, and emissions. This zone considers potential odour, gas, and particulate releases from the facility, as well as noise from operations that may affect adjacent communities and ecological systems based on IFC Standard 1.

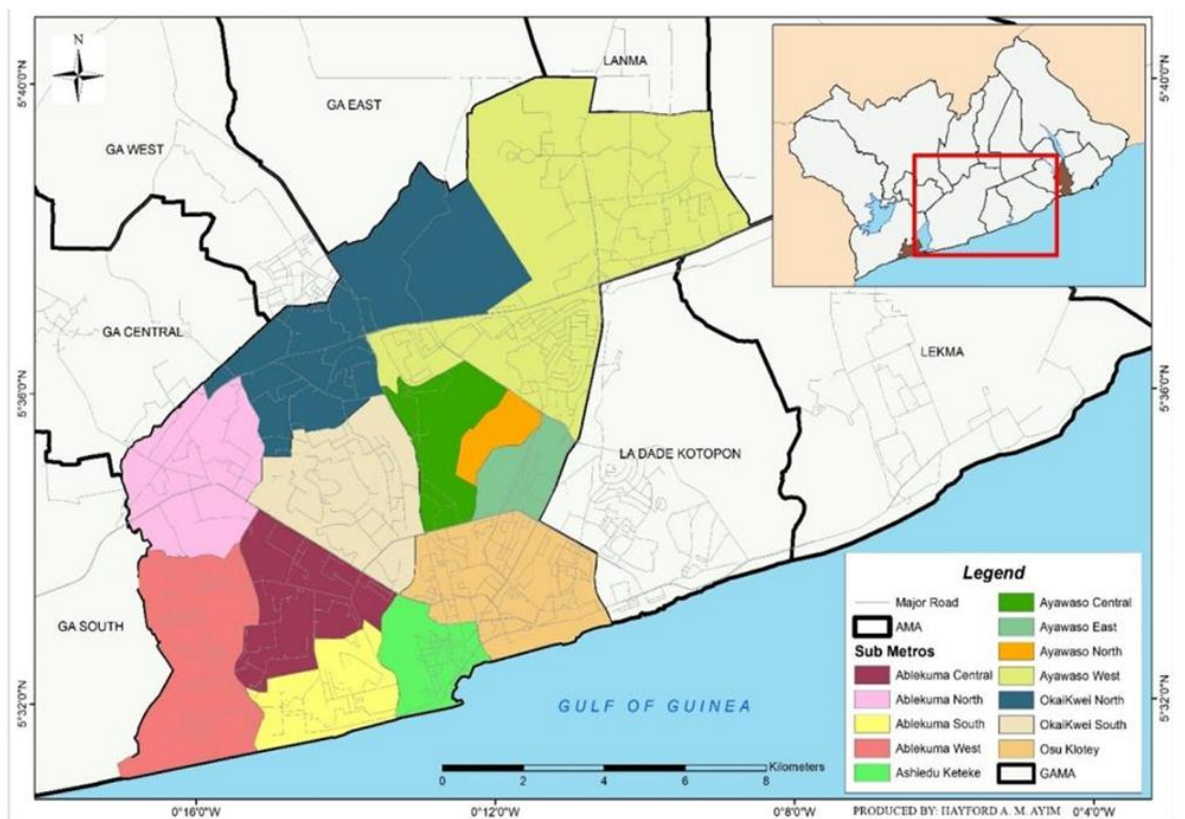


**Figure 3. 2** *Project Area (colour coded) as defined by the City of Influence (Accra Metropolitan Assembly) (Source: City of Accra’s Waste Management Department, 2023)*

The proposed project area is characterized by a mix of residential, commercial, and institutional land uses, as well as informal activities (scrap dealers, livestock keeping and informal settlers) that reflect the urbanized and densely populated nature of the area.

The proposed 1.77 ha site for the composting plant is predominantly unoccupied, showing signs of informal waste dumping, informal scrap dealings and degraded vegetation (Plate 3.1). Historically designated as part of an industrial zone, it aligns with the nearby IRECOP facility, owned and operated by Zoomlion. The land is mostly open, with patches of grass, shrubs, and bare ground, reflecting anthropogenic activities, including soil compaction, erosion, and litter accumulation. The IRECOP facility influences the site, with occasional spillover of solid waste and vehicular movement related to waste collection and recycling. Situated near the ecologically sensitive Korle Lagoon, the site has suffered from pollution, urban runoff, improper waste disposal, and encroachment. It lies in an area with little vegetation, bordered by an unapproved dumpsite to the south and a scrap yard to the north. The biodiversity in the area is low and limited to species adapted to urban environments.



**Plate 3.1**      *Current land use and activities of the project site in Jamestown*

### **3.1.1 Residential Settlements**

Settlements including Agbogbloshie, Bukom, Korle Gonno, Korle Bu and Jamestown are among the communities closest to the project location; however, there are other communities in close proximity located within the project location that are in other sister municipalities. These areas are characterized by a high population density, informal housing structures, and limited access to basic urban infrastructure. Agbogbloshie, in particular, is renowned for its informal electronic waste recycling activities, contributing to environmental pollution and health risks.

### **3.1.2 Commercial/Economic Activities**

Within a less than 5km radius hosts bustling markets, including the Agbogbloshie Market, a major hub for foodstuff trading and other informal commercial activities. Informal economic ventures such as scrap metal processing, small-scale trading, and artisanal work dominate the local economy.

### **3.1.3 Institutional Land Use**

The Korle-Bu Teaching Hospital, a major health care institution, is located within the area, along with associated facilities such as the hospital mortuary and the Polyclinic. Educational institutions and places of worship are scattered throughout the settlements, reflecting the area's urban diversity.

### **3.1.4 Transport and Infrastructure**

The site is accessible via two major urban roads, Ring Road West to the west and Guggisberg Avenue to the south, as well as informal roads arising out of convenience. However, traffic congestion and poor road conditions pose significant challenges in the project area. The Odaw River and its tributaries flow through the area, discharging into the Korle Lagoon, which lies to the east of the site. These water bodies are heavily polluted by untreated urban wastewater and solid waste.

## 3.2 Environmental Challenges

The vicinity is marked by significant environmental concerns, including air and water pollution from nearby informal waste processing activities and emissions from vehicular traffic. The Korle Lagoon and its immediate environment remain focal points of ecological degradation, with diminished aquatic life and extensive siltation. The project is likely to further increase the odour situation within the project area and further add to the already polluted Korle Lagoon and the Odaw River. During waste collection from generation points and temporal storage within communities, there could be further emission of odour and leachate which could affect the receiving environment as well as the social life of the people within such vicinities. These would likely attract flies and mice that are mostly associated with organic waste, which will further increase the risk of disease outbreaks within the communities. During final transportation of waste to the composting plant, there could be further emission of odour and leachate, as well as littering along the transportation routes.

## 3.3 Key Project Components

### 3.3.1 Project Design and Land Use Requirements

The proposed project will be developed into an integrated facility featuring a well-organized landscape layout (Figure 3.3 and 3.4). The proposed compost facility will employ covered aerated static pile (CASP) composting technology occupying an area of 1.77 ha, with a capacity of 466 tonnes of organic waste per day. The production process involves pre-processing the organic waste received by further sorting and shredding into pieces; the pre-processed waste is piled and composted; finished compost is post-processed by sieving and packaging of finished compost and before storage. The key infrastructure components include:

- **Administrative Facilities:** The “main administrative building” will be for operations management and will house all staff. There will be staff offices, staff common rooms, staff changing and restrooms, storage rooms, meeting rooms, and a kitchenette. These spaces will be divided in two storeys high (a ground and first floor).
- **Waste Processing Units:** The units will consist of a waste receiving and pre-processing area; a composting area; a curing and maturation area; and a packaging area for finished compost. The waste receiving and pre-processing will occur in the “Pre-processing Building” of the facility. The building will contain two pre shredders linked to two chain conveyors taking the shredded organic waste into a trommel screen. The material from the trommel screen will then be transported on moving conveyors to trucks that will transport to the next stage of the process i.e. forming the compost pile. The “Composting area” will have 12 chambers for forming compost piles. Each chamber will have an aeration system, sprinklers and monitoring equipment. Similarly, there will be 12 chambers in the “curing and maturation area” for the final stages of the composting before storage in the “storage area”. The storage area will also have 9 chambers for the piles. The compost packaging will occur in the “Compost packaging unit” which will house a receiving funnel attached to a screw conveyor that will bring the matured compost into a packaging unit. The packaged compost will roll down a roller conveyor for distribution.

- **Leachate Management System:** The leachate treatment system will have 4 constructed wetlands being fed by a leachate pumping station. There will be a treated leachate pumping station, leachate storage tank, and reverse osmosis (RO) treatment system in place to further polish the effluent. Treated effluent will be discharged or reused in the facility.
- **Support Infrastructure:** The support infrastructure will include air blower building, a garage area, an electrical building, and a water tank. There will be 10 blower units installed with a future capacity to double the numbers to 20. These blowers will be connected to the electrical system in the “electrical building.” The blowers will supply air through pipes to the composting piles. The “garage area” will be for vehicle maintenance, repairs, and washing area. It will also have storage rooms for supplies.
- **Utilities and Sustainability Features:** There will be sewage collection pipes, water supply pipes, air pressure pipes, and a 2,677 m<sup>2</sup> solar panel area for renewable energy.
- **Security and Access:** This will include a security post, weighbridge, and parking area for staff and visitors.
- **Stormwater Management System:** The facility will have three main stormwater drainage systems, collecting and directing stormwater through a treatment receptor to discharge into the Odaw River.

Figure 3.4 illustrates an artistic impression (3D) of the proposed facility.



Figure 3. 3 General Landscape Layout. (Source: GIZ/HYDROPLAN (2024))

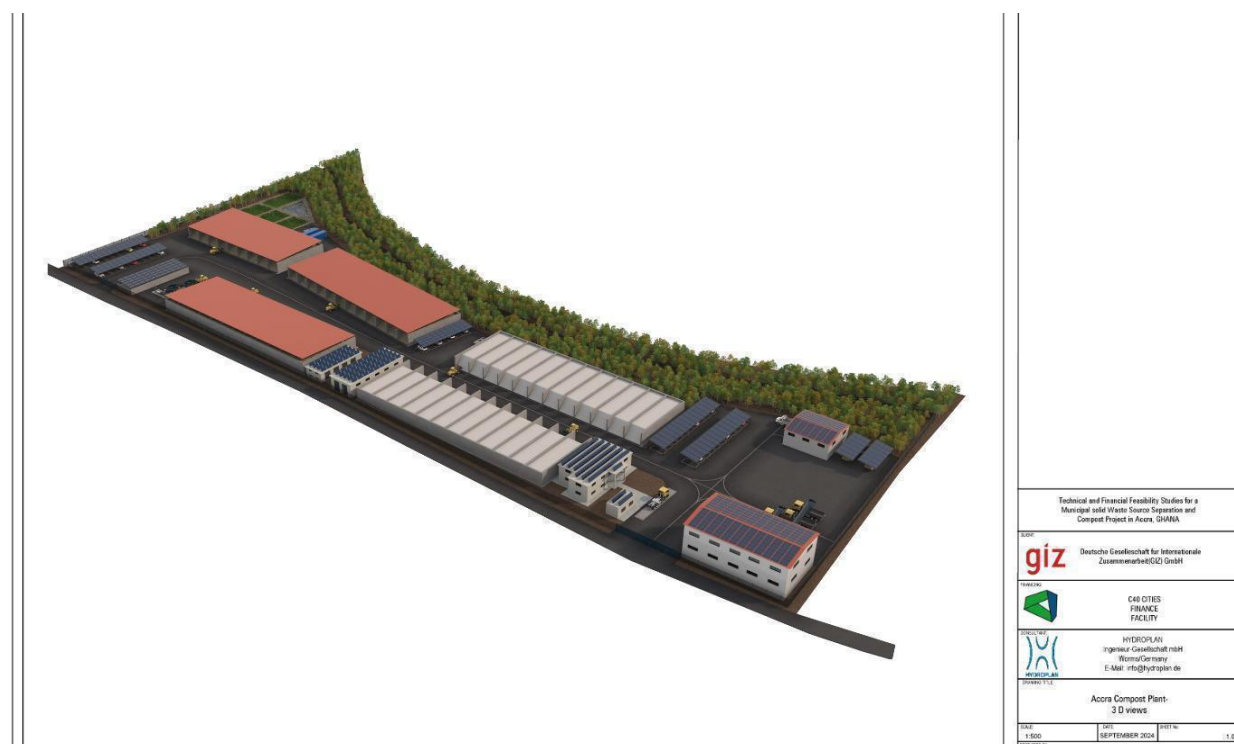


**Figure 3. 4 3D View of Proposed Compost Plant Facility. (Source: GIZ/HYDROPLAN (2024))**

Figures 3.5 and 3.6 illustrate the layout of the compost packaging unit and sections of the main administrative building, respectively.

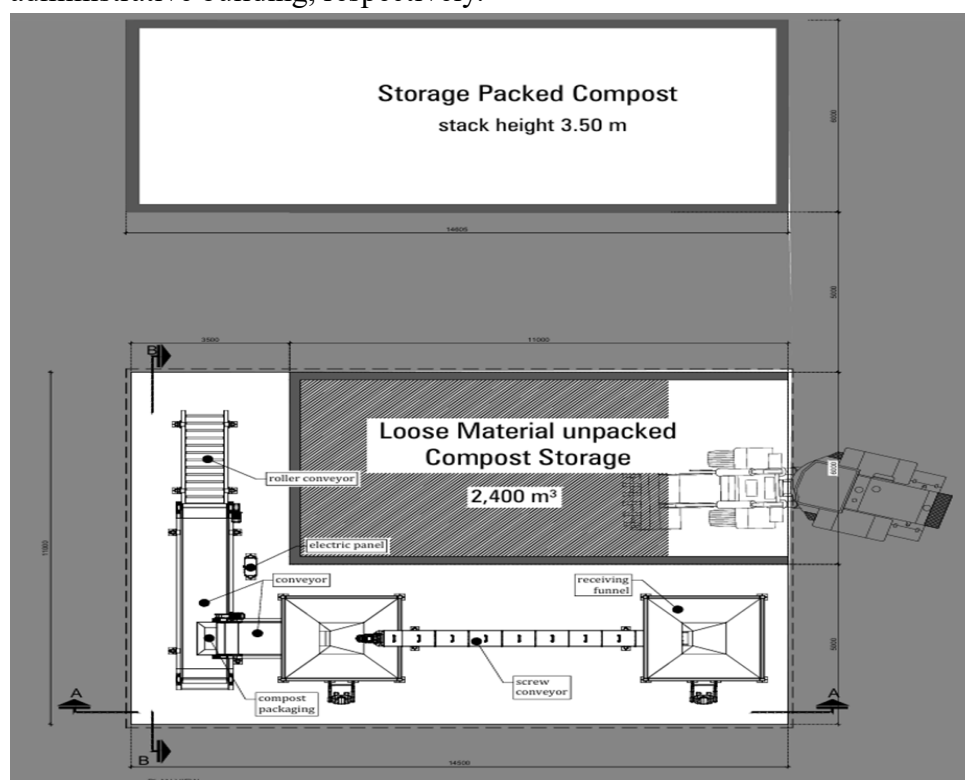


**Figure 3. 5 Compost Packaging Unit Layout. (Source: GIZ/HYDROPLAN (2024))**

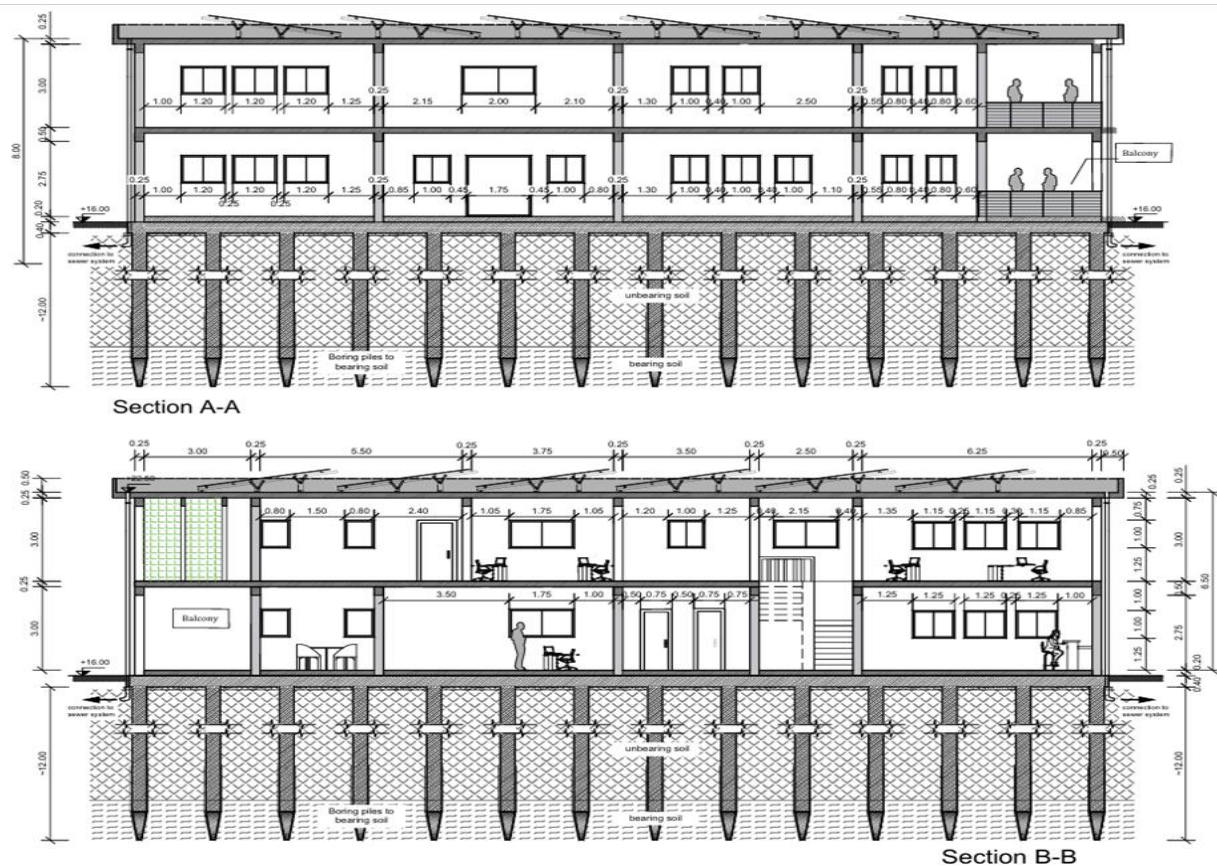


**Figure 3.6** Main Administrative Building Sections. (Source: GIZ/HYDROPLAN (2024))

### 3.3.2 Project Components & Processes

The main material inputs for the proposed project will be source-separated organic waste, water and energy sources (electricity, solar and diesel), while the main outputs will be the product (compost), some residual solid waste, wastewater (treated effluent), and other emissions. Figure 3.7 Shows the environmental flow diagram of the proposed project.

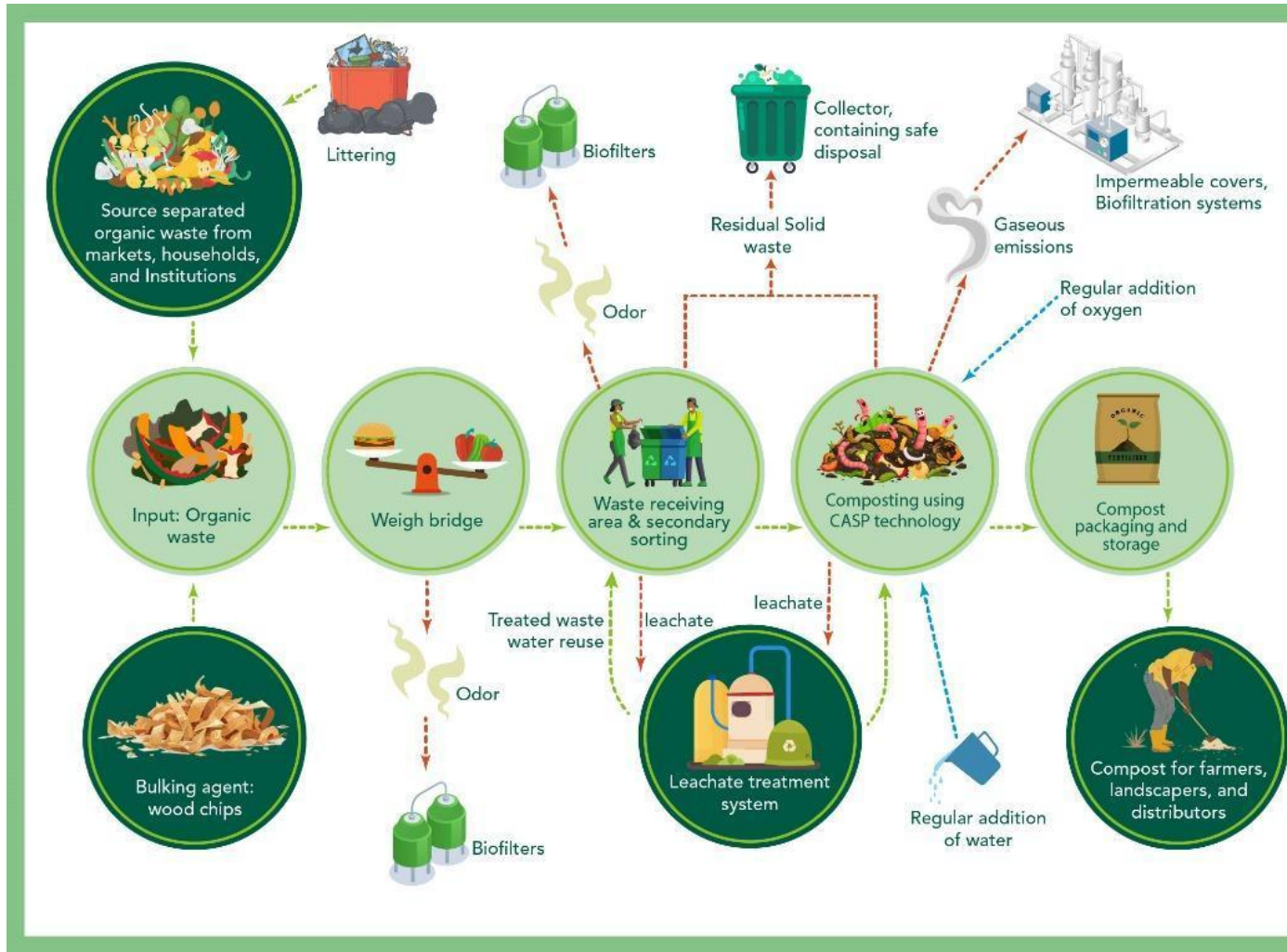


**Figure 3. 7** *Process flow diagram of the proposed facility*

### 3.3.3 Waste Reception and Pre-Processing

Primary source-separated organic waste will be received at the plant on a daily basis. The trucks bringing the load will be weighed at the weighbridge on entering the facility to determine the tonnage of waste received. Based on the design capacity, the facility will be processing organic waste amounting to 466 tonnes per day from the metropolis. From the weighbridge, the trucks will deliver the waste to the pre-processing building where the pre shredder will shred the waste and move it through the conveyor system to the plant trucks that will take it to the composting chambers. Secondary sorting will be done at the pre-shredder stage to remove any inert materials and other foreign materials that may have escaped the primary source-separation prior. This will be the quality control/assurance step to ensure raw materials are of the highest quality or purity. Based on the initial characterization of MSW in Accra, the organic waste will not require air drying to remove excess moisture before transporting to the composting area. The processes will be mechanized.

### ***3.3.4 Composting Processes***

The organic waste, after going through the pre-processing above, will be arranged in the 12 chambers for compost piles. Each pile will be connected with aerators/blowers to supply air (oxygen), sprinklers to supply water for moisture adjustment, and temperature monitoring devices to ensure optimal conditions will be maintained for effective composting. The piles will be covered with breathable materials in a process referred to as a CASP method. The active composting will occur at this stage, and it will take place in less than 40 days. This is where active breakdown of the waste by microorganisms will occur, causing a rise in temperature from ambient temperature range to 50-60°C. Turning of the piles will not be required. This method will effectively reduce odours and emissions. Technicians and key staff of the facility will be constantly monitoring the processes from start to the end.

### ***3.3.5 Curing and Maturation***

After the active composting phase above is completed, the material will be transported by means of front-end loader trucks to continue the process in the 12 curing and maturation chambers. In this chamber, the composting material will enter into the second mesophilic stages where temperature will begin to drop to below 50°C as the material begins to stabilize and it is turning into humus. This process will also be monitored by adjusting moisture and measuring the temperature of the piles. The compost temperature will gradually reduce to ambient temperatures and that will signify the end of the composting process. This process is continuously monitored to enhance quality.

### ***3.3.6 Storage***

The matured composts will be moved from the curing and maturation chambers to the 9 storage chambers. In storage, the matured compost will be air dried, awaiting packaging.

### ***3.3.7 Packaging and Distribution***

The matured final compost will be bagged using an installed compost packaging unit. This will be a fully mechanized process leading to bagged bags ready for distribution or sales.

### ***3.3.8 Leachate Management***

Leachate from the end-to-end composting processes will be treated to comply with Ghana Standards for effluent discharge (GS 1212:2019). Treatment will include collecting all leachate into a tank and pumping the leachate through constructed wetland systems, which will make use of physical, chemical, and biological processes to remove pollutants (total suspended solids, total dissolved solids, nutrients, trace metals, and organic matter). An additional reverse osmosis treatment step will be included after the constructed wetlands to meet EPA effluent discharge guidelines. The treated effluent will be discharged into the lagoon or redirected for reuse with the facility. The stormwater in the facility will be managed through a constructed drainage system, which will open at three places into the lagoon to prevent flooding in the facility. The treated leachate and stormwater in the facility will be reused within the facility where possible to close water and other resource loops.

### ***Leachate Characteristics After Treatment***

For the CASP method of composting, the process is isolated from any external factors, and parameters such as moisture content, odour and aeration are well controlled. From literature,

the expected leachate characteristics of the municipal organic waste composting using CASP method is presented in Table 3.1

### *Treatment Efficiency of constructed wetlands*

Constructed wetland system was capable of efficiently removing BOD<sub>5</sub> (87.3%), COD (74.5%), ammonia (91.5%), nitrate (87.9%), total nitrogen (87.8%), total suspended solids (85.5%), and heavy metals (ranging from 70 to 90%) from the composting leachate (Bakshoodeh et al 2017).

Based on the efficiency of treatment, we are expecting the characteristics of treated effluent from the composting facility to as stated in Table 3.2. This could be diluted during the rainy season with storm water or run off.

**Table 3. 1**      *Expected leachate characteristics of CASP composting*

| pH      | Conductivity (mS/cm) | TSS (g/L) | TVS (g/L) | Cl (mg/L) | Cd (mg/L) | Cu (mg/L) | Ni (mg/L) | Pb (mg/L) | Zn (mg/L) | COD (g/L) | BOD (g/L) | TKN (mg/L) | NH4 (mg/L) | TP (mg/L) | PO4 (mg/L) |
|---------|----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|-----------|------------|
| 5.9-8.1 | 1.4-36.7             | 0.35-23.4 | 1.78-14.4 | 2910-3210 | 0.01-0.17 | <0.01-1.5 | 0.05-1.47 | 0.02-1.07 | 0.5-8.2   | 8.5-42.8  | 0.67-7.90 | 350-3213   | 250-2275   | -         | 12-85      |

**Table 3. 2**      *Expected characteristics of treated effluent before*

| pH      | Conductivity (mS/cm) | TSS (g/L) | TVS (g/L) | Cl (mg/L) | Cd (mg/L)  | Cu (mg/L)  | Ni (mg/L)  | Pb (mg/L)  | Zn (mg/L) | COD (g/L)  | BOD (g/L) | TKN (mg/L) | NH4 (mg/L) | TP (mg/L) | PO4 (mg/L) |
|---------|----------------------|-----------|-----------|-----------|------------|------------|------------|------------|-----------|------------|-----------|------------|------------|-----------|------------|
| 5.9-8.1 | 0.42-11.01           | 0.03-3.39 | 0.26-2.09 | 291-321   | <0.01-0.02 | <0.01-0.15 | <0.01-0.15 | <0.01-0.17 | 0.05-0.82 | 2.17-10.91 | 0.09-1.00 | 42.7-391.9 | 21.3-193.4 | -         | 12-85      |

## **3.4 Environmental Process Flow and Supply Chain Analysis**

### *3.4.1 Environmental Process Flow*

The proposed project is aimed at producing compost from source-separated organic waste for the country's agriculture sector to improve waste collection & management in cities, minimize greenhouse gas emissions and to improve soil health. In the short term, the compost product will be marketed to farmers and landscape developers within the Greater Accra Region. In the long term, the project will be further replicated in other cities to ensure availability of compost to farmers, reduction in overall greenhouse gas emissions and improved solid waste management all over the country. The main material inputs for the proposed project will be source-separated organic waste, water and energy sources (electricity, solar and diesel) while the main outputs will be the product (compost), some residual solid waste, wastewater (treated effluent), and other emissions.

### *3.4.2 Supply chain Analysis (Construction)*

The major raw materials for the construction include sand, stones, cement, blocks, iron rods, roofing and other needed building materials (paint, nails, electrical wires, bulbs, air

conditioners among others), water, and electricity. These raw materials will be sourced from the various registered and recognised distributors within the value chain.

- **Sand**

Sand will be sourced from a registered, recognised and sustainably mined site at Nsawam in the Eastern Region of Ghana or Ada in the Greater Accra Region of Ghana. This will be done through competitive bidding to ensure the specifications of the required sand for the project and also to ensure value for money.

- **Stones and chippings**

Stones and chippings will be sourced from a registered, recognised and sustainable quarry at the Shai Hills in the Greater Accra Region of Ghana through a competitive bidding.

- **Cement**

Cement will be sourced from cement manufacturing companies in Ghana (including GHACEM, Diamond, Dzata, etc) through competitive bidding.

- **+Blocks**

Blocks will be sourced from registered and recognised block manufacturing companies in the Greater Accra Region through competitive bidding.

- **Iron Rods**

Metal rods for the project will be sourced from steel manufacturing companies in Ghana through competitive bidding.

- **Roofing and other needed building materials**

These will be sourced from accredited dealers/manufacturers in Ghana through competitive bidding.

- **Water**

Water for construction will be sourced from the Ghana Water Company, the sole government owned water utility company responsible for the production, transmission and distribution of water in urban areas in Ghana and has about 80 systems serving a total population of some six million. The Ghana Water Company Ltd. treats and supplies around 61 and 70 million cubic meters per year from the Weija lake and Volta River respectively to the city of Accra.

- **Electricity**

Electricity will be sourced from the Electricity Company of Ghana (ECG). This will be complemented by Diesel powered generators and solar powered lighting. ECG is responsible for the distribution of electricity in nine (9) Operational Regions in the southern part of Ghana namely, Accra East, Accra West, Tema, Eastern, Central, Volta, Western, Ashanti and Sub-Transmission, which are further decentralized into eighty-eight (88) operational districts. The Accra Metropolitan Assembly (AMA) falls under the Accra East Region of the Electricity Company of Ghana (ECG).

### ***3.4.3 Supply Chain Analysis (Upstream)***

This subsection describes the existing and proposed waste collection systems, focusing on the activities, processes, and stakeholder roles within the upstream segment of the value chain that supplies feedstock to the proposed compost plant during operation.

#### ***Pre Project-Supply Chain Conditions***

During the pre-project supply chain, waste that the compost plant aims to process followed a fragmented and limited trajectory.

### ***Collection and Transport System***

Waste collection coverage is limited and logistically strained. Many neighbourhoods, especially low-income informal settlements, lack reliable service, leading to waste accumulation or burning. For waste that is collected, the journey to final disposal is long and costly and traffic delays impede timely waste transportation. Informal micro-enterprises (ISPs) and individuals collect waste using handcarts, tricycles, or improvised “borla taxis.” These informal waste collectors often fill service gaps by offering affordable, personalized collections to residents who might not be reached regularly by the formal service providers. Some of these wastes are often dumped illegally in closer vacant lands or drains to avoid the cost and time of driving to far landfill sites.

Zoomlion Ghana Ltd, among the country’s largest waste management companies dominates service provision in Accra, leveraging its fleet of trucks and personnel to cover the majority of collection zones. Other companies including Jekora Ventures, J. Stanley Owusu & Co., and Meskworld among others also operate in the city. These formal companies are organized under the Environmental Service Providers Association (ESPA), an industry body that includes Zoomlion, Zoompak, Meskworld, J. Stanley-Owusu, ACARP, and other waste firms.

### ***Low Resource Recovery***

Despite organics forming the bulk of waste (60%), there is minimal composting or formal recycling infrastructure. The supply chain mostly ends at disposal, meaning valuable organic matter that could be composted currently decomposes in dumps, emitting greenhouse gases and odours instead of enriching soils.

### ***Informal Sector Exclusion***

In the current conditions, informal waste pickers and itinerant recyclers are not formally integrated into city waste systems. They often work independently at landfill sites or roam the streets collecting recyclables, but without recognition or support. This not only perpetuates unsafe working conditions but also means the city does not fully leverage their contribution. The challenge is how to include these actors in a formal supply chain without disrupting their livelihoods.

### ***With-Project System (3-Stream Strategy)***

The project proposes a progressive three-stream collection system (organic, recyclables, residual), to be scaled citywide. Organic waste will be diverted to composting facilities, recyclables to MRFs<sup>1</sup>/recycling plants, and residuals to landfills or waste-to-energy plants.

Implementation will be phased:

- **Year 1:** Major hotels, high-end restaurants, and large commercial centres.
- **Year 2:** High-income neighbourhoods (e.g., Cantonments, Airport Residential, East Legon), major markets (e.g., Makola), and selected schools/institutions.

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<sup>1</sup> Materials Recovery Facilities

- **Years 3–4:** Middle-income neighbourhoods, additional schools, markets, and public institutions.
- **Years 5–6:** Low-income areas and informal settlements, supported by subsidized bins and education campaigns.

Coverage is expected to rise from 75% to 100%, with 90% participation in organic waste separation by Year 6.

### ***Collection Frequency***

The system will apply differentiated schedules based on waste type and settlement. Organic waste will be collected three times weekly in high- and middle-income areas, and through ISPs with tricycles and communal points in low-income communities. Recyclables will be collected every two weeks, while residual waste will be collected weekly across all areas. This approach is designed to ensure regular service, minimizes overflow, and supports effective source separation.

### ***Infrastructure and Fleet***

Households will be equipped with colour-coded bins: 30L for organics, 120L for residual waste, and 240L for recyclables. Collection operations will be supported by a diversified fleet: compartmentalized trucks operated by FSPs for large-scale and long-haul collection, and tricycles operated by ISPs in dense or low-access neighbourhoods. To bridge service gaps, communal bins will be installed in hard-to-reach or underserved settlements.

### ***Role of Informal Service Providers (ISPs)***

ISPs will play a central role in the collection model under the proposed project, particularly in underserved communities such as Nima, Jamestown, and Agbogbloshie. Integration measures include: provision of 295 tricycles under a hire-purchase scheme (each compartmentalized for the three waste streams), formation of cooperatives, access to microfinance, and training in source separation techniques. Incentive mechanisms will further encourage ISP participation. With these measures, ISPs are projected to manage approximately 43% of total collection, complementing the 57% handled by FSPs.

### ***Citizen Incentives***

To promote compliance and behavioural change, households will receive colour-coded bins along with an initial supply of liners. A sustained public education campaign will reinforce the importance of segregation at source, while community reward schemes, including reduced fees and vouchers, will serve as positive incentives to encourage participation.

### ***Participation Targets***

The project has set clear participation targets to guide phased implementation. By 2026, institutions, businesses, and markets are expected to achieve 50% compliance, while high-income households are projected to reach 40% compliance. By 2027, middle- and low-income

households are targeted to achieve 30% compliance, supported by ISP-led collection systems and public engagement strategies.

### ***Monitoring and Evaluation***

A comprehensive monitoring and evaluation framework will guide implementation. Key performance indicators will track collection coverage, segregation compliance, citizen participation, and operational efficiency. Findings from regular reviews will be used to optimize collection routes, adjust infrastructure provision, and progressively expand coverage.

### ***Projected Waste Quantities***

Collection efficiency is expected to improve significantly over the project horizon. In Year 1, the system will collect 56% of total municipal solid waste (MSW), equivalent to 920 tonnes/day (444 tonnes organic, 31 tonnes recyclables, 444 tonnes residual). By Year 2, this is projected to increase to 61% (1,009 tonnes/day), and by Year 3 to 67% (1,098 tonnes/day).

A proportion of the collected organics will be diverted to composting facilities, starting with 25% (approximately 111 tonnes/day) in Year 1, rising to 40% by Years 11–15, and reaching 50% by Years 16–20. By the twentieth year, the composting plant is expected to process nearly 400 tonnes/day, close to its 466 tonnes/day design capacity. Residual organics will be managed through anaerobic digestion, decentralized composting, landfilling, or external partnerships with facilities such as ACARP and IRECOP.

### ***Permits and Approvals***

Accra operates under franchise agreements granting FSPs exclusive rights in designated zones. These agreements include varied payment models (per household, per tonne, per collection frequency), with oversight and performance incentives/penalties. While by-laws exist for franchising, no binding regulation currently mandates source separation. However, under the C40 Climate Action Implementation (CAI) project, the city is updating its by-laws to require source separation by households, businesses, and institutions before the project's rollout.

#### ***3.4.3.1 Source of Raw Materials***

The primary raw materials for the compost plant include various source-separated organic waste types from municipal solid waste (MSW) generated in Accra. The main components of the MSW in the city are organics (53%), plastics (17%), inorganics (15%), sanitary (5%), paper (4%), textiles (3%), glass (2%), and metals (2%). The moisture content of Accra's MSW is 50%, and the bulk density of the organic fraction of MSW is 520Kg/m<sup>3</sup>. Organic fractions, such as food scraps, market waste, and yard trimmings, forms the primary suitable raw materials for composting. The characteristics of the raw materials must comply with the carbon (C): nitrogen (N) ratio requirement of between 25:1 and 30:1 for an effective composting process. The current C:N ratio of the organic waste in the project area is between 13:1 and 24:1. Hence, additional special bulking materials or carbon sources in Table 3.1 below would be used to supplement the raw materials for composting. To account for changes in consumption patterns of the communities and competition for waste, incoming waste will be analysed

periodically and the C:N ratio adjusted accordingly. The total quantity of source-separated organic from MSW as raw material to be treated at the plant is 466 tonnes per day.

**Table 3. 3      *High carbon raw material sources***

| Raw material         | C:N ratio |
|----------------------|-----------|
| Wood chips           | 400-700:1 |
| Cardboard (shredded) | 350:1     |
| Sawdust              | 325-500:1 |
| Newspaper (shredded) | 175:1     |
| Pine needles         | 80:1      |
| Straw                | 75-90:1   |
| Corn (maize) stalks  | 60-75:1   |
| Rice straw           | 60:1      |
| Leaves               | 60-80:1   |
| Peanut shells        | 35:1      |
| Garden waste         | 30:1      |

Source: Adapted from Nikiema et al. (2020)

### **3.4.3.2 Waste collection and transportation**

To prevent cross-contamination, organic waste must be collected and transported to compost plants using dedicated equipment, which requires training in proper handling. The high moisture content of organic waste increases transport costs compared to mixed waste, posing challenges for both informal and formal service providers. There is also a risk that transporters may divert waste to livestock farmers for extra income. To offset lost revenue from waste diversion, affected municipalities should receive compensation. Establishing transfer sites in key areas could reduce transportation costs and create additional waste management jobs, particularly benefiting women and youth in the informal sector.

### **3.4.3.3 Water supply**

Water is essential for maintaining the appropriate moisture levels in the piles to facilitate the decomposition process. On average, the water requirement for compost is about 50 to 60% by weight of the compost produced (Chen et al., 2011). The water requirements for the project are for operational use and for use by the proposed 50 employees of the project. Water requirement for each employee is estimated at 80 to 100 L/day. Hence, the total water requirement for use by the employees ranges from 4000 to 5000 L/day. The estimated water requirements for the compost plant range from 10,000 to 15,000 L/day, which will primarily come from recycled treated leachate and effluent from constructed wetlands when production commences. In addition, the project will harvest rainwater to complement its water sources and to reduce the dependence on external water sources such as the municipal water supply from Ghana Water Company Ltd. (GCWL) and boreholes.

The project is expected to install sufficient stormwater collection and storage systems to collect about 1200m<sup>3</sup> of the approximately 26,000 m<sup>3</sup> of the project's annual water requirement. To

ensure an uninterrupted water supply, the project will build an overhead water storage tank of volume 40 to 60 m<sup>3</sup>, which is able to store water required by the project in two to three days.

#### ***3.4.3.4 Electricity/Energy Supply***

The total estimated energy requirement for the proposed compost plant is 3,464kWh/day (103,920 kWh/month and 1,264,360 kWh/year) for the mechanical equipment, pumping systems, ventilation systems, lighting, control systems, and administrative offices. For the purposes of the proposed plant, the energy supply stakeholders will be ECG, solar power installation firms, and generator set suppliers.

- **Electricity Company of Ghana**

Based on the location of the project compost plant in the Greater Accra Region, the ECG will be the main stakeholder for the national grid energy retail supplier. The compost plant also proposes sub venting this annual requirement by 50% using supply from solar. The current electricity tariff for non-residential customers in Ghana is a rate; it is to be estimated to evaluate how much the plant will be liable to pay.

- **Solar power**

The assumed average solar irradiance is estimated at 5 kWh per square meter per day based on a reviewed feasibility report by the engineering consultant. Using high-efficiency solar panels with an efficiency of around 20%, the potential energy output based on the square meters of area covered by the solar panels can be estimated. The direct impact of using this renewable energy source is that it cuts the direct reliance on energy sources from ECG.

#### ***3.4.5 Compost Distribution and Application***

This subsection describes the activities and processes involving stakeholders in the downstream value chain of the proposed compost plant operations. The key activities include product (compost) distribution and application, described below:

- **Product (Compost)**

The finished compost from the plant will be bagged and delivered to customers via distribution centres. There will be direct sales at the plant as well for urban and peri-urban farmers, landscapers and home gardeners. These consist of both men and women from informal and formal settlements. Application of the compost to land will lead to direct improvement of crop yields, and improvement in soil structure for landscaping and horticulture.

Urban and peri-urban farmers will rely on Extension Services from MoFA to guide on the application of compost to different crops. Farmers are key stakeholders in the upstream end of the value chain and their direct or indirect interaction with extension agents is critical for successful use and integration of compost into urban and peri-urban farming.

### ***3.4.6 Equipment Requirements***

The proposed Composting Plant requires a range of specialized equipment and machinery to efficiently manage the composting process from waste reception to the final curing stage. The waste reception and pre-processing area will include two heavy-duty shredders capable of handling various organic waste, each with a power range of 100-150 kW and a capacity of 15-20 t/h. Additionally, there will be two screening machines, such as trommel screens or vibrating screens, each with a power range of 20-30 kW, a drum length of 5-7 m, and a capacity of 10-15 t/h. Four durable conveyor belts, each 10-15 m in length and 1-1.5 m in width, will transport materials between different pre-processing stages.

The composting area, designed for the CASP system, will feature a complete aeration system that includes perforated pipes, blowers, and control units. The blower units will have a power range of 10-20 kW each, and the control units will be equipped with temperature and oxygen sensors. To monitor the internal conditions of the compost piles, fifty high-accuracy temperature and oxygen sensors will be used, each capable of measuring a temperature range from -20°C to 100°C and oxygen concentration from 0-25%. Two self-propelled windrow turners, each with a width of 3-4 m and a power range of 150-200 kW, will handle the turning and aeration of the compost piles, with a turning capacity of 2,000-2,500 m<sup>3</sup> per hour.

In the curing area, two versatile front-end loaders, each with a bucket capacity of 2-3 m<sup>3</sup> and a power range of 100-150 kW, will be used to move compost and turn piles during curing. Additionally, thirty handheld or fixed moisture meters, capable of measuring moisture content from 0-100%, will ensure optimal moisture levels in the curing piles.

The finished compost storage area will include sufficient durable, UV-resistant tarps to cover 4,000 m<sup>2</sup>, protecting the compost from the elements. A loading conveyor belt, 10-15 m in length and 1-1.5 m in width with a power range of 5-10 kW, will facilitate the loading of finished compost into transport vehicles. Supporting infrastructure will include two forklifts with a lifting capacity of 2-3 tons and a power range of 50-100 kW for moving pallets and other materials. The administrative and staff facilities will be equipped with desks, chairs, computers, printers, and other necessary office equipment. The maintenance workshop will be stocked with tools and equipment for routine maintenance of machinery. Safety and environmental control equipment will feature twenty ABC-type fire extinguishers strategically placed around the facility. The leachate collection system will include lined ponds or tanks with a total capacity of 50,000 litres, pumps, and treatment units. An emergency backup generator with a power range of 300-500 kW will ensure continuous operation during power outages.

### ***3.4.7 Sub-Project Components***

This will include several key elements designed to enhance the efficiency and sustainability of the proposed compost plant. Waste collection infrastructure outside of the facility will be upgraded with colour-coded bins, fleet of trucks will be expanded and community collection points will be strategically placed to improve waste segregation and access. Capacity building efforts will focus on training ISPs and educating the public on effective source-separation techniques to ensure high-quality organic waste will be collected. Additionally, market

development initiatives will foster partnerships with agricultural and landscaping industries to promote the use of compost, while ensuring quality through certification processes that align with industry standards. Furthermore, an extensive awareness and sensitisation campaign will be implemented to educate households and individuals to separate waste in three waste streams at source.

### 3.5 Climate Change Considerations

The proposed compost plant integrates several climate change-related features aimed at mitigating environmental impacts and enhancing the city's resilience. By diverting organic waste from landfills, the plant will play a pivotal role in minimizing methane emissions, a major contributor to climate change. In addition, the composting method that will be used by the facility minimizes odour and emissions. Composting will promote long-term carbon sequestration by enhancing soil carbon storage. The facility will also prioritize energy efficiency, utilizing solar panels and other efficient machinery to reduce reliance on fossil fuels, which further supports its sustainability goals. With advanced constructed wetland systems for leachate management, the plant will mitigate water pollution risks, while its design will accommodate fluctuations in waste volume due to climate impacts, ensuring the facility will remain adaptable to changing environmental conditions. Collectively, these measures will contribute to significant reductions in greenhouse gas emissions, preventing an estimated 25,513.5 tonnes of CO<sub>2</sub> emissions annually, and bolster the plant's role in supporting Accra's climate resilience.

### 3.6 Auxiliary Components

The compost plant will incorporate several auxiliary components, including the following, aimed at enhancing its environmental and social impact:

Stormwater drainage systems are designed to channel runoff into the Odaw River, effectively preventing flooding and contamination.

- Environmental monitoring systems: To maintain environmental compliance, the compost plant will utilize monitoring systems with sensors to track air quality, emissions, and composting conditions. Regular audits will assess waste collection and segregation practices, ensuring adherence to operational standards and identifying areas for improvement. Public feedback systems will provide a platform for addressing community concerns, enhancing operational efficiency. Furthermore, the plant's infrastructure will be continuously updated based on insights from monitoring data, ensuring responsiveness to evolving needs and challenges.
- Public awareness campaigns will engage the community, promoting waste segregation and the benefits of compost utilization.
- Research and Development: A dedicated research and development lab will focus on testing compost quality and exploring innovative waste management techniques to further optimize the plant's operations.

### 3.7 Compost Quality & Market Demand

There is the need to ensure that the final product meets national and international soil amendment standards while mitigating risks associated with heavy metals and contaminants to guarantee safe application.

- **Product quality assurance (QA)/ quality control (QC) plan**

The proposed project will implement the following QAQC plan from feedstock /raw material sourcing, production processes and product storage:

- **Storage and product sale**

The post processing stages will include bagging and storage of finished compost. It will be ensured that sacks for the bagging are adequately labelled with the requisite information as stipulated by MoFA's Plant Protection and Regulatory Services Department (PPRSD) and the Ghana Standards Authority (GSA). The final compost will also be sent to GSA and MoFA-PPRSD for independent product testing before releasing to the market.

### 3.8 Project Schedule and Workforce

#### 3.8.1 Programme of Works

The implementation timeline for the proposed project is 27 months (Figure 3.8). The proposed programme of works is presented below and will be based on the following criteria:

- An overall construction period of 12 months or as may be determined upon completion of all pre-construction engagements.
- Slowing down activities during the rainy season (May – October, based on rainfall charts generated from available data). The Project assumes 12 working days per rainy month instead of the ordinary 24 working days per month in the dry seasons.
- One working shift daily except for concrete casting and other activities that must be completed without interruption.
- Work on Sundays and holidays in special cases only, subject to prior approval of the engineer.

| PHASE                          | MONTH       |   |   |   |   |   |              |   |   |    |    |    |    |    |    |    |    |    |             |    |              |    |    |    |             |    |    |
|--------------------------------|-------------|---|---|---|---|---|--------------|---|---|----|----|----|----|----|----|----|----|----|-------------|----|--------------|----|----|----|-------------|----|----|
|                                | 1           | 2 | 3 | 4 | 5 | 6 | 7            | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19          | 20 | 21           | 22 | 23 | 24 | 25          | 26 | 27 |
| Design and Tendering           | First Phase |   |   |   |   |   |              |   |   |    |    |    |    |    |    |    |    |    |             |    |              |    |    |    |             |    |    |
| Construction of Infrastructure |             |   |   |   |   |   | Second Phase |   |   |    |    |    |    |    |    |    |    |    |             |    |              |    |    |    |             |    |    |
| Equipment Installation         |             |   |   |   |   |   |              |   |   |    |    |    |    |    |    |    |    |    | Third Phase |    |              |    |    |    |             |    |    |
| Commissioning and Testing      |             |   |   |   |   |   |              |   |   |    |    |    |    |    |    |    |    |    |             |    | Fourth Phase |    |    |    |             |    |    |
| Start-Up                       |             |   |   |   |   |   |              |   |   |    |    |    |    |    |    |    |    |    |             |    |              |    |    |    | Fifth Phase |    |    |

**Figure 3. 8 Project Programme**

### ***3.8.2 Human Resource Requirements/Employment***

The project will engage a diverse team, including 295 Informal Service Providers (ISPs) who will manage waste collection in underserved areas. To formalize their operations, the project will support the formation of cooperatives and provide tricycles through a hire-purchase scheme. ISPs will also benefit from access to microfinance, equipment grants, and financial incentives, alongside training in effective waste segregation and collection practices. These measures are designed to strengthen their businesses, improve efficiency, and fully integrate them into the city's formal waste management system.

Two (2) formal service providers (FSPs) will focus on serving high-income areas, hotels, and institutions, utilizing compactor vehicles for waste collection. Additionally, the facility will require skilled staff comprising 5 engineers, 15 technicians, and 10 machine operators to oversee operations. Twenty (20) administrative and compliance officers will ensure smooth day-to-day management and adherence to environmental and social regulations. Hence, the total number of employees that will be engaged by the project is 347.

### ***3.8.3 Operations and Maintenance***

The operation and maintenance of the proposed compost plant will be outsourced to a private service provider through a management contract. The operation and maintenance of the plant will be undertaken following an operation and maintenance manual designed for the plants. These plans include, or will be amended to include, the following topics:

- Waste Reception and Pre-Processing: Establish protocols for sorting waste, maintaining sorting equipment, and handling contaminants.
- Composting Process: Set maintenance schedules for composting equipment, monitor temperature, moisture, and aeration, and manage odours and pests.
- Leachate and Stormwater Management: Conduct regular checks on leachate treatment systems and stormwater drainage to prevent contamination.
- Screening, Packaging, and Distribution: Maintain screening and packaging equipment, ensure compost quality, and manage safe storage and transport.
- Environmental Monitoring: Calibrate sensors and collect data to ensure compliance with environmental standards.
- Safety and Emergency Protocols: Implement health and safety procedures and emergency response protocols.
- Equipment Maintenance: Schedule preventive maintenance, inspections, and manage spare parts inventory.
- Staff Training and Capacity Building: Provide ongoing training and performance reviews to ensure adherence to best practices.
- Performance Monitoring and Audits: Conduct regular audits, monitor operations, and gather public feedback for improvements.
- Infrastructure Maintenance: Maintain plant infrastructure and update based on performance data.

### 3.9 Project Proponent's Capabilities

The project proponent (AMA) includes departments like Waste Management and Environmental Health, staffed by qualified officers able to oversee the proposed project. AMA plans a Service Level Agreement with the private sector for project management, and has the technical expertise to audit, monitor, and supervise their activities under the ESMP.

### 3.10 Analysis of Project Alternatives

This section discusses the alternatives considered for the project to minimize environmental damage and also to ensure public safety. Under IFC's Environmental Assessment Policy (OP 4.01), ESIA must evaluate viable alternatives, including a “no-project” scenario, to identify and avoid significant impacts at the early stages of the project. The alternatives considered are limited to the project location, process technology, raw material sources, and access to the site conforming to IFC PS 1, PS3, and PS5 and in alignment with the levels and measures presented in the IFC Environmental, Health and Safety Guidelines.

The estimated land size for the proposed project is 1.77-hectare. The design development process adopts, environmental and social sustainable approach to achieve the project's objectives. Several options are under consideration to present the most feasible alternatives. These options have been analysed according to their suitability to meet the project objectives. The options include:

- The project location alternatives
- Composting technology alternatives
- Alternative sources of raw material
- Road access alternatives
- No action option (business as usual)

#### 3.10.1 The Project Location Alternative

Three sites were considered and analysed for the project (Site 1: Gbegbeyise, Site 2: KLERP adjacent to IRECOP—selected site and Site 3: Adedenkpo). Analysis of the various sites and reasons for site selections have been presented below.

##### 3.10.1.1 Site Selection Process and Methodology

A rapid site assessment was conducted by Hydroplan Ing. GmbH under Task 1 of the Technical Feasibility Study. The assessment employed GPS-based geospatial mapping and a standardised matrix of site characterisation parameters (hydrogeology, topography, drainage, access, proximity to sensitive receptors, emissions potential, and environmental constraints). The three sites designated by AMA were inspected and evaluated.

##### 3.10.1.2 Evaluation Summary of Alternative Locations

- **Site 1: Gbegbeyise**
  - i. Located ~320m from the seashore in western AMA, occupying a 1.47ha uncontrolled waste disposal site.

- ii. Situated in a depression with poor drainage, resulting in persistent groundwater accumulation, it has a high risk of flooding.
- iii. Surrounded by high-density residential areas with narrow, unpaved access roads and requires resettlement to accommodate storm drains.
- iv. Extensive remediation is required due to ~55,000 m<sup>3</sup> of legacy waste and unstable alluvial soils.

- **Conclusion**

The site is not suitable due to environmental vulnerability, insufficient land area, high flood risk, close residential proximity, and excessive site preparation costs.

- **Site 2: KLERP (adjacent to IRECOP) – Selected Site**

- i. Located ~1.5 km from the coastline, directly adjacent to the IRECOP MBT plant.
- ii. Total area of 2.94 ha, with 1.77 ha usable after applying environmental buffers (30 m from the river, 5 m from the roads).
- iii. No significant residential settlement nearby; direct access via well-paved road network connected to Ring Road.
- iv. Although classified as a former uncontrolled dump, the site offers feasible conditions for maturation and screening phases of composting.
- v. Further development (e.g., for splitting and intensive composting) would require geotechnical stabilization and leachate control infrastructure.

- **Conclusion**

The site is suitable and hence selected for the current project phase focusing on maturation. The site meets location, access, emission buffer, and cost-effectiveness criteria.

- **Site 3: Adedenkpo**

- i. Located in the heart of Jamestown, ~1.5 km from the seashore, covering 0.81 ha.
- ii. Densely surrounded by residential and informal commercial activities, including ongoing recycling operations.
- iii. Access is via narrow, congested roads.
- iv. Paving would require extensive resettlement and infrastructure development.
- v. Limited land availability and unstable ground conditions making the site unsuitable for any composting infrastructure.

- **Conclusion**

Site three is not suitable due to land size limitations, excessive environmental remediation needs, and incompatible land use context.

### ***3.10.2 Composting Technology Alternative***

Selecting the appropriate composting technology for the proposed composting plant involves addressing the unique characteristics of the city's waste profile, spatial constraints, environmental requirements, and operational goals. The technology must align with the city's

sustainability objectives, manage diverse feedstock efficiently, and ensure regulatory compliance. The following factors were considered:

i. **Assessment of Organic Waste in Accra**

Accra generates a mix of organic waste, including yard waste, food waste, manure, ground wood, and sawdust among others. This diverse feedstock necessitates a flexible composting technology capable of processing mixed organic streams while ensuring high-quality compost output.

ii. **Evaluation of Composting Technologies**

Key composting technologies considered include:

▪ **Windrow Composting:**

Advantages: Suitable for large volumes; simple operation.

Challenges: Requires significant land area, which is limited in Accra.

▪ **Aerated Static Pile Composting (ASPC):**

Advantages: Efficient aeration, better process control, and scalability.

Challenges: Higher initial costs compared to windrow systems.

▪ **Covered Aerated Static Pile Composting (CASP):**

Advantages: Superior odour management, moisture control, and suitability for urban areas.

Challenges: Higher investment costs but justified by urban compatibility.

▪ **In-Vessel Composting:**

Advantages: Compact and fast processing.

Challenges: Very high capital and operational costs, making it less feasible for the current scale.

▪ **Anaerobic Digestion:**

Advantages: Biogas production alongside compost.

Challenges: Requires specialized feedstock management and infrastructure, making it unsuitable for mixed waste streams.

### 3.10.2.1 *Selected Technology*

The Covered Aerated Static Pile Composting (CASP) technology has been chosen for the following reasons:

i. **Operational Efficiency:**

- CASP allows for controlled aeration and temperature management, ensuring faster and higher-quality composting.
- Covered systems enhance odour control and protect compost from rain, critical for urban areas.

ii. **Environmental Compatibility:**

- The technology minimizes leachate formation and greenhouse gas emissions.
- Meets stringent environmental regulations by controlling odours and runoff.

iii. **Space Optimization:**

- CASP systems require less land compared to windrow composting, making it suitable for Accra's space constraints.

iv. **Scalability and Flexibility:**

- The system is adaptable to future expansions and feedstock variability.

v. **Economic Viability:**

- While the initial investment is higher, long-term operational savings and improved compost quality offset costs.

The choice of Covered Aerated Static Pile Composting (CASP) technology ensures the proposed composting plant will meet environmental, operational, and community expectations. By leveraging CASP, the facility will achieve efficient processing of diverse organic waste streams, compliance with environmental standards, and scalability for future growth and enhanced odour and moisture control, crucial for urban integration

### **3.10.3 Raw Materials Alternatives**

The primary raw material for the composting plant is organic waste, predominantly sourced from municipal solid waste streams, food processing industries, and agricultural residues.

**Alternative raw material options include:**

- Dedicated collection of biodegradable household waste to ensure consistent quality.
- Integration of green waste (e.g., leaves and grass clippings) from parks and landscaping services.

The choice of raw materials will consider availability and accessibility, potential contamination with non-biodegradable or hazardous waste and seasonal variations in waste supply.

#### **3.10.3.1 Raw Materials for Composting Plant Operations**

i. **Food Waste**

This includes kitchen scraps like vegetable peels, fruit cores, coffee grounds, eggshells, and leftover food. They have high nitrogen content, essential for microbial activity, and high moisture content, aiding in maintaining the optimal compost pile environment.

They are usually shredded or chopped to increase surface area and ensure efficient microbial decomposition. They are screened to remove contaminants like plastics, metals, and hazardous materials before use.

## ii. **Green Waste**

It comprises yard trimmings such as grass clippings, leaves, branches, and other garden debris which contains a balanced mix of nitrogen and carbon. Fibrous in nature, green waste support structural integrity and aeration in compost piles. This may be shredded to expedite decomposition and improve pile uniformity. It helps regulate moisture levels and supports aeration.

## iii. **Agricultural Residues**

They include crop residues comprising stalks, husks, straw, and leaves left after harvesting. They have a high carbon content, critical for balancing nitrogen-rich materials. They are bulky and fibrous, enhancing aeration within the compost pile. They are typically shredded to increase decomposition efficiency by exposing more surface area to microbes. Nutrients in them such as potassium, phosphorus, and trace minerals, are recycled, enriching the compost.

## iv. **Market Waste**

This contains spoiled fruits, vegetables, and other organic matter sourced from local markets. It has high nitrogen and moisture content, suitable for composting and is often available in large quantities. Inspected and sorted to remove non-organic contaminants. This is managed carefully to prevent anaerobic conditions due to high moisture.

## v. **Exclusions**

Meat, dairy, oily foods, treated wood, synthetic materials, and pesticide-contaminated waste are not allowed in compost due to pest, odour, and contamination concerns. Non-biodegradable items such as plastics, metals, and glass are also excluded to maintain compost quality. Non-compostable waste should remain below 5%, managed through advanced screening. Effective raw material management ensures efficient decomposition and high-quality compost for agricultural and environmental use.

### **3.10.4 Access Alternative**

#### **● Truck Access and Circulation Alternatives**

As part of the analysis of project alternatives, attention was given to truck access and circulation. Efficient and safe vehicle movement is essential for plant operations and must be carefully designed to minimize traffic disruptions, safety risks, and environmental impacts in surrounding communities.

#### **i. Use of Existing IRECOP Access Road (Preferred Option)**

The preferred option is to utilize the existing access road that serves the Integrated Recycling and Compost Plant (IRECOP), which lies adjacent to the proposed composting facility site. This road is paved, designed for heavy-duty trucks, and connects directly to Accra's Ring Road. It provides a direct, reliable route that avoids residential neighbourhoods. This option requires no new construction, significantly reduces cost, and aligns with AMA's zoning for waste

infrastructure within the Korle Lagoon Ecological Restoration Project (KLERP) area. It also allows logistical coordination with IRECOP's existing traffic flow while maintaining adequate separation between operations.

The access point (gate) will have a weigh bridge for recording the weight of trucks arriving at the facility with waste and the weight of trucks exiting after offloading to calculate the amount of waste received and processed. Hence, the preferred access point will be widened to provide separate in and out routes for traffic before and after accessing the weigh bridge.

Alternative option will consider separate entry and exit points for traffic. This would require having two weigh bridges leading to possible inconsistencies in data collection on weights of materials received at the facility as well as billing etc. It would also require additional energy and resources not necessarily leading to productive outcomes.

#### ii. **Construction of a New Dedicated Access Road (Alternative Option)**

A second alternative involved constructing a separate, dedicated access road to the composting site from a different direction. While this would offer operational independence, it presents major challenges. This option would likely require land acquisition, potentially displace economic activities, and come at a high capital cost. It may also disturb urban settlement and water drainage systems, increasing environmental and social risks. Given these drawbacks, this option was not selected.

#### iii. **Use of Local Community Roads (Rejected Option)**

The use of existing community roads was considered early in the planning process but rejected. These roads are narrow, frequently unpaved, and pass through densely populated areas, making them unsuitable for heavy truck traffic. Using these roads would pose serious safety risks to residents, increase dust and noise levels, and likely generate opposition from affected communities. This option was deemed socially and environmentally unacceptable.

### ● **Conclusion**

After reviewing all alternatives, the use of the existing IRECOP access road was selected as the most practical and responsible solution for truck ingress and egress. It minimizes environmental and social impacts, avoids residential disturbance, and supports the safe and efficient operation of the composting facility. This access route will be complemented by on-site traffic management measures to further reduce nuisance and enhance operational safety.

#### **3.10.5 “No Action” Scenario**

##### **Environmental and Social Considerations:**

The existing waste management system, if left unchanged, will continue to contribute to environmental degradation, including the accumulation of organic waste in landfills and potential contamination of surrounding areas. Additionally, air pollution from waste disposal, and the negative impact on nearby communities due to improper waste handling, may worsen over time, especially during periods of heavy rainfall or increased waste generation.

- **Conclusion**

The "no action" alternative is not a sustainable or viable option for addressing waste management issues. A proactive approach, such as the proposed source separation and composting project, is essential to mitigate environmental and social risks while improving long-term waste management practices in the city.

## 4.0 DESCRIPTION OF ENVIRONMENTAL AND SOCIAL BASELINE CONDITIONS

### 4.1 Spatial, Institutional, and Temporal Boundaries

The spatial boundary for this assessment included the proposed project site at Jamestown and its immediate surroundings likely to be impacted by construction and operational activities. This zone of influence covered the project footprint and adjoining infrastructure such as roads, surface drains, residential areas, and institutional facilities. It further extended to environmental receptors such as the Odaw River, the Korle Lagoon, and potentially downstream marine ecosystems affected by surface runoff.

The assessment covers four distinct project phases: the pre-construction stage involving site preparation and baseline monitoring; the construction phase marked by civil works and installation of composting infrastructure; the operational phase during which composting activities and associated environmental emissions occur; and the eventual decommissioning phase when the facility may be retired and deinstalled. Each of these stages is associated with specific environmental considerations, which are accounted for in this baseline and in the impact assessment that follows.

### 4.2 Project Site Overview

#### 4.2.1 Project Site History

The proposed site is located at latitude 5.542942° and longitude -0.225584° within Jamestown, an inner-city zone with a long history of unregulated waste handling. Over several decades, the area served as an informal dumping ground and a base for scrap dealers and waste pickers engaged in material recovery through dismantling and open burning. These activities have resulted in severe surface degradation, accumulation of residual waste, and visible contamination by metals, hydrocarbons, and decomposed organic matter. The historical use of the site has also altered its morphology, replacing natural topsoil with layers of mixed waste and debris. Due to these conditions, the site has been prioritized by the Accra Metropolitan Assembly as part of the city's broader strategy to rehabilitate degraded urban lands under initiatives such as the Korle Lagoon Restoration Project and Accra Climate Resilience interventions.

#### 4.2.2 Existing Land Use at the Proposed Project Site and Near Vicinity

The project site is presently in a non-operational state but as mentioned above, exhibits clear signs of historical use for uncontrolled waste disposal and scrap-related activities. Surface conditions consist of compacted waste layers, scattered metal parts, remnants of open fires, and patches of bare soil devoid of vegetation. The site lacks formal infrastructure, and access is possible via adjacent roads connecting to Central Accra.

### 4.3 Environmental Baseline Conditions of the Project Area

The environmental conditions of the proposed MSW Source Separation and composting project site, its immediate surroundings, and the broader Accra Metropolitan Area are shaped by both regional climate patterns and localized urban factors. This section draws on ten years of

meteorological data (2014–2023) obtained from the GMet, supplemented with field observations undertaken during the ESIA study, reconnaissance and spatial analysis using GIS. These data provide critical insights for the facility’s design, composting process management, occupational health planning, and environmental risk mitigation. Understanding climatic and physical site conditions aligns with the requirements of IFC Performance Standard 3 (Resource Efficiency and Pollution Prevention), which mandates the assessment of environmental and climate variables for pollution control and sustainable operations. Additional triggers from IFC PS2 (Labour and Working Conditions) and PS6 (Biodiversity Conservation and Sustainable Resource Management) apply where worker safety, heat stress, or runoff risks are identified.

#### ***4.3.1 Regional Climate and Meteorology***

The climate of Accra is characterised by high temperatures, seasonally intense rainfall, fluctuating wind speeds, and high humidity, moderated to some extent by its coastal location. However, localized urban conditions, including surface sealing, limited vegetation, and blocked drainage systems, create heat pockets and poor air circulation, particularly in low-lying zones like Jamestown. During the site visit, strong odours emanating from the nearby Korle Lagoon and poor airflow near stagnant drains reinforced the influence of microclimatic factors and pollution hotspots in the project’s immediate vicinity.

#### ***4.3.2 Site Specific Microclimate***

##### ***4.3.2.1 Wind Pattern and Regime***

Wind speed data from GMet shows average monthly values between 5 and 11 m/s across the Greater Accra Region. The strongest winds occur between July and September, with historical peaks of 11 m/s in August and September of 2015 and 2016. More recent years (2022–2023) exhibit a declining trend, with several months recording speeds as low as 4–6 m/s. On-site observations confirmed predominantly south-westerly wind directions and open exposure across the project site.

During dry months, low wind speeds reduce air exchange, leading to odour retention and localized warming, while during peak wind seasons, dust, compost particles, and odorous gases may be dispersed beyond the site boundary into the densely populated settlement and communities in close proximity to the project site. These wind conditions are relevant for both natural aeration of compost piles and design of structural elements that must withstand seasonal gusts. They also inform air dispersion models required under IFC PS3, particularly for odour and emissions control planning (Figure 4.1)

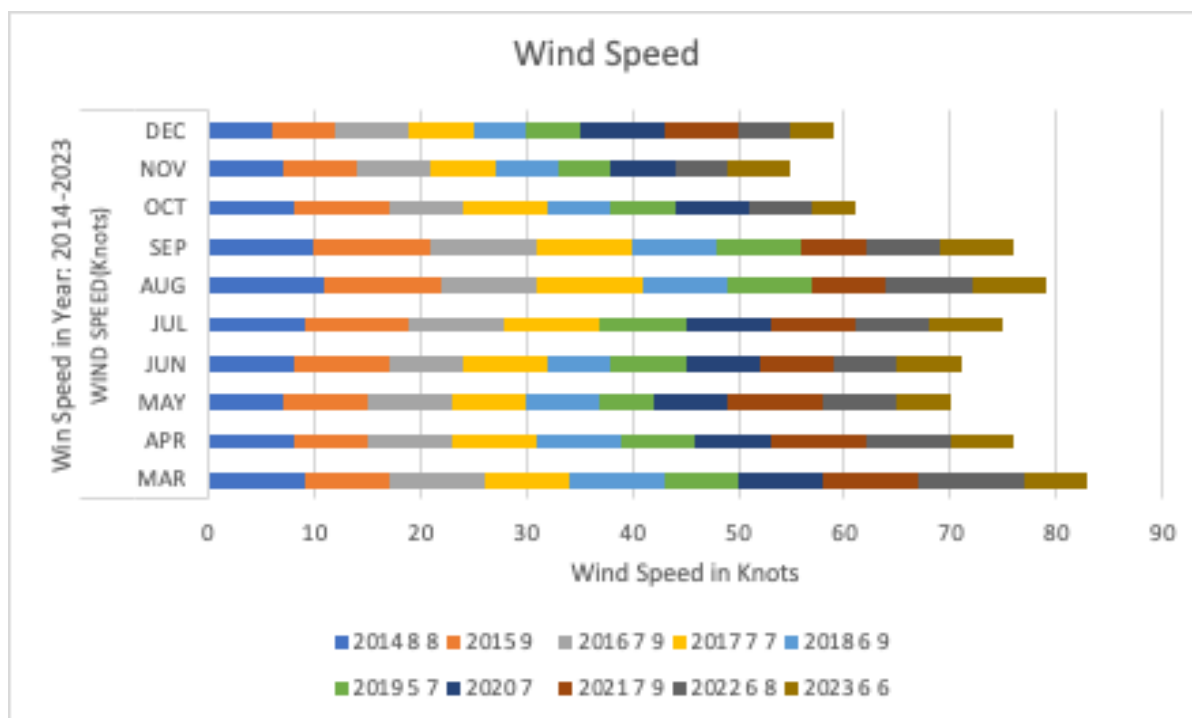


**Figure 4. 1** *Wind Speed from 2014 to 2023 in Greater Accra (GMet Data)*

#### 4.3.2.2 Temperature Trends

Over the past decade, temperature trends across all quarters reveal a gradual but consistent pattern of warming. As shown in Figure 4.3, which illustrates the quarterly trends in minimum and maximum temperatures from 2014 to 2023, both daytime and nighttime temperatures have increased across all seasons, though with varying intensities. During the first quarter (January to March), there is a clear upward trend in both minimum and maximum temperatures. Night temperatures have risen slightly, while daytime temperatures show a more noticeable increase, suggesting a gradual warming of the early dry season. In the second quarter (April to June), night temperatures remain relatively stable, while daytime highs fluctuate but generally trend upward, likely reflecting variations in rainfall onset and intensity. The third quarter (July to September), traditionally the coolest due to peak rainfall, maintains the lowest temperature values overall. In general, Figure 4.3 reflects a broader warming trend across the region, with each quarter experiencing increases in temperature, most notably in Q1 and Q4.

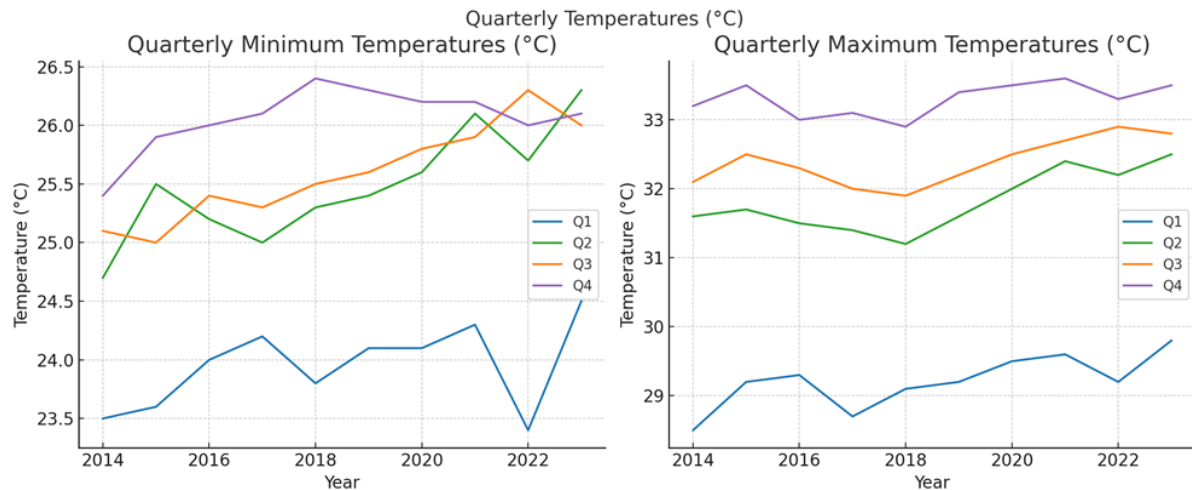


**Figure 4.2** Quarterly minimum and maximum temperature trends from 2014 to 2023

#### 4.3.2.3 Rainfall Patterns

Rainfall in Accra follows a bimodal regime, with a major rainy season from April to July and a minor one from September to November. Quarterly analysis of GMet data from 2014 to 2023 confirms significant inter-annual and intra-annual variability. For instance, total rainfall in Q2 exceeded 500 mm in 2015 and 2022, with peak monthly values reaching over 300 mm in June 2015 and May 2022. Conversely, the dry season is pronounced in Q1, where rainfall often drops below 50 mm, as seen in January 2016 and February 2022. At the project site in Jamestown, field assessments revealed conditions that heighten the area's vulnerability to flooding and stagnant water, notably blocked drains, inadequate runoff channels, and siltation. Figure 4.4 shows quarterly rainfall trend from 2014-2023.

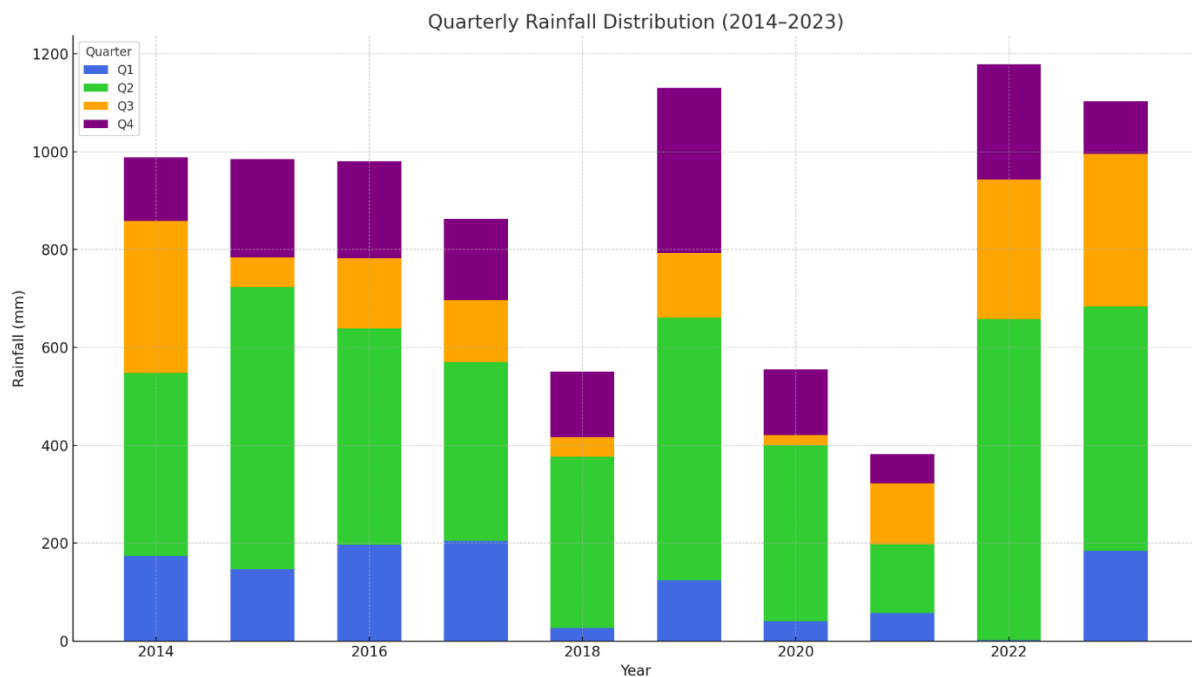


**Figure 4.3** Quarterly Rainfall Trend from 2014-2023

#### 4.3.2.4 Relative Humidity

Relative humidity in Accra ranges from 60% to 96%, with morning values (06:00) generally between 85% and 96%, and afternoon values (15:00) between 46% and 76%. GMet records show persistently high morning humidity across all years, with some decline in afternoon values in recent years. Field conditions confirmed high moisture retention in the air during early hours and rapid surface drying in the afternoons, especially during Harmattan months. Figure 4.5 shows the relative humidity at 6:00 am and 3:00 pm trend from 2014 to 2023

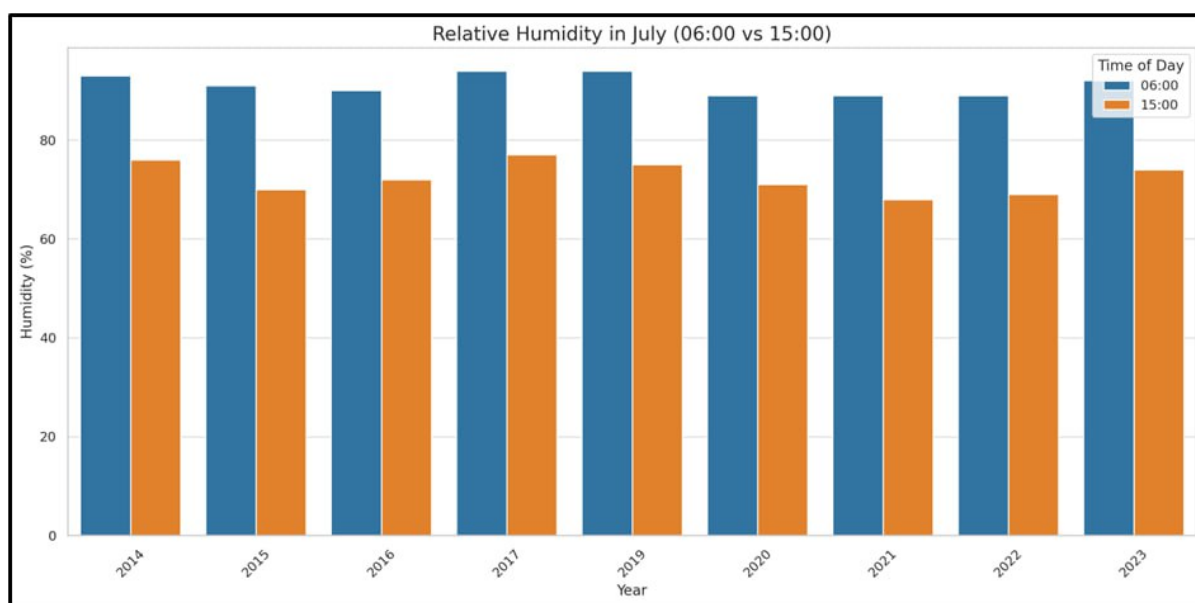


**Figure 4. 4** The relative humidity at 6:00 am and 3:00 pm trend from 2014 to 2023

#### 4.3.2.5 Solar Radiation

Accra receives high solar intensity throughout the year, particularly between January and April. This has significant implications for the composting process and structural design. Solar exposure supports thermophilic microbial activity in compost piles, contributing to pathogen inactivation and faster decomposition. However, excessive radiation may also overheat compost piles, increase water demand and risk microbial die-off. At the site, direct sunlight exposure was observed across most of the plot, with little natural shade or cover. These conditions necessitate design interventions such as shading nets, ventilation, and temperature monitoring tools to maintain compost quality and process control. From an infrastructure standpoint, materials must be UV-resistant to reduce degradation and ensure long-term resilience.

### 4.4 Existing Site Baselines (Expert Studies)

#### 4.4.1 Air Quality

The air quality within and around the proposed project site is significantly influenced by multiple sources of pollution, both historical and ongoing. The site lies within a heavily burdened urban corridor, bounded by informal waste management activities, stagnant water bodies, and active infrastructure. Over years of uncontrolled dumping and scrap trading, large quantities of residual and decomposing waste have accumulated on-site. These piles emit odorous gases, release dust under dry conditions, and serve as substrates for spontaneous fires. Intermittent open burning of

waste materials contributing visibly to air quality degradation. Smoke plumes, mostly from small-scale fires particularly from areas previously used for scrap processing and domestic waste disposal. The Korle Lagoon, located just downstream of the Odaw River and within 600 meters of the site, emits a strong, persistent odour especially under low wind conditions. This lagoon, widely documented as one of the most polluted water bodies in the sub-region, adds to the area's air quality burden by releasing methane, hydrogen sulphide, and other volatile compounds from its anaerobic, nutrient-rich sediments. On top of this legacy, ongoing waste dumping persists at the project location. These activities generate dust, disturb settled waste, and add to the uncontrolled release of airborne contaminants.

#### 4.4.2 Ambient Particulate Matter ( $PM_{2.5}$ , $PM_{10}$ ) and Total Suspended Particles (TSPs)

To quantify these existing pollution levels and establish a baseline, ambient air quality monitoring was conducted at four cardinal points (Western, Southern, Northern, and Eastern ends of the site) between 29th and 30th January 2025. Particulate matter was sampled using MiniVol Tactical Air Samplers with the ASTM D4096-17 Test Method as prescribed in the Ghana Standard (GS 1236:2019). The flow rates of the Minivol samplers were set at 5 L/min in line with the Ghana Air quality standards. Samplers were placed at a minimum height of 5 meters above ground level to prevent the collection of ground level dust temporarily made airborne by gusting winds (Plate 4.1). Results showed that all four monitoring points significantly exceeded permissible 24-hour thresholds. Under IFC PS3, such levels necessitate strong mitigation during both construction and operational phases, including enclosed handling areas, paved access roads, and dust suppression protocols. Table 4.6 shows a summary of concentrations of target dust pollutants.

**Table 4. 1** Concentration of particulate matter and total suspended particles

| Sampling location                                                                                  | Coordinates            | $PM_{2.5}(\mu g/m^3)$ | $PM_{10}(\mu g/m^3)$ | TSP           |
|----------------------------------------------------------------------------------------------------|------------------------|-----------------------|----------------------|---------------|
| Western end                                                                                        | 5.5440095, - 0.2263848 | *167                  | *250                 | *417          |
| Southern end                                                                                       | 5.5423309 - 0.2256982  | *222                  | *375                 | *431          |
| Northern end                                                                                       | 5.5440715, - 0.226183  | *292                  | *319                 | *431          |
| Eastern end                                                                                        | 5.5426609, - 0.2251238 | *167                  | *208                 | *278          |
| <b>Ghana Standards for 24-hr ambient <math>PM_{2.5}</math> <math>PM_{10}</math> (GS 1236:2019)</b> |                        | <b>35.0</b>           | <b>70.0</b>          |               |
| <b>IFC/WHO Guideline levels</b>                                                                    |                        | <b>25.0</b>           | <b>50.0</b>          |               |
| Analytical Standard Method                                                                         |                        | ASTM D4096-17         | ASTM D4096-17        | ASTM D4096-17 |

Remark: Monitoring results with asterisk exceeded their applicable permissible levels specified in the Ghana Standard for Environment and Health Protection – Requirements for Ambient Air Quality and Point Source/Stack Emissions (GS 1236:2019).



**Plate 4. 1: Air Quality Monitoring at Project Site**

#### 4.4.3 Gases ( $\text{NO}_2$ and $\text{SO}_3$ )

Gases such as sulphur trioxide ( $\text{SO}_3$ ) and nitrogen dioxide ( $\text{NO}_2$ ) were sampled using graduated dragger tubes in accordance with the AS 3580.4.1 test method for  $\text{SO}_3$  and the ISO 7996 for  $\text{NO}_2$ , which is specified in the Ghana Standard (GS 1236:2019). The values recorded for all four monitoring points were within the permissible levels as per the Ghana Standard (GS 1236:2019) as well as the IFC/WHO guidelines limits (Table 4.2).

**Table 4. 2 Levels of Nitrogen and Sulphur Trioxide at the proposed project site**

| Sampling locations                                                                                                     | Coordinates           | $\text{NO}_2(\mu\text{g}/\text{m}^3)$ | $\text{SO}_3(\mu\text{g}/\text{m}^3)$ |
|------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------------------------------|---------------------------------------|
| Western end                                                                                                            | 5.5440095, -0.2263848 | 19.02                                 | 41.0                                  |
| Southern end                                                                                                           | 5.5423309 -0.2256982  | 14.23                                 | 39.82                                 |
| Northern end                                                                                                           | 5.5440715, -0.226183  | 22.11                                 | 44.11                                 |
| Eastern end                                                                                                            | 5.5426609, -0.2251238 | 13.70                                 | 35.24                                 |
| <b>Ghana Standards for 24-hr ambient <math>\text{PM}_{2.5}</math> &amp; <math>\text{PM}_{10}</math> (GS 1236:2019)</b> |                       | <b>150</b>                            | <b>150</b>                            |
| <b>WHO 2021 AQGs (updated) / IFC Guideline levels</b>                                                                  |                       | <b>25</b>                             | <b>125</b>                            |
| Analytical Standard Method                                                                                             |                       | ISO 7996                              | AS 3580.4.1                           |

Remark: Monitoring results with asterisk exceeded their applicable permissible levels specified in the Ghana Standard for Environment and Health Protection – Requirements for Ambient Air Quality and Point Source/Stack Emissions (GS 1236:2019).

#### 4.4.4 Ambient Noise

Existing sources of noise pollution at the project area are both constant and intermittent, arising from waste handling operations, vehicular traffic, human activity, and industrial facilities in the

area. At times, especially during peak traffic or delivery hours, the noise environment becomes particularly intense. Ambient noise monitoring was conducted on 29th January 2025. Measurements were recorded at 10-minute intervals over a 24-hour period using high-precision, Type 1 integrated sound level meters with internal data logging and calibration capability. LAeq (equivalent continuous noise level), LA<sub>10</sub> (nuisance level), LA<sub>50</sub> (average level), LA<sub>90</sub> (background level), and LAMAX (maximum peak noise) were captured for each location. Meters were calibrated before and after each measurement session to ensure accuracy, as specified in national and international protocols. Noise levels exceeded Ghana's daytime permissible limit of 75 dB(A) for commercial areas at three of the four locations. Under IFC EHS Guidelines, noise levels should not exceed 3 dB(A) above the background level (LA<sub>90</sub>) at the nearest receptor. At the affected locations, background noise levels (LA<sub>90</sub>) ranged from 61.0 to 65.6 dB(A). Given that LAeq levels ranged from 77.0 to 82.3 dB(A), the exceedances are significant and may pose risks to both workers and local residents. Table 4.3 is a summary of the ambient noise levels at the project area.

**Table 4.3**      *Ambient Noise levels at four locations at the proposed site*

| Monitoring locations                                                             | Coordinates                                                                                                                                                            | LAeq  | LA10 | LA50 | LA90 | LAMAX |
|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|------|------|-------|
| Western end                                                                      | 5.5440095, -0.2263848                                                                                                                                                  | *79.1 | 82.8 | 75.3 | 65.6 | 93.2  |
| Southern end                                                                     | 5.5423309, -0.2256982                                                                                                                                                  | *77.0 | 79.0 | 65.1 | 61.1 | 97.2  |
| Northern end                                                                     | 5.5440715, -0.226183                                                                                                                                                   | *82.3 | 86.5 | 73.2 | 61.0 | 96.5  |
| Eastern end                                                                      | 5.5426609, -0.2251238                                                                                                                                                  | 62.2  | 68.1 | 50.8 | 47.9 | 85.7  |
| <b>Ghana Standard for ambient noise level for commercial areas, GS 1222:2018</b> | <b>Daytime: 75 dB (A)</b><br><b>Nighttime: 65 dB(A)</b>                                                                                                                |       |      |      |      |       |
| IFC/WBG (2007) Noise level Guidelines                                            | Daytime (Residential; institutional; educational): 55 dBA<br>Night (Residential; institutional; educational): 45 dBA<br>Daytime/night (Industrial; commercial): 70 dBA |       |      |      |      |       |
| Test Method Used                                                                 | ANSI S1.43                                                                                                                                                             |       |      |      |      |       |

Remark: Monitoring results with asterisk exceeded their applicable permissible levels specified in the Ghana Standard for Health Protection – Requirements for Ambient Noise Control (GS 1222:2018).

#### 4.4.5 Soil Quality

Soil quality at the proposed MSW Source Separated and composting project site was assessed through a combination of field observation and laboratory analysis conducted between 16th and 30th January 2025. Samples were collected from four strategic locations. Entrance, Middle of Site, Lagoon Bank, and Across the Street to evaluate soil condition in relation to its potential for composting operations and its environmental health. Parameters analysed included pH, Total Organic Carbon (TOC), heavy metals, and basic microbiological indicators. Composite soil samples were collected using a trowel for surface sampling and an auger to drill into the soil for subsurface sampling. Soil pH and the digestion and analysis of heavy metals was determined by flame atomic absorption spectrometry. The methodology followed Ghana's environmental monitoring protocols and international standards including WHO, and IFC

Environmental, Health and Safety (EHS) Guidelines. Levels of Arsenic (As), Chromium (Cr), Mercury (Hg) and Nickel were lower than their permissible level for all areas sampled. On the other hand, several parameters (lead (Pb), zinc (Zn), and cadmium (Cd)) exceeded WHO permissible limits at multiple sampling locations within the proposed project site. This is reflective of the previous and current use of the site (formal unapproved waste dump site and current scrap yard). Table 4.4 summarises the results of the soil quality assessment.

**Table 4.4** *Soil quality levels at four locations at the project site*

| Sam. loc       | Coordinates          | TOC    | pH      | Pb       | Cd      | As      | Cr       | Zn       | Hg      | Ni       |
|----------------|----------------------|--------|---------|----------|---------|---------|----------|----------|---------|----------|
| Entrance       | 5.542619 -0.2257387  | 12.25% | 5.21    | 420*     | 10      | 21      | 18.94    | 1290*    | 0.11    | 3.86     |
| Middle of site | 5.5424273 -0.2254665 | 2.28%  | 4.67    | 450*     | ND      | 12      | 55.23    | 2100*    | 1.34    | 11.02    |
| Lagoon bank    | 5.5427834 -0.2252077 | 17.62% | 4.88    | 600*     | 100*    | 18      | 42.01    | 1600*    | 0.67    | 7.26     |
| Across street  | 5.5424734 -0.2262718 | 5.13%  | 6.72    | 150      | ND      | 5       | 5.3      | 800*     | ND      | 1.59     |
| WHO            |                      |        | 6.0-7.0 | 400mg/kg | 20mg/kg | 50mg/kg | 200mg/kg | 300mg/kg | 10mg/kg | 100mg/kg |

Remarks: Monitoring results with asterisk exceeded their applicable permissible levels specified in the WHO Guidelines for soil (2004). TOC = Total organic carbon

#### **4.4.6 Geology, Geomorphology and Hydrogeology of Project Area**

##### **4.4.6.1 Geomorphology**

The proposed project site lies within the coastal plain geomorphic region of southern Ghana. This zone is characterised by gently undulating terrain and low-lying formations shaped by long-term marine and fluvial processes. The landscape is mostly depositional, with areas historically influenced by alluvial sedimentation from the Odaw River system and tidal backflows from the Korle Lagoon. The surrounding landform consists of shallow depressions, relic drainages, and compacted artificial fills from decades of urban development and informal dumping.

##### **4.4.6.2 Local Geology of the Project Area**

Geologically, the project area is underlain by sedimentary rocks of the Accraian Series, part of the Togo Structural Basin. The dominant lithologies include shales, sandstones, and clayey layers, with intercalated ferruginous materials. These formations have low permeability and limited groundwater yield, often requiring artificial support for sustainable extraction. Surface soils are typically anthropogenically modified urban fills, composed of compacted sandy clays, construction debris, and organic-rich layers from prolonged dumping. These disturbed layers rest above the natural geological profile and exhibit variable infiltration and load-bearing characteristics, requiring geotechnical verification before structural foundations are laid.

##### **4.4.6.3 A Summary of Geotechnical Survey Conducted at the Proposed Site**

Geotechnical investigations were conducted at five locations within the proposed project site between 24th and 26th August 2024 as part of the feasibility study for the compost plant. The borehole logs were drawn from the Feasibility Study Report prepared for the Municipal Solid Waste Source Separation and Composting Project. These investigations aimed to evaluate

subsurface conditions, groundwater occurrence, and the suitability of the soil profile for proposed structural development. The borehole data reveal consistent patterns of surface-level contamination by domestic waste, underlain by plastic silty clays, fine- to medium-grained silty sands, and consolidated sandstone layers at depth. Groundwater levels were recorded between 4.0 and 6.0 meters across the site.

**Borehole 1:** Drilled on 24th August 2024, Borehole 1 revealed a shallow surface layer of silty sandy lateritic gravels mixed with domestic waste (0–0.3 m), followed by firm greyish silty clay (0.3–5.6 m), and a transition to dense silty sand with refusal at 9.0 m (SPT 50 blows/50 mm). Groundwater was encountered at 6.0 m. The upper waste-laden material is structurally unsuitable and requires removal. Intermediate clay may require stabilization. Dewatering measures are recommended due to high groundwater.

**Borehole 2:** Also drilled on 24th August 2024, Borehole 2 showed waste-contaminated silty sand to a depth of 4.3 m, underlain by plastic silty clay and loose to medium-dense silty sand, transitioning to dense sandstone beyond 8.3 m where SPT refusal was recorded. Groundwater occurred at 4.0 m. The profile suggests the need for deep excavation and potential piling into the competent sandstone layer. Upper waste must be removed and groundwater managed.

**Borehole 3:** Drilled through 4.0 m of compacted dumped material, Borehole 3 encountered soft to firm silty clay (4.0–6.0 m) and dense silty sand with sandstone elements (6.0–8.0 m), with refusal at 8.0 m. Groundwater appeared at 5.0 m. The transition to hard sandstone offers a solid founding stratum. However, the heterogeneity of the upper fill and plastic clay zones necessitates deep foundation solutions and site-specific stabilization strategies.

**Borehole 4:** This borehole presented a similar profile to Borehole 3, with transported dump material extending to 4.6 m, followed by plastic silty clays and sandy clays to 8.075 m, where refusal on dense sandstone occurred. Groundwater was recorded at 4.6 m. The soft plastic clays are prone to settlement and moisture-induced deformation, requiring stabilization or bypass via piles anchored in the dense substratum.

**Borehole 5:** Drilled on 26th August 2024, Borehole 5 revealed a surface layer of waste-laden silty sand and clay to 5.6 m, underlain by medium-dense to dense silty sand with increasing sandstone content. Refusal was recorded at 11.0 m. Groundwater was found at 5.6 m. The upper layers require excavation and stabilization; deep foundations into the sandstone are strongly recommended to ensure structural integrity and long-term settlement control.

Across all boreholes, the presence of domestic waste and plastic clays in the upper layers presents significant geotechnical risks. These materials exhibit low bearing capacity, poor compaction response, and high variability. Conversely, the deeper silty sand and sandstone formations offer competent founding strata, though at depths ranging from 7 to 11 meters. Each borehole's position relative to the proposed facility layout is illustrated in Figure 4.6.

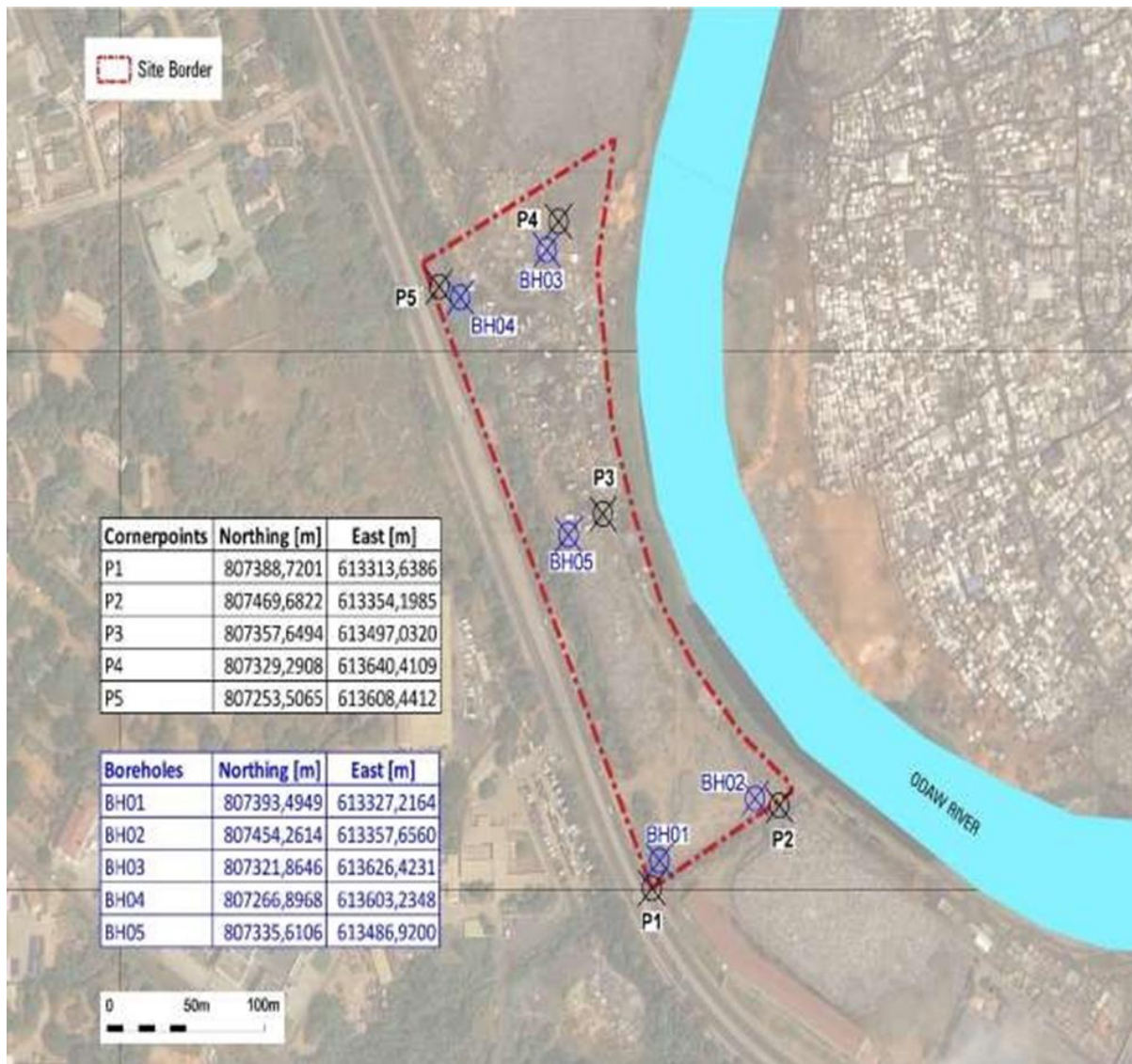


**Figure 4. 5** Location of Boreholes relative to the Proposed compost plant (Source: Feasibility Study Report, GIZ)

#### 4.4.6.4 Topography and Drainage Pattern

The project site falls within the low-lying coastal plains of Accra, a zone historically prone to poor surface drainage and recurrent flooding. Topographic and geospatial analysis, supported by elevation and slope maps (Figures 4.7 and 4.8), confirms that the site is predominantly flat, with minimal elevation variation across its extent. These physical attributes are critical considerations for drainage planning, infrastructure resilience, and long-term environmental risk management.

#### 1. Elevation

As shown in the elevation map (Figure 4.7), the site lies within a narrow elevation band ranging from 2 to 22.8 meters above sea level, with the majority of the area situated toward the lower end of this range. The red-shaded areas on the map correspond to zones that are at or near sea level. This elevation profile places the project site within a high flood-risk zone, particularly during periods of intense rainfall or tidal backflows from the nearby Korle Lagoon system. Given Accra's history of recurrent flooding, often exacerbated by blocked storm drains, poor

urban runoff management, and inadequate flood infrastructure, the low elevation of the site poses a significant risk of seasonal waterlogging and inundation.

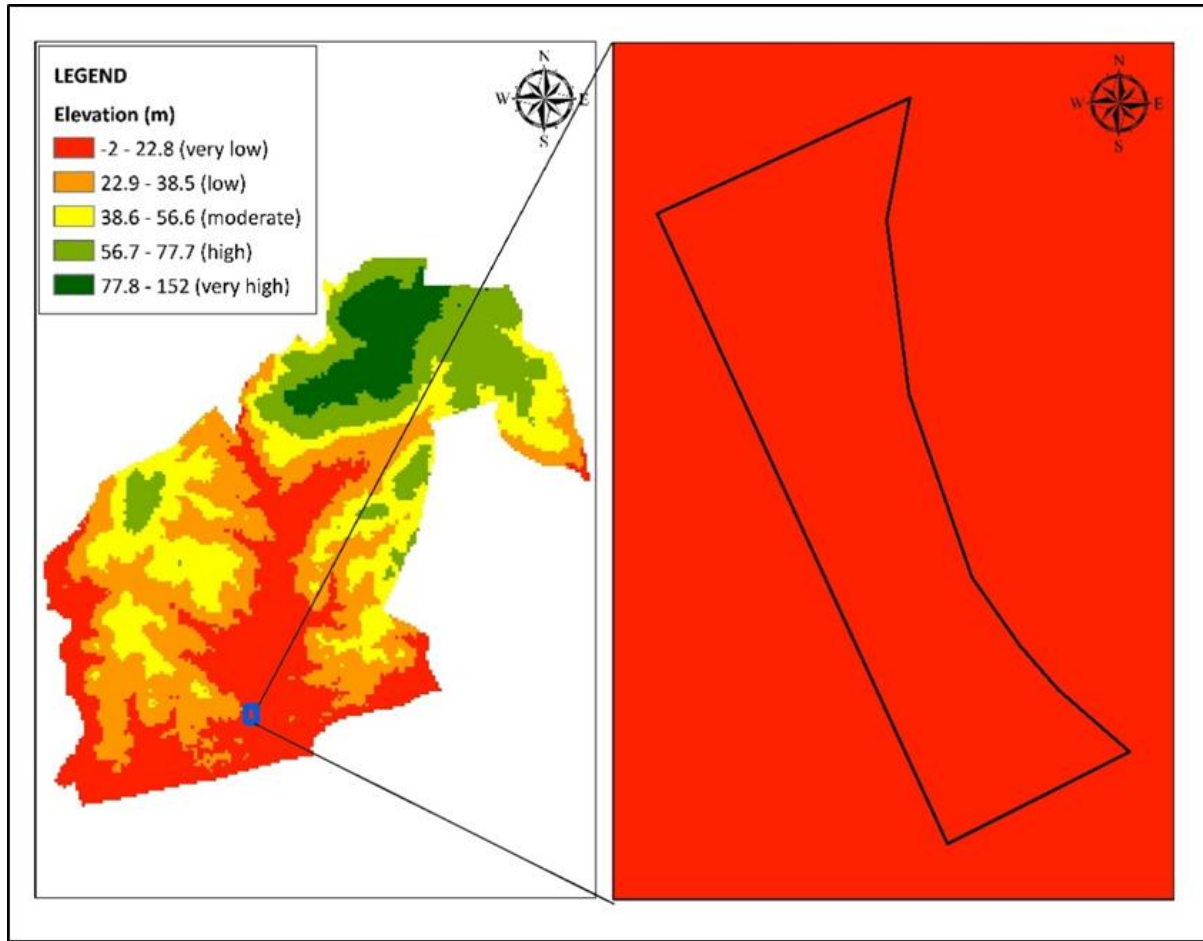


**Figure 4. 6    Elevation Map**

## 2. Slope

The slope analysis (Figure 4.9) indicates that the site falls within the “very low” ( $0\text{--}1.06^\circ$ ) and “low” ( $1.07\text{--}1.91^\circ$ ) slope categories. This confirms that the site is topographically flat, with very limited natural gradient to facilitate surface runoff. While such low slopes are advantageous from a construction standpoint, minimizing earthworks and erosion risks, they also reduce natural drainage efficiency. During heavy rainfall events, the lack of slope may lead to surface water accumulation, slow runoff, and localized ponding, especially in low-lying areas of the site. Again, flat terrain adjacent to flood-prone water bodies heightens vulnerability to backwater effects and stagnation during peak flow periods.

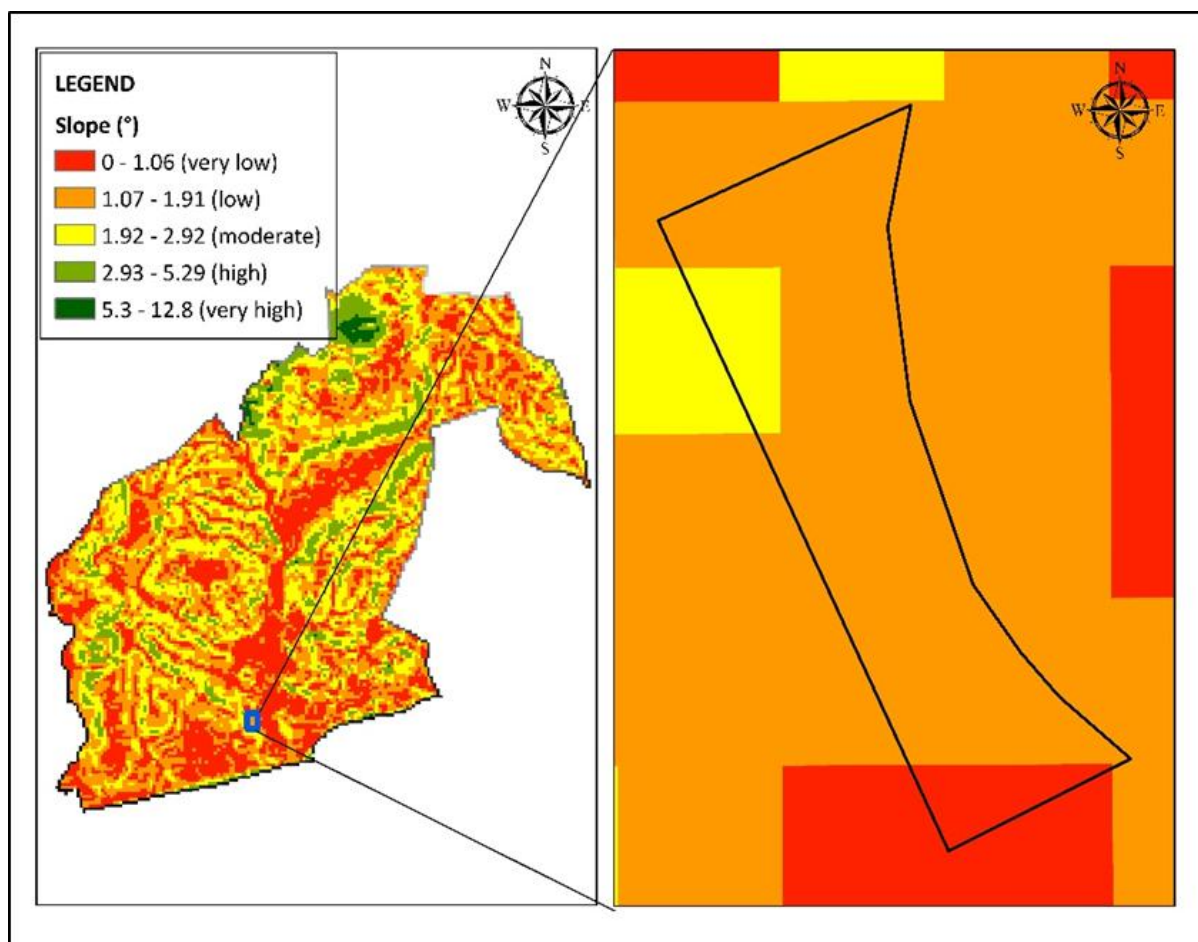


**Figure 4. 7    Slope Map**

#### **4.4.6.5 Faults and Seismic Activity**

Although Ghana is not in a high-risk earthquake zone, Accra and its surroundings fall within a seismically sensitive corridor, associated with the Akwapim fault line with the most recent significant earthquake occurring on June 24, 2020, registering a magnitude of 4.0 near Gbawe, a suburb of the city. This event, though moderate, serves as a reminder of the region’s vulnerability to seismic activity, which has historically caused damage, as seen in the 1939 earthquake (magnitude 6.4) that led to loss of life and infrastructure collapse.

#### **4.4.7 Surface Water Analysis (Odaw River)**

Hydrologically, the site falls within the Odaw-Korle catchment. The river and its tributaries are subject to frequent flooding, primarily due to encroachment, sedimentation, and blockage from improperly managed solid waste. The hydrogeological setting is dominated by low-yield weathered and fractured rock aquifers, typical of sedimentary formations in the Accraian belt. Given the site’s location near the river, understanding the surface hydrology is essential for flood risk management, leachate control, and sustainable operation of the composting facility. As part of baseline assessment, surface water quality sampling was conducted on 16th January 2025 at three strategic locations along the Odaw River to assess spatial variation and cumulative pollution impacts. The selected sampling points were:

- Upstream (background conditions): 5.5427340, -0.2248026
- Storm Drain Confluence (potential discharge point): 5.5424931, -0.2248083
- Downstream (cumulative pollution zone): 5.5424998, -0.2245203

These locations were chosen based on flow dynamics, proximity to the project site, and visible pollutant pathways. Grab sampling was conducted under stable flow conditions to minimize sediment disturbance. Key physical parameters pH, temperature, dissolved oxygen (DO), turbidity, electrical conductivity, and total dissolved solids (TDS) were measured in situ using a calibrated Horiba U-52G multiparameter water quality meter. Also, water quality parameters such as Nitrate-nitrogen, Ammonia-nitrogen, sulphate and phosphate were determined with Wagtech Potalab Photometer Model 7100 using the correct reagent tablets. Biochemical Oxygen Demand (BOD) was determined by the Velp Scientific System (Incubator). The Velp system uses a BOD sensor which records BOD every 24 hours for 5 days of incubation. Extensive field work on the identification of sampling location was done. All these tests were carried out in accordance with the test method spelt out in the Ghana Standard (GS 1212:2019). The content of all the heavy metal was determined by (SCHIMADZU AAS model AA7000) Atomic Absorption Spectrophotometer.

#### **4.4.7.1 Physico-chemical characteristics**

Water samples revealed severely degraded physical water quality. pH values ranged from 5.2 to 5.3 across all locations well below the GS 175:2021 acceptable range (6.5–8.5). Electrical conductivity and Total Dissolved Solids (TDS) were excessively high, with conductivity exceeding 20,000  $\mu\text{S}/\text{cm}$  upstream and downstream, and TDS peaking at 12,720 mg/L over 25 times the national limit. Turbidity was also extreme, with values reaching 272 NTU at the storm drain, indicating high sediment and organic load. Dissolved oxygen (DO) levels were critically low (around 2.7 mg/L), a strong indication of oxygen depletion due to excessive organic loading (See Table 4.5).

Lead concentrations ranged from 0.22 to 0.65 mg/L, substantially surpassing the GS 175:2021 limit of 0.11 mg/L. Iron levels exceeded the permissible 0.3 mg/L at all locations. Mercury (0.0023 mg/L upstream) also exceeded its allowable threshold (0.001 mg/L). These contaminants are likely linked to urban runoff, industrial discharge, and leachate from unmanaged dump sites. Ammonia and nitrate levels were within acceptable limits, although the nutrient load may increase with further organic inputs if uncontrolled.

Biochemical Oxygen Demand (BOD) was consistently higher at all locations. The figures (Maximum >279) far exceed the acceptable limit of 12mg/l indicating that the Odaw River is highly polluted. Table 4.5 shows the quality measurements of the Odaw River.

**Table 4. 5      Surface Water Quality (Odaw River)**

| Location    | pH      | Conductivity | TDS      | Turbidity | DO     | NH3       | NO <sub>3</sub> | Nitrite  | Total Fe | Cl       | SO <sub>4</sub> <sup>2-</sup> | Mn       | CO <sub>2</sub> D | Cu     | F <sup>-</sup> | Pb        | Cd         | Hg         | BOD    |
|-------------|---------|--------------|----------|-----------|--------|-----------|-----------------|----------|----------|----------|-------------------------------|----------|-------------------|--------|----------------|-----------|------------|------------|--------|
| Upstream    | 5.21*   | 20400*       | 12500*   | 214*      | 2.74   | 0.02      | 0.289           | 0.1      | 0.5*     | 26       | 100                           | 0.34*    | 960*              | 0.06   | 1.5            | 0.22*     | 0.002      | 0.0023*    | 11.0   |
| Storm drain | 5.3*    | 12450*       | 8200*    | 272*      | 2.7    | 0         | 0.246           | 0.09     | 0.2      | 21       | 50                            | 0.24*    | 620*              | 0      | 0.03           | 0.15*     | 0.001      | 0.001      | 115.3* |
| Downstream  | 5.26*   | 20600 *      | 12720*   | 160*      | 2.7    | 0.02      | 0.331           | 0.13     | 0.6*     | 33       | 142                           | 0.34*    | 1120*             | 0      | 1.5            | 0.65*     | 0.001      | <0.001     | 179.2* |
| GS 175:2021 | 6.5-8.5 | 2000 mg/l    | 500 mg/l | 0.1-5 NTU | 5 mg/l | 00.5 mg/l | 50 mg/l         | 3.0 mg/l | 0.3 mg/l | 250 mg/l | 250 mg/l                      | 0.1 mg/l | 250 mg/l          | 5 mg/l | 1.5 mg/l       | 0.11 mg/l | 0.003 mg/l | 0.001 mg/l | 12mg/l |

Remark: Monitoring results with asterisk exceeded their applicable permissible levels specified in the Ghana Standard for Water Quality (DGS 175:2021). The surface water quality was benchmarked against the GSA standards for surface water.

#### **4.4.7.2 Microbial Water Quality**

The microbial assessment showed severe contamination across all sampling points. E. coli ranged from 20,000 to 100,000 CFU/100mL, and total coliforms exceeded 10 million CFU/100mL downstream. These far exceed GS 175:2021 thresholds (<500 for total coliforms and <1 for faecal/E. coli), indicating strong faecal pollution. The IFC PS3 and PS6 highlight the critical need for microbiological pollution control, especially given the risk to downstream users and aquatic biodiversity (Table 4.6). PS6 for instance focuses on pollution, habitat loss, and degradation encompasses the potential impacts of microbiological pollutants.

**Table 4. 6**      *Levels of microbial contamination of the Odaw River*

| Parameter | Observed Condition | IFC / GS Guideline | Risk           | Recommended Mitigation           |
|-----------|--------------------|--------------------|----------------|----------------------------------|
| pH        | Acidic (5.2–5.3)   | 6.5–8.5            | Aquatic stress | Buffer runoff, soil conditioning |
| DO        | ~2.7 mg/L          | ≥ 5 mg/L           | Aquatic death  | Organic load reduction           |
| Lead (Pb) | Up to 0.65 mg/L    | 0.11 mg/L          | Toxicity       | Source tracking and treatment    |
| E. coli   | 20,000–100,000 CFU | <1 CFU             | Health hazard  | Sanitation control, bio-barriers |

#### 4.4.8 Biological Environment

##### 4.4.8.1 Vegetation of the proposed project site

The proposed site is an already degraded, unplanned landfill and scrap yard, with patches of vegetation along the road that separates the proposed site from the Korle Bu Mortuary. Plate 4.1 presents photos of the project site.

**Plate 4. 2: Proposed project site view**

Eight plant species belonging to 5 plant families were recorded at the project site (Table 4.7), with the dominant family being Fabaceae (originally Leguminosae), also known as the pea or legume family. None of the plant species are of significant conservation importance. However, three of the plant species; *Azadirachta indica*, *Leucaena leucocephala* and *Typha domingensis* are invasive plant species (Plates 4.2 - 4.3), which are well known and studied and typically found growing along arid roadsides, in carparks, and on land areas as abandoned as the project site. The plant species recorded have been presented in Table 4.7.

**Table 4. 7**      *Plant species recorded at the proposed project site*

| Family   | Scientific Name              | IUCN Conservation Status |
|----------|------------------------------|--------------------------|
| Fabaceae | <i>Leucaena leucocephala</i> | Lower Risk               |
| Fabaceae | <i>Albizia lebbek</i>        | Least Concern            |
| Fabaceae | <i>Acacia auriculiformis</i> | Least Concern            |

|               |                           |               |
|---------------|---------------------------|---------------|
| Fabaceae      | <i>Senna siamea</i>       | Least Concern |
| Combretaceae  | <i>Terminalia catappa</i> | Least Concern |
| Euphorbiaceae | <i>Ricinus communis</i>   | Not assessed  |
| Typhaceae     | <i>Typha domingensis</i>  | Least Concern |
| Meliaceae     | <i>Azadirachta indica</i> | Least concern |



**Plate 4. 3: *Leucaena leucocephala* (A), *Typha domingensis* (B) and *Azadirachta indica* (C)**

#### 4.4.8.2 Fauna

The urbanised and degraded nature of the project site makes it less important for biodiversity conservation. Nevertheless, the site supports few ecologically important species worth highlighting. The site is home to the locally protected, Yellow-billed Kite (*Milvus migrans parasitus*) and Cattle Egret (*Bubulcus ibis*). Table 4.8 presents the fauna species recorded from the project site. The proposed project site is along the Odaw River, approx. 1.5km away from the seashore and about 600m away from the Korle Lagoon which has been classified as one of the most polluted water bodies on earth. While the proposed project site is degraded, it still holds ecological value, particularly due to the presence of protected bird species and invasive plant species

**Table 4. 8**      *Avi-Fauna recorded from the proposed project site*

| Common name                  | Scientific Name                  | Local status | IUCN Conservation Status |
|------------------------------|----------------------------------|--------------|--------------------------|
| Red-eyed Dove                | <i>Streptopelia semitorquata</i> |              | Least Concern            |
| Laughing Dove                | <i>Spilopelia senegalensis</i>   |              | Least Concern            |
| Common Bulbul                | <i>Pycnonotus barbatus</i>       |              | Least Concern            |
| Northern Grey-headed Sparrow | <i>Passer griseus</i>            |              | Least Concern            |
| Yellow-billed Kite           | <i>Milvus migrans parasitus</i>  | Appendix 1   | Least Concern            |
| Western Plantain-eater       | <i>Crinifer piscator</i>         |              | Least Concern            |
| African Grey Hornbill        | <i>Lophoceros nasutus</i>        |              | Least Concern            |
| Pied Crow                    | <i>Corvus albus</i>              |              | Least Concern            |
| Barn Swallow                 | <i>Hirundo rustica</i>           |              | Least Concern            |
| White-headed Lapwing         | <i>Vanellus tectus</i>           |              | Least Concern            |
| Cattle egret                 | <i>Bubulcus ibis</i>             | Appendix 1   | Least Concern            |

*Note: Appendix 1 species are wholly protected from capture/destruction at all times of the year*

#### 4.4.8.3 Land Use Land Cover Classification Scheme for Accra Metropolitan Area

The project is located in the Ashiedu Keteke Sub-metro of the Accra Metropolitan Assembly. Historically, much of the Accra Metropolitan Area was believed to have been covered by dense forest, yet the vegetation of the entire Metropolitan Area has been altered over the past centuries. A land use land cover (LULC) baseline analysis was conducted to throw more light on the current land use patterns within the Accra Metropolitan Area, to enhance the assessment of potential environmental impacts and sustainability considerations of the project. LULC maps for the study area, spanning the years 1994, 2004, 2014, and 2024, illustrate the principal land use categories within the AMA. These maps help assess historical land use trends, urban expansion, and environmental changes in AMA. The distribution of land use types directly affects waste generation patterns, logistics for waste collection and transportation, road networks and potential environmental risks, making LULC classification a vital tool for planning and decision-making in the project. The key LULC classes relevant to the project are described in Table 4.9.

**Table 4. 9      LULC Classification Scheme**

| <b>LULC Class</b> | <b>Description</b>                                                                                                                                                                                                                          |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dense Vegetation  | Areas covered by thick, continuous forest or natural vegetation, typically found in protected zones or less disturbed regions. These areas play a critical role in carbon sequestration, biodiversity conservation, and climate regulation. |
| Open Vegetation   | Forested areas with a more open canopy, allowing sunlight penetration. This category includes agroforestry zones and urban green spaces, which contribute to soil protection and stormwater management.                                     |
| Bare Area         | Land with minimal vegetation cover, including exposed soil, degraded lands, and areas undergoing construction. Such areas have a high potential for erosion, dust generation, and urban heat effects.                                       |
| Built-up Area     | Highly urbanized zones with concentrated human habitation and infrastructure, including residential, commercial, and industrial zones. These areas generate significant waste streams and influence waste collection logistics.             |
| Waterbody         | Includes rivers, streams, and wetlands that play a crucial role in flood control, ecosystem health, and urban cooling. Proper waste management is essential to prevent pollution and eutrophication of these water resources.               |

The spatial distribution of LULC classes in the project area from 1994 to 2024, as shown in Figure 4.9, highlights significant urbanization and environmental transformation within the AMA. The classification maps categorize the landscape into dense vegetation, open vegetation, bare areas, built-up areas, and waterbodies, with accompanying tables providing detailed statistics on LULC changes, annual rates of change, and transition probabilities (Table 5.10-5.12). These changes are critical in understanding the evolving urban landscape and its implications for waste generation, collection, transportation, and the overall feasibility of the project.

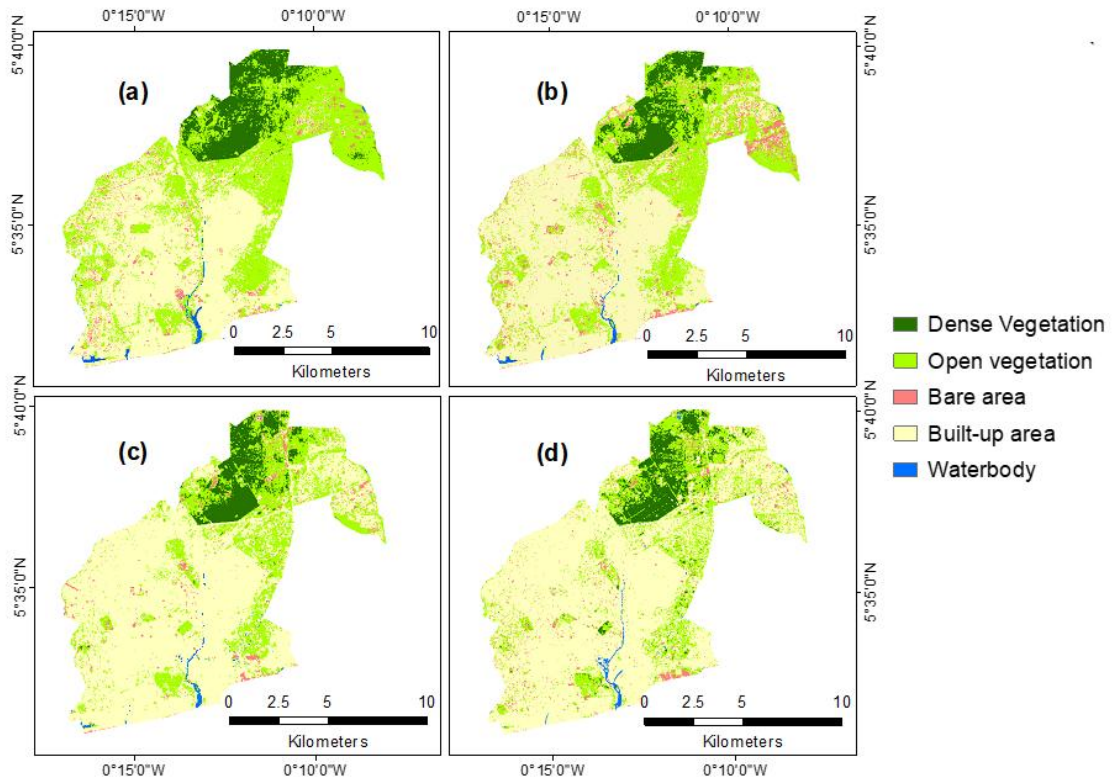


**Figure 4. 8 Spatio-Temporal Land-Use trend of the Accra Metropolis (a)1994 (b)2004 (c)2014 and (d)2024**

Over the three decades, urbanization has been a dominant driver of land use change, with built-up areas increasing from 48.06% in 1994 to 73.54% in 2024. This rapid expansion has led to a corresponding decline in vegetative cover, with dense vegetation reducing from 12.26% to 6.51% and open vegetation decreasing from 35.79% to 16.56%. These shifts indicate an increasing concentration of human settlements and commercial activities, which directly impact waste generation rates and collection logistics. The expansion of built-up areas suggests that waste collection and transportation networks will need to be well-structured to ensure efficient movement of organic waste from households and markets to the compost plant.

The transition probability matrix further illustrates how land use has changed over time, with open vegetation consistently transitioning into built-up areas. Between 2014 and 2024, approximately 31.39% of open vegetation was converted into urbanized land, reflecting the ongoing urban sprawl. Such patterns underscore the importance of waste management strategies that accommodate increasing population densities and changing land use dynamics. The loss of waterbodies (-21.59% over 30 years) highlights potential challenges related to water availability necessitating sustainable water-use practices.

Upstream in the value chain, the changes in LULC indicate that waste generation will continue to rise due to urban expansion, making it essential to strengthen source separation initiatives to ensure a steady supply of organic waste to the compost plant. With more waste being generated from commercial and residential sources rather than agricultural activities, the composition of

organic waste may change, affecting compost quality. The project will integrate quality control measures, such as pre-processing screening to remove contaminants like plastics. Additionally, transportation logistics must be optimized to accommodate the increasing distance between waste generation points and the composting site. Tables 4.10 – 4.12 presents the change statistics, rate of change dynamics, and Transition probability matrix respectively over the past few years.

**Table 4. 10**      *Change statistics from 1994–2024*

| LULC Class       | 1994  |           | 2004  |           | 2014  |           | 2024   |           |
|------------------|-------|-----------|-------|-----------|-------|-----------|--------|-----------|
|                  | km2   | % of area | km2   | % of area | km2   | % of area | km2    | % of area |
| Dense vegetation | 17.15 | 12.26     | 14.28 | 10.21     | 10.71 | 7.66      | 9.11   | 6.51      |
| Open vegetation  | 50.07 | 35.79     | 41.76 | 29.85     | 30.76 | 21.99     | 23.17  | 16.56     |
| Bare area        | 4.56  | 3.26      | 7.05  | 5.04      | 3.53  | 2.52      | 4.05   | 2.89      |
| Built-up area    | 67.24 | 48.06     | 75.95 | 54.29     | 94.16 | 67.31     | 102.88 | 73.54     |
| Waterbody        | 0.88  | 0.63      | 0.86  | 0.61      | 0.74  | 0.53      | 0.69   | 0.49      |

**Table 4. 11**      *Rate of change dynamics from 1992–2022*

| LULC Class       | Change (Δ)<br>(1994-2004) |        | Change (Δ)<br>(2004-2014) |        | Change (Δ)<br>(2014-2024) |        | Net Change (Δ)<br>(1994-2024) |        |
|------------------|---------------------------|--------|---------------------------|--------|---------------------------|--------|-------------------------------|--------|
|                  | Δ<br>(km2)                | Δ %    | Δ<br>(km2)                | Δ %    | Δ (km2)                   | Δ %    | Δ (km2)                       | Δ %    |
| Dense vegetation | -2.87                     | -16.73 | -3.57                     | -25.00 | -1.6                      | -14.94 | -8.04                         | -46.88 |
| Open vegetation  | -8.31                     | -16.60 | -11.00                    | -26.34 | -7.59                     | -24.67 | -26.9                         | -53.72 |
| Bare area        | 2.49                      | 54.61  | -3.52                     | -49.93 | 0.52                      | 14.73  | -0.51                         | -11.18 |
| Built-up area    | 8.71                      | 12.95  | 18.21                     | 23.98  | 8.72                      | 9.26   | 35.64                         | 53.00  |
| Waterbody        | -0.02                     | -2.27  | -0.12                     | -13.95 | -0.05                     | -6.76  | -0.19                         | -21.59 |

**Table 4. 12**      *Transition probability matrix from 1992–2002, 2002–2012, and 2012–2022*

| Period:<br>from-to<br>LULC | LULC                | Dense<br>vegetation | Open<br>vegetation | Bare area | Built-up<br>area | Waterbody |
|----------------------------|---------------------|---------------------|--------------------|-----------|------------------|-----------|
|                            |                     | <b>2004</b>         |                    |           |                  |           |
|                            | Dense<br>vegetation | 0.6722              | 0.2936             | 0.0156    | 0.0186           | 0.0000    |
|                            | Open<br>vegetation  | 0.0285              | 0.6034             | 0.0837    | 0.2826           | 0.0018    |

| Period:<br>from-to<br>LULC | LULC                | Dense<br>vegetation | Open<br>vegetation | Bare area | Built-up<br>area | Waterbody |
|----------------------------|---------------------|---------------------|--------------------|-----------|------------------|-----------|
| 1994                       | Bare area           | 0.0000              | 0.1370             | 0.2658    | 0.5958           | 0.0014    |
|                            | Built-up area       | 0.0000              | 0.0699             | 0.0284    | 0.9010           | 0.0007    |
|                            | Waterbody           | 0.0000              | 0.0891             | 0.0954    | 0.2498           | 0.5657    |
|                            |                     | 2014                |                    |           |                  |           |
|                            | Dense<br>vegetation | 0.7048              | 0.2373             | 0.0255    | 0.0318           | 0.0006    |
|                            | Open<br>vegetation  | 0.0584              | 0.5677             | 0.0284    | 0.3427           | 0.0028    |
| 2004                       | Bare area           | 0.0061              | 0.2245             | 0.1592    | 0.6093           | 0.0009    |
|                            | Built-up area       | 0.0001              | 0.0345             | 0.0105    | 0.9537           | 0.0012    |
|                            | Waterbody           | 0.0049              | 0.1044             | 0.0314    | 0.2820           | 0.5773    |
|                            |                     | 2024                |                    |           |                  |           |
|                            | Dense<br>vegetation | 0.7177              | 0.2537             | 0.0048    | 0.0238           | 0.0000    |
|                            | Open<br>vegetation  | 0.0806              | 0.5730             | 0.0299    | 0.3139           | 0.0026    |
| 2014                       | Bare area           | 0.0089              | 0.2568             | 0.2439    | 0.4833           | 0.0071    |
|                            | Built-up area       | 0.0002              | 0.0619             | 0.0237    | 0.9087           | 0.0055    |
|                            | Waterbody           | 0.0037              | 0.0797             | 0.0963    | 0.2584           | 0.5619    |

## 4.5 Socio-Economic Environment

### 4.5.1 Overview

The socio-economic and cultural baseline information of the entire project area has been highlighted in the ESIA report as follows:

1. Demography (population composition and distribution, socio-economic conditions, cultural and ethnic diversity, population growth rate).
2. Social services (electricity, telecommunication, water supply, hospitals, etc).
3. Cultural heritage: (unique features of the area or its people; cemetery, fetish grove, festivals etc).

### 4.5.2 Demographic Characteristics within the MSW value chain of GAMA

The MSW supply chain workforce is diverse, spanning formal company employees (drivers, sweepers, loaders) and informal actors (tricycle collectors, pickers, scrap dealers). Women are disproportionately involved in waste handling and informal recycling, highlighting gendered impacts. Thousands of livelihoods depend on the current supply chain. However, most informal roles are precarious and unrecognized. Without integration into the project, these groups risk exclusion from the project.

The age distribution indicates that most actors are young, with the highest participation rates found in the 18-37 age group. This is particularly evident among ISPs and waste pickers, where

over 80% fall within this range. However, intermediate buyers and recyclers tend to be slightly older, with a significant proportion (28%) between 38-47 years old. Participation declines significantly among individuals aged 48 and above.

Educational attainment remains low across the sector, with a large proportion of ISPs and waste pickers having no formal education. Primary education is more common among intermediate buyers and processors, where it is the dominant educational level. Secondary education is prevalent among ISPs, while tertiary education is almost non-existent across the recycling value chain.

Nationality-wise, Ghanaians constitute the majority across all categories, though their representation is lower among waste pickers and intermediate buyers, where Nigeriens and Nigerians play a significant role. Notably, end-user recycling industries are heavily dominated by Chinese nationals, who make up half of the workforce in that sector, while other foreign nationals, including Lebanese and Indians, account for a smaller share. Table 4.13 presents demographic dynamics within the value chain (World Bank, 2021b).

**Table 4. 13 Demographic dynamics within the value chain in GAMA**

| Characteristics | Category                      | ISPs (%) | Waste Pickers (%) | Intermediate Buyers, Recyclers & Processors (%) | End-User Recycling Industries (%) |
|-----------------|-------------------------------|----------|-------------------|-------------------------------------------------|-----------------------------------|
| Sex             | Male                          | 99       | 85                | 91                                              | 98                                |
|                 | Female                        | 1        | 15                | 9                                               | 2                                 |
| Age             | <18                           | 4        | 3                 | 0                                               | N/A                               |
|                 | 18-27                         | 45       | 43                | 12                                              | N/A                               |
|                 | 28-37                         | 36       | 32                | 52                                              | N/A                               |
|                 | 38-47                         | 12       | 14                | 28                                              | N/A                               |
|                 | 48-57                         | 3        | 6                 | 8                                               | N/A                               |
|                 | >57                           | 1        | 3                 | 0                                               | N/A                               |
| Education       | None                          | 42       | 52                | 9                                               | N/A                               |
|                 | Primary                       | 20       | 33                | 66                                              | N/A                               |
|                 | Secondary                     | 37       | 14                | 22                                              | N/A                               |
|                 | Tertiary                      | 1        | 1                 | 3                                               | N/A                               |
| Nationality     | Ghanaian                      | 93       | 59                | 70                                              | 40                                |
|                 | Nigerien                      | 5        | 32                | 26                                              | 0                                 |
|                 | Nigerian                      | 2        | 7                 | 4                                               | 0                                 |
|                 | Togolese                      | 0        | 2                 | 0                                               | 0                                 |
|                 | Chinese                       | 0        | 0                 | 0                                               | 50                                |
|                 | Others (Lebanese, India, etc) | 0        | 0                 | 0                                               | 10                                |

Source: (TREND, 2020; World Bank, 2021b)

### 4.5.3 Health

#### 4.5.3.1 Overview

Health services in Accra are mainly delivered by government facilities, including Korle Bu Teaching Hospital, two government hospitals, three polyclinics, and several registered private clinics and maternity homes. The city faces major health challenges from communicable diseases, worsened by poor sanitation and poverty. Upper Respiratory Tract Infections have been the leading illness since 2018, followed by malaria (Table 4.14). Non-communicable diseases like hypertension and diabetes are also increasing, straining resources further. The COVID-19 pandemic exposed system vulnerabilities, with Accra becoming an early hotspot. Rapid population growth, informal settlements, and frequent migration intensify pressure on healthcare facilities, requiring greater government support. While doctor-patient ratios have improved, ongoing demand and emerging infectious diseases underscore the need for continued investment in healthcare infrastructure, staff, and resources.

**Table 4. 14 Top Ten Diseases within the Metropolis (2018 - 2020)**

| No. | Disease                            | 2018   |            | 2019   |            | 2020   |            |
|-----|------------------------------------|--------|------------|--------|------------|--------|------------|
|     |                                    | Number | Percentage | Number | Percentage | Number | Percentage |
| 1   | Upper Respiratory Tract Infections | 21745  | 12.3       | 33057  | 15.7       | 20952  | 12.2       |
| 2   | Malaria                            | 20786  | 11.8       | 24821  | 11.8       | 19990  | 11.6       |
| 3   | Acute Urinary Tract Infection      | 10315  | 5.9        | 16317  | 7.7        | 10031  | 5.8        |
| 4   | Rheumatism & Other Joint Pains     | 10133  | 5.8        | 12435  | 5.9        | 10020  | 5.8        |
| 5   | Diarrhoea Diseases                 | 10100  | 5.7        | 11717  | 5.6        | 9730   | 5.7        |
| 6   | Hypertension                       | 8244   | 5.2        | 11276  | 5.4        | 9210   | 5.4        |
| 7   | Anaemia                            | 8173   | 4.6        | 11046  | 5.2        | 7941   | 4.6        |
| 8   | Typhoid Fever                      | 5478   | 3.1        | 8827   | 4.2        | 5382   | 3.1        |
| 9   | Skin Diseases                      | 5284   | 3          | 6730   | 3.2        | 5189   | 3          |
| 10  | Diabetes Mellitus                  | 4385   | 2.5        | 6361   | 3          | 4380   | 2.5        |

**Source: Accra Metropolitan Health Directorate, 2021**

Maternal mortality in Accra fell from 484 to 277 deaths per 100,000 live births between 2017 and 2020 due to better reproductive health services and expanded healthcare facilities. Infant mortality rates, however, were inconsistent, rising to 4.1 per 1,000 in 2018 before dropping and then rising again to 3.5 in 2020. The AMA has upgraded health facilities, adding a maternity ward at Usher Clinic and renovating Kaneshie Polyclinic. HIV/AIDS prevalence peaked at 2.6% in 2018 but dropped to 0.2% by 2020 following education, screenings, and the "Treat-All" policy. Collaboration with national bodies targets preventing mother-to-child transmission and meeting the 90-90-90 HIV goals.

Despite progress in healthcare access and outcomes, Accra continues to face challenges with disease management, infrastructure, and emerging health threats.

#### ***4.5.3.2 Occupational Health and Safety (OHS) in the Waste Sector***

Waste management in Accra poses significant risks, especially for informal waste collectors who are regularly exposed to hazardous materials and airborne pollutants and suffer frequent injuries due to demanding work and lack of proper PPE. For example, most women collectors in Old Fadama and Jamestown do not use PPE, while only one-third in Manhean Community wear gear provided through the Pick It project (Seureca, 2019). Poor hygiene further leads to stomach illnesses, and roadside collection raises accident risks. The project aims to improve safety by introducing structured protocols, targeted training, and sufficient PPE for all workers.

#### ***4.5.3.3 Community Health and Safety in the Waste Sector***

Current waste management practices are characterized by open dumping and burning which poses significant risks to community health. These practices degrade air quality, with emissions from burning waste and decomposing organic matter contributing to respiratory illnesses. Improper disposal methods also contaminate water sources, heightening the prevalence of waterborne diseases. Additionally, uncollected waste attracts vectors such as rodents and mosquitoes, exacerbating public health concerns. Odour nuisance from existing waste facilities further impacts the quality of life for nearby residents.

#### ***4.5.4 Education (Cross-Sectoral)***

Education is central to sustainable development, and the AMA has supported this by building over 20 new classroom blocks, each for 800 pupils, and renovating existing facilities. Although the number of schools decreased from 545 to 391 between 2018 and 2020 because of boundary changes, private schools (274 as of 2020) continue to contribute to educational access. Public school enrolment, especially at primary and junior high levels, has risen. Mandatory kindergarten blocks in new constructions have boosted early childhood enrolment. Teacher numbers dropped from 4,069 in 2017/18 to 1,128 in 2019/20 due to administrative changes but recent hires are reversing the trend. The pupil-teacher ratio now meets the Ghana Education Service standard of 1:45. The Gender Parity Index shows basic education in Accra achieved gender parity from 2017 to 2021, with notable increases in both female and male enrolment—especially among girls, helped by targeted programs addressing absenteeism and dropout rates.

#### ***4.5.5 Economy and Employment***

Accra's economy is mainly supported by its service sector, which includes supermarkets, shopping malls, hotels, restaurants, transportation, storage, communication, financial services, real estate, public administration, education, health, and other social services. The city acts as a financial center, with many banks and financial institutions. Employment is concentrated in the service and sales sector, followed by the industrial sector, which accounts for about 22% of the workforce in areas such as blacksmithing, electricity, gas, water, and construction. Most jobs are within the informal sector. Accra's primary commodity sector consists of fishing and urban agriculture. Urban agriculture involves the cultivation of vegetables—examples include Korle-Bu Vegetable Growers and Marketing Society (in Korle Bu, Ablekuma South Sub-metro), farmers around Ghana Broadcasting Corporation (GBC) (in Kanda, Ayawaso East

Municipality), farmers in Dzorwulu (Ayawaso West Municipality), and those in the Airport Residential Area near Opeibea (Accra Metropolitan Assembly)—and livestock. The fishing industry is also significant, with most catch consumed locally. Deep-water fishing typically occurs from June to September, while shallow-water fishing is conducted throughout the year. Fish stock depletion and pollution, particularly from plastics, are noted concerns in areas like Jamestown and Chorkor. Security is a key consideration in Accra's development. The AMA works with security agencies through the Metro Security Committee to implement law and order measures in the metropolis. Metro security guards are assigned to markets and public spaces, while joint actions with the police support road safety and crime prevention. Accra is regarded as a stable city with democratic governance, which contributes to its standing as a commercial centre and business destination. Nonetheless, security challenges persist, including chieftaincy disputes, armed robbery, pickpocketing, fraud, and other crimes that may affect growth and development. Accra continues to be an economically important city, with investment and commerce opportunities alongside ongoing efforts to address environmental and security issues.

#### ***4.5.5.1 Labour Conditions of waste pickers***

##### **Working hours**

Women engaged in waste picking at Old Fadama Market collect plastics for less than four hours daily, making it a part-time activity for supplemental income. Similarly, women in Manhean Community spend about four hours per day picking plastics. At the Tema New Town sorting centre, women work over four hours daily, sorting and segregating plastics as their primary occupation, though some have additional jobs (Seureca, 2019). Men working at the attendance site primarily collect household waste and extract valuable materials. Waste pickers at Kpone and Nsumia landfills work over seven hours daily, except Sundays, making waste picking their sole livelihood. In Darkuman, most waste pickers work more than nine hours per day, six days a week. These observations reveal the diversity of informal waste picking activities in the AMA, ranging from casual collection to full-time livelihood. Informal waste pickers currently rely on mixed municipal waste to recover recyclables and organic materials that will increasingly be diverted through source separation initiatives. As such, the introduction of source separation systems while environmentally beneficial may disrupt existing informal livelihoods by reducing access to recoverable materials at dumpsites and landfills.

#### ***4.5.5.2 Perception and Impact of Waste Picking***

Waste pickers generally have a positive perception of their work, as it either supplements their income or serves as their primary occupation, enabling them to support their families. Women engaged in street waste picking are gaining respect for their role in environmental cleanliness, particularly in plastic waste collection. Generally, societal perceptions of waste pickers are improving.

In Old Fadama, waste picking has significantly improved livelihoods, allowing women to support their children's education and, in some cases, even purchase property. Initiatives such as the Pick-It project, Waste Picker Day (organized by Coliba, Total, and Voltic), and AMA's efforts to integrate "bola taxi" into the collection system have amplified the voices of informal

waste workers. While waste pickers have often faced stigma and negative public perception, these initiatives are gradually reshaping attitudes and highlighting their crucial contribution to waste management and environmental sustainability (Seureca, 2019). Unfortunately, these initiatives failed to consider the health and safety of the people involved in the sector. They often collect waste with bare hands exposing them to contaminations, physical injury and several health hazards. This project will integrate the people in the sector, providing them with the needed PPE to do their work in a safer and healthy environment.

#### **4.5.6 *Historic and Cultural Environment***

Accra, spanning 23.44 square kilometres along Ghana's Gulf of Guinea, has transformed from a small fishing village in the 16th century to the nation's active capital. Its rise began with the relocation of colonial headquarters from Cape Coast in 1877, spurring commerce and urban growth. By 1899, Accra was the Gold Coast's busiest port. After Ghana's independence in 1957, the city became the administrative focus, which, combined with relaxed policies, led to rapid industrialisation and major migration, particularly between 1960 and 1970. Today, immigrants make up over 35% of population growth. Culturally, Accra is diverse, home to ethnic groups including the Ga, Akan, Ewe, and Mole-Dagbani, with English as the official language alongside widely spoken local languages. About 30% of residents speak Ga, reflecting the city's variety due to ongoing migration.

Accra's rich heritage is showcased through festivals like Homowo and Chale Wote, and sites such as the National Theatre and National Museum. Tourism plays a vital economic role, with top attractions like Independence Square and Labadi Beach drawing over a million international visitors in 2019, contributing about 4.7% to Ghana's GDP.

Religiously, the city is predominantly Christian (71%), followed by Islam (17%) and traditional African religions. Despite facing challenges linked to rapid urbanisation and strained public services, Accra remains Ghana's commercial and cultural centre, shaped by its dynamic mix of people and traditions.

### **4.6 *Gender, Equity and Social Inclusion***

#### **4.6.1 *Gender Equality***

Gender equality and social inclusion remains a critical issue in Accra especially in the project location where according to the GSS (2021), women outnumber men with a female-to-male ratio of 1.04:1. Educational disparities persist, as fewer women complete Junior High School or attain tertiary education compared to men. Traditional stereotypes often prioritize boys' education, limiting women's employment prospects and financial independence.

Many women live below the poverty line, earning about US\$1.25 per day, which affects housing, healthcare access, and overall well-being. Employment data shows men dominate technical and clerical jobs, while women are concentrated in sales (42%) and production or service roles. These challenges emphasize the need for gender-focused interventions in education, economic empowerment, and skills training, alongside slum upgrades to address urban poverty. The proposed project will address these social inclusion dynamics under the following sub sections:

#### ***4.6.2 Gender Dynamics in the Waste Value Chain***

Gender dynamics significantly influence waste management behaviours, access to resources, and participation in environmental initiatives such as the proposed project. With the understanding of gender roles, responsibilities, and constraints will enable the project to design an inclusive and equitable waste management system that involves generation, collection, transportation, processing, and marketing that ensures participation from all societal groups (men, women, youth, PWDs) in the value chain.

#### ***4.6.3 Gender Roles and Participation in Waste Management***

Men and women engage differently in waste management due to socio-cultural norms and economic opportunities. In the project location and adjoining municipalities, while men dominate formal waste collection, women are active in informal waste picking and recycling, particularly in low-income areas. Women, as household waste managers, play a key role in promoting waste separation behaviours.

Despite their contributions, women face economic barriers, unsafe conditions, and limited access to training. Men dominate operational roles like machine operation and driving, while women are concentrated in washing (99%), sorting, and cash collection roles (81%). Administrative roles are more balanced at 53% women and 47% men.

#### ***4.6.4 Household Waste Separation and Decision-Making***

Despite their involvement in waste management activities, women remain underrepresented in decision-making processes. Survey findings indicate that 59.5% respondents make individual household decisions on waste separation, with notable gender differences in perceptions and motivations. Women, often responsible for household chores, play a central role in managing domestic waste. The project will leverage women's groups for awareness campaigns and recruiting female "waste ambassadors" to enhance community buy-in and sustainable engagement. Gender-responsive stakeholder engagement is essential to ensure women's voices are heard in policy and operational decisions.

#### ***4.6.5 Economic Incentives and Inclusion***

A significant proportion of low-income residents within the Accra metropolis practice informal waste separation, such as collecting plastic bottles for sale. For instance, women's participation in the plastics value chain is significantly limited, with men owning the majority of businesses across all scales (large, medium, and small). Data indicates that approximately 80% of CEOs or business owners are men, while women account for only 20% (Ghana National Plastic Action Partnership, 2021).

Women, particularly market vendors and food sellers, can be key stakeholders in composting efforts if economic incentives are provided. Support mechanisms, such as cash-back schemes or economic incentives for women in waste businesses will be explored to encourage participation and create income-generating opportunities for all.

#### ***4.6.6 Housing Types and Accessibility Challenges***

Congested housing conditions, particularly in informal settlements like Old Fadama, limit the access to trucks serving households directly. Many women in these areas rely on communal

waste collection points. The project proponent (AMA) will ensure the availability of colour-coded and size-appropriate communal bins in strategic locations while considering accessibility for women, children, and persons with disabilities.

#### ***4.6.7 Policy and Institutional Consideration***

In spite of the recognized role of informal waste service providers, their formal inclusion remains a challenge. Gender-responsive policies are needed to integrate them into municipal waste systems, establish fair employment frameworks for both men and women, and ensure equitable access to service contracts for women-led businesses.

### **4.7 Equity and Inclusion**

#### ***4.7.1 Service User Inclusivity***

User inclusivity assesses the extent to which service users influence municipal decision-making in MSWM. Successful MSWM in developing countries require stakeholder involvement. However, in the Odaw catchment (including the project footprint), households and businesses generating MSW are largely excluded from planning and implementation. No established stakeholder platforms exist to promote inclusive governance, reducing transparency and equity in service provision. Low-income communities often receive inferior services and have limited avenues to voice concerns.

Despite franchise agreements mandating complaint desks, users pay fees directly to service providers without input on service levels or pricing. Public review of MSWM budgets, though legally required, is rarely implemented. Assembly members and Social Services Committee representatives participate in stakeholder meetings, but political dynamics hinder effective citizen representation. Trust in local representatives has declined, affecting information flow and sustainable MSWM interventions.

Citizen engagement, participatory decision-making, and feedback mechanisms are weak, limiting user empowerment and ownership of MSWM initiatives. The absence of inclusive strategies contributes to issues like littering, illegal dumping, resistance to user charges, and opposition to waste treatment and disposal facilities (World Bank, 2021b). The ESIA process will consider inputs from all user categories (the communities) into decision-making and management plan proposals with regards to the proposed project.

#### ***4.7.2 Service Provider Inclusivity***

Provider inclusivity measures the involvement of municipal, private, community, and informal service providers in MSWM planning and implementation. Formal providers have moderate participation in decision-making and access to tendering platforms with clear franchise agreements. However, informal waste and recycling service providers remain largely excluded.

Municipalities in the Odaw River Basin scored an average of 55% in provider inclusivity, with Accra Metro (85%) and Ga East (80%) performing better. Service provision is governed by a 5-year Fee and Performance-Based Franchise Agreement, with relatively transparent bidding processes. AMA and Ablekuma North have taken steps to recognize and engage ISPs, including providing office space and integrating them into MSWM activities. Ga-East Municipality has

also formally registered most ISPs to enhance service delivery (World Bank, 2021b). The ESIA process will consider inputs from all service providers, regulators etc. into decision-making and management plan proposals with regards to the proposed project.

### **4.7.3 Vulnerability Analysis**

The AMA acknowledges the need to address vulnerability and social exclusion in areas like Agbogbloshie, Konkomba Market, and Old Fadama, characterized by poverty and informal settlements. Vulnerable groups include women-headed households, PWDs, street children, and migrants, often lacking access to basic services like waste collection and healthcare. Informal waste pickers face unsafe conditions, but formal integration, targeted training, and improved working conditions can provide safer livelihoods.

The AMA's initiatives, such as community-based support, non-formal education, and healthcare outreach, aim to mitigate these challenges. Proposed interventions will include fair hiring for compost plant operations, micro-enterprise opportunities through compost sales, and accessible infrastructure for PWDs at collection points and processing facilities.

#### **4.7.3.1 Disability**

The disability rate of the Greater Accra region is estimated at 2.6% (GSS, 2019) of the population; hence, with a population of about 2,514,000 in the Accra Metropolitan Area (GSS, 2019), there are an estimated 65,364 PWDs in the Accra Metropolitan Area. However, the AMA has identified 385 individuals with disabilities in the metropolis, comprising 46% males and 54% females that are supported through their economic empowerment program. To support PWDs, the Assembly provides items such as refrigerators, sewing machines, wheelchairs, and laptops. Additionally, it assists with school fees and helps establish mobile money (MoMo) services. Annually, the Assembly allocates approximately GH¢136,609.00 to support these initiatives, improving the livelihoods and independence of PWDs (AMA, 2022). The proposed project will consider PWDs in the labour considerations in downstream, mainstream, and upstream value chain operations. The project will also ensure disability friendly access and use of facilities.

#### **4.7.3.2 Street Children**

Street children in the metropolis face significant challenges, including homelessness, exposure to health hazards, and inadequate opportunities for physical and psychological development. A substantial portion of these children, accounting for 38.3% of street hawkers, are homeless and depend on informal activities like cleaning windcreens and begging to survive. They are highly vulnerable to social alienation, which poses risks to public security. Many of these children lack basic education, with 71.8% unable to read or write. To address this, the AMA collaborates with non-governmental organizations to provide vocational training in fields such as auto mechanics, masonry, carpentry, catering, and sewing. The goal is to equip these children with employable skills, enabling them to transition into productive livelihoods (AMA, 2022). The proposed project will consider street children who have completed the needed skills training and have attained the legal age of eighteen years for employment.

#### ***4.7.3.3 Pro-Poor Programming***

The School Feeding Programme, designed to improve school attendance and retention among children in public basic schools provides a nutritious meal daily, made from locally grown foodstuffs. Beneficiaries increased from 859 children in 2017 to 8,336 in 2018. To ensure its success, a School Feeding Implementation Committee trains caterers, monitors service quality, and addresses challenges in service delivery. These programmes reflect the AMA's commitment to reducing social exclusion, enhancing resilience, and improving the quality of life for vulnerable populations within the metropolis (AMA, 2022). The proposed project can be linked to the school feeding program by supplying organic fertilizer for school gardens/farms to grow nutritious vegetables that go into feeding school children

## 5.0 STAKEHOLDER CONSULTATIONS

### 5.1 Introduction

This section outlines the public consultations conducted to date and summarizes the planned stakeholder engagement activities for the remainder of the project. It covers stakeholder mapping, consultations held during the ESIA studies, and key issues raised by stakeholders. It also presents planned engagement activities to be undertaken by the project owners throughout the project lifecycle.

Stakeholder participation is a vital component of environmental assessments. In Ghana, public consultation during project preparation is mandated under Section 27 of the Environmental Protection (Environmental Assessment) Regulations, 2025 LI 2504, which requires engagement with individuals or communities likely to be affected by the project.

Similarly, IFC Performance Standard 1 emphasizes the importance of early engagement with project-affected communities, particularly those in close proximity to project facilities who may face direct environmental, health, or livelihood impacts.

Stakeholder engagement is an ongoing process involving stakeholder analysis and planning, consultations, information disclosure, public participation, and reporting. The scope and intensity of this engagement must align with the project's potential risks and impacts and its phase of development, as required by LI 2504 and IFC PS1.

### 5.2 Stakeholder Identification and Analysis

The goal of stakeholder identification is to determine the individuals, groups and organizations that may be directly or indirectly affected by the Project (positively or negatively) or have a vested interest in it. A stakeholder mapping exercise was conducted to identify key individuals and interest groups based on the following criteria:

- Those directly and indirectly involved in project implementation and value chain
- Those whose independent activities overlap with the Project
- Those potentially impacted directly or indirectly by the Project
- Those with an interest or influence over the Project
- Any other relevant stakeholders

This process included field visits to engage local institutions and individuals with potential interest or influence in the Project. Stakeholder identification is a continuous process throughout the ESIA, and the stakeholder engagement strategy (Attached as separate document) will be regularly updated to reflect new or evolving stakeholders. An overview of the main stakeholder groups is provided in Table 5.1

**Table 5.1**      *Identified Stakeholders and Categories*

| Stakeholder Categories & Group                                                                                                                                                                                                                                               | Connection to the Project                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Government &amp; Regulatory Bodies (Ministries and Government Agencies)</b>                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Ministry of Local Government, Chieftaincy and Religious Affairs (Community Development Directorate & Environmental Health and Sanitation Directorate)                                                                                                                        | Provides overarching policy direction, coordination, and support for local governance, sanitation and waste management initiatives.<br><br>NB: During the scoping study (January 2025), the Ministry of Sanitation and Water Resources was dissolved, and its functions were absorbed by the Environmental Health and Sanitation Directorate under the Ministry of Local Government, Chieftaincy, and Religious Affairs. |
| Ministry of Fisheries and Aquaculture Development (Fisheries Commission)                                                                                                                                                                                                     | Ensures no negative impact on water bodies that may affect fisheries resources.                                                                                                                                                                                                                                                                                                                                          |
| Ministry of Food and Agriculture (Plant Protection and Regulatory Services Directorate, and Crop Services Directorate)                                                                                                                                                       | A key government institution in Ghana which oversees policies and programmes to promote agricultural growth and food security. Specifically, the PPRSD advocates for compost use and enforces plant protection regulations, while the Crop Services Directorate ensures the compost plant's outputs align with national agricultural priorities, soil health, and sustainable farming practices.                         |
| Accra Metropolitan Assembly (AMA)<br>(Waste Management Department, Planning Department, Agric Department, Public Health Department, Works Department, Social Welfare and Community Development, Ashiedu Keteke Sub-Metro, Ablekuma South Sub-Metro, Okaikoi South Sub-Metro] | AMA is the project proponent and key local authority overseeing waste management and project beneficiaries and communities. AMA seeks to ensure that the project aligns with the Accra Climate Action Plan and regulatory Compliance                                                                                                                                                                                     |
| Greater Accra Regional Coordinating Council (GARCC)                                                                                                                                                                                                                          | GARCC is responsible for coordinating regional and district-level institutions within the Greater Accra Region, including the AMA. It oversees the implementation of government policies and ensures effective coordination among stakeholders in regional development projects.                                                                                                                                         |
| Environmental Protection Authority (EPA)                                                                                                                                                                                                                                     | Regulatory body enforcing environmental laws, including EPA Act 1124 and LI 2504; issuing environmental permits for the project.                                                                                                                                                                                                                                                                                         |
| Forestry Commission                                                                                                                                                                                                                                                          | Responsible for managing fauna resources in the country. They are responsible for ensuring the conservation and protection of wild animals including birds, mammals, reptiles, insects, and amphibians of conservation concern.                                                                                                                                                                                          |

| Stakeholder Categories & Group                                                                                                     | Connection to the Project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>● Ghana Wildlife Division (GWD)</li> <li>● Forest Service Division (FSD)</li> </ul>         | Responsible for managing plant resources in Ghana. Ensures compliance with forest conservation regulations if applicable.                                                                                                                                                                                                                                                                                                                                                                                                                |
| Department of Parks and Gardens                                                                                                    | The Department of Parks and Gardens (DPG) oversees the development and maintenance of public green spaces in Ghana. In relation to the proposed project, DPG serves as a key end-user of the compost, supporting sustainable landscaping and contributing to the project's circular economy and environmental goals.                                                                                                                                                                                                                     |
| Ghana National Fire Service (GNFS) - Accra Central Division                                                                        | Engaging the GNFS was crucial to assess fire risks, ensure compliance with fire safety regulations, and develop an effective emergency response plan for the proposed compost plant. Their involvement helped verify the adequacy of fire control measures, provide fire safety training for staff, and minimize potential hazards, ensuring the safety of the facility, workers, and surrounding communities.                                                                                                                           |
| Ghana Police - Korle District                                                                                                      | Engagement with the Korle District Police was crucial for ensuring security, community safety, and conflict resolution throughout the project implementation and operation phase. Their involvement helped address potential security risks, manage safety concerns for local communities, and ensure smooth interactions with local authorities. The police can also play a key role in emergency response preparedness and coordinating with stakeholders to mitigate any disputes or safety issues that may arise during the project. |
| <b>Private Sector, Associations &amp; Companies/Industries</b>                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Environmental Service Providers Association (ESPA)                                                                                 | Represents waste management service providers; ensures industry compliance and standards.                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Restaurant and Eatery Associations<br>Example: Makola market food sellers, Kaneshie Market food sellers, Mall Food Operators, etc. | Key organic waste generators; potential participants in waste separation initiatives.                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| The Accra Compost and Recycling Plant (ACARP)                                                                                      | A waste management facility in Accra which focuses on managing municipal solid waste and promoting environmental sustainability by converting organic waste into compost and recyclable materials. Engaging ACARP is crucial to harness their expertise, resources, and experience in producing high-quality compost.                                                                                                                                                                                                                    |
| Triple C Ghana Ltd                                                                                                                 | Triple C Ghana Ltd, located approximately 1km south-east of the project site, operates within the miscellaneous nondurable goods wholesale sector. As a key receptor within the project's Area of Influence, their environmental and social feedback, informed by years of operation in the area, was critical to understanding potential project impacts and ensuring responsive mitigation measures.                                                                                                                                   |

| Stakeholder Categories & Group                                                                                                                                                                                     | Connection to the Project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Informal Service Providers (ISPs)</b>                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| ISPs include street sweepers and waste collectors/scrap dealers, tricycle or motorbike waste collectors “Aboboyaa”, private waste management groups, etc.                                                          | ISPs facilitate source separation and collection of organic waste; ensure safe and fair working conditions.<br>The existing project site is currently occupied by the Mortuary Road Scrap Dealers Association who are identified for consultation regarding the risks of displacement (both physical and economic) and measures to minimize or mitigate these impacts.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Formal Service Providers (FSPs)</b>                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| FSPs include: Zoomlion (IRECOP) and Jekora Ventures                                                                                                                                                                | Zoomlion Ghana Limited, one of the largest waste management companies in Ghana, offers waste collection, disposal, recycling, and sanitation services across Accra and beyond. Its subsidiary, IRECOP, enhances the operational efficiency and sustainability of the AMA compost plant through expertise in waste management and recycling. The proximity of the IRECOP and AMA compost sites facilitate seamless collaboration, supporting Accra’s sustainability goals.<br>Jekora Ventures Limited also plays a key role in waste management, focusing on the collection, transportation, and recycling of both solid and organic waste in Accra.<br>Overall, FSPs are vital to the efficiency, scalability, and sustainability of the AMA compost plant, ensuring effective management and conversion of organic waste into valuable compost for agricultural and environmental use. |
| <b>Communities and Local Stakeholders</b>                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Traditional Authorities (Sempe Korle-Bu Mantse, Korle Wulormor, Jamestown Mantse, and Gbese Mantse)                                                                                                                | Traditional Authorities provide support for cultural and local governance and facilitate community engagement.<br>NB: During the scoping studies, the consultant discovered that the Jamestown traditional authority was without a ruler due to ongoing chieftaincy disputes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Project affected communities, individual residents, (non) organised groups, vulnerable groups (e.g. women, elderly people, PWD, etc).<br><br>Communities Identified within 1km radius of the project site include: | Local community representatives play a crucial role in informing communities directly or indirectly impacted by the proposed project. It is essential to raise awareness about the project’s schedule, activities, and potential risks and benefits, particularly for vulnerable groups such as those with limited education, economic resources, or access to land. These communities and households, as key organic waste generators, are vital to the project’s success and can support source separation efforts.                                                                                                                                                                                                                                                                                                                                                                   |

| Stakeholder Categories & Group                                                                                | Connection to the Project                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Korle Gonno, Korle-Bu, Mudor, Jamestown, Bukom, Old Fadama, Agbogloboshie, are largely low-income communities |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Residents' associations of selected high-income communities such as Cantonments, Dzorwulu, etc.               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Market Operators (Example; Agbogloboshie Market, Kaneshie Market, etc)                                        | Generate significant organic waste; ensure proper waste separation and recycling practices.                                                                                                                                                                                                                                                                                                                                                                          |
| International Central Gospel Church & School                                                                  | These are religious/civic facilities located within close proximity to the project site. These land uses are sensitive receptors with direct exposure to potential environmental and social impacts such as odour, air quality, traffic, and noise. Their inclusion ensures that community concerns are addressed, promotes awareness and acceptance, and supports the development of effective mitigation measures and inclusive stakeholder engagement strategies. |
| Abossey Okai Central Mosque                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Bukom Boxing Arena                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Farmers Association including urban/peri urban farmers and landscapers                                        | Key beneficiaries of compost output; promote use of compost for sustainable agriculture.                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Public Health and Educational Institutions</b>                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Korle Bu Teaching Hospital                                                                                    | Located about 60 meters away from the proposed project site is the Korle Bu Teaching Hospital (KBTH). KBTH is Ghana's largest teaching and referral hospital which provides advanced medical care, trains healthcare professionals, and conducts medical research.<br>Engagement with KBTH will ensure health and safety considerations for neighbouring healthcare facilities.                                                                                      |
| <b>Research Institutions and NGOs/CSOs and Development Partners</b>                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Water Research Institute of the Council for Scientific and Industrial Research (CSIR-WRI)                     | CSIR-WRI is a prominent research institution in Ghana specializing in water resources management, research, and development. Collaborating with CSIR-WRI ensures effective management of water-related environmental impacts, supporting the plant's sustainability and alignment with national environmental policies.                                                                                                                                              |
| NGO/CSO - Ghana Wildlife Society                                                                              | Advocate for biodiversity conservation and climate resilience.<br>Specialises in waterbirds and shorebirds research; engagement will ensure effective mitigation of the project's potential impacts on these species, which may be present in the project area.                                                                                                                                                                                                      |
| Accra School of Hygiene (SOH)                                                                                 | SOH is a public institution that specializes in training professionals in public health, environmental health, and related fields.                                                                                                                                                                                                                                                                                                                                   |

| Stakeholder Categories & Group | Connection to the Project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                | SOH will provide insights to ensure the project meets public health and hygiene standards, promotes community well-being, and aligns with sustainable waste management goals. They often collaborate with organizations like GIZ and the Accra Metropolitan Assembly to address solid waste management, composting, and health challenges related to poor sanitation.                                                                                                                                                                                                                                                                                                            |
| GIZ Ghana                      | <p>GIZ Ghana has extensive experience in waste management in Accra and can provide valuable insights to enhance the project's efficiency. This includes ensuring alignment with local waste management policies, effective stakeholder engagement, capacity building, and adherence to environmental and social safeguards.</p> <p>GIZ's expertise in promoting circular economy practices can support resource recovery, contributing to Accra's environmental and economic goals. Additionally, GIZ can help address conflicts between scrap dealers (currently occupying the project site) and stakeholders, manage grievances, and ensure smooth project implementation.</p> |

### 5.3 Methods for Consultation

A structured consultation programme was developed to ensure effective stakeholder engagement and mitigate potential risk of apprehensions associated with the proposed project. The process complied with the legal requirements for public participation under Ghanaian laws (Environmental Protection Authority Act 2025 (Act 1124) and the Environmental Protection (Environmental Assessment) Regulations, 2025 (LI2504). Additionally, the engagement strategy aligned with international best practices, including the IFC Performance Standards on Environmental and Social Sustainability (specifically Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts) and the World Bank Environmental and Social Framework (ESF), particularly Environmental and Social Standard 10 (ESS10): Stakeholder Engagement and Information Disclosure.

The ESIA team employed culturally sensitive methods for public consultations, ensuring inclusivity and relevance to local contexts. The consultations were conducted in English, Twi, and Ga (the main languages spoken by stakeholders) to facilitate understanding. Notifications were sent to state institutions through official correspondence, and meetings were held with traditional authorities. Engagements with community members and representatives were organized with the support of local assembly members and opinion leaders at times and locations convenient for participants. Consultation methods were adapted to comply with health and safety protocols.

The consultation activities included:

- Community Forums: Structured discussions with relevant groups and opinion leaders to gather diverse perspectives.
- Key Informant Interviews: One-on-one interviews with stakeholders, such as traditional authorities and local government representatives, to gain in-depth insights.
- One-on-One Interviews: Individual interviews with a maximum of five participants, conducted in compliance with health protocols.
- Focus Group Discussions: Group discussions with up to 15 participants to facilitate in-depth dialogue on key issues.
- Validation Workshop: A final participatory workshop to present ESIA findings, address stakeholder feedback, and confirm alignment with community and institutional expectations.

Stakeholder consultative meetings were conducted with national and local government agencies, community representatives, local stakeholders, private sector companies, and formal & informal service providers. A detailed list of these meetings held during the ESIA study is provided in Sections 5.4.1 and 5.4.2

The meetings commenced with a project introduction and purpose of the meeting and followed with discussions to collect feedback. Concerns related to the impact of the project were also raised during the meetings. Detailed minutes of meetings, attendance list and pictures for each

meeting are presented in Appendix 3. The discussion guide for the meetings is attached as a separate document.

#### 5.4 Stakeholder engagement activities undertaken up-to-date

A total of twenty-eight (28) meetings with governmental and non-government agencies and ten (10) forums and meetings with all project communities were organised. The complete list of meetings organised during the ESIA study is presented in subsequent sections. Detailed minutes of meetings, attendance list and pictures for each meeting are presented in Appendix 3.

##### 5.4.1 Consultations with National and Local Government & Institutional Stakeholders

A total of twelve (12) meetings in the form of interviews and focused group discussions were organized with representatives of national and local government organisations and institutional stakeholders (see Appendix 5). Plate 5.1 presents few pictures from the meetings.



Meeting with AMA & GIZ Project Team



Meeting with KBTH (Environmental Health Unit)



Meeting with Korle Bu District Fire station



Meeting with CSIR

**Plate 5.1: Photos of meetings with national, local government & institutional stakeholders**

#### 5.4.2 Consultations with Communities & Religious Groups

Four (4) community forums were held with members and representatives from communities within a 1km radius of the project site. The communities engaged include Korle Bu, Korle Gonno, Jamestown, Mudor, Old Fadama/Konkoma, Agbogbloshie, etc. Participants include representatives of the following groups:

Opinion Leaders/Assembly Members

- Residents
- Youth and Women Groups
- Persons with Disabilities
- Farmers' Associations
- Market women
- Food vendors and Eatery Operators
- Informal service providers: street sweepers, waste collectors/borla taxis/aboboyaa operators

Focus Group Discussions were held separately with women, market traders, and food vendors, and with informal service providers (Mortuary Road Scrap Dealers). In addition, stakeholder meetings were conducted with key religious institutions within the project AoI, including the leadership of International Central Gospel Church (ICGC) and Abossey Okai Central Mosque. See Appendix 6. Plate 5.2 shows some pictures from the community engagement meetings.



Community Forum at Jamestown



Meeting with Women Group – Korle Bu Forum



Meeting with Mortuary Road Scrap Dealers



Meeting with Sempe Korle Bu Mantse

**Plate 5. 2: Photos of Community Engagements**

### 5.5 Summary of issues articulated during consultations

This section summarizes the key stakeholder issues raised during the ESIA process. Detailed records of each meeting are provided in Appendix 7. The incorporation of these issues into the project design and mitigation measures is outlined throughout the ESIA. Table 5.2 presents a summary of concerns raised between February and March 2025.

**Table 5. 2**      *Issues-Responses Matrix*

| <b>Issues</b>                                                                                      | <b>Stakeholder(s)</b>                                                                                                                                                                                                                                                                                             | <b>Concerns</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Responses/categorisation of actions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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| <b>Waste Generation, Collection and Segregation Programmes/Space &amp; Waste Handling Concerns</b> | <ul style="list-style-type: none"> <li>• AMA and sub-metros</li> <li>• Jekora Ventures Ltd</li> <li>• IRECOP</li> <li>• Water Research Institute (CSIR)</li> <li>• Communities</li> <li>• ACARP</li> <li>• Accra School of Hygiene</li> <li>• Bukom Boxing Arena</li> <li>• Korle Bu Teaching Hospital</li> </ul> | <ul style="list-style-type: none"> <li>• Jekora Ventures Ltd's existing source-segregation program with clients provides a valuable case study for the proposed project and a potential partnership opportunity.</li> <li>• Concerns regarding space availability at the proposed site, including its capacity to accommodate all organic waste and the need for appropriate measures to handle by-products and operational waste.</li> <li>• Proper waste segregation and collection systems are crucial for effective waste management. To support these systems, informal service providers should be integrated into the waste collection and segregation programmes.</li> <li>• Households should be provided with litter bins and appropriate containers to facilitate the separation of waste at the source.</li> <li>• Households may not segregate waste properly</li> <li>• Risk of waste collectors mixing waste after segregation by households</li> <li>• People may not be motivated to segregate waste</li> <li>• There should be exclusion of unwanted waste types from the organic waste</li> <li>• Deploy personnel at collection points to monitor and enforce proper waste sorting.</li> <li>• Eateries need tailored collection services; Assign dedicated service providers.</li> </ul> | <ul style="list-style-type: none"> <li>• The project will identify potential synergies with Jekora Ventures Ltd's existing program. This will be addressed during further stakeholder engagement at the project implementation stage</li> <li>• The project will establish clear waste acceptance criteria and ensure sufficient space allocation for waste storage and processing by exploring space-sharing arrangements with IRECOP and other facilities. This will be addressed in the ESMP</li> <li>• The project will provide colour-coded bins within communities to facilitate waste segregation, coupled with incentives to encourage participation. This will be addressed in the ESMP.</li> <li>• Extensive public education on waste segregation will be conducted. This will be addressed in the ESMP.</li> </ul> |

| Issues                                                      | Stakeholder(s)                                                                                    | Concerns                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Responses/categorisation of actions                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Displacement and loss of livelihood of waste pickers</b> | <ul style="list-style-type: none"> <li>Waste Pickers Association</li> <li>WIEDO</li> </ul>        | <ul style="list-style-type: none"> <li>The association raised concerns regarding the potential displacement of existing waste picker and are seeking clarity on what the project offers them and how they will be integrated into the new waste management system</li> <li>Clear guidelines on how the integration will be, and how well they would be remunerated</li> </ul>                                                                                                                                                                 | <ul style="list-style-type: none"> <li>The project will identify potential synergies with existing waste pickers and integrate their activities into the project</li> <li>The project will ensure fair salaries and compensations for all staff.</li> <li>Clear integration guidelines will be developed for and members will be at liberty to decide whether to be on the project or not.</li> </ul>       |
| <b>Public-Private Partnerships (PPP)</b>                    | <ul style="list-style-type: none"> <li>Jekora Ventures Ltd</li> <li>IRECOP</li> </ul>             | <ul style="list-style-type: none"> <li>Collaboration between private operators and public sectors (including AMA) is essential for project success.</li> <li>Public-private partnerships (PPPs) should not only focus on infrastructure and capital but also extend to the policy level to ensure smooth operations.</li> <li>To further encourage participation, incentives such as tax waivers and reduced permit renewal fees are necessary.</li> <li>There is generally poor adherence to best practices by waste transporters</li> </ul> | <ul style="list-style-type: none"> <li>The project will identify potential synergies with existing private operators, including Jekora Ventures and IRECOP. This will be addressed during further stakeholder engagement at the project implementation stage.</li> <li>Clear environmental guidelines for waste collection and transport will be implemented. This will be addressed in the ESMP</li> </ul> |
| <b>Infrastructure Cost &amp; Concerns</b>                   | <ul style="list-style-type: none"> <li>Jekora Ventures Ltd</li> <li>AMA and sub-metros</li> </ul> | <ul style="list-style-type: none"> <li>Lack of infrastructure for source separation leads to higher costs.</li> <li>No incentives to encourage source separation.</li> <li>Lack of adequate facilities for processing organic waste; there should be promotion of composting and onsite anaerobic digestion at institutional and market levels</li> </ul>                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>The project will develop proper collection incentives, especially for informal service providers. This will be addressed in the ESMP.</li> <li>Additionally, the project will explore carbon credit opportunities to sustain operations. This will be addressed at the project implementation stage.</li> </ul>                                                      |

| Issues                                                                                      | Stakeholder(s)                                                                                                                                                                                                                                                                                                                                                                    | Concerns                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Responses/categorisation of actions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| <b>Odour &amp; Community Health &amp; Safety, Occupational Health &amp; Safety Concerns</b> | <ul style="list-style-type: none"> <li>• AMA and sub-metros</li> <li>• Jekora Ventures Ltd</li> <li>• IRECOP</li> <li>• Community Members</li> <li>• ACARP</li> <li>• Accra School of Hygiene</li> <li>• GNFS</li> <li>• Triple C Ghana Ltd</li> <li>• Bukom Boxing Arena</li> <li>• Korle Bu Teaching Hospital</li> <li>• Abossey Okai ICGC</li> <li>• Abossey Mosque</li> </ul> | <ul style="list-style-type: none"> <li>• Stench/odour is a major concern: delayed waste collection can result in unpleasant odours and create unsanitary conditions, emphasizing the need for timely waste disposal services.</li> <li>• Houseflies/pollution and associated health risks need to be managed.</li> <li>• Deterioration of access roads due to truck movement</li> <li>• Unauthorized entry into facility</li> <li>• Odour management concerns</li> <li>• Direct exposure to public; e.g., uncovered waste transport causing environmental and health risks</li> <li>• High safety standards required considering the project's proximity to sensitive receptors</li> <li>• Risk of fire outbreak due to organic waste and mixed materials</li> <li>• Site layout should be designed to support movement of firefighting equipment</li> <li>• Organic waste can generate flammable gases; Monitor and manage heaped organic waste to reduce fire risk</li> <li>• Uncontrolled site access increases risk of hazards; Wall the project site, create a buffer zone, and control entry and exit</li> <li>• The project should follow up on GARID and IRECOP health initiatives to ensure collaboration; Incorporate health screenings and educational workshops in project implementation.</li> <li>• Risk of health impacts from improper waste management.</li> <li>• Drug addiction among ISPs impacts waste handling. Include ISP rehabilitation/integration programmes.</li> </ul> | <ul style="list-style-type: none"> <li>• The project will implement structured collection schedules to minimise waste decay and odours. This will be addressed in the ESMP.</li> <li>• The project will strengthen odour management systems; implement measures to control pollution/houseflies and other health hazards. This will be addressed in the ESMP.</li> <li>• The project will collaborate with relevant departments/authorities responsible for road maintenance. This will be addressed in the ESMP.</li> <li>• Perimeter security and community sensitization on safety will be strengthened. This will be addressed in the ESMP.</li> <li>• Continuous stakeholder engagement will be ensured. This will be addressed in the ESMP.</li> <li>• Buffer zones with landscaping will be constructed. This will be addressed in the ESMP.</li> <li>• Specialized vehicles will be used for organic waste transport. This will be addressed in the ESMP.</li> </ul> |

| Issues                                                                                            | Stakeholder(s)                                                                                                                                                                                                                                                                                       | Concerns                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Responses/categorisation of actions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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|                                                                                                   |                                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>Risks of staff misconduct, teenage pregnancies, and STIs; Develop strong labour management protocols.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Biodiversity Conservation</b>                                                                  | <ul style="list-style-type: none"> <li>Department of Parks and Gardens</li> <li>Ghana Wildlife Division</li> </ul>                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>Trees to be removed during construction;</li> <li>Parks and Gardens is responsible for identifying planting sites, planting, and nurturing trees. The project bears all associated costs.</li> <li>Recommend proper landscaping and a green buffer between the project and surrounding communities.</li> <li>Project site not near a wetland of conservation concern, but may attract Critically Endangered species like Hooded Vultures</li> <li>The Korle lagoon is degraded but still supports adapted bird species; adopt conservation-friendly policies; avoid further pollution; support lagoon restoration</li> <li>Risk of hunting protected species (e.g., sea turtles, Hooded Vultures, Cattle Egrets) by staff; Enforce strict no-hunting policies; provide staff education on wildlife coexistence</li> </ul> | <ul style="list-style-type: none"> <li>For every tree removed, three must be planted. Parks and Gardens will issue an invoice for replacement. This will be addressed in the ESMP.</li> <li>Proper landscaping and a green buffer will be implemented between the project and the surrounding communities.</li> <li>Implement 'no-hunting rule' within the project implementation area for both staff and non-staff. This will be addressed in the ESMP.</li> <li>Management measures will be implemented to avoid further pollution, support lagoon restoration and support adapted bird species. This will be addressed in the ESMP.</li> </ul> |
| <b>Social and Community Engagement &amp; Support/Employment and Inclusion/Awareness Creation.</b> | <ul style="list-style-type: none"> <li>AMA and sub-metros</li> <li>Jekora Ventures Ltd</li> <li>Ministry of Local Government</li> <li>Community Members</li> <li>ACARP</li> <li>Accra School of Hygiene</li> <li>Communities</li> <li>Bukom Boxing Arena</li> <li>Ghana Wildlife Division</li> </ul> | <ul style="list-style-type: none"> <li>Further stakeholder engagement may be needed.</li> <li>Timeliness and execution of operations and processes should be disclosed to stakeholders</li> <li>Local content must be factored into employment.</li> <li>Community development should be integrated in project implementation.</li> <li>Continuous awareness campaigns and regular engagement are essential to maintaining proper waste management.</li> <li>AMA should provide bins, gloves, and masks to households to support project implementation</li> </ul>                                                                                                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li>The project will conduct further stakeholder consultations at all phases and implement inclusive hiring policies, prioritizing local communities and marginalized groups. This will be addressed during further stakeholder engagement</li> <li>Equitable trainings and capacity development programmes will ensure all staff have the needed capacity to</li> </ul>                                                                                                                                                                                                                                       |

| Issues                           | Stakeholder(s)                                                                                        | Concerns                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Responses/categorisation of actions                                                                                                                                                                                                                                                              |
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|                                  | <ul style="list-style-type: none"> <li>Korle Bu Teaching Hospital</li> </ul>                          | <ul style="list-style-type: none"> <li>Avoid past mistakes by addressing capacity, odour control, and proper separation strategies.</li> <li>Inclusion of PWDs in employment: design inclusive roles and consider skills of PWDs in workforce integration.</li> <li>Operational clarity and inclusion of informal waste collectors is required; there should be formation of cooperatives assigned specific waste types to improve accountability and waste quality</li> </ul> | <p>work on the project. This will be addressed at the ESMP</p> <ul style="list-style-type: none"> <li>The formation of cooperatives and the assigning of specific waste types can be taken up by AMA.</li> </ul>                                                                                 |
| <b>Capacity Building</b>         | <ul style="list-style-type: none"> <li>AMA and sub-metros</li> <li>Accra School of Hygiene</li> </ul> | <ul style="list-style-type: none"> <li>There should be Institutional ownership by AMA with legal backing through by-laws</li> <li>Staff incompetence can cause accidents</li> <li>The project may lack in-house SHE personnel. Recommended for the project to collaborate with experts from Accra School of Hygiene</li> </ul>                                                                                                                                                 | <ul style="list-style-type: none"> <li>Trained and qualified personnel will be deployed for operations. This will be addressed at the project operation stage through further stakeholder engagement.</li> </ul>                                                                                 |
| <b>Labour Conditions</b>         | <ul style="list-style-type: none"> <li>ESPA</li> </ul>                                                | <ul style="list-style-type: none"> <li>Informal workers lack formal protections and regulation.</li> <li>There have been poor working conditions in similar projects; ensure fair wages and safe work conditions.</li> </ul>                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>Informal workers will be incorporated in the project framework. This will be addressed during further stakeholder engagement at the project operation stage.</li> </ul>                                                                                   |
| <b>Displacement/resettlement</b> | <ul style="list-style-type: none"> <li>AMA and sub-metros</li> </ul>                                  | <ul style="list-style-type: none"> <li>Relocation and social safeguard concerns should be managed separately by AMA; not directly linked to the compost project</li> </ul>                                                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>A resettlement strategy will be developed to ensure the smooth relocation of illegal settlers on the project site following the IFC PS5/WBG ESS5 requirements. This will be addressed during the pre-construction stage of the project by AMA.</li> </ul> |

| Issues                                     | Stakeholder(s)                                                                                                                                                        | Concerns                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Responses/categorisation of actions                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Leachate Management</b>                 | <ul style="list-style-type: none"> <li>Accra School of Hygiene</li> <li>Triple C Ghana Ltd</li> <li>Bukom Boxing Arena</li> <li>Korle Bu Teaching Hospital</li> </ul> | <ul style="list-style-type: none"> <li>Risk of pollution of the Korle Lagoon</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>Proper management of leachate will be ensured to prevent further pollution of the already polluted Korle lagoon</li> </ul>                                                                                                                                                                                                                                                                                                                                         |
| <b>Supply Chain</b>                        | <ul style="list-style-type: none"> <li>ESPA</li> </ul>                                                                                                                | <ul style="list-style-type: none"> <li>Informal workers operate independently; payment systems differ from formal contractors.</li> <li>Informal operators pay fewer taxes and fees.</li> <li>Formal sector inefficiencies drive informal sector growth.</li> <li>Many informal workers are unregistered, making enforcement difficult.</li> </ul>                                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>Informal workers will be integrated into formal structures to enhance regulation and collaboration.</li> <li>Fee structures will be streamlined and formalized to ensure equity.</li> <li>Performance gaps in formal service delivery will be bridged</li> <li>Association membership will be encouraged to improve training and oversight. These concerns will be addressed during further stakeholder engagement at the project implementation stage.</li> </ul> |
| <b>Compost Quality &amp; Market Demand</b> | <ul style="list-style-type: none"> <li>Department of Parks and Gardens</li> <li>Communities</li> </ul>                                                                | <ul style="list-style-type: none"> <li>Current compost prices are high for ordinary farmers and landscapers. Reduce cost to increase affordability and uptake.</li> <li>Presence of contaminants (e.g., bottles, nails) in compost: Ensure compost meets international standards to attract local and international buyers.</li> <li>Limited awareness of compost benefits: Educate farmers on the advantages of compost over inorganic fertilizers to boost uptake.</li> <li>Integrate compost use into urban greening and landscaping projects.</li> </ul> | <ul style="list-style-type: none"> <li>Compost pricing will be addressed during further stakeholder engagement at the project implementation stage.</li> <li>Compost quality issues will be addressed in the ESMP</li> <li>Awareness creation on compost benefits and use will be addressed during further engagement at the project implementation stage.</li> </ul>                                                                                                                                     |

| Issues                                                                                    | Stakeholder(s)                                                                                                                                                                             | Concerns                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Responses/categorisation of actions                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Project sustainability</b>                                                             | <ul style="list-style-type: none"> <li>• Communities</li> <li>• AMA and sub-metros</li> <li>• Bukom Boxing Arena</li> <li>• Abossey Okai ICGC</li> <li>• Abossey Mosque</li> </ul>         | <ul style="list-style-type: none"> <li>• Need for long-term planning, partnerships, and stable financing. Develop a sustainability plan with private sector engagement and secured funding</li> <li>• The need for long-term management and enforcement of source segregation. AMA to manage the facility; draft by-law being finalized to mandate segregation and proper collection</li> <li>• Need for clarity on project stages and regular updates</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>• These will be addressed during further engagement at the project implementation stage.</li> </ul>                                                                                                                                                                                                                                                                                                                         |
| <b>Regulatory Compliance &amp; Inspections/Environmental &amp; Water Quality Concerns</b> | <ul style="list-style-type: none"> <li>• ESPA</li> <li>• MoFA-PPRSD</li> <li>• Fisheries Commission</li> <li>• Water Research Institute (CSIR)</li> <li>• ACARP</li> <li>• GNFS</li> </ul> | <ul style="list-style-type: none"> <li>• An ESIA must be conducted, and an EPA permit obtained for the project.</li> <li>• Facility inspections are necessary to ensure compliance with regulations. Obtain fire permit prior to construction, in line with L.I. 1724</li> <li>• Comply with ISO 14001 (EMS) and ISO 9001 (QMS) standards</li> <li>• The nutrient content of the compost products must be verified during operations to ensure quality control</li> <li>• Baseline data on water, soil, and air quality should be collected to establish environmental benchmarks.</li> <li>• Leachate treatment should be prioritised to mitigate potential contamination.</li> <li>• Effluent quality should be monitored to ensure compliance with environmental standards.</li> <li>• Potential project impact on fisheries should be evaluated and to manage local aquatic ecosystems.</li> <li>• Need for alignment with environmental and quality standards</li> <li>• Task forces exist within the communities but lack comprehensive coverage.</li> </ul> | <ul style="list-style-type: none"> <li>• The ESIA will identify mitigation measures, to minimize negative impacts, promote community well-being, and ensure environmental compliance.</li> <li>• Best practices will be incorporated into the project design and operations to minimise environmental impact.</li> <li>• Internal regulatory mechanisms within communities will be strengthened</li> <li>• All the issues will be addressed by the ESMP</li> </ul> |

| Issues | Stakeholder(s) | Concerns                                                                                                                                                                                                                      | Responses/categorisation of actions |
|--------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
|        |                | <ul style="list-style-type: none"> <li>Weak enforcement of by-laws and regulatory oversight. Recommendation: Improve enforcement mechanisms; enhance stakeholder involvement in drafting and implementing by-laws.</li> </ul> |                                     |

### 5.6 Stakeholders Engagement and Communication Strategy

Stakeholder consultation will be an ongoing process throughout the project, involving multiple rounds of information sessions and public disclosures. Engagement activities will include public notices, one-on-one meetings, and responses to emails, phone calls, and written inquiries, as well as district-based public forums. Continuous monitoring and reporting are essential to track progress, address issues, and maintain a comprehensive record of engagement. The process begins at the project's preliminary stage and continues through implementation. Table 5.3 outlines the proposed stakeholder engagement approach.

**Table 5.3 Stakeholder Engagement and Communication Strategy**

| Activity                              | Identified Stakeholders                                                                                                                                                                     | Focus of Consultation / Information to be shared                                                                                                                                                                          | Frequency / Timelines                 | Method of Engagement                                                              | Responsible Agency |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------------------------------|--------------------|
| <b>Draft ESIA Validation Workshop</b> | Representatives of: <ul style="list-style-type: none"> <li>Project Team (AMA, GIZ)</li> <li>National and Local Statutory/Government Agencies</li> <li>Informal Service Providers</li> </ul> | <ul style="list-style-type: none"> <li>Feedback on issues and concerns raised during the ESIA preparatory phase</li> <li>Presentations on findings from the ESIA study, including proposed mitigation measures</li> </ul> | Before Draft ESIA is submitted to EPA | <ul style="list-style-type: none"> <li>Stakeholder Validation Workshop</li> </ul> | EHG                |

| Activity                             | Identified Stakeholders                                                                                                                                                                                                                                                                                                                                                               | Focus of Consultation / Information to be shared                                                                                                                                                          | Frequency / Timelines                       | Method of Engagement                                                                                                                                                                                                             | Responsible Agency                      |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
|                                      | <ul style="list-style-type: none"> <li>Formal service providers include Jekora Ventures, Zoomlion IRECOP, ESPA.</li> <li>Communities' reps including residents, opinion leaders/assembly members, women's groups, PWD, food vendors &amp; eateries operators, religious groups</li> <li>Traditional Authorities</li> <li>Private companies: ACARP &amp; Triple C Ghana Ltd</li> </ul> | <ul style="list-style-type: none"> <li>and community grievance redress arrangements.</li> <li>Receiving comments from participants and potentially affected people and responding to comments.</li> </ul> |                                             |                                                                                                                                                                                                                                  |                                         |
| <b>Disclosure of the ESIA report</b> | <ul style="list-style-type: none"> <li>AMA, sub-metros and neighbouring affected MMDAs</li> <li>EPA</li> <li>GIZ</li> <li>Traditional Authorities in Project area</li> </ul>                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>Make available copies of the approved ESIS</li> </ul>                                                                                                              | After EPA approves the ESIS for the project | <ul style="list-style-type: none"> <li>Publication of the approved ESIS to inform the public where they can access the documents</li> <li>Deliver hard and/or soft copy of the approved ESIS to relevant stakeholders</li> </ul> | AMA                                     |
| <b>Pre-mobilisation</b>              | <ul style="list-style-type: none"> <li>AMA</li> <li>Affected institutions/organisations in the project area</li> </ul>                                                                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>Information on schedule of preparation and construction works</li> </ul>                                                                                           | At least 1 month prior to construction      | <ul style="list-style-type: none"> <li>Sharing of relevant reports</li> </ul>                                                                                                                                                    | Construction Company/Project Contractor |

| Activity                  | Identified Stakeholders                                                                                                                                                                             | Focus of Consultation / Information to be shared                                                                                                                                                                                                                                                                                                                                                     | Frequency / Timelines              | Method of Engagement                                                                                                                            | Responsible Agency      |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
|                           | <ul style="list-style-type: none"> <li>Project communities/representatives</li> <li>Affected Project MMDAs</li> </ul>                                                                               | <ul style="list-style-type: none"> <li>Awareness creation on the potential impacts and remedial measures to relevant stakeholders and project affected communities</li> <li>Integration of the ESIA into planning for construction (impacts and mitigation measures)</li> <li>Grievance redress procedures</li> <li>Capacity building for stakeholders for the implementation of the ESIA</li> </ul> |                                    | <ul style="list-style-type: none"> <li>Institutional /Community notifications.</li> </ul>                                                       |                         |
| <b>Construction phase</b> | <ul style="list-style-type: none"> <li>AMA</li> <li>Affected institutions/organisations in the project area</li> <li>Project communities/representatives</li> <li>Affected Project MMDAs</li> </ul> | <ul style="list-style-type: none"> <li>Information on Schedule of construction work activities and progress of construction</li> <li>Awareness creation on the potential impacts and remedial measures to communities</li> <li>Training</li> <li>CESMP Implementation</li> <li>Code of Conduct</li> <li>ESMP implementation</li> <li>Grievance redress mechanisms</li> </ul>                         | Throughout the construction period | <ul style="list-style-type: none"> <li>General stakeholder meetings for consultants, and contractor</li> <li>Community notification.</li> </ul> | Project Contractor/ AMA |

| Activity                         | Identified Stakeholders                                                                                                                                                                                                                   | Focus of Consultation / Information to be shared                                                                                                                                                                                                                                                                                                                                                                                                                                    | Frequency / Timelines                   | Method of Engagement                                                                                                                                                                                      | Responsible Agency     |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| <b>Decommissioning phase</b>     | <ul style="list-style-type: none"> <li>• AMA</li> <li>• Affected institutions/organisations in the project area</li> <li>• Project communities/representatives</li> <li>• Affected Project MMDAs</li> </ul>                               | <ul style="list-style-type: none"> <li>• Information on Schedule of construction work activities and progress of construction</li> <li>• Awareness creation on the potential impacts and remedial measures to communities</li> <li>• CESMP</li> <li>• Code of Conduct</li> <li>• Grievance redress mechanisms</li> </ul>                                                                                                                                                            | Decommissioning phase                   | <ul style="list-style-type: none"> <li>• General stakeholder meetings for contractor and AMA</li> <li>• Community or Institutional notification.</li> </ul>                                               | Project Contractor/AMA |
| <b>Operation and maintenance</b> | <ul style="list-style-type: none"> <li>• AMA</li> <li>• Project Contractor</li> <li>• Affected institutions/organisations in the project area</li> <li>• Project communities/representatives</li> <li>• Affected Project MMDAs</li> </ul> | <ul style="list-style-type: none"> <li>• Formulation of ESHS and Security Policies in compliance</li> <li>• Public awareness creation/sensitisation on waste disposal and maintenance of drains</li> <li>• Operation and Maintenance (O&amp;M) requirements</li> <li>• Roles and responsibilities in the O&amp;M</li> <li>• Training on Management and Emergency Response Measures.</li> <li>• Review of grievances</li> <li>• Consultations with stakeholders and local</li> </ul> | During operation and maintenance period | <ul style="list-style-type: none"> <li>• General meetings/institutional engagements</li> <li>• Community meetings and interviews</li> <li>• Field investigations</li> <li>• Training Workshops</li> </ul> | Project Contractor/AMA |

| Activity | Identified Stakeholders | Focus of Consultation /<br>Information to be shared                                                                                                                | Frequency /<br>Timelines | Method of<br>Engagement | Responsible<br>Agency |
|----------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------------|-----------------------|
|          |                         | <p>communities on preparation of ESMP</p> <ul style="list-style-type: none"> <li>• Disclosure of ESMP to all potentially impacted parties, and training</li> </ul> |                          |                         |                       |

## 5.7 Stakeholder Validation Workshop

The stakeholder validation workshop represented a key milestone in the ESIA process for the proposed Municipal Solid Waste Source Separated and Composting Plant Project. As part of the broader stakeholder engagement strategy, the workshop aimed to ensure that project-affected and interested parties were given the opportunity to review, comment, and contribute meaningfully to the finalization of the ESIA and associated ESMP.

The primary objectives of the validation workshop were to:

- Disseminate key findings from the draft ESIS, including baseline environmental and social conditions, predicted project impacts, and proposed mitigation and enhancement measures.
- Validate the ESMP by engaging stakeholders on its mitigation strategies, institutional responsibilities, and monitoring frameworks.
- Capture informed feedback, concerns, and recommendations from a diverse cross-section of stakeholders including regulatory bodies, academic institutions, community representatives, and private sector actors.
- Reinforce transparency and accountability, aligning the project with Ghana's legal frameworks and international best practices such as the IFC PS.
- Promote stakeholder ownership and reduce future risks of conflict by clarifying project intentions, addressing misconceptions, and identifying opportunities for local collaboration and benefit-sharing.

### 5.7.1 Workshop Details

The validation workshop was held on Friday, 25th April 2025 at the Naa Dedei Hall within the Accra Metropolitan Assembly (AMA) premises. It was facilitated by the Environmental and Health Impact Assessment Group (EHG) with support from AMA, the C40 Cities Finance Facility (CFF), and GIZ.

The event was structured into three core sessions:

- Presentation of the draft ESIS findings, covering project background, baseline assessments, impact analysis, and an overview of the ESMP.
- An open stakeholder dialogue, featuring moderated discussions and targeted contributions from technical agencies, civil society groups, and community stakeholders.
- Final reflections and closing, during which key recommendations were captured, clarifications made, and next steps outlined for updating the ESIS.

Some photos from the session have been presented in plate 5.3.



**Plate 5. 3: Photos of Validation Workshop**

### ***5.7.2 Summary of Stakeholder Feedback and Project Responses***

Stakeholder inputs covered a wide range of environmental, social, operational, and institutional issues. Table 5.4 summarizes the key concerns raised and the corresponding responses and commitments from the project team.

**Table 5. 4      Environmental and Social Concerns and Stakeholder Inputs**

| <b>Environmental &amp; Social Concern</b>    | <b>Stakeholder Groups</b>                             | <b>Stakeholder Concern</b>                                                                                                                                                              | <b>Project Team Response</b>                                                                                                                                                                                                                                                               |
|----------------------------------------------|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Surface Water and Leachate Management</b> | Fisheries Commission, EPA                             | Potential contamination of the Korle Lagoon and groundwater due to leachate from organic waste; inadequate leachate control could exacerbate nutrient loading in a sensitive ecosystem. | The project will implement a robust leachate diversion system to an off-site treatment facility, install phytoremediation beds and engineered wetlands for secondary polishing, and construct engineered surface water drainage and erosion control infrastructure.                        |
| <b>Odour Emissions</b>                       | Korle Bu Teaching Hospital, Community Representatives | Risk of foul odour emissions affecting nearby communities, with past negative experiences from similar mixed waste facilities cited as a concern.                                       | The project will adopt the Controlled Aerated Static Pile (CASP) composting method to ensure aerobic decomposition, process only source-separated organic waste from institutions and households and maintain a targeted input stream to reduce odour generation.                          |
| <b>Air Quality and Dust Pollution</b>        | Jamestown Community                                   | Concern over particulate matter emissions during construction and operation phases, posing health risks to residents.                                                                   | The project will conduct bi-weekly air quality monitoring (PM <sub>2.5</sub> and PM <sub>10</sub> ) in accordance with EPA guidelines, carry out regular road watering and surface maintenance, and ensure proper aeration of compost piles to minimize dust and harmful gas accumulation. |
| <b>Noise Disturbances</b>                    | Nearby Residents                                      | Anticipated noise disruptions from operational activities, especially during off-peak hours.                                                                                            | The project will implement a monthly noise monitoring program, restrict operations to designated daytime hours, install acoustic barriers around noise-generating equipment, and utilize low-decibel machinery to reduce sound levels.                                                     |
| <b>Transport-Related Impacts</b>             | Community Stakeholders                                | Concerns about traffic congestion, vehicle emissions, and odour leaks from collection trucks, especially during peak hours near Korle Gonno.                                            | The project will develop designated transport routes and collection schedules to avoid peak traffic periods, include GIS-based transport schematics in the final ESIS, and implement structured collection and fleet management plans to optimize logistics and reduce emissions.          |

| <b>Environmental &amp; Social Concern</b>  | <b>Stakeholder Groups</b>          | <b>Stakeholder Concern</b>                                                                                                                      | <b>Project Team Response</b>                                                                                                                                                                                                                                   |
|--------------------------------------------|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fire Safety and Hazardous Gas Risk</b>  | Ghana National Fire Service (GNFS) | Concern over fire outbreaks and chemical hazards, especially in light of incidents at similar waste facilities.                                 | The project will co-develop a fire safety and hazardous gas management protocol with GNFS, establish emergency access routes, install fire suppression infrastructure, and conduct regular training and simulation drills for staff.                           |
| <b>Baseline Data Integrity</b>             | Water Research Institute           | Concern regarding the misrepresentation of baseline water quality data, with some parameters inaccurately reported as within acceptable limits. | The project acknowledged and rectified the reporting error, confirmed the exceedance of national water quality limits, and has annexed raw data tables and trend analyses in the final ESIA for full transparency.                                             |
| <b>Rodents and Pest Management</b>         | Korle Bu Teaching Hospital         | Fears of vermin and pest infestations due to improper organic waste handling.                                                                   | The project will enforce a 24-hour waste processing policy to prevent pileup, require strict PPE usage for all waste handling personnel, and conduct continuous temperature monitoring of compost piles to deter pest activity.                                |
| <b>Inclusion of Informal Waste Pickers</b> | NGOs, Community Representatives    | Concern over the potential displacement of informal waste workers and insufficient engagement with their groups.                                | The project will actively engage with existing informal waste picker cooperatives, co-create inclusive integration models such as bifast centres with proper amenities, and establish fair compensation and transition mechanisms to support affected workers. |
| <b>Community Education</b>                 | Multiple Stakeholders              | Emphasis on the need for extensive public education to promote source separation and foster community buy-in.                                   | The project will implement targeted educational campaigns for schoolchildren, youth, and market vendors, with the aim of building long-term community awareness and promoting environmentally responsible waste practices.                                     |
| <b>Access to Draft ESIA</b>                | Institutional Stakeholders         | Concern over limited access to the draft ESIA document, which constrained the ability of stakeholders to provide informed input.                | The project will improve the timeliness of ESIA document dissemination for future engagements, ensuring stakeholders have adequate time to review and provide meaningful feedback.                                                                             |
| <b>Academic collaboration</b>              | Accra School of Hygiene, CSIR      | Underutilization of academic institutions for research, training, and monitoring roles.                                                         | The project will formalize partnerships with academic institutions to support long-term monitoring, technical training, research collaboration, and adaptive project management.                                                                               |

### 5.7.3 Institutional and Financial Arrangements

Stakeholders also raised critical concerns regarding the institutional design, private sector involvement, and financial sustainability of the project. These issues are key to ensuring long-term operational success and equitable benefit-sharing. Table 5.5 summarizes the feedback received and the project team's corresponding commitments.

**Table 5.5** *Institutional and Financial Arrangements*

| Aspect                               | Stakeholder Concern                                                                                                                                                 | Project Team Response                                                                                                                                                                                 |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Private Sector Integration</b>    | Stakeholders emphasized the need for inclusive participation of existing compost marketers and collectors and expressed concern about displacement and competition. | The project will complement, not compete with, facilities like IRECOP and will include private actors in both waste collection and compost marketing to support an integrated, inclusive value chain. |
| <b>Ownership and Operation Model</b> | Requests were made for transparency in selecting operators and mechanisms to ensure vulnerable group access.                                                        | The project will be owned by AMA and operated through competitively selected contractors under a performance-based management framework that ensures inclusive and efficient service delivery.        |
| <b>Financing Structure</b>           | Concerns were raised about the sustainability of financing and potential over-reliance on public funds.                                                             | The project will adopt a blended finance model combining public capital, donor support, and private investment, thereby sharing risks and reducing fiscal pressure on the Assembly.                   |
| <b>Revenue and Cost Recovery</b>     | Stakeholders requested clarity on how operational costs would be recovered to ensure financial viability.                                                           | The project will implement a multi-stream revenue model including compost sales, gate fees, and service charges, with potential CSR and donor-based support mechanisms.                               |
| <b>Decommissioning Planning</b>      | Concerns were raised about the long-term fate of the facility after its operational life.                                                                           | The project will develop a decommissioning plan with options for converting the site into an urban green space or recovery hub, supported by future participatory planning with stakeholders.         |

## 6.0 ASSESSMENT OF POTENTIAL ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS

### 6.1 Overview

The ESIA involves identifying potential environmental and social impacts that may arise from the proposed municipal solid waste (MSW) source separation and composting project. This included assessing the potential impacts on biodiversity, water resources, occupational health and safety, community health and safety, waste management, land conflicts, livelihood disruptions, population influx, loss of lands requiring resettlement/compensation, cultural heritage sites and value chain among others.

Potential risks were identified through community consultations, which allowed stakeholders to raise unique and sensitive local issues. Primary baseline data were also collected and reviewed to inform the impact identification process. Site visits were conducted at the proposed project and the immediate communities of the proposed site.

The assessed potential risks were categorized based on upstream (input-related) and downstream (output-related) activities across the pre-construction, construction, and operation phases, ensuring a structured approach to mitigation. Broader environmental and social risks and impacts were identified, emphasizing the need for ongoing monitoring and mitigation strategies to address impacts effectively throughout the project lifecycle. The initial gathering of the field data is to enable the ESIA focus on very real and pertinent issues of identifying and managing environmental, social, safety and public health risks that will be associated with the project, i.e., pre-construction activities (topographical survey, geotechnical investigations), construction activities, and the operation of the composting plant. Table 6.1 presents the identified potential environmental and social impacts of the project informed by the stakeholder consultation, appraisal of the baseline information, and expert analysis/opinions.

### 6.2 Impact/Risk Assessment and Evaluation Methodology

Impacts were assessed using structured and transparent tools, including:

- **Modified Leopold Matrix:** Used to assign weighted scores to interactions between project activities and environmental/social receptors. A valuable tool which offers a structured and comprehensive approach to evaluating the potential environmental and social consequences of the project and informing mitigation strategies.
- **Sensitivity and Impact Criteria Matrix:** This tool helped quantify impact magnitude, extent, duration, probability, reversibility, and significance. The matrix is used to determine which potential impacts are most critical to address. It works by evaluating each impact based on two key factors: likelihood and severity.

Likelihood refers to the probability that a particular impact will occur, typically categorized as unlikely, possible, or likely.

- **Likely** (assigned a value of between 3 and 5) - refers to an impact that is expected to occur under normal project operations. Such impacts have over 66% chance of occurring.

- Possible (assigned a nominal value of 3) - This refers to an impact that could occur, but only under certain conditions (e.g., specific season, heavy rain, etc.). The chances that such impacts will occur range between 33% and 66%.
  - Unlikely (assigned a value of between 1 and 3) - This refers to an impact with a remote chance of happening during normal operations. Such impacts usually have less than 33% chances of occurring.
- Severity/Effect (also known as consequence) assesses the extent of harm the impact could cause if it does occur, ranging from minor to moderate to severe.
    - Minor/Low - Refers to impacts with low magnitude and low significance level to the environment or project objectives. Such impacts are small and localised and mostly assigned values of 1 and 2.
    - Moderate/Medium - This refers to impacts with a mid-level significance to the environment or project objectives. Such impacts have comparatively larger geographic distribution and are assigned values of 3. Example: Impacts that can affect the entire project district.
    - Severe/High - This indicates a large, far-reaching effect that is critically important to the environment or community. Such impacts have a wide geographic distribution that could extend to the entire region and even beyond and are assigned values of 4 and 5.
  - By combining these two dimensions, the matrix helps prioritize risks, allowing the project to focus mitigation efforts on impacts that are both probable and potentially serious as depicted in Figure 6.1. The matrix is applied to all project phases to assess the identified environmental and social risks.

|                 |   | Risk Assessment Matrix |                 |                 |                 |                 |
|-----------------|---|------------------------|-----------------|-----------------|-----------------|-----------------|
| Likelihood<br>↑ | 5 | Medium/<br>High        | Medium/<br>High | High            | High            | High            |
|                 | 4 | Low /<br>Medium        | Medium/<br>High | Medium/<br>High | High            | High            |
|                 | 3 | Low /<br>Medium        | Low /<br>Medium | Medium/<br>High | Medium/<br>High | High            |
|                 | 2 | Low                    | Low             | Low /<br>Medium | Low /<br>Medium | Medium/<br>High |
|                 | 1 | Low                    | Low             | Low             | Low /<br>Medium | Medium/<br>High |
|                 |   | 1                      | 2               | 3               | 4               | 5               |
|                 |   | Effect<br>→            |                 |                 |                 |                 |

**Figure 6.1 Risk Assessment Matrix**

The risk rating matrix (figure 6.1) is used to assess and prioritize risks based on the likelihood and severity of their consequences. The matrix is comprised of a grid with five columns and five rows, creating 25 individual cells.

- The five rows represent the likelihood or probability of the risk occurring, while the columns represent the severity (effect) of the consequences.
- Each cell in the matrix represents a level of risk, with the highest risk in the top-right corner and the lowest risk in the bottom-left corner.
- The likelihood and severity of a risk occurring are usually rated as low, low/medium, medium/high, or high.
- These ratings are assigned based on the expert knowledge of the risk assessor, and they can be adjusted based on the specific project or situation.

### 6.3 Beneficial/Positive Impacts

#### 6.3.1 *Reduced Landfill Waste*

Diverting organic materials from landfills will significantly reduce the volume of waste requiring disposal by about 50%. For example, in 2019, Ghana's two main landfills in Kpone and Nsumia received a total of 688,482.65 metric tons of solid waste (with 346,633.17 metric tons and 341,849.50 metric tons, respectively) meaning that only 344,241.33 metric tons would have reached the two landfills. This will extend the lifespan of the landfills and minimize the environmental problems associated with them.

#### 6.3.2 *Methane Reduction*

Organic waste decomposing in landfills under anaerobic (oxygen-deprived) conditions produces methane, a potent greenhouse gas. Composting, an aerobic process, significantly reduces methane emission with reductions ranging from 38% to 84%. Composting offers a powerful strategy for mitigating methane emissions and promoting a more sustainable waste management approach. In 2019, the Kpone and Nsumia landfills produced 28,303 tonnes of methane (CH<sub>4</sub>) and 77,833 tonnes of biogenic Carbon. Additionally, a study on the Tamale landfill site estimated that approximately 77% of the disposed waste could decompose to generate methane. This landfill site was projected to reach a peak methane generation rate of 2222 m<sup>3</sup>/hr in 2036

#### 6.3.3 *Job Creation*

Composting plants will create employment opportunities along the waste management value chain, including collection, processing, maintenance, and administration. This can be especially beneficial in the Ashiedu Keteke Sub-Metropolitan areas which has an unemployment rate of about 12.5% among people 15 years and above.

#### 6.3.4 *Improved Public Health*

By reducing waste in landfills, composting plants will help minimize the spread of disease vectors (e.g., rodents, flies) and improve overall public health.

## 6.4 Adverse Risks and Impacts

### 6.4.1 Summary of Potential Adverse Risks and Impacts

|                                                                | Likelihood |        |        | Effect |        |        | Significance |        |        |
|----------------------------------------------------------------|------------|--------|--------|--------|--------|--------|--------------|--------|--------|
|                                                                | PP         | CP     | OP     | PP     | CP     | OP     | PP           | CP     | OP     |
| Displacement of scrap dealers and informal waste pickers       | High       | -      | -      | High   |        |        | High         | -      | -      |
| Risk of conflict associated with resettlement of scrap dealers | High       | Medium | Low    | High   | Medium | Low    | High         | Medium | Low    |
| Community & Occupational Health, Safety                        | Low        | High   | High   | Low    | Medium | Medium | Low          | High   | High   |
| Improper Waste Handling and Disposal Impacts                   | Low        | Medium | High   | Low    | Medium | High   | Low          | Medium | High   |
| Threat to Biodiversity                                         | Medium     | Medium | Medium | Low    | Low    | Low    | Low          | Low    | Low    |
| Impacts on Water Resources                                     | Low        | Medium | Medium | Low    | Medium | Medium | Low          | Medium | Medium |
| Traffic and Accident Risks                                     | Low        | Medium | Medium | Low    | Medium | Medium | Low          | Medium | Medium |
| Inefficient Use of Resources                                   | Low        | Medium | Medium | Low    | Medium | Medium | Low          | Medium | Medium |
| Climate Risks                                                  | Low        | Medium | Medium | Medium | Medium | Medium | Low          | Medium | Medium |
| Labour Rights Infringement Risks                               | Low        | Medium | Medium | Low    | Medium | Medium | Low          | Medium | Medium |

\*Key: PP – Pre Construction Phase; CP – Construction Phase; OP – Operation Phase

### 6.4.2 Displacement of Scrap Dealers and Informal Waste Pickers

The proposed site is predominantly vacant and informally used as a dumping site. About 200 informal waste collectors (specifically members of the mortuary road scrap dealer's association) are identified to currently occupy the site with their operations fragmented by underlying disputes. The land, currently owned by the Government of Ghana, will require proper acquisition (either through a lease or a simple administrative approval process as both parties are government) by the AMA to facilitate the project's implementation. Land-take for the project may result in potential conflicts or disputes among the informal waste collectors if

the three identified traditional authorities (i.e., Sempe Korle Bu Mantse, Korle Wulormor and Gbese Mantse) are not involved in properly resettling them. Livelihood disruptions and concerns from existing scrap dealers and local communities regarding the project's impacts on their livelihoods are also germane issues. Engagements with PAPs indicate a strong expectation of fair and adequate compensation. Additionally, the project may interfere with planned developments and indirectly influence surrounding land use, potentially altering zoning and development plans in the area. The ratings for the likelihood and effect of land-take impacts are therefore high (5) and high respectively. The risk level is therefore high.

### ***6.4.3 Risk of Conflict Associated with Resettlement of Scrap Dealers***

#### ***Pre-Construction Phase***

During the pre-construction phase, the risk of conflict associated with the resettlement of scrap dealers and other informal waste workers currently occupying the project site is expected to be most pronounced. The project site is already being used as a source of livelihood by individuals engaged in scrap recovery and informal waste activities. These workers depend on access to the site for income generation, and any attempt to relocate them without adequate consultation, compensation, or alternative livelihood arrangements may lead to dissatisfaction and resistance.

Potential sources of conflict may include disagreements over eligibility for compensation, perceived inadequacy of compensation amounts, lack of clarity regarding resettlement arrangements, and concerns about loss of income. In addition, informal workers may not have formal recognition or documentation of their activities, which could further complicate identification of affected persons and determination of entitlements. If communication is not handled properly, misinformation and mistrust may develop between the project proponent and affected groups, increasing the likelihood of disputes.

The magnitude of this impact is considered high because loss of livelihood and displacement can significantly affect the well-being of affected individuals. The spatial extent of the impact is localised to the project site but directly affects a specific and potentially vulnerable group. The duration of the impact may extend from the pre-construction phase into the early stages of construction, particularly if resettlement issues are not resolved promptly. The impact is partially reversible, as fair compensation, livelihood restoration measures, and negotiated agreements can address grievances, although some residual dissatisfaction may remain. The overall effect of this impact is therefore considered high. Given the sensitivity of land use and livelihood issues, the likelihood of conflict arising is considered high. Consequently, the overall significance of the risk of conflict during the pre-construction phase is assessed as high.

#### ***Construction Phase***

During the construction phase, the risk of conflict may persist if resettlement and compensation issues have not been fully resolved prior to commencement of works. Affected scrap dealers and informal waste workers may attempt to regain access to the site or disrupt construction activities if they feel that their concerns have not been adequately addressed. This could lead to tensions between workers, contractors, and affected community members.

Conflicts during this phase may manifest as protests, obstruction of access roads, or disputes with construction personnel. In addition, if some affected individuals perceive that others have been treated more favourably in compensation or relocation arrangements, this may create further grievances and social tension within the affected group.

The magnitude of the impact during the construction phase is considered medium to high, depending on the effectiveness of resettlement implementation during the pre-construction phase. The spatial extent remains localised to the project site and immediate surroundings. The duration of the impact is medium-term, corresponding to the construction period, although the intensity of conflict is likely to decrease over time if issues are addressed. The impact remains partially reversible, as ongoing engagement, grievance redress mechanisms, and corrective actions can help resolve disputes. The overall effect is therefore considered medium. The likelihood of conflict at this stage is considered medium, particularly if resettlement processes were not fully satisfactory. Consequently, the overall significance of the impact during the construction phase is assessed as medium.

### ***Operation Phase***

During the operational phase, the risk of conflict related to resettlement is expected to reduce significantly, provided that resettlement and compensation issues have been adequately addressed during earlier phases. However, residual risks may remain if affected individuals continue to feel that their livelihoods have not been fully restored or if promised support measures have not been implemented.

There is also a possibility that former informal workers may seek to re-enter the site to access waste materials for income generation, particularly if alternative livelihood options are limited. This could lead to conflicts with facility management or security personnel. Additionally, if employment opportunities at the compost plant are perceived to be distributed unfairly, this may create further dissatisfaction among previously affected individuals.

The magnitude of the impact during the operation phase is considered low, as it relates primarily to residual grievances and access restrictions rather than initial displacement. The spatial extent remains localised to the project site. The duration of the impact is long-term, as any unresolved grievances may persist over time. However, the impact is largely reversible through continued engagement, fair employment practices, and effective grievance mechanisms. The overall effect is therefore considered low. The likelihood of conflict during the operational phase is considered low. Consequently, the overall significance of the impact during the operation phase is assessed as low.

### ***6.4.4 Community and Occupational Health, Safety and Security Risks***

#### ***Pre-Construction Phase***

During the pre-construction phase, risks to both the local community and workers are minimal. Activities at this stage are largely limited to site surveys, minor vegetation clearing, and

preparatory works. Dust and emissions are expected to be minor, generated primarily by occasional vehicle movement and small-scale earth disturbance. The Korle ecological site/habitat, although considered one of the most polluted in the world, is sensitive to particulate emissions, particularly dust soiling and the project could aggravate the existing ambient conditions. The magnitude of these impacts is low, confined to the immediate site area, and their duration is short-term, with high reversibility as any minor dust naturally settles.

Noise and vibration impacts are similarly limited, arising only from survey equipment or site access vehicles, with low magnitude, short duration, and high reversibility, affecting only the immediate site environment. Accident risks to workers, such as slips, trips, or minor cuts during site visits or clearing, are also low in magnitude and limited in extent, with short-term exposure and high reversibility due to the minor nature of potential injuries. Risks from odour and pests at this stage are negligible.

Considering the combination of magnitude, extent, duration, and reversibility across all risk categories, the overall likelihood of adverse impacts in the pre-construction phase is low, the overall effect is low, and the overall significance is low.

### ***Construction Phase***

The construction phase introduces significantly higher risks due to the presence of heavy machinery, excavation activities, and increased human activity on site. Construction dust emissions can increase airborne particulate matter concentrations and dust soiling. The former has potential health implications for the construction workers, and the latter can impact residential dwellings and local businesses through the deposition/settlement of dust on surfaces. Dust and emissions from construction works are of medium magnitude, extending across the site and to areas immediately surrounding it. Their duration is medium-term, corresponding to the construction schedule, and reversibility is medium, as dust and emissions will settle once construction activities cease but may temporarily affect air quality and worker comfort. Construction activities are not expected to add to the existing odorous situation of the project area.

Noise and vibration from machinery, generators, and construction operations are of medium magnitude and primarily affect the workers and nearby communities, with medium-term duration and high reversibility once activities stop. Accident risks for workers during construction, including slips, trips, falls, cuts, and machinery-related injuries, are high in magnitude due to the potential severity, site-wide in extent, and of medium-term duration. Reversibility is medium because medical treatment is available, but serious injuries could have lasting consequences.

Pests, including rodents and insects, may temporarily increase due to water pooling or construction debris, with low to medium magnitude, local extent, medium-term duration, and high reversibility through proper site housekeeping. Considering all these factors together, the overall likelihood of adverse impacts during the construction phase is high, the overall effect is medium, and the overall significance of the phase is high.

### ***Operation Phase***

During the operation phase, risks are primarily associated with the handling of organic waste, the operation of machinery, and ongoing plant maintenance.

Key emissions include:

- Particulate matter - sources include dust from handling, sorting, and processing organic waste
- Methane (CH<sub>4</sub>) and hydrogen sulphide (H<sub>2</sub>S) may be produced under anaerobic conditions
- Nitrous Oxide (N<sub>2</sub>O) arises from nitrification and denitrification
- Carbon Dioxide (CO<sub>2</sub>) is a major by-product of aerobic decomposition
- Ammonia (NH<sub>3</sub>) and Volatile Organic Compounds (VOCs) are emitted from nitrogen-rich or decomposing materials.

The risks involved are contributions to air pollution and climate change via greenhouse gas emissions.

Accident risks for workers remain, particularly from slips, trips, cuts. The greatest risk of bacterial infection appears to be in the initial stages of composting, and from raw feedstocks like manure, biosolids and postconsumer food scraps. They pose little risk in final stages because pathogenic forms die at the high temperatures of composting. Handling organic materials can expose workers to pieces of dead bacteria, known as endotoxins, that are potentially present in nearly any feedstocks and the composts made from them. They are heat-stable and not substantially inactivated by composting temperatures. These risks are long-term in duration and have medium reversibility, as serious injuries may require extensive treatment or result in permanent consequences.

Noise sources will include machinery (shredders, turners, conveyors) and increased truck movements. This results in noise and vibration impacts to nearby communities as well as potential impact on public wellbeing. Existing sources of noise pollution at the project area are both constant and intermittent, arising from waste handling operations, vehicular traffic, human activity, and industrial facilities in the area. The noise environment becomes particularly intense especially during peak traffic or delivery hours, exceeding Ghana's daytime permissible limit of 75 dB(A) for commercial areas at three of the four locations sampled under this assessment. Noise and vibration from plant equipment and vehicles are of medium magnitude, localized primarily to the site and nearby community, and persist long-term during operational hours, but are highly reversible when machinery or vehicles are not in use.

Odour arising from decomposing organic matter is medium in magnitude, affects worker on the site as well as visitors and immediate surroundings, and persists throughout the operational life of the plant. The existing south-westerly winds could disperse odour to communities and facilities within a 1km radius from the proposed project site. The odour is however not expected to spread beyond the areas already affected by the existing odour from the Korle Lagoon (such as the Korle Bu Teaching Hospital, Korle Bu Police Station, Bukom Arena among others, that

are within the 1km radius) and other facilities whose operations emit odorous gases. Reversibility is medium, as proper compost management can reduce odour but without mitigation, impacts may persist.

Pest-related risks, including flies, rodents, and other organisms, have medium magnitude, affect the entire site, persist long-term, and have medium reversibility with proper pest control measures. Considering the combination of magnitude, extent, duration, and reversibility for all risks during the operation phase, the overall likelihood is high, the overall effect is high, and the overall significance of the phase is high.

#### ***6.4.5 Improper Waste Handling and Disposal Impacts***

##### ***Pre- Construction Phase***

During the pre-construction phase, activities associated with the project are limited mainly to site preparation, detailed surveys, minor clearing of vegetation, and mobilization of personnel and equipment. At this stage, the potential for improper waste handling and disposal arises primarily from the presence of small teams conducting site visits and preliminary clearing activities. Waste generated during this phase is expected to be minimal and largely consists of packaging materials, food waste from workers, and small quantities of vegetation cleared from the site. Given that the proposed project site in Jamestown is already characterized by degraded land conditions, informal waste dumping, and scrap handling activities, the additional waste generated during pre-construction is unlikely to significantly alter the existing environmental conditions.

The magnitude of potential impacts from improper handling or disposal of such waste is therefore considered low, as the volume of waste generated would be small and largely non-hazardous. The spatial extent of any impact would be limited to the immediate project footprint, as the activities are confined to the 1.77-hectare site and involve only a small number of personnel. The duration of the impact would be short-term, occurring only during the brief period of pre-construction activities before full construction begins. The impacts would also be highly reversible, since any improperly disposed waste could easily be collected and removed from the site without long-term environmental consequences.

Given these characteristics, the overall effect of potential waste mismanagement during the pre-construction phase is low. The likelihood of such impacts occurring is also low because the activities involved are limited and easily supervised. Consequently, the overall significance of impacts related to improper waste handling and disposal during the pre-construction phase is considered low.

##### ***Construction Phase***

During the construction phase, the potential for impacts related to improper waste handling and disposal becomes more significant due to the larger number of workers on site and the variety of materials used in construction activities. Construction of the composting facility will require the use of materials such as sand, stones, cement, iron rods, roofing materials, electrical fittings, and other building supplies sourced from suppliers within Ghana. Activities associated with

these materials will generate construction waste such as broken blocks, concrete debris, packaging materials, scrap metal, wood off-cuts, and other residual materials. If these wastes are not properly managed, they may accumulate on the project site or be disposed of indiscriminately in nearby areas.

Improper disposal of construction waste could result in localized land contamination, obstruction of drainage pathways, and visual pollution. This is particularly relevant given the site's proximity to the Korle Lagoon and the Odaw River system, which are already heavily polluted due to urban runoff and improper waste disposal in the surrounding communities. If construction waste were to enter nearby drains or waterways, it could contribute to further siltation or blockage of drainage channels, potentially exacerbating flooding risks during heavy rainfall events. In addition, poorly managed construction waste could create safety hazards for workers, including tripping hazards or exposure to sharp materials.

The magnitude of impacts from improper handling of construction waste is considered medium because the volume of waste generated during construction could be substantial and could interact with the already degraded environmental conditions of the surrounding area. The extent of the impact would likely remain localized to the project site and its immediate surroundings, although improper disposal into nearby drains could allow materials to reach the lagoon. The duration of the impact is expected to be medium-term, lasting throughout the construction period. However, the impacts are largely reversible because waste materials can be collected, transported, and disposed of appropriately at approved waste management facilities.

In addition to construction materials, waste generated by construction workers represents another potential source of impact. Workers present on site will generate solid waste such as food packaging and other domestic refuse, as well as liquid waste including wastewater from sanitation facilities. If proper sanitation and waste collection systems are not provided, such wastes may be disposed of indiscriminately around the site. This could attract pests such as rodents and flies and create unsanitary conditions for workers and surrounding communities. In a densely populated urban environment such as Jamestown, where waste management challenges already exist, improper handling of worker-generated waste could contribute to localised environmental and public health concerns.

The magnitude of this impact is considered low to medium because the quantity of waste generated by workers is relatively small compared to municipal waste volumes, but poor management could still create localized health and sanitation issues. The extent of the impact would remain limited to the project site and its immediate surroundings. The duration would be medium-term, lasting for the duration of the construction phase, while the reversibility of the impact is high because proper cleaning and waste removal can quickly restore site conditions.

Taking all these factors into account, the overall effect of improper waste handling during the construction phase is considered medium. The likelihood of such impacts occurring is also medium because construction activities involve many materials and workers, increasing the

possibility of waste mismanagement if appropriate controls are not implemented. The overall significance of the impact during the construction phase is therefore assessed as medium.

### ***Operation Phase***

During the operational phase of the compost plant, improper handling and disposal of waste could pose more substantial environmental and occupational risks due to the scale and nature of activities at the facility. The plant is designed to process up to 466 tonnes of source-separated organic waste per day collected from across the Accra Metropolitan area and surrounding municipalities. This waste will be delivered to the facility, weighed at the weighbridge, and then transferred to the pre-processing building where shredding and secondary sorting will occur before the waste is transported to composting chambers.

Improper handling of feedstock at this stage could lead to several potential impacts. Although the project proposes source separation of organic waste at the point of generation, contamination with plastics, metals, or other inert materials may still occur. If such materials are not properly removed during pre-processing, they could affect the quality of the compost product and create occupational hazards for workers operating shredders and other equipment. In addition, poorly managed organic waste could lead to odour generation, attraction of pests, and exposure of workers to bioaerosols or other biological agents associated with decomposing organic matter. Given that the surrounding area already experiences waste-related environmental challenges, these impacts could contribute to existing sanitation and health concerns if not properly controlled.

The magnitude of these impacts is considered medium because of the large volume of organic waste handled daily. The spatial extent of potential impacts is primarily limited to the facility and the immediate surrounding area within the defined area of influence, particularly considering the proximity of nearby communities and the Korle Lagoon. The duration of the impact would be long-term because waste handling is a continuous operational activity throughout the life of the plant. However, the impacts remain largely reversible because appropriate waste management procedures, quality control systems, and worker safety protocols can effectively prevent or address these issues.

Waste generated by plant workers during routine operations is expected to consist mainly of domestic refuse and wastewater from staff facilities. With approximately 50 employees expected to work at the facility, the volume of such waste is relatively small. If improperly managed, however, it could create localized sanitation issues and attract pests within the facility. The magnitude of this impact is therefore low, the extent is limited to the facility site, and the duration is long-term but easily manageable. The reversibility of the impact is high because proper housekeeping and waste collection systems can readily address these issues.

Effluent management represents another important aspect of waste handling during plant operations. The composting process will generate leachate that must be treated before discharge or reuse. The project design includes a leachate treatment system consisting of constructed wetlands and a reverse osmosis treatment process intended to ensure that treated effluent meets

national effluent discharge standards before release or reuse within the facility. If this system were to malfunction or if effluent were improperly handled, contaminants could potentially enter nearby drainage systems or the Korle Lagoon, which lies adjacent to the project site. Given the already degraded state of the lagoon and the importance of preventing additional pollution, improper effluent management could worsen existing water quality conditions.

The magnitude of potential impacts from improper effluent handling is considered medium because untreated or poorly treated leachate could contain organic pollutants and nutrients that may affect receiving water bodies. The extent of the impact could extend beyond the site to nearby water bodies if effluent enters drainage channels connected to the lagoon. The duration would be long-term if such issues persist during plant operations, but the impacts remain reversible if effluent treatment systems are properly maintained and monitored.

Considering all aspects of waste handling during plant operations, including feedstock management, worker-generated waste, and effluent treatment, the overall effect of improper waste handling during the operational phase is assessed as high. The likelihood of such impacts occurring is considered high because the facility will handle large volumes of organic waste on a daily basis, increasing the potential for operational lapses if proper management systems are not implemented. Therefore, the overall significance of impacts related to improper waste handling and disposal during the operational phase is assessed as high.

#### **6.4.6 Threat to Biodiversity**

##### ***Pre-Construction Phase***

The pre-construction phase will involve site clearing and preparation activities, leading to potential disturbance or loss of habitats and impacts on flora and fauna species. It will also involve earthworks including embankments and trenching, and the assembly and welding of infrastructure which may result in the removal or severance of habitats, affecting the species that rely on those ecosystems.

However, the site is an abandoned field with no habitats of high importance or significance. Additionally, specialized studies conducted within the proposed site to assess species (flora and fauna) diversity and distribution did not find any globally protected species on site. The two locally protected bird species of some importance: Cattle egret and Yellow-billed Kites found feeding in the polluted Odaw River and on the legacy waste pile on the proposed project site are not at risk because they are opportunistic feeders and will take advantage of readily available food sources, including those found in other disturbed areas. The loss of foraging site for these bird species and others that depend on the legacy waste pile and insects attracted to the odour from the polluted Odaw River, is therefore not anticipated to adversely affect biodiversity.

The spread of identified invasive species such as *Leucaena leucocephala*, *Typha domingensis* and *Azadirachta indica* as a result of site modification is also not anticipated. The likelihood and effect of the risk of loss of biodiversity is therefore rated medium (3) and low respectively. Consequently, the risk level is low.

***Construction Phase***

Although the project site is already degraded due to informal waste dumping and scrap-dealing activities, construction activities may still pose limited risks to local biodiversity. Earthworks, and construction traffic may remove small patches of opportunistic vegetation and disturb hardy fauna species that currently utilize the area. Excavation and soil disturbance may also increase sediment-laden runoff during rainfall events, which could enter nearby drainage channels and ultimately the Korle Lagoon, potentially affecting water quality and aquatic organisms.

In addition, accidental spills of fuels, oils, or construction materials and temporary noise disturbance may affect birds and other wildlife along the lagoon margins. Given that the site is already highly disturbed, the magnitude of impact is considered low, with impacts largely confined to the project area of influence (the 1.77-hectare site and up to a 1 km radius), indicating a local extent. The duration of impacts is short-term, limited to the 12-month construction period, and impacts are largely reversible once construction activities cease and the site stabilizes. Accordingly, the likelihood of biodiversity impacts is considered medium, while the effect is assessed as low. Therefore, the significance is ranked low.

***Operation Phase***

During operation of the compost plant, biodiversity risks will mainly relate to waste handling and facility management. The current presence of scavenging bird species such as the Cattle Egret and the Hooded Vulture indicates that the site already functions as a feeding area due to existing informal waste dumping near the Korle Lagoon. Composting activities could therefore maintain or slightly increase bird activity if organic waste is left exposed, potentially increasing bird congregation around the facility. Poorly managed composting operations could also generate leachate or nutrient-rich runoff that may reach the Korle Lagoon, potentially worsening water quality and affecting aquatic biodiversity.

Considering the already degraded baseline conditions, the magnitude of impact is assessed as low to moderate, with effects expected to remain within the project's area of influence (the site and up to a 1 km radius), indicating a local extent. The duration of impacts may be long-term, lasting throughout the operational life of the facility; however, they are largely reversible if appropriate waste management, runoff control, and housekeeping practices are implemented. With these considerations, the likelihood of biodiversity impacts during operation is considered medium, while the effect is assessed as low. Therefore, the significance is ranked low.

***6.4.7 Impacts on Soil and Water Resources******Pre-Construction Phase***

During the pre-construction phase, project activities will largely involve site mobilisation, surveying, minor vegetation clearing, and preparation for construction works. These activities may result in limited disturbance of the soil surface, particularly where vegetation is cleared and equipment begins to access the site. Given that the project area is located within a highly urbanised part of Accra, and is characterised by degraded land conditions, informal waste

disposal, and extensive human activity, the soils within the project footprint are already significantly disturbed. As a result, the additional soil disturbance expected during the pre-construction phase is unlikely to substantially alter existing soil conditions.

However, minor soil disturbance during early site preparation could lead to localized soil erosion or sediment movement, particularly during rainfall events. Because the project site lies close to the Korle Lagoon, which receives runoff from the surrounding urban catchment, there is a possibility that sediments from disturbed areas could be transported into nearby drains that ultimately discharge into the lagoon. Such sediment movement could contribute slightly to the already high sediment loads in the lagoon and its associated drainage channels.

The magnitude of this potential impact is considered low because only limited areas of soil will be disturbed at this stage. The spatial extent of the impact would be confined primarily to the project footprint and its immediate surroundings. The duration of the impact would be short-term, occurring only during the brief pre-construction period. The impact is also highly reversible because disturbed soil surfaces can be stabilised or restored once construction begins. The overall effect on soil and water resources during the pre-construction phase is therefore considered low. Given the limited scale of activities, the likelihood of the impact occurring is also low. Consequently, the overall significance of impacts on soil and water resources during the pre-construction phase is assessed as low.

### ***Construction Phase***

During the construction phase, the potential for impacts on soil and water resources increases due to the more intensive nature of construction activities. Construction of the compost plant will involve excavation, grading, installation of foundations, construction of processing buildings and composting chambers, and the development of access roads and drainage infrastructure. These activities will require the movement of soil and construction materials, which may expose soil surfaces and increase the potential for erosion and sediment transport during rainfall events.

Disturbed soils may be washed into nearby drainage channels during storms, especially considering the urban drainage network that discharges into the Korle Lagoon. The lagoon and surrounding waterways are already heavily polluted and subject to sedimentation due to uncontrolled runoff from surrounding communities. Although the project will occupy a relatively small site area of approximately 1.77 hectares, uncontrolled runoff from exposed construction areas could still contribute to additional sediment loading in nearby drains if appropriate erosion and runoff control measures are not implemented.

Construction activities may also involve the use of machinery and equipment that require fuel, lubricants, and hydraulic fluids. Improper handling or accidental spills of these substances could contaminate the soil within the project site. If spilled materials are not promptly contained, they may infiltrate the soil or be transported by runoff into nearby drainage systems. Such contamination could degrade soil quality within the site and potentially affect nearby

surface water bodies. The risk is particularly relevant given the proximity of the site to drainage pathways connected to the lagoon.

In addition, wastewater generated by construction workers, including wash water from sanitation facilities and equipment cleaning activities, may also pose a risk to soil and water quality if not properly managed. Discharge of untreated wastewater onto the ground could result in localized soil contamination and unsanitary conditions.

The magnitude of impacts on soil and water resources during the construction phase is considered medium. This reflects the increased level of soil disturbance and the potential for accidental spills or runoff of contaminants associated with construction activities. The spatial extent of the impact is expected to remain largely confined to the project site and nearby drainage pathways, although sediment or contaminated runoff could eventually reach the lagoon through existing urban drainage channels. The duration of the impact is expected to be medium-term, lasting for the duration of the construction phase. However, the impacts are largely reversible because soil contamination from minor spills can be remediated and erosion can be controlled through proper site management. The overall effect of construction activities on soil and water resources is therefore considered medium. The likelihood of such impacts occurring is also medium because construction activities inherently involve soil disturbance and the use of fuel-powered machinery. Accordingly, the overall significance of impacts on soil and water resources during the construction phase is assessed as medium.

### ***Operation Phase***

During the operational phase of the compost plant, the potential impacts on soil and water resources are primarily associated with the handling and processing of large volumes of organic waste. The facility is designed to process up to approximately 466 tonnes of organic waste per day, which will undergo shredding, sorting, and controlled composting within enclosed chambers. During the decomposition process, organic waste can produce leachate containing nutrients, organic matter, and dissolved contaminants. If this leachate is not properly collected and treated, it could infiltrate surrounding soils or enter nearby drainage systems.

Given the project's proximity to the Korle Lagoon, improper management of leachate could contribute to further degradation of surface water quality. Leachate rich in organic matter and nutrients could increase nutrient loading in receiving waters, potentially worsening eutrophication and other water quality problems already affecting the lagoon. However, the project design includes infrastructure for collecting and treating leachate through dedicated treatment systems, including constructed wetlands and additional treatment processes before discharge or reuse. When properly operated, these systems are intended to minimise the release of untreated wastewater into the surrounding environment.

Another potential source of soil and water impacts during operations relates to runoff from areas where organic waste is received, processed, or stored. If runoff from these areas is not properly contained and directed to the treatment system, it may carry organic materials or contaminants into nearby drainage channels. In addition, accidental spills of fuel or lubricants

from operational equipment could contaminate soil within the facility if appropriate spill prevention and response procedures are not implemented.

Despite these risks, the facility's design incorporates containment measures such as paved operational surfaces, controlled drainage systems, and leachate collection infrastructure intended to minimise direct contact between waste materials and the underlying soil. These features significantly reduce the potential for contamination of soil and surrounding water resources when properly maintained.

The magnitude of potential impacts during the operational phase is considered medium because of the large volume of organic waste handled at the facility and the potential environmental consequences of poorly managed leachate. The spatial extent of potential impacts could extend beyond the site through drainage channels connected to the lagoon if containment systems fail. The duration of the impact would be long-term because composting operations will occur continuously throughout the life of the plant. However, the impacts remain largely reversible if effective leachate management, runoff control, and monitoring systems are implemented and maintained. The overall effect on soil and water resources during the operational phase is therefore assessed as medium. Given the scale of waste processing and the complexity of waste handling systems, the likelihood of such impacts occurring is considered medium. Consequently, the overall significance of impacts on soil and water resources during the operational phase is assessed as medium.

#### **6.4.8 Traffic and Accident Risks**

##### ***Pre-Construction Phase***

During the pre-construction phase, project-related traffic will be limited mainly to site visits by technical teams, surveyors, consultants, and project management personnel, as well as the delivery of small quantities of equipment or materials required for site preparation activities. These movements are expected to occur intermittently and will involve light vehicles rather than heavy-duty trucks. As a result, the additional traffic generated during this phase will be relatively small compared to the existing traffic levels in the surrounding parts of the Accra Metropolitan area, which already experience significant vehicular activity due to commercial activities, markets, and dense residential settlements.

Nevertheless, the presence of additional vehicles accessing the project site could introduce minor risks related to road safety, particularly for pedestrians and informal roadside activities that are common in the Jamestown area. Vehicles entering and exiting the site may interact with pedestrians, cyclists, and other road users, increasing the potential for minor accidents if traffic is not properly managed. However, because the number of vehicle trips during this phase will be small and irregular, the overall level of risk is expected to remain limited.

The magnitude of the potential impact is therefore considered low because the number of vehicles involved will be minimal and their movements will occur only occasionally. The spatial extent of the impact will be confined primarily to access roads immediately surrounding

the project site and nearby intersections. The duration of the impact will be short-term, lasting only for the pre-construction period. Any impacts that occur would also be reversible, as they would cease once site preparation activities are completed. The overall effect of traffic and accident risks during the pre-construction phase is therefore considered low. Given the limited vehicle movements expected, the likelihood of traffic-related incidents occurring during this phase is also low. Consequently, the overall significance of traffic and accident risks during the pre-construction phase is assessed as low.

### ***Construction Phase***

During the construction phase, traffic levels associated with the project are expected to increase more significantly. Construction activities will require the delivery of materials such as sand, stones, cement, steel, and prefabricated components, as well as the movement of construction equipment and machinery. These activities will involve regular truck movements to and from the project site. In addition, workers travelling to and from the site may contribute to increased traffic during peak hours.

The increase in construction traffic may create potential risks for both road users and nearby communities. Heavy trucks entering and leaving the site may interact with pedestrians, motorcycles, taxis, and commercial vehicles using surrounding roads. In densely populated urban areas such as Jamestown, roads are often shared by multiple users, including pedestrians, informal traders, and public transport vehicles. The movement of large construction vehicles within such environments may increase the risk of road accidents, particularly if vehicles are reversing, manoeuvring in narrow spaces, or entering busy roadways.

Another potential concern during this phase is the temporary obstruction of traffic or reduced road capacity caused by construction vehicles loading or unloading materials near the site. This may lead to localized congestion or unsafe road conditions, particularly during peak traffic periods. In addition, construction vehicles carrying loose materials may create hazards if loads are not properly secured, potentially resulting in debris falling onto roadways and creating additional risks for road users.

The magnitude of traffic-related impacts during the construction phase is considered medium because of the increased frequency of heavy vehicle movements and the potential for interaction with vulnerable road users. The spatial extent of the impact is expected to extend beyond the project site to surrounding access roads and nearby intersections used by construction vehicles. However, the impact remains largely confined to the immediate urban area surrounding the facility and does not affect the wider transport network of the Accra Metropolitan area.

The duration of the impact is expected to be medium-term, lasting throughout the construction phase. The impacts are largely reversible because traffic conditions will return to normal once construction activities are completed and heavy vehicle movements cease. The overall effect of construction traffic on accident risks is therefore considered medium. Given the number of vehicles and the nature of construction logistics, the likelihood of traffic-related incidents

occurring during this phase is considered medium. Accordingly, the overall significance of traffic and accident risks during the construction phase is assessed as medium.

### ***Operation Phase***

During the operational phase, traffic and accident risks will primarily be associated with the transportation of organic waste to the compost plant. The facility is designed to receive approximately 466 tonnes of organic waste per day, which will be delivered by waste collection trucks from different parts of the metropolitan area. These trucks will transport source-separated organic waste to the plant where it will be weighed, inspected, and processed for composting.

The regular movement of waste collection vehicles to and from the facility will increase traffic along access routes leading to the site. Although plant operations are expected to occur only during daytime hours, the number of truck movements associated with the daily delivery of waste could still be substantial. Waste trucks entering and leaving the facility may interact with pedestrians, informal roadside vendors, public transport vehicles, and other road users. In areas with high pedestrian activity, such as those surrounding markets and residential areas, these interactions may increase the risk of road accidents.

Within the facility itself, traffic-related risks may also affect workers. Waste trucks manoeuvring within the site during unloading and movement between processing areas may create potential hazards such as collisions, reversing accidents, or injuries involving workers operating equipment or performing inspections near moving vehicles.

The magnitude of the potential impact during the operational phase is considered medium because of the regular movement of waste collection trucks required to sustain plant operations. The spatial extent of the impact may extend beyond the immediate site to nearby access roads used by the trucks. However, the impact remains limited to the local transport network rather than the broader metropolitan road system of Accra. The duration of the impact is long-term because these traffic movements will occur throughout the operational life of the facility. Despite this, the impacts remain reversible because they would cease if plant operations stop and traffic associated with the facility is discontinued.

The overall effect of operational traffic on accident risks is therefore considered medium. Given the regular daily truck movements required to transport organic waste to the plant, the likelihood of traffic-related accidents occurring is considered medium. Consequently, the overall significance of traffic and accident risks during the operational phase is assessed as medium.

### ***6.4.9 Inefficient Use of Resources***

#### ***Pre-Construction Phase***

During the pre-construction phase, resource use associated with the project will be relatively limited and will mainly involve the use of materials and services required for site preparation.

and mobilisation. Activities during this stage may include minor vegetation clearing, survey work, and preparation of the site for construction. These activities will require small amounts of fuel for vehicles and equipment, as well as limited use of materials such as marking posts, temporary fencing, and other preparatory inputs.

Given the limited scale of activities, the potential risks related to inefficient resource use during the pre-construction phase are minimal. Inefficient use of fuel, materials, or other inputs could occur if vehicles and equipment are used unnecessarily or if materials procured for site preparation are not managed properly. However, because the number of personnel and activities involved at this stage will be small, the overall volume of resources consumed will remain low.

The magnitude of potential impacts associated with inefficient resource use during the pre-construction phase is therefore considered low. The spatial extent of the impact would be limited to the project site and activities associated with project mobilisation. The duration of the impact would be short-term because these activities occur only during the early stage of the project. The impacts are also fully reversible, since resource use at this stage does not lead to long-term environmental degradation but simply represents short-term consumption of materials and fuel. The overall effect of resource inefficiency during the pre-construction phase is therefore low. Given the small scale of activities, the likelihood of significant resource inefficiencies occurring is also low. Consequently, the overall significance of resource efficiency risks during the pre-construction phase is assessed as low.

### ***Construction Phase***

During the construction phase, resource efficiency risks become more relevant due to the larger quantities of materials, energy, and water required for construction activities. The construction of the compost plant will involve the use of construction materials such as sand, gravel, cement, steel reinforcement bars, roofing materials, electrical components, and piping systems. In addition, construction activities will require fuel for machinery and transport vehicles, as well as water for activities such as concrete mixing, dust suppression, and worker sanitation.

Inefficient use of construction materials may occur if materials are poorly stored, damaged, or wasted during construction activities. For example, improper storage of cement or aggregates may result in material losses due to weather exposure, while poor construction practices may lead to unnecessary material wastage. These inefficiencies could increase the demand for raw materials and contribute indirectly to environmental impacts associated with resource extraction and transport.

Energy use during construction will largely be associated with fuel consumption by trucks, generators, and construction machinery. Inefficient use of equipment, prolonged idling of vehicles, or poorly maintained machinery may result in higher fuel consumption than necessary. This not only increases operational costs but also contributes to unnecessary emissions and inefficient use of energy resources.

Water consumption during construction also presents potential resource efficiency concerns. Water may be required for construction processes, equipment cleaning, and worker facilities.

If water is used inefficiently or allowed to leak from temporary supply systems, it could lead to unnecessary consumption of a resource that is already under pressure in many parts of Accra, where water supply systems sometimes experience shortages or intermittent service.

The magnitude of resource efficiency impacts during the construction phase is considered medium because construction activities involve substantial quantities of materials and energy. The spatial extent of the impact is not confined strictly to the project site, as inefficient resource use indirectly affects supply chains and extraction activities that occur elsewhere. However, the direct impacts remain largely associated with project activities at the site. The duration of the impact is medium-term, lasting throughout the construction period. The impacts are also largely reversible because improved resource management practices can quickly reduce inefficiencies and waste. The overall effect of resource efficiency risks during construction is therefore considered medium. The likelihood of inefficiencies occurring is also considered medium because construction projects typically involve complex logistics and multiple contractors handling materials and equipment. As a result, the overall significance of resource efficiency risks during the construction phase is assessed as medium.

### ***Operation Phase***

During the operational phase, resource efficiency becomes an important aspect of the long-term sustainability of the compost plant. The facility will require continuous inputs of energy, water, and operational materials to support waste reception, shredding, composting processes, facility maintenance, and administrative activities. Efficient management of these resources is therefore important both from an environmental and economic perspective.

Energy consumption during operations will primarily be associated with equipment such as shredders, conveyor systems, aeration systems for composting chambers, pumps for leachate management, and other facility operations. If these systems are not properly maintained or operated efficiently, energy consumption could become unnecessarily high. Inefficient energy use may increase operational costs and contribute indirectly to environmental impacts associated with electricity generation.

Water use at the facility will be required for several operational purposes, including cleaning of equipment and operational areas, maintaining moisture levels in composting materials where necessary, sanitation facilities for workers, and operation of treatment processes associated with leachate management. Inefficient water use could occur if water is used excessively, if leaks develop in supply systems, or if operational procedures do not prioritise water conservation. Given the broader water supply pressures within Accra, efficient water use is an important consideration for the long-term operation of the plant.

Another important aspect of resource efficiency during the operational phase relates to the quality of organic waste delivered to the facility and the effectiveness of feedstock management. The compost plant is designed to process approximately 466 tonnes of organic waste per day collected from different parts of the metropolitan area. However, even where waste separation is encouraged at the source, incoming waste streams may still contain

contaminants such as plastics, metals, glass, or other non-compostable materials. If such contaminants are present in large quantities, additional sorting will be required at the facility, increasing labour and energy use and reducing the overall efficiency of the composting process. Poor waste quality may also reduce the quality of the final compost product, potentially limiting its marketability and undermining the resource recovery objectives of the facility.

In addition, poor feedstock management within the facility may lead to inefficiencies in the composting process itself. Composting requires careful control of parameters such as moisture content, aeration, carbon-to-nitrogen balance, and temperature. If feedstock is not properly prepared, mixed, or monitored, the composting process may become inefficient, resulting in incomplete decomposition, longer processing times, or increased rejection of materials. In such cases, a portion of the incoming organic waste may ultimately require disposal rather than being converted into useful compost. This would represent a loss of valuable organic material that could otherwise contribute to soil improvement in agricultural or landscaping applications.

The magnitude of resource efficiency risks during the operational phase is therefore considered medium because the facility will operate continuously and depend on several key resources, including energy, water, and organic waste feedstock. The spatial extent of the impact extends beyond the project site because energy and water resources are supplied through regional infrastructure systems, while the efficiency of feedstock utilisation affects broader waste management systems across Accra. The duration of the impact is long-term, as resource use and feedstock management will continue throughout the operational life of the compost plant. However, these impacts remain largely reversible because improvements in operational procedures, waste acceptance protocols, equipment maintenance, and process monitoring can significantly enhance resource efficiency. The overall effect of resource efficiency risks during the operational phase is therefore considered medium. Given the scale of waste processing and the continuous nature of plant operations, the likelihood of resource inefficiencies occurring without effective management is considered medium. Consequently, the overall significance of resource efficiency risks during the operational phase is assessed as medium.

#### **6.4.10 Climate Risks**

##### ***Pre-Construction Phase***

During the pre-construction phase, climate-related risks are expected to be limited because project activities will mainly involve planning, mobilisation, and minor site preparation. However, climate conditions may still influence the timing and efficiency of these activities. In particular, heavy rainfall events, which are common during the rainy seasons in Accra, could temporarily delay site preparation activities or affect access to the project site if roads become muddy or waterlogged. Short periods of intense rainfall could also lead to minor soil erosion on exposed ground if vegetation is cleared during early site preparation.

Although these risks exist, the scale of pre-construction activities is relatively small and temporary. Any delays caused by rainfall would likely be short-lived and manageable through adjustments to work schedules. The magnitude of climate-related impacts during the pre-

construction phase is therefore considered low. The spatial extent of the impact would be limited to the project site and immediate surroundings. The duration of the impact would be short-term because pre-construction activities occur only during the early stages of the project. These impacts are also fully reversible because temporary disruptions or minor erosion can be addressed through simple site management measures. The overall effect of climate-related risks during the pre-construction phase is therefore low. Given the seasonal variability of rainfall in Accra, the likelihood of such disruptions occurring is considered medium. However, because the effects remain minor and manageable, the overall significance of climate-related risks during the pre-construction phase is assessed as low.

### ***Construction Phase***

Climate-related risks become more relevant during the construction phase because construction activities depend heavily on weather conditions and site accessibility. Periods of heavy rainfall could affect several aspects of construction work, including excavation, concrete works, and transportation of construction materials. Rainfall may lead to water accumulation in excavated areas or construction trenches, which could delay works and require additional pumping or drainage measures. Wet conditions may also increase the risk of soil erosion or sediment runoff from exposed surfaces if not properly managed.

In addition, extreme heat conditions may affect the productivity and safety of construction workers. High daytime temperatures, which are common in Accra, may lead to heat stress among workers performing physically demanding tasks. This could reduce work efficiency and increase the need for rest breaks and hydration measures. Although such conditions are typical of the local climate, they still represent an operational risk that requires appropriate management during construction.

Climate conditions may also influence the durability and quality of certain construction processes. For example, heavy rainfall during concrete works may affect curing conditions, while high temperatures may accelerate evaporation of water used in construction processes. If not managed properly, these factors could lead to inefficiencies or minor material losses.

The magnitude of climate-related risks during the construction phase is considered medium because weather conditions can affect the pace and efficiency of construction activities. The spatial extent of the impact remains largely limited to the project site and construction logistics routes. The duration of the impact is medium-term, lasting throughout the construction period. These impacts are largely reversible because construction schedules and site management practices can be adjusted to accommodate weather conditions. The overall effect of climate-related risks during the construction phase is therefore considered medium. Given the seasonal rainfall patterns and occasional extreme weather events experienced in Accra, the likelihood of such disruptions is considered medium. As a result, the overall significance of climate-related risks during the construction phase is assessed as medium.

### ***Operation Phase***

During the operational phase, climate-related risks primarily relate to how weather patterns and longer-term climate trends may affect the functioning of the compost plant. One of the most

relevant risks is increased rainfall intensity, which may affect the management of organic waste and composting processes at the facility. Composting operations rely on controlled moisture conditions to ensure efficient biological decomposition. Excessive rainfall could increase the moisture content of compost piles, potentially slowing the composting process, increasing odour generation, or requiring additional management to maintain optimal conditions.

Heavy rainfall may also increase the generation of leachate from organic waste and composting materials. If not properly managed, this could increase the volume of leachate that must be collected and treated within the facility. Inadequate management of stormwater and leachate systems during intense rainfall events could increase the risk of overflow or runoff from operational areas.

Another climate-related risk involves potential flooding of the project area during periods of intense rainfall. Although the project design is expected to include drainage infrastructure, extreme rainfall events associated with climate variability could temporarily overwhelm drainage systems, affecting operations or causing water accumulation within operational areas of the facility.

High temperatures may also influence the composting process. While composting relies on microbial activity that generates heat, extremely high ambient temperatures may increase evaporation and require more frequent moisture control measures. These conditions may require additional water use or operational adjustments to maintain optimal composting conditions.

At the same time, the compost plant also contributes indirectly to climate change mitigation by diverting organic waste from disposal sites and converting it into compost. Organic waste that decomposes in unmanaged disposal sites can generate methane, a greenhouse gas. By processing organic waste through controlled composting, the facility can reduce methane emissions and contribute to improved waste management practices in Accra.

The magnitude of climate-related risks during the operational phase is considered medium because weather conditions can influence composting efficiency, leachate generation, and overall facility operations. The spatial extent of these impacts is primarily limited to the project site, although disruptions in waste processing could indirectly affect broader waste management operations in Accra. The duration of the impact is long-term because the facility will operate continuously over many years and will therefore be exposed to climate variability throughout its operational life. However, these impacts remain largely manageable and reversible through appropriate operational controls, drainage management, and process monitoring. The overall effect of climate-related risks during the operational phase is therefore considered medium. Given the increasing variability in rainfall patterns and temperature conditions in the region, the likelihood of climate-related operational challenges is considered medium. Consequently, the overall significance of climate-related risks during the operational phase is assessed as medium.

#### ***6.4.11 Labour Rights Infringement Risks***

##### ***Pre-Construction Phase***

During the pre-construction phase, labour requirements for the project will be relatively limited and will mainly involve project planning, mobilisation, and initial site preparation activities. These activities may involve a small number of technical staff, surveyors, and support personnel. Although the workforce at this stage is expected to be small, there remains a potential risk of labour rights concerns if workers are not engaged under clear and fair contractual arrangements or if labour standards are not properly communicated to contractors involved in mobilisation activities.

Labour rights risks at this stage may include the absence of written employment contracts, unclear terms of engagement, delayed payment for short-term services, or lack of information provided to workers regarding working conditions and responsibilities. Such issues may arise particularly where temporary labour or subcontractors are engaged for short-term preparatory tasks.

However, the magnitude of potential labour rights impacts during the pre-construction phase is considered low because the number of workers involved is small and the duration of engagement is short. The spatial extent of the impact is limited to the project workforce and does not extend beyond the project's organisational structure. The duration of the impact would also be short-term because pre-construction activities occur only at the early stage of the project. These impacts are largely reversible, as any contractual or administrative issues can be corrected quickly through improved documentation and communication with workers. The overall effect of labour rights risks during the pre-construction phase is therefore considered low. Given that most project developers and contractors typically establish contractual arrangements before mobilisation begins, the likelihood of significant labour rights violations at this stage is considered low. Consequently, the overall significance of labour rights risks during the pre-construction phase is assessed as low.

##### ***Construction Phase***

Labour rights risks are more relevant during the construction phase because this stage will involve a larger workforce, including skilled and unskilled labourers, equipment operators, technicians, and supervisory staff. Construction activities for the compost plant will require workers to perform tasks such as earthworks, installation of infrastructure, construction of operational structures, and installation of mechanical equipment. These activities are typically carried out over several months and involve multiple contractors or subcontractors.

Potential labour rights risks during this phase may include excessive working hours, delayed or unfair wages, lack of formal employment agreements, discrimination in hiring practices, or inadequate mechanisms for workers to raise grievances. Construction workers may also be exposed to risks related to informal recruitment practices, particularly where local labour is hired on a daily or short-term basis. Without proper oversight, such arrangements may create opportunities for unfair treatment of workers.

Another possible risk is the engagement of vulnerable workers without adequate safeguards. While the project is not expected to involve child labour, the construction sector in many contexts sometimes relies on casual labour arrangements that may lack sufficient protections. Ensuring that all workers meet the legal minimum working age and are employed under fair conditions consistent with national labour laws is therefore important.

The magnitude of labour rights risks during the construction phase is considered medium because the workforce size will be significantly larger and labour arrangements may involve multiple actors. The spatial extent of the impact remains limited to workers employed directly or indirectly by the project. The duration of the impact is medium-term, corresponding to the construction period. These impacts are largely reversible because corrective measures such as improved contract management, wage monitoring, and grievance mechanisms can address most issues if they arise. The overall effect of labour rights risks during the construction phase is therefore considered medium. Given the common use of temporary labour arrangements in construction projects, the likelihood of labour management challenges occurring is considered medium. Consequently, the overall significance of labour rights risks during the construction phase is assessed as medium.

### ***Operation Phase***

During the operational phase, the compost plant will employ a permanent workforce responsible for waste reception, sorting, composting operations, facility maintenance, administration, and security. Workers may include equipment operators, plant technicians, supervisors, waste handlers, and administrative staff. Because the plant will operate continuously, labour rights considerations will become an ongoing operational issue rather than a temporary construction concern.

Potential labour rights risks during operations may include unfair employment conditions, inadequate wages, lack of job security for contract workers, or insufficient access to grievance mechanisms. Workers involved in waste handling and composting operations may also be vulnerable to poor working conditions if labour management systems are not properly established. In addition, if waste collection contractors supply feedstock to the facility, workers engaged in waste handling outside the facility could also be indirectly affected by labour management practices within the waste management system.

Another potential concern relates to the treatment of vulnerable workers or discrimination in employment practices. Ensuring equal employment opportunities, fair treatment of workers regardless of gender or background, and compliance with national labour regulations will be important in maintaining responsible labour practices.

The magnitude of labour rights risks during the operational phase is considered medium because the plant will employ workers continuously and labour management practices will affect workers over a long period. The spatial extent of the impact remains limited primarily to workers employed by the facility and associated contractors. The duration of the impact is long-term because the plant will operate for many years. However, these impacts are largely

reversible through effective labour policies, enforcement of labour standards, and establishment of worker grievance mechanisms. The overall effect of labour rights risks during the operational phase is therefore considered medium. Given the routine nature of labour management challenges in operational facilities and the continuous engagement of workers, the likelihood of labour-related concerns arising is considered medium. Consequently, the overall significance of labour rights risks during the operational phase is assessed as medium.

## 7.0 MITIGATION AND ENHANCEMENT MEASURES

### 7.1 Introduction

The proposed project's anticipated impacts have been thoroughly evaluated in the previous chapter in accordance with the objectives of this environmental and social study. This chapter proposes mitigation and management measures to ensure the management of the project's impacts within reasonable and acceptable limits. The general rules followed in designing the mitigation measures are:

- Avoidance of major impacts: major impacts are generally considered unacceptable, impacts that would endure into the long-term or extend over a large area.
- Reduction of major and moderate impacts to as low as reasonably practicable (ALARP) by planning, designing, and controlling mitigation measures. Thus, mitigation measures will be applied until the limitations of cost effectiveness and practical applications are reached. The limitations are established by best international practice, and
- Implementation of good contractor practices for impacts rated as minor, to ensure management of impacts within good reason.

### 7.2 Recommended Mitigation Measures

Table 7.1 presents a summary of the significant impacts, the impact receptors, and the recommended mitigation measure for each impact. The application of the mitigation measures is expected to reduce major and moderate impacts to minor or negligible impacts that may not require further mitigation.

#### *Timeline for Implementation of Mitigation Measures*

- **Pre-Construction Phase**

Mitigation actions proposed for potential adverse impacts identified at the pre-construction phase must be implemented before construction work begins without any exceptions.

- **Construction Phase**

Mitigation actions for construction phase impacts will generally be implemented from the start to the end of the project's construction phase, with few exceptions. Mitigation measures associated with the displacement of the scrap dealers on-site would be implemented at the pre-construction phase, before the displacement of the affected properties, in line with EPA guidelines.

- **Operation Phase**

The contractor will prepare and submit a detailed Environmental and Social Management Plan (ESMP) within 18 months of commencement of operations to the EPA for approval and subsequent implementation, and thereafter every three years in accordance with Regulation 33 of LI 2504. The ESMP will identify and itemise mitigation actions with objectives, timelines, cost and specific responsibilities being implemented or to be implemented within the first three years, and subsequent ESMPs will also indicate the same. Table 7.1 summarises the mitigation and enhancement measures proposed for the identified impacts.

*Displacement of scrap dealers and informal waste pickers Table 7.1 Proposed mitigation and enhancement measures*

| Impact Identified                                              | Receptor                                    | Mitigation/enhancement measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Residual impact |
|----------------------------------------------------------------|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <b>Pre-Construction Phase</b>                                  |                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                 |
| Displacement of scrap dealers and informal waste pickers       | Informal waste pickers (scrap dealers)      | <ul style="list-style-type: none"> <li>• A RAP, together with a Livelihood Restoration Plan, will be prepared to adequately resettle and compensate the scrap dealers for the loss of access to the project site for their livelihood activities.</li> <li>• A census &amp; socio-economic survey will be conducted to identify affected persons, assets, and livelihoods.</li> <li>• The existing occupants of the site (scrap dealers) will be resettled in line with Ghana's legal framework, IFC PS5 and AfDB OS 5.</li> <li>• Fair compensation at full replacement cost will be delivered without depreciation for lost assets (structures, equipment, materials).</li> <li>• Access to alternative business sites for displaced scrap dealers will be facilitated.</li> <li>• Livelihood restoration programmes, including skills training, will be considered for implementation where necessary.</li> <li>• Land ownership and tenure will be verified with relevant authorities (Lands Commission, AMA).</li> <li>• Due diligence will be conducted to confirm that land is free of encumbrances or informal claims.</li> <li>• The land acquisition process will adhere to the Land Act 2020 (Act 1036) and IFC PS5.</li> <li>• Prior engagement has been held with scrap dealers to discuss project impacts, alternatives, and mitigation measures. This will be continued to ensure participatory resettlement considerations for the affected persons.</li> <li>• A transparent GRM will be established to help address concerns in line with IFC PS1</li> </ul> | Minor           |
| Risk of conflict associated with resettlement of scrap dealers |                                             | <ul style="list-style-type: none"> <li>•</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                 |
| Community & Occupational Health & Safety Risks                 | Nearby communities, workers, general public | Same as for construction phase (not including odour)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Minor           |

| Impact Identified                    | Receptor                                              | Mitigation/enhancement measures                                                                                                                                                                                                                                                                                              | Residual impact |
|--------------------------------------|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| •                                    | •                                                     | •                                                                                                                                                                                                                                                                                                                            |                 |
|                                      |                                                       | •                                                                                                                                                                                                                                                                                                                            |                 |
|                                      |                                                       | •                                                                                                                                                                                                                                                                                                                            |                 |
| Improper waste handling and disposal | General environment, workers                          | <ul style="list-style-type: none"> <li>• Develop and implement a site waste management plan prior to mobilization</li> <li>• Provide clearly designated waste collection points and bins during site preparation activities</li> </ul>                                                                                       | Minor           |
| Threat to biodiversity               | Flora and fauna on the site, Korle Lagoon, Odaw River | <ul style="list-style-type: none"> <li>• Same as for construction phase</li> </ul>                                                                                                                                                                                                                                           | Minor           |
| Impacts on soil and water resources  | Soil, Korle Lagoon, Odaw River, groundwater           | <ul style="list-style-type: none"> <li>• Maintain existing vegetation where possible and stabilise exposed soil surfaces</li> <li>• Diversion channels or retention/detention ponds will be constructed to control and treat stormwater runoff during excavation of legacy waste</li> </ul>                                  | Minor           |
| Traffic and accident risks           | Workers, road users, site visitors                    | <ul style="list-style-type: none"> <li>• Develop and implement a site access and traffic management plan prior to mobilisation</li> <li>• Install warning signage and clearly mark entry and exit points to the project site</li> </ul>                                                                                      | Minor           |
| Inefficient use of resources         | Project                                               | <ul style="list-style-type: none"> <li>• Develop and implement a mobilisation plan that optimises vehicle movements and equipment use to minimise fuel consumption</li> <li>• Procure only required quantities of materials and store them in designated protected areas to prevent loss or damage</li> </ul>                | Minor           |
| Climate risks                        | Project, Korle Lagoon, Odaw River                     | <ul style="list-style-type: none"> <li>• Schedule site preparation and mobilisation activities taking seasonal rainfall patterns into account to minimise weather-related disruptions</li> <li>• Minimise vegetation clearing until construction is ready to begin and stabilise exposed surfaces where necessary</li> </ul> |                 |
| Labour rights infringement risks     | Workers                                               | <ul style="list-style-type: none"> <li>• Ensure all workers engaged during mobilisation receive written contracts outlining roles, wages, and working conditions</li> </ul>                                                                                                                                                  |                 |

| Impact Identified                                                                                                     | Receptor                                    | Mitigation/enhancement measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Residual impact |
|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
|                                                                                                                       |                                             | <ul style="list-style-type: none"> <li>● Provide orientation for all mobilised workers on labour rights, working conditions, and reporting procedures</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                 |
| <b>Construction Phase</b>                                                                                             |                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                 |
| Risk of conflict associated with resettlement of scrap dealers                                                        |                                             | <ul style="list-style-type: none"> <li>●</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |
| Community & Occupational Health & Safety Risks <ul style="list-style-type: none"> <li>● Dust and emissions</li> </ul> | Nearby communities, workers, general public | <ul style="list-style-type: none"> <li>● Dust generating areas will be controlled by water dousing under dry weather conditions.</li> <li>● Gas (Methane, NOx, SOx, CO2) emission will be monitored regularly to ensure they are within Ghana Standards permissible limit during site preparation.</li> <li>● On-site speed limits will be applied and enforced for trucks travelling on unpaved surfaces (10 km/h)</li> <li>● Trucks transporting waste materials off-site will be secured with tarpaulins before leaving the site.</li> <li>● Dust-generating areas will be controlled by water dousing under dry weather conditions.</li> <li>● Stockpiles will be planned and sited to minimise potential dust generation, considering prevailing wind directions and the locations of sensitive receptors. They will be protected against windblown dust by windshields, or by covering them, or by water spraying in dry periods.</li> <li>● The drop height of potentially dust generating materials will be kept as low as reasonably practicable.</li> <li>● Maintenance procedures will be carried out to ensure that equipment remains in optimal condition, thereby reducing exhaust emissions caused by reduced performance</li> <li>● Dust-related grievances will be investigated and managed as part of the Grievance Mechanism.</li> <li>● Construction vehicles will be prohibited from keeping engines running while waiting to enter the site or while stationed on-site.</li> </ul> | Minor           |

| Impact Identified                                                                                                    | Receptor                                         | Mitigation/enhancement measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Residual impact |
|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <ul style="list-style-type: none"> <li>Noise and vibration</li> <li>Occupational accidents</li> <li>Pests</li> </ul> |                                                  | <ul style="list-style-type: none"> <li>Adopt noise-suppressing construction methods to meet Ghana ambient noise standards and WBG EHS Guidelines. This may involve installing noise barriers at sensitive points, such as the entrance of the Korle Bu mortuary and the estate opposite the project site</li> <li>Excavations and other noise-generating activities will be limited to the hours of 7:00am to 5:00 pm weekdays and 7:30am to 5:00pm on Saturdays and Sundays. Contractors will be permitted to conduct essential construction activities during off-hours if required to address unforeseen emergencies that threaten life or property.</li> <li>Noise-generating equipment will be fitted with sound control devices, and every exhaust will be properly muffled.</li> <li>Regular monitoring of noise levels during construction</li> <li>Provide PPEs to workers and site visitors</li> <li>Develop and implement Occupational Health and Safety (OHS)</li> <li>Conduct periodic toolbox meetings for workers</li> <li>Provide adequate and visible safety signage and warnings on site</li> <li>Provide first aid facilities and trained first aiders on site</li> <li>Handwashing stations, restricted eating/drinking areas, and periodic health checks will be conducted to protect workers from pathogens</li> <li>Maintain proper housekeeping and drainage on site</li> </ul> |                 |
| Improper waste handling and disposal impacts                                                                         | General environment, workers, nearby communities | <ul style="list-style-type: none"> <li>Develop and implement a Construction Waste Management Plan covering segregation, storage, transportation and disposal of construction waste</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Minor           |

| Impact Identified                   | Receptor                                    | Mitigation/enhancement measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Residual impact |
|-------------------------------------|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
|                                     |                                             | <ul style="list-style-type: none"> <li>● Segregate construction waste (metal, wood, concrete, packaging materials) and encourage reuse or recycling where possible</li> <li>● Provide adequate sanitary facilities (toilets and washing facilities) for construction workers</li> <li>● Establish routine waste collection and off-site disposal through collaboration with municipal waste services</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                 |
| Threat to biodiversity              | Korle Lagoon, identified bird species       | <ul style="list-style-type: none"> <li>● Limit vegetation clearance to only the footprint required for the plant and access roads</li> <li>● Establish buffer zone between project site and Korle Lagoon with native vegetation</li> <li>● Additional measures related to air quality impacts are provided for under Community &amp; Occupational Health and Safety Risks</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Minor           |
| Impacts on soil and water resources | Soil, Korle Lagoon, Odaw River, groundwater | <ul style="list-style-type: none"> <li>● Periodic water quality testing will be conducted to ensure any negative changes are detected early and remedied.</li> <li>● Construct diversion channels or retention/detention ponds to control and treat stormwater runoff, reducing the volume and velocity of water reaching the river.</li> <li>● Site drainage systems will be designed to withstand extreme rainfall and prevent waterlogging</li> <li>● Construct a vegetation buffer between the project and the Odaw River with native plants to reduce siltation.</li> <li>● Use biodegradable mats or mulches, and install geotextile fabrics to stabilize disturbed soils and stockpiles to minimize erosion</li> <li>● Install silt fences, sedimentation basins, or swales to capture and contain soil particles before they enter the Odaw River</li> <li>● Continuously monitor water quality and sediment levels downstream to enable prompt adjustments such as enhancing structural controls if pollutant threshold levels are exceeded.</li> <li>● Minor critical infrastructure and waste storage areas will be elevated above flood-prone levels</li> </ul> | Minor           |
| Traffic and accident risks          | Workers, road users, site visitors          | <ul style="list-style-type: none"> <li>● Continue implementing traffic management plan</li> <li>● Provide trained traffic marshals at the site entrance during peak delivery periods</li> <li>● Require all construction vehicle drivers to undergo safety briefings and adhere to site speed limits</li> <li>● Ensure construction materials transported by trucks are properly covered and secured</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Minor           |

| Impact Identified                                                                                                                                      | Receptor                                                      | Mitigation/enhancement measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Residual impact |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
|                                                                                                                                                        |                                                               | <ul style="list-style-type: none"> <li>Additional measures provided under community &amp; occupational health and safety risks</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |
| Inefficient use of resources                                                                                                                           | Project                                                       | <ul style="list-style-type: none"> <li>Implement proper material storage and handling procedures, including covered storage for cement and organised storage areas for aggregates and steel</li> <li>Maintain construction equipment regularly and enforce a no-idling policy for vehicles and machinery when not in use</li> <li>Implement water conservation measures such as controlled water use for concrete mixing and dust suppression, and repair leaks promptly</li> <li>Implement construction material management planning, including accurate quantity estimation and reuse of offcuts where feasible</li> </ul> | Minor           |
| Climate risks                                                                                                                                          | Project site, workers                                         | <ul style="list-style-type: none"> <li>Provide temporary drainage channels and pumps where necessary to prevent water accumulation in excavation areas</li> <li>Implement erosion control measures such as temporary drainage, sediment barriers, and stabilisation of exposed areas</li> <li>Implement heat management measures such as provision of shaded rest areas, drinking water, and scheduled rest breaks</li> </ul>                                                                                                                                                                                                |                 |
| Labour rights infringement risks                                                                                                                       | Workers                                                       | <ul style="list-style-type: none"> <li>Implement wage monitoring procedures and require contractors to maintain payment records for all workers</li> <li>Establish labour management procedures specifying working hours, rest periods, and overtime arrangements</li> <li>Establish and communicate a worker grievance redress mechanism</li> </ul>                                                                                                                                                                                                                                                                         |                 |
| <b>Operation Phase</b>                                                                                                                                 |                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                 |
| Risk of conflict associated with resettlement of scrap dealers                                                                                         |                                                               | <ul style="list-style-type: none"> <li></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |
| Community & Occupational Health & Safety Risks <ul style="list-style-type: none"> <li>Occupational accidents (slips, cuts, falls, injuries)</li> </ul> | Nearby communities, workers, site visitors and general public | <ul style="list-style-type: none"> <li>Mitigation measures for accidents are same as during the construction phase</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Minor           |

| Impact Identified                                                                                                                                                                  | Receptor                                                  | Mitigation/enhancement measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Residual impact |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <ul style="list-style-type: none"> <li>● Odour from organic waste</li> <li>● Pests such as flies and rodents attracted to organic waste</li> <li>● Noise and vibrations</li> </ul> |                                                           | <ul style="list-style-type: none"> <li>● Implement proper compost management practices (turning, aeration, moisture control)</li> <li>● Odour-neutralising agents (e.g., caustic soda, lime, activated charcoal) or biofilters will be applied on exposed organic matter and disturbed soils</li> <li>● Temporary windbreaks or barriers (e.g., shade nets, fencing) will be installed to limit odour dispersion toward sensitive receptors</li> <li>● The project will install biofilters at vantage sections of the site</li> <li>● Odour levels will be continuously monitored in sensitive areas (Korle Bu Teaching Hospital and nearby communities) to ensure compliance with EPA regulations.</li> <li>● Where thresholds are exceeded, adaptive measures (such as additional spraying or further sealing) will be implemented promptly.</li> <li>● Implement pest management measures including keeping good sanitation and periodic pest control</li> <li>● Mitigation measures are same as during the construction phase</li> </ul> |                 |
| Improper waste handling and disposal impacts                                                                                                                                       | Project, workers, nearby communities, general environment | <ul style="list-style-type: none"> <li>● Implement a feedstock acceptance and inspection protocol to ensure only appropriate organic waste is accepted for composting</li> <li>● Provide personal protective equipment (PPE) and training for workers handling organic waste</li> <li>● Maintain dedicated areas for sorting and temporary storage of rejected materials removed from feedstock</li> <li>● Operate and maintain the leachate collection and treatment system, including constructed wetlands and treatment facilities</li> <li>● Provide adequate waste collection and sanitation facilities for plant workers</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                    | Minor           |

| Impact Identified                   | Receptor                                    | Mitigation/enhancement measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Residual impact |
|-------------------------------------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
|                                     |                                             | <ul style="list-style-type: none"> <li>● Maintain regular housekeeping and cleaning schedules within waste handling and processing areas</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |
| Threat to biodiversity              | Korle Lagoon, identified bird species       | <ul style="list-style-type: none"> <li>● Maintain green buffer and tree cover around the site</li> <li>● Additional measures are provided under waste handling and disposal and impact on soil and water resources</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                 | Minor           |
| Impacts on soil and water resources | Soil, Korle Lagoon, Odaw River, groundwater | <ul style="list-style-type: none"> <li>● Measures for leachate management are provided under waste handling and disposal impact</li> <li>● Ensure all operational surfaces are paved and connected to the drainage and leachate collection system</li> <li>● Establish spill prevention and response procedures and maintain spill response equipment</li> <li>● Conduct routine monitoring of effluent quality</li> <li>● Implement routine housekeeping and inspection of waste handling areas</li> </ul>                                                                                                                   | Minor           |
| Traffic and accident risks          | Workers, road users, site visitors          | <ul style="list-style-type: none"> <li>● Develop and implement an operational phase traffic management plan for waste collection vehicles</li> <li>● Schedule waste deliveries during designated daytime hours and avoid peak traffic periods where possible</li> <li>● Establish clearly marked internal traffic routes, pedestrian walkways and speed limits within the facility</li> <li>● Provide traffic safety training for workers and ensure high-visibility PPE is worn in operational areas</li> <li>● Ensure regular inspection and maintenance of waste transport vehicles</li> </ul>                             | Minor           |
| Inefficient use of resources        | Project                                     | <ul style="list-style-type: none"> <li>● Install energy-efficient equipment where feasible and implement routine maintenance of shredders, conveyors, aeration systems, and pumps</li> <li>● Implement water management procedures including controlled water use, regular inspection of water supply systems, and prompt repair of leaks</li> <li>● Establish clear waste acceptance criteria and implement screening and sorting procedures for incoming waste</li> <li>● Implement standard operating procedures for feedstock preparation, moisture control, aeration, and monitoring of composting parameters</li> </ul> | Minor           |

| Impact Identified                | Receptor         | Mitigation/enhancement measures                                                                                                                                                                                                                                                                                                                                                                     | Residual impact |
|----------------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
|                                  |                  | <ul style="list-style-type: none"> <li>● Implement quality control procedures for compost production including periodic laboratory testing of compost quality</li> </ul>                                                                                                                                                                                                                            |                 |
| Climate risks                    | Project, workers | <ul style="list-style-type: none"> <li>● Maintain functional stormwater drainage and leachate collection systems within the facility</li> <li>● Monitor and manage moisture levels in compost piles through proper aeration, covering where necessary, and operational adjustments</li> <li>● Regular inspection and maintenance of site drainage infrastructure and stormwater channels</li> </ul> | Minor           |
| Labour rights infringement risks | Workers          | <ul style="list-style-type: none"> <li>● Develop and implement a facility labour management policy consistent with national labour regulations</li> <li>● Maintain a worker grievance redress mechanism accessible to all plant employees</li> <li>● Implement transparent recruitment procedures and equal opportunity employment practices</li> </ul>                                             | Minor           |

## 8.0 PROVISIONAL ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

### 8.1 Introduction

A Provisional Environmental and Social Management Plan (PESMP) is developed for the project in accordance with the Environmental Protection (Environmental Assessment) Regulations, 2025 (LI 2504) to assist the composting project in being carried out in an environmentally safe and sustainable manner. The PESMP outlines management commitments and the required training programmes for the sustainable implementation of the proposed project. An estimated budget for the PESMP is also included in this section. This ESMP will be updated by the contractor as changes are made to the project designs or as required by the EPA of Ghana.

The implementation of the PESMP is expected to meet the following objectives:

- Provide the platform to accommodate changes and uncertainties during project implementation;
- Manage actual impacts during project implementation phase;
- Ensure proper implementation of project permitting conditions.
- Ensure satisfactory environmental performance; and
- Serve as a source of background information for future projects.

This ESMP therefore provides general mitigation and management measures for the site establishment phase, maintenance phase, and operation phase of the project. Its purpose is to reduce the risk of adverse impacts from the project on sensitive environmental resources. The PESMP also provides the focus for achieving best practices through an approach that establishes environmental objectives, procedures, action plans, and evaluation, and sets up a process that integrates environmental responsibility in all aspects of the project activities. The ESMP will be implemented while taking cognisance of the contractor's Environmental Sustainability Policy and Environmental Health and Safety Policy.

### 8.2 Objectives of the ESMP

The proposed compost plant project aims to improve waste management and sanitation in the Greater Accra Region and provide sustainable livelihoods for people along its supply chain. This ESMP outlines the mitigation measures, monitoring requirements, and institutional responsibilities for managing the environmental and social impacts identified during the Environmental and Social Impact Assessment (ESIA).

The primary objectives of this ESMP are:

- To ensure compliance with national environmental legislation and international best practices.
- To mitigate adverse environmental and social impacts and enhance positive impacts.
- To provide a monitoring framework to ensure effective implementation of mitigation measures

### 8.3 Management Arrangement

The successful implementation of the ESMP requires the involvement of various stakeholders, including government agencies, contractors, and local communities. The roles and responsibilities of each party are outlined below:

- **Project Proponent (Government/Developers):** Responsible for ensuring overall compliance with the ESMP, including financing and oversight of mitigation measures. **Project Implementation Unit:** A Project Implementation Unit (PIU) will be established within the Ministry of Local Government, Decentralisation and Rural Development. The PIU, which will consist of an Environmental Safeguards Specialist and Social Safeguards Specialist, will oversee the implementation of the project and be responsible for monitoring the projects activities.
- **Construction Contractor:** Responsible for implementing the mitigation measures outlined in the ESMP during the construction phase. The contractor's team will have an E&S Specialist to oversee E&S issues.
- **Supervising Consultant:** Supervise the Construction Contractor. There will be an E&S Specialist on the Supervising Consultant's team.
- **Operation Contractor:** A private contractor will be retained to manage the facility and oversee its day-to-day operations. The contractor will have an E&S Specialist on the team to oversee E&S issues.
- **Environmental Protection Authority (EPA):** Provides regulatory oversight and ensures that the project complies with national environmental standards.
- **Lands Commission:** Will oversee the resettlement of scrap dealers

## 8.4 Proposed Management Plan

The proposed management plan is outlined in Table 8.1 below:

**Table 8.1** *Summary of Provisional Environmental and Social Management Plan*

| Risks/Impacts                                            | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Objective                                                                | Target                                                      | Budget (GHS)               | Time frame                                           | Responsibility | Monitoring                               |
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| <b>Pre-Construction Phase</b>                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                          |                                                             |                            |                                                      |                |                                          |
| Displacement of scrap dealers and informal waste pickers | <ul style="list-style-type: none"> <li>• Preparation of RAP and LRP</li> <li>• A census &amp; socio-economic survey will be conducted to identify affected persons, assets, and livelihoods.</li> <li>• The existing occupants of the site (scrap dealers) will be resettled in line with Ghana's legal framework, IFC PS5 and AfDB OS 5.</li> <li>• Fair compensation at full replacement cost will be delivered without depreciation for lost assets (structures, equipment, materials).</li> <li>• Access to alternative business sites for displaced scrap dealers will be facilitated.</li> <li>• Livelihood restoration programmes, including skills training, will be considered for implementation where necessary.</li> <li>• Legal &amp; Regulatory Compliance (IFC PS1 &amp; PS5; AfDB OS 5)</li> <li>• Land ownership and tenure will be verified with relevant authorities (Lands Commission, AMA).</li> <li>• Due diligence will be conducted to confirm that land is free of encumbrances or informal claims.</li> </ul> | To have access to the land with minimal effect on existing scrap dealers | 5% loss of livelihood of existing scrap dealers on the land | 5 Included in project cost | Prior to commencement of pre-construction activities | E AMA          | E&S Specialist of Supervising Consultant |

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| Risks/Impacts                                                                                            | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Objective                                                                             | Target                                                                                                                   | Budget (GHS)                 | Time frame                           | Responsibility                            | Monitoring                                 |
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|                                                                                                          | <ul style="list-style-type: none"> <li>The land acquisition process will adhere to the Land Act 2020 (Act 1036) and IFS PS5.</li> <li>An environmental permit will be obtained from the EPA in line with LI 2504).</li> <li>Stakeholder Engagement &amp; Grievance Management</li> <li>Prior engagement has been held with scrap dealers to discuss project impacts, alternatives, and mitigation measures. This will be continued to ensure participatory resettlement considerations for the affected persons.</li> <li>A transparent GRM will be established to help address concerns in line with IFC PS1</li> </ul> |                                                                                       |                                                                                                                          |                              |                                      |                                           |                                            |
| Risk of conflict associated with resettlement of scarp dealers                                           | <ul style="list-style-type: none"> <li>Implement the grievance redress mechanism</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Settle disputes                                                                       | All disputes settled                                                                                                     | Included in grievance budget | Throughout project lifecycle         | AMA                                       | Environmental Safeguards Specialist of PIU |
| <ul style="list-style-type: none"> <li>Community &amp; Occupational Health &amp; Safety Risks</li> </ul> | <ul style="list-style-type: none"> <li>Same mitigation measures as for the construction phase</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Reduce dust generation and protect workers and nearby communities                     | <ul style="list-style-type: none"> <li>Same as for construction phase</li> </ul>                                         | a 150,000                    | During the pre-construction phase    | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant   |
| <ul style="list-style-type: none"> <li>Improper waste handling and disposal impacts</li> </ul>           | <ul style="list-style-type: none"> <li>Develop and implement a site waste management plan prior to mobilization</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Ensure proper procedures are in place for handling and disposing of all waste streams | <ul style="list-style-type: none"> <li>Waste Management Plan prepared and approved before construction begins</li> </ul> | 5,000                        | Prior to pre-construction activities | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant   |

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| Risks/Impacts                                                                         | Proposed mitigation action                                                                                                                                                                                                                                                              | Objective                                                                                                                                                                   | Target                                                                                                                                                                              | Budget (GHS)          | Time frame                                                                                                         | Responsibility                            | Monitoring                               |
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|                                                                                       | <ul style="list-style-type: none"> <li>Provide clearly designated waste collection points and bins</li> </ul>                                                                                                                                                                           | <p>generated during the project</p> <p>Prevent indiscriminate disposal of waste by workers</p>                                                                              | <ul style="list-style-type: none"> <li>Waste bins available and used; no visible litter on site</li> </ul>                                                                          | 5,000                 | Throughout pre-construction activities                                                                             |                                           |                                          |
| <ul style="list-style-type: none"> <li>Threat to biodiversity</li> </ul>              | Refer to construction phase                                                                                                                                                                                                                                                             |                                                                                                                                                                             |                                                                                                                                                                                     |                       | Throughout pre-construction activities                                                                             | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |
| <ul style="list-style-type: none"> <li>Impacts on soil and water resources</li> </ul> | <ul style="list-style-type: none"> <li>Maintain existing vegetation where possible and stabilise exposed soil surfaces</li> <li>Diversion channels or retention/detention ponds will be constructed to control and treat stormwater runoff during excavation of legacy waste</li> </ul> | To prevent water quality deterioration, soil erosion and sedimentation                                                                                                      | <ul style="list-style-type: none"> <li>Exposed soils stabilised; no visible sediment runoff from site</li> </ul>                                                                    | 10,000                | Throughout the project lifecycle                                                                                   | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |
| <ul style="list-style-type: none"> <li>Traffic and accident risks</li> </ul>          | <ul style="list-style-type: none"> <li>Develop and implement a site access and traffic management plan prior to mobilisation</li> <li>Install warning signage and clearly mark entry and exit points to the project site</li> </ul>                                                     | <p>Ensure safe entry and exit of vehicles and minimise disruption to surrounding road users</p> <p>Alert road users and pedestrians to the presence of project vehicles</p> | <ul style="list-style-type: none"> <li>Traffic management plan prepared and implemented before site mobilisation</li> <li>Traffic warning signs installed and maintained</li> </ul> | <p>-</p> <p>8,000</p> | <p>Prior to commencement of pre-construction activities</p> <p>Prior to and during pre-construction activities</p> | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |

| Risks/Impacts                                                                        | Proposed mitigation action                                                                                                                                                                                                                                                                                                   | Objective                                                                                                                                                            | Target                                                                                                                                                                                                     | Budget (GHS) | Time frame                                                                                                                                                                      | Responsibility                            | Monitoring                               |
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| <ul style="list-style-type: none"> <li>• Inefficient use of resources</li> </ul>     | <ul style="list-style-type: none"> <li>• Develop and implement a mobilisation plan that optimises vehicle movements and equipment use to minimise fuel consumption</li> <li>• Procure only required quantities of materials and store them in designated protected areas to prevent loss or damage</li> </ul>                | <p>Minimise unnecessary fuel use during project mobilisation</p> <p>Prevent wastage of materials during site preparation</p>                                         | <ul style="list-style-type: none"> <li>• Mobilisation plan implemented; fuel consumption records maintained</li> <li>• Evidence of controlled procurement; designated storage areas established</li> </ul> |              | <p>Developed prior to pre-construction activities commence and maintained throughout pre-construction phase</p> <p>Throughout pre-construction phase and construction phase</p> | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |
| <ul style="list-style-type: none"> <li>• Climate risks</li> </ul>                    | <ul style="list-style-type: none"> <li>• Schedule site preparation and mobilisation activities taking seasonal rainfall patterns into account to minimise weather-related disruptions</li> <li>• Minimise vegetation clearing until construction is ready to begin and stabilise exposed surfaces where necessary</li> </ul> | <p>Ensure climate conditions do not significantly disrupt site mobilisation and preparation</p> <p>Prevent soil erosion and runoff during early site preparation</p> | <ul style="list-style-type: none"> <li>• Work schedule reflects seasonal weather planning; minimal weather-related delays</li> <li>• Limited exposed soil areas; no visible erosion or runoff</li> </ul>   |              | Throughout pre-construction phase                                                                                                                                               | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |
| <ul style="list-style-type: none"> <li>• Labour rights infringement risks</li> </ul> | <ul style="list-style-type: none"> <li>• Ensure all workers engaged during mobilisation receive written contracts</li> </ul>                                                                                                                                                                                                 | <p>Ensure fair and transparent</p>                                                                                                                                   | <ul style="list-style-type: none"> <li>• All workers have written employment agreements</li> </ul>                                                                                                         |              | Throughout pre-construction phase                                                                                                                                               | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |

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| Risks/Impacts                                                              | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Objective                                                                                | Target                                                                                                                               | Budget (GHS) | Time frame                | Responsibility                            | Monitoring                               |
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|                                                                            | outlining roles, wages, and working conditions<br><br>● Provide orientation for all mobilised workers on labour rights, working conditions, and reporting procedures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | labour engagement<br><br>Promote awareness of labour rights and project labour standards | ● Worker orientation sessions conducted; attendance records available                                                                |              |                           |                                           |                                          |
| <b>Construction Phase</b>                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                          |                                                                                                                                      |              |                           |                                           |                                          |
| Community & Occupational Health & Safety Risks<br><br>● Dust and emissions | ● Dust generating areas will be controlled by water dousing under dry weather conditions.<br>● Gas (Methane, NOx, SOx, CO2) emission will be monitored regularly to ensure they are within Ghana Standards permissible limit during site preparation.<br>● On-site speed limits will be applied and enforced for trucks travelling on unpaved surfaces (10 km/h)<br>● Trucks transporting waste materials off-site will be secured with tarpaulins before leaving the site.<br>● Stockpiles will be planned and sited to minimise potential dust generation, considering prevailing wind directions and the locations of sensitive receptors. They will be protected against windblown dust by | To prevent, minimize and control air quality deterioration                               | To meet Environment and Health Protection Standard (GS 1236: 2019, GS 1219:2018) and IFC Environmental, Health and Safety guidelines | 150,000      | During construction phase | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |

| Risks/Impacts                                                         | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Objective                                                    | Target                                                         | Budget (GHS) | Time frame               | Responsibility                            | Monitoring                               |
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| <ul style="list-style-type: none"> <li>Noise and vibration</li> </ul> | <p>windshields, or by covering them, or by water spraying in dry periods.</p> <ul style="list-style-type: none"> <li>The drop height of potentially dust generating materials will be kept as low as reasonably practicable.</li> <li>Maintenance procedures will be carried out to ensure that equipment remains in optimal condition, thereby reducing exhaust emissions caused by reduced performance</li> <li>Dust-related grievances will be investigated and managed as part of the Grievance Mechanism.</li> </ul><br><ul style="list-style-type: none"> <li>Construction vehicles will be prohibited from keeping engines running while waiting to enter the site or while stationed on-site.</li> <li>Adopt noise-suppressing construction methods to meet Ghana ambient noise standards and WBG EHS Guidelines. This may involve installing noise barriers at sensitive points, such as the entrance of the Korle Bu mortuary and the estate opposite the project site</li> <li>Excavations and other noise-generating activities will be limited to the hours of 7:00am to 5:00 pm weekdays and 7:30am to 5:00pm on Saturdays and Sundays.</li> </ul> | To prevent, reduce and control noise pollution and vibration | Below 55dB LAeq 1 hour of GS 1222:2018 and IFC EHS guidelines. |              | Throughout project cycle | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |

| Risks/Impacts                                                            | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Objective                                                | Target                                | Budget (GHS) | Time frame                   | Responsibility                            | Monitoring                               |
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| <ul style="list-style-type: none"> <li>Occupational accidents</li> </ul> | <p>Contractors will be permitted to conduct essential construction activities during off-hours if required to address unforeseen emergencies that threaten life or property.</p> <ul style="list-style-type: none"> <li>Noise-generating equipment will be fitted with sound control devices, and every exhaust will be properly muffled.</li> <li>Regular monitoring of noise levels during construction</li> <li>Provide PPEs to workers and site visitors</li> <li>Develop and implement Occupational Health and Safety (OHS)</li> <li>Conduct periodic toolbox meetings for workers</li> <li>Provide adequate and visible safety signage and warnings on site</li> <li>Provide first aid facilities and trained first aiders on site</li> <li>Handwashing stations, restricted eating/drinking areas, and periodic health checks will be conducted to protect workers from pathogens</li> </ul> | To protect occupational health and safety of all workers | To have 100% incident free activities | 3,000,000    | Throughout project cycle     | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |
| Pests                                                                    | Same as for operation phase                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Same as for operation phase                              | Same as for operation phase           | R 30,000     | During the project lifecycle |                                           |                                          |

| Risks/Impacts                                                  | Proposed mitigation action                                                                                                                                                                    | Objective                                                                                            | Target                                                                                       | Budget (GHS)                 | Time frame                                                        | Responsibility                            | Monitoring                                 |
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| Risk of conflict associated with resettlement of scarp dealers | Implement the grievance redress mechanism                                                                                                                                                     | Settle disputes                                                                                      | All disputes settled                                                                         | Included in grievance budget | Throughout project lifecycle                                      | AMA                                       | Environmental Safeguards Specialist of PIU |
| Improper waste handling and disposal impacts                   | <ul style="list-style-type: none"> <li>Develop and implement a Construction Waste Management Plan covering segregation, storage, transportation and disposal of construction waste</li> </ul> | Ensure construction debris and materials are properly handled and disposed of at approved facilities | Waste management plan implemented; waste disposed of at approved municipal landfill sites    | 5,000                        | Before construction begins and maintained throughout construction | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant   |
|                                                                | <ul style="list-style-type: none"> <li>Segregate construction waste (metal, wood, concrete, packaging materials) and encourage reuse or recycling where possible</li> </ul>                   | Reduce the volume of waste requiring final disposal and prevent indiscriminate dumping               | Percentage of construction waste segregated or reused; no uncontrolled waste dumping on site | 30,000                       | Throughout construction period                                    | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant   |
|                                                                | <ul style="list-style-type: none"> <li>Provide adequate sanitary facilities (toilets and washing facilities) for construction workers</li> </ul>                                              | Prevent open defecation and uncontrolled disposal of wastewater on site                              | Functional sanitation facilities available and maintained for workers                        | 40,000                       | Throughout construction period                                    |                                           |                                            |
|                                                                | <ul style="list-style-type: none"> <li>Establish routine waste collection and off-site disposal through collaboration with municipal waste services</li> </ul>                                | Ensure proper disposal of solid                                                                      | Waste removed from site regularly; no waste accumulation on site                             | 25,000                       |                                                                   |                                           |                                            |

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| Risks/Impacts                       | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Objective                                                                                                             | Target                                                                                                                                                                            | Budget (GHS) | Time frame                                                                                                    | Responsibility                            | Monitoring                               |
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|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | waste generated by workers                                                                                            |                                                                                                                                                                                   |              | Throughout construction period                                                                                |                                           |                                          |
| Threat to biodiversity              | <ul style="list-style-type: none"> <li>Limit vegetation clearance to only the footprint required for the plant and access roads</li> <li>Establish buffer zone between project site and Korle Lagoon with native vegetation</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p>Minimise loss of native vegetation and habitat</p> <p>Protect riparian habitat and maintain ecosystem services</p> | <p>Area of vegetation cleared restricted to project footprint (m<sup>2</sup>)</p> <p>Width of buffer zone maintained (≥10–15 m) and number of native trees/plants established</p> | 30,000       | <p>During site preparation and earthworks</p> <p>During site preparation and first 6 months post-planting</p> | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |
| Impacts on soil and water resources | <ul style="list-style-type: none"> <li>Periodic water quality testing will be conducted to ensure any negative changes are detected early and remedied.</li> <li>Construct diversion channels or retention/detention ponds to control and treat stormwater runoff, reducing the volume and velocity of water reaching the river.</li> <li>Site drainage systems will be designed to withstand extreme rainfall and prevent waterlogging</li> <li>Construct a vegetation buffer between the project and the Odaw River with native plants to reduce siltation.</li> <li>Use biodegradable mats or mulches, and install geotextile fabrics to stabilize disturbed soils and stockpiles to minimize erosion</li> </ul> | To prevent water quality from deteriorating                                                                           | To contain all stormwater and manage runoff adequately to meet effluent discharge guidelines GS1212:2019 and IFC EHS guidelines                                                   | 500,000      | Throughout project cycle                                                                                      | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |

| Risks/Impacts              | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Objective                                                                                                                                                                                                     | Target                                                                                                                                                                                                                                                                        | Budget (GHS) | Time frame                    | Responsibility                            | Monitoring                               |
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|                            | <ul style="list-style-type: none"> <li>• Install silt fences, sedimentation basins, or swales to capture and contain soil particles before they enter the Odaw River</li> <li>• Continuously monitor water quality and sediment levels downstream to enable prompt adjustments such as enhancing structural controls if pollutant threshold levels are exceeded.</li> <li>• Minor critical infrastructure and waste storage areas will be elevated above flood-prone levels</li> </ul> |                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                               |              |                               |                                           |                                          |
| Traffic and accident risks | <ul style="list-style-type: none"> <li>• Continue implementing traffic management plan</li> <li>• Provide trained traffic marshals at the site entrance during peak delivery periods</li> <li>• Require all construction vehicle drivers to undergo safety briefings and adhere to site speed limits</li> </ul>                                                                                                                                                                        | <p>Ensure safe entry and exit of vehicles and minimise disruption to surrounding road users</p> <p>Ensure safe movement of trucks entering and leaving the site</p> <p>Promote safe driving behaviour and</p> | <ul style="list-style-type: none"> <li>• Traffic management plan prepared and implemented before site mobilisation</li> <li>• Traffic marshals present during peak construction traffic periods</li> <li>• Driver safety training conducted; speed limits enforced</li> </ul> | -            | Throughout construction phase | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |

| Risks/Impacts                | Proposed mitigation action                                                                                                                                                                             | Objective                                                                                               | Target                                                                                                                                   | Budget (GHS) | Time frame                    | Responsibility                            | Monitoring                               |
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|                              | <ul style="list-style-type: none"> <li>Ensure construction materials transported by trucks are properly covered and secured</li> </ul>                                                                 | <p>reduce accident risks</p> <p>Prevent road hazards and reduce accident risks on surrounding roads</p> | <ul style="list-style-type: none"> <li>All trucks transporting materials properly covered</li> </ul>                                     |              |                               |                                           |                                          |
| Inefficient use of resources | <ul style="list-style-type: none"> <li>Implement proper material storage and handling procedures, including covered storage for cement and organised storage areas for aggregates and steel</li> </ul> | Reduce wastage of construction materials                                                                | <ul style="list-style-type: none"> <li>Material storage areas established and maintained; periodic site inspections conducted</li> </ul> |              | Throughout construction phase | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |
|                              | <ul style="list-style-type: none"> <li>Maintain construction equipment regularly and enforce a no-idling policy for vehicles and machinery when not in use</li> </ul>                                  | Improve energy efficiency of construction machinery and vehicles                                        | <ul style="list-style-type: none"> <li>Equipment maintenance records available; fuel consumption monitored</li> </ul>                    | 20,000       |                               |                                           |                                          |
|                              | <ul style="list-style-type: none"> <li>Implement water conservation measures such as controlled water use for concrete mixing and dust suppression, and repair leaks promptly</li> </ul>               | Promote efficient water use during construction activities                                              | <ul style="list-style-type: none"> <li>Water usage monitoring records maintained; absence of leaks from supply systems</li> </ul>        | 20,000       |                               |                                           |                                          |

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| Risks/Impacts                    | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                 | Objective                                                                                                                                                                                                       | Target                                                                                                                                                                                                                                                                        | Budget (GHS) | Time frame                    | Responsibility                            | Monitoring                               |
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| Climate risks                    | <ul style="list-style-type: none"> <li>● Provide temporary drainage channels and pumps where necessary to prevent water accumulation in excavation areas</li> <li>● Implement heat management measures such as provision of shaded rest areas, drinking water, and scheduled rest breaks</li> </ul>                                                        | <p>Maintain safe and efficient construction operations during periods of heavy rainfall</p> <p>Protect worker health and maintain safe working conditions</p>                                                   | <ul style="list-style-type: none"> <li>● Drainage channels installed where needed; absence of standing water in work areas</li> <li>● Availability of shaded areas and drinking water; no reported heat stress incidents</li> </ul>                                           |              | Throughout construction phase | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |
| Labour rights infringement risks | <ul style="list-style-type: none"> <li>● Implement wage monitoring procedures and require contractors to maintain payment records for all workers</li> <li>● Establish labour management procedures specifying working hours, rest periods, and overtime arrangements</li> <li>● Establish and communicate a worker grievance redress mechanism</li> </ul> | <p>Ensure timely and fair payment of workers</p> <p>Ensure compliance with national labour laws and acceptable working conditions</p> <p>Provide workers with accessible channels to report labour concerns</p> | <ul style="list-style-type: none"> <li>● Wage payment records available; no wage-related complaints</li> <li>● Labour management procedures implemented; compliance checks conducted</li> <li>● Grievance mechanism established; grievances recorded and addressed</li> </ul> |              | Throughout construction phase | E&S Specialist of Construction Contractor | E&S Specialist of Supervising Consultant |
| <b>Operation Phase</b>           |                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                               |              |                               |                                           |                                          |

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| Risks/Impacts                                    | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Objective                               | Target                                                                                                                                       | Budget (GHS)         | Time frame                       | Responsibility                         | Monitoring                                 |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------------------|----------------------------------------|--------------------------------------------|
| Community & Occupational Health and Safety Risks |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                         |                                                                                                                                              |                      |                                  |                                        |                                            |
| ● Occupational accidents                         | ● Same as in construction phase. Covered under construction phase                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Covered under construction phase        | ● Covered under construction phase                                                                                                           | C 15,000<br>C 15,000 | Throughout the project lifecycle | E&S Specialist of Operation Contractor | Environmental Safeguards Specialist of PIU |
| ● Noise and vibrations                           | ● Same as in construction phase. Covered under construction phase                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Covered under construction phase        | ● Covered under construction phase                                                                                                           |                      | Throughout the project lifecycle |                                        |                                            |
| ● Odour                                          | <ul style="list-style-type: none"> <li>● Implement proper compost management practices (turning, aeration, moisture control)</li> <li>● Odour-neutralising agents (e.g., caustic soda, lime, activated charcoal) or biofilters will be applied on exposed organic matter and disturbed soils</li> <li>● The project will install biofilters at the site</li> <li>● Temporary windbreaks or barriers (e.g., shade nets, fencing) will be installed to limit odour dispersion toward sensitive receptors</li> <li>● Odour levels will be continuously monitored in sensitive areas (Korle Bu Teaching Hospital and nearby communities) to ensure compliance with EPA regulations.</li> </ul> | To minimize odour generation and spread | ● To meet Environment and Health Protection standard (GS 1236: 2019, GS 1219:2018) and IFC Environmental, Health and Safety (EHS) guidelines | 100,000              | Throughout the project lifecycle | E&S Specialist of Operation Contractor | Environmental Safeguards Specialist of PIU |

| Risks/Impacts                                                  | Proposed mitigation action                                                                                                                                                                                                                                                              | Objective                                                                                                                                            | Target                                                                                                                                                                                                       | Budget (GHS)                 | Time frame                   | Responsibility                         | Monitoring                                 |
|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------------------------------|----------------------------------------|--------------------------------------------|
| Pest                                                           | <ul style="list-style-type: none"> <li>Where thresholds are exceeded, adaptive measures (such as additional spraying or further sealing) will be implemented promptly.</li> </ul> <p>Implement pest management measures including keeping good sanitation and periodic pest control</p> | Prevent pest infestations and protect worker health                                                                                                  | At least 1 pest control activities carried out each quarter; no visible pest levels on site                                                                                                                  | 10,000                       | Throughout project lifecycle | E&S Specialist of Operation Contractor | Environmental Safeguards Specialist of PIU |
| Risk of conflict associated with resettlement of scarp dealers | Implement the grievance redress mechanism                                                                                                                                                                                                                                               | Settle disputes                                                                                                                                      | All disputes settled                                                                                                                                                                                         | Included in grievance budget | Throughout project lifecycle | AMA                                    | Environmental Safeguards Specialist of PIU |
| Improper waste handling and disposal impacts                   | <ul style="list-style-type: none"> <li>Implement a feedstock acceptance and inspection protocol to ensure only appropriate organic waste is accepted for composting</li> <li>Provide personal protective equipment (PPE) and training for workers handling organic waste</li> </ul>     | <p>Maintain compost quality and protect workers from hazardous contaminants</p> <p>Protect workers from biological hazards and physical injuries</p> | <ul style="list-style-type: none"> <li>Percentage of incoming waste inspected; rejected contaminated loads documented</li> <li>Workers equipped with PPE and trained in waste handling procedures</li> </ul> | -                            | Throughout operation phase   | E&S Specialist of Operation Contractor | Environmental Safeguards Specialist of PIU |

| Risks/Impacts | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Objective                                                                                                                                                                                                                                                                                                                                                          | Target                                                                                                                                                                                                                                                                                                                                                                             | Budget (GHS)                     | Time frame                 | Responsibility                         | Monitoring                                 |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------------------------|----------------------------------------|--------------------------------------------|
|               | <ul style="list-style-type: none"> <li>● Maintain dedicated areas for sorting and temporary storage of rejected materials removed from feedstock</li> <li>● Operate and maintain the leachate collection and treatment system, including constructed wetlands and treatment facilities</li> <li>● Provide adequate waste collection and sanitation facilities for plant workers</li> <li>● Maintain regular housekeeping and cleaning schedules within waste handling and processing areas</li> </ul> | <p>during waste handling</p> <p>Prevent accumulation of non-compostable waste and ensure proper disposal</p> <p>Prevent untreated leachate or effluent from entering drainage systems or nearby water bodies</p> <p>Prevent unsanitary conditions and pest attraction at the facility</p> <p>Reduce pest attraction, odour generation, and contamination risks</p> | <ul style="list-style-type: none"> <li>● Designated storage areas maintained and waste removed regularly</li> <li>● Effluent quality meets national discharge standards; treatment system functioning properly</li> <li>● Waste bins and sanitation facilities provided and maintained</li> <li>● Routine cleaning records maintained; no visible accumulation of waste</li> </ul> | <p>-</p> <p>250,000</p> <p>-</p> | Throughout operation phase | E&S Specialist of Operation Contractor | Environmental Safeguards Specialist of PIU |

CONSTRUCTION & OPERATION OF A SOURCE-SEPARATED ORGANIC WASTE COMPOSTING PLANT – ESIS

| Risks/Impacts                       | Proposed mitigation action                                                                                                                                                                                                                                                                                         | Objective                                                                                                                                                                                       | Target                                                                                                                                                                                                                                                                                                  | Budget (GHS)                                     | Time frame                                                                      | Responsibility                         | Monitoring                                 |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------|--------------------------------------------|
| Threat to biodiversity              | <ul style="list-style-type: none"> <li>Implementation of strict no hunting/persecution rule</li> <li>Education of staff and subcontractors to understand the need to cohabit with wildlife</li> <li>Maintain green buffer and tree cover around the site</li> </ul>                                                | <p>To prevent habitat loss and reduce wildlife disturbances and pest risks</p> <p>Sustain biodiversity, reduce dust and noise, improve aesthetics</p>                                           | <ul style="list-style-type: none"> <li>No increase in rodent/bird populations around the facility; vegetative cover maintained at <math>\geq 80\%</math> post-planting</li> <li>Survival rate of planted trees/plants (<math>\geq 80\%</math>) and buffer area maintained (<math>m^2</math>)</li> </ul> | 10,000 (year maintenance, watering, replacement) | <p>Throughout the operation phase</p> <p>Ongoing throughout plant operation</p> | E&S Specialist of Operation Contractor | Environmental Safeguards Specialist of PIU |
| Impacts on soil and water resources | <ul style="list-style-type: none"> <li>Ensure all operational surfaces are paved and connected to the drainage and leachate collection system</li> <li>Establish spill prevention and response procedures and maintain spill response equipment</li> <li>Conduct routine monitoring of effluent quality</li> </ul> | <p>Prevent infiltration of contaminated runoff into soil and nearby drainage systems</p> <p>Rapidly contain and clean spills to prevent soil contamination</p> <p>Ensure effluent discharge</p> | <ul style="list-style-type: none"> <li>Operational surfaces maintained; runoff captured and treated</li> <li>Spill response equipment available and staff trained in spill response</li> </ul>                                                                                                          | 60,000                                           | Throughout operational phase                                                    | E&S Specialist of Operation Contractor | Environmental Safeguards Specialist of PIU |

| Risks/Impacts              | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                              | Objective                                                                                                                                                                                                                | Target                                                                                                                                                                                                                                                                | Budget (GHS) | Time frame                                          | Responsibility                         | Monitoring                                 |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------------------------------------------|----------------------------------------|--------------------------------------------|
|                            | <ul style="list-style-type: none"> <li>Implement routine housekeeping and inspection of waste handling areas</li> </ul>                                                                                                                                                                                                                                                                 | <p>complies with environmental standards and does not degrade water quality</p> <p>Prevent accumulation of organic residues that could contaminate soil</p>                                                              | <ul style="list-style-type: none"> <li>Effluent monitoring results within regulatory limits</li> <li>Routine inspection records maintained; no accumulation of waste residues</li> </ul>                                                                              |              |                                                     |                                        |                                            |
| Traffic and accident risks | <ul style="list-style-type: none"> <li>Develop and implement an operational phase traffic management plan for waste collection vehicles</li> <li>Schedule waste deliveries during designated daytime hours and avoid peak traffic periods where possible</li> <li>Establish clearly marked internal traffic routes, pedestrian walkways and speed limits within the facility</li> </ul> | <p>Ensure efficient and safe movement of waste trucks to and from the facility</p> <p>Reduce congestion and accident risks in surrounding communities</p> <p>Improve traffic organisation and reduce collision risks</p> | <ul style="list-style-type: none"> <li>Traffic management procedures implemented and communicated to drivers</li> <li>Waste deliveries occur only within approved daytime operating hours</li> <li>Internal road markings installed; speed limits enforced</li> </ul> |              | Prior to commencement of operation phase activities | E&S Specialist of Operation Contractor | Environmental Safeguards Specialist of PIU |

| Risks/Impacts                | Proposed mitigation action                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Objective                                                                                                                                                                                                | Target                                                                                                                                                                                                                                                                                                           | Budget (GHS)                | Time frame                                                                             | Responsibility                         | Monitoring                                 |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|----------------------------------------------------------------------------------------|----------------------------------------|--------------------------------------------|
|                              | <ul style="list-style-type: none"> <li>● Provide traffic safety training for workers and ensure high-visibility PPE is worn in operational areas</li> <li>● Ensure regular inspection and maintenance of waste transport vehicles</li> </ul>                                                                                                                                                                                                                                                           | <p>Protect workers from vehicle-related accidents</p> <p>Maintain vehicle safety and reduce risk of mechanical failure</p>                                                                               | <ul style="list-style-type: none"> <li>● Workers trained and wearing high-visibility PPE</li> <li>● Vehicle inspection and maintenance records maintained</li> </ul>                                                                                                                                             |                             |                                                                                        |                                        |                                            |
| Inefficient use of resources | <ul style="list-style-type: none"> <li>● Install energy-efficient equipment where feasible and implement routine maintenance of shredders, conveyors, aeration systems, and pumps</li> <li>● Implement water management procedures including controlled water use, regular inspection of water supply systems, and prompt repair of leaks</li> <li>● Implement standard operating procedures for feedstock preparation, moisture control, aeration, and monitoring of composting parameters</li> </ul> | <p>Promote efficient energy use in facility operations</p> <p>Ensure efficient use of water resources at the facility</p> <p>Maintain optimal composting conditions for efficient compost production</p> | <ul style="list-style-type: none"> <li>● Equipment maintenance records available; periodic monitoring of energy consumption</li> <li>● Water consumption records maintained; regular inspections conducted</li> <li>● Compost process monitoring records maintained (temperature, moisture, aeration)</li> </ul> | <p>30,000</p> <p>10,000</p> | <p>Prior to commencement of operation activities</p> <p>Throughout operation phase</p> | E&S Specialist of Operation Contractor | Environmental Safeguards Specialist of PIU |

CONSTRUCTION & OPERATION OF A SOURCE-SEPARATED ORGANIC WASTE COMPOSTING PLANT – ESIS

| Risks/Impacts                    | Proposed mitigation action                                                                                                                                                                                                                                                                                                                        | Objective                                                                                                                                                                              | Target                                                                                                                                                                                                                                          | Budget (GHS)     | Time frame                 | Responsibility                         | Monitoring                                 |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------------------|----------------------------------------|--------------------------------------------|
|                                  | <ul style="list-style-type: none"> <li>Implement quality control procedures for compost production including periodic laboratory testing of compost quality</li> </ul>                                                                                                                                                                            | Ensure production of high-quality compost products                                                                                                                                     | <ul style="list-style-type: none"> <li>Compost quality testing reports available</li> </ul>                                                                                                                                                     |                  |                            |                                        |                                            |
| Climate risks                    | <ul style="list-style-type: none"> <li>Maintain functional stormwater drainage and leachate collection systems within the facility</li> <li>Regular inspection and maintenance of site drainage infrastructure and stormwater channels</li> </ul>                                                                                                 | <p>Ensure effective management of stormwater and leachate</p> <p>Improve climate resilience of plant operations</p>                                                                    | <ul style="list-style-type: none"> <li>Drainage and leachate systems operational and regularly inspected</li> <li>Drainage inspections conducted regularly; no operational shutdown due to flooding</li> </ul>                                  | 10,000           | Throughout operation phase | E&S Specialist of Operation Contractor | Environmental Safeguards Specialist of PIU |
| Labour rights infringement risks | <ul style="list-style-type: none"> <li>Develop and implement a facility labour management policy consistent with national labour regulations</li> <li>Maintain a worker grievance redress mechanism accessible to all plant employees</li> <li>Implement transparent recruitment procedures and equal opportunity employment practices</li> </ul> | <p>Ensure fair and consistent labour management practices</p> <p>Promote fair treatment and accountability in the workplace</p> <p>Promote fair and inclusive employment practices</p> | <ul style="list-style-type: none"> <li>Labour policy adopted and communicated to staff</li> <li>Grievances logged and resolved within specified timeframes</li> <li>Recruitment procedures documented; workforce diversity monitored</li> </ul> |                  | Throughout operation phase | E&S Specialist of Operation Contractor | Environmental Safeguards Specialist of PIU |
|                                  |                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                        | <b>Total</b>                                                                                                                                                                                                                                    | <b>4,538,000</b> |                            |                                        |                                            |

## 8.5 Proposed Monitoring Plan

The Monitoring Plan provides a framework for tracking the implementation of mitigation measures and assessing their effectiveness. Monitoring activities will be carried out during all project phases, with specific indicators for each environmental and social aspect (Table 8.2).

**Table 8.2** *Monitoring Indicators and Frequency for Environmental and Social Aspects*

| No | What to monitor (parameter)   | When to monitor (frequency)                                                   | How to monitor (methods)                                                  | Who monitors               | Budget           |
|----|-------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------|----------------------------|------------------|
| 1  | Ambient Noise and Air Quality | Bi-Weekly                                                                     | Air and noise meter                                                       | Project manager/contractor | 1,700,000        |
| 2  | Water Quality                 | Quarterly monitoring, with additional checks after significant rain events    | laboratory analysis                                                       | Project manager/contractor | 600,000          |
| 3  | Biodiversity                  | Bi-annually                                                                   | Fauna and flora diversity assessment                                      | Project manager/contractor | 200,000          |
| 4  | Waste                         | Monthly                                                                       | Assessment of waste generation volumes and management effectiveness       | Project manager            | 2,450,000        |
| 5  | GBV, SEA, SH Risks            | Continuous monitoring, with quarterly reporting on GBV, SEA, and SH incidents | Establishment of a GRM and Community & stakeholder engagements            | Project manager            | 300,000          |
| 7  | Community Health and Safety   | Weekly monitoring during <b>construction</b> , post-construction check-ins    | Number of near misses/accidents both onsite and other project ancillaries | Project manager            | 3,600,000        |
|    |                               |                                                                               |                                                                           | <b>Total</b>               | <b>8,850,000</b> |

## 8.6 Audit and Inspection

An audit and inspection programme will be established to assess the effectiveness of environmental and social mitigation measures. This programme will ensure that the project is in compliance with the ESMP and applicable environmental and social standards. Audits will be carried out by an external environmental and social auditor, appointed by the contracting entity, with approval from the project sponsor.

### 8.7 Audit Protocol

Audits will be conducted regularly, every month, throughout the duration of the project. These audits will be based on agreed protocols and will assess:

- Compliance with environmental and social standards.
- Effectiveness of mitigation measures outlined in the ESMP.
- Progress towards meeting environmental and social objectives and targets.

Audits may include both scheduled inspections and random spot checks. The frequency of audits may be adjusted based on findings, confidence in the audit programme, and the degree of compliance observed.

### 8.8 Corrective Actions

The audit findings will be reviewed, and corrective actions will be implemented where necessary to address any deficiencies. These actions will be tracked and reported to the project sponsor to ensure timely resolution of issues.

### 8.9 Reporting

Effective reporting mechanisms will be put in place to ensure that environmental and social monitoring results, audits, and incidents are documented and communicated to relevant stakeholders. This will help track the progress of ESMP implementation and ensure that any issues or non-compliances are addressed promptly.

### 8.10 Internal Reporting

The **Contracting Entity** will be responsible for documenting all environmental, social, health, and safety incidents during the construction and operational phases. These reports will be produced weekly and will include:

- **Category of non-conformance:** Type of incident or issue (e.g., environmental, social, health).
- **Severity of the incident:** Classification of the incident's potential impact.
- **Frequency of incidents:** How often similar incidents occur.
- **Corrective actions:** Steps taken to address the issue.

These records will be discussed in project management meetings to initiate corrective actions and ensure continuous improvement. Key findings will also be shared with the project sponsor to maintain transparency.

### 8.11 Incident Notification and Reporting

In the event of an environmental or social incident, the contracting entity must immediately notify the project coordinator. Incident reports should include:

- A detailed description of the incident.
- The parties involved.
- Steps taken to mitigate immediate risks.

- Long-term corrective actions to prevent recurrence.

These incidents will be tracked to reduce the likelihood of future non-conformance and improve the overall environmental and social performance of the project.

## 8.12 Grievance Mechanism

The legal framework for Grievance Redress has basis in the Constitution of Ghana (Article 20), as well as in the State Lands Act (1962). In accordance with IFC PS1, a grievance mechanism will be developed to address project implementation concerns promptly and effectively, in a transparent manner. The GM will be culturally appropriate and readily accessible to all project-affected parties and interested parties, at no cost and without retribution. The GM process, or procedure will not prevent recourse to judicial or administrative remedies. Specifically, the GM will:

- Provide affected people with avenues for making a complaint or resolving any dispute that may arise during the course of the implementation of the project;
- Ensure that appropriate and mutually acceptable redress actions are identified and implemented to the satisfaction of complainants; and
- Minimise to the barest minimum the need to resort to judicial proceedings.

Grievances may take the form of specific complaints about actual damage or injury, general concerns about project activities, incidents and impacts, or perceived impacts. The project will provide a mechanism that would provide opportunities for all direct and indirect beneficiaries, service providers and other stakeholders along the entire supply chain (both upstream and downstream activities) to report and seek redress for project related complaints. Stakeholders would be sensitized about the GM, as well as measures put in place to address project related complaints at the community, district, regional and national levels in a confidential manner. This will be done as part of continuous stakeholder consultations.

### 8.12.1 Grievance Redress Structure

The project will adopt and enhance the existing grievance redress structure for MMDAs in Ghana. At the district assembly level in Ghana, complaint resolution involves a multi-tiered approach, leveraging established structures and community engagement to address grievances effectively. This includes community-level committees, collaboration with local authorities, and the formal mechanisms of the Assembly itself. Grievances are resolved or referred to the following levels depending on the nature of the complaint or dispute:

- Community Grievances and Surveillance Committees (CGSCs)
- Collaboration with Local Authorities and Stakeholders
- Formal Assembly Structures

The contractors who will be involved in both the pre-construction and construction phases will be required to develop simple GRMs that align or feed into the existing GRM structures of the AMA. Construction and operational staff at the project level will maintain a grievance and conflict resolution log and report outcomes to the AMA and finally to the Greater Accra Regional Coordinating Council (GARCC) if required.

In line with IFC PS 1 and 2, the project GRM will be accessible to all project-affected persons. Contractors will be required to establish worker-specific grievance mechanisms for their employees, coordinated with the project GRM to ensure oversight and consistency. All other external stakeholders, including informal waste pickers and affected community members, will access the project GRM directly. Both the worker and community channels will ensure confidentiality, protection against retaliation, and transparent resolution of concerns. The transparent nature of resolving grievances and active involvement of local structures, i.e., CGSCs and MMDAs supported by the GARCC at the regional level will enable the GRM to address grievances amicably. This proven mechanism would be followed to facilitate all grievances or complaints at any point during the various phases of the project. The CGSCs within the various beneficiary MMDAs will be empowered to address any issues that may arise within their jurisdictions during the implementation of the project (especially with regards to the upstream activities i.e., source segregation, waste collection and haulage). Where a CGSC cannot resolve any grievance at the local MMDA level, it would be escalated to the GARCC who would coordinate with the relevant MMDA to find a solution to the complaint. The Public Relations and Social Welfare & Community Development Officers at the AMA will play a key role in coordinating the resolution of all grievances which will then be logged for record-keeping and tracking purposes.

**Table 8.3**      *Grievance Redress Roles*

| Level               | Agency/Individual                                    | Grievance Redress Role                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Regional, District  | GARCC, AMA and other beneficiary/participating MMDAs | <ul style="list-style-type: none"> <li>● Establish GRMs via circulars and memoranda</li> <li>● Provide operational guidelines for GRMs, e.g., source segregation and waste collection activities</li> <li>● Designate necessary funds and staff to facilitate GRM operations</li> <li>● Maintain databases on the status of grievance handling by Contractors and CGSCs</li> <li>● Participate in GRM activities</li> <li>● Monitoring grievance-handling processes by Contractors and CGSCs</li> <li>● Coordinate the functions of CGSCs</li> <li>● Provide capacity-building training to CGSC members</li> </ul> |
| Contractors / CGSCs | Grievance Redress Committees                         | <ul style="list-style-type: none"> <li>● Maintaining a list of those who are directly or indirectly affected by construction, operations, and maintenance work</li> <li>● Addressing grievances excluding issues of GBV/SEA/SH</li> </ul>                                                                                                                                                                                                                                                                                                                                                                          |

### **8.12.2** *Grievance Resolution Procedure*

Information about the GM will be publicized as part of the initial programme of consultations and disclosure in all the participating MMDAs. Brochures will be distributed during consultations and public meetings, and posters will be displayed in public places such as in

GARCC and MMDA offices, contractors' offices, notice boards available to strategic stakeholders such as the Teaching Hospital and Police Departments at Korle Bu, etc. Information about the GRM will also be posted online on websites of implementing MMDAs. The overall grievance resolution framework will include six steps described below. The six steps demonstrate a typical grievance resolution process.

### **Step 1: Reception and Registration**

A formal grievance can be lodged at GARCC and AMA offices in Accra or any beneficiary district office with trained dedicated staff from the Public Relations and Complaints Committee (PRCC), or at the community level through the Contractors or the CGSCs. Grievances may be lodged by a variety of different means, including direct reporting in person to the project office/district office, use of suggestion boxes, by direct phone calls, through WhatsApp, by mail or on the web. For regular calls, a toll-free number or dedicated phone number will be promoted through posters and local radio stations for lodging formal complaints or grievances. Stakeholders will be required to report instances of gender-based discrimination, sexual harassment, and sexual violence either directly or through email or phone calls. The PRCCs will accept any complaint submitted anonymously and any complaint from individuals who identify themselves initially but request anonymity during the investigation and adjudication process. Although it is inherently difficult to investigate anonymous complaints, investigations into such complaints will be as thorough as is practicable and will be appropriate to the allegations. All Project staff will be trained to pass on all submissions that could be considered to form a grievance directly to the Communication Specialist / Project Liaison Officer as soon as possible after they are received. The complaints will be recorded on the complaint form in cases where the complainant is unable to fill in the form.

Details of the person lodging the grievance and information regarding the grievance will be recorded in the register. All grievances will be recorded by the Communication Specialist or Environmental and Social Specialist, who will ensure the grievance is captured in a centralized electronic Grievance Database where the status of the grievance captured will be linked to all the IAs or various levels of grievance redress mechanism. Community and village leaders and government departments will also be advised to pass any complaints they receive to local offices of the IAs from where they will be forwarded to the PCUs.

The PRCC staff responsible will record each grievance on a standard Grievance Form and will ensure that the name of the community, the date recorded, the name of the complainant and the name of the person that received the grievance are noted. The complainant will be required to complete a grievance form with the assistance of the Communication Specialist, who will record the grievance in a grievance log according to the category of grievances (for example, unfair employment process being followed, loss of livelihood or communication and information not transparent). A grievance can also be lodged by sending a grievance form or written complaint directly to the Contractors or the CGSCs. All grievances will be logged in a grievance log file.

All incoming inquiries and grievances will be reflected in a dedicated grievance register and assigned an individual reference number. The grievance register will also be used to track the status of an inquiry/grievance, analyse the frequency of complaints arising, their geographic distribution, typical sources and causes of complaints, as well as to identify prevailing topics and any recurrent trends. The grievance register will contain the following information:

#### **Grievance Register**

1. a unique reference number;
2. date of incoming grievance;
3. location where the grievance was received/submitted and in what form;
4. complainant's name and contact details (in case of non-anonymous inquiries and grievances); contents;
5. identification of parties responsible for addressing and resolution of the issue;

### **Step 2 Screening, Prioritization and Assignment**

Complaints received by the project will be handled as is reasonably practicable, depending on the nature and complexity of the grievance. To expedite the screening process, all incoming grievances will be lodged into the central database, according to their nature based on the following categories:

A0: Request for information not directly related to the Project

A1: Questions/Doubts

A2: Requests/Petitions

A3: Complaints

Following this preliminary assessment, the grievance will be directed to the respective project entity for resolution. The respective entity will report back on the grievance. Grievances will be prioritized according to their severity and complexity level. The following table shows the priority levels that will be applied:

**Table 8. 4      Grievance Priority Classification**

| <b>Priority Level</b> | <b>Description</b>                                                                                                                                                                                                                                                        | <b>Example</b>                                                                                                                                            |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| High                  | Concern, claim or grievance involving stakeholders of high priority, and: <ul style="list-style-type: none"> <li>• Reports on a breach of human rights</li> <li>• Relates to legal non-compliance</li> <li>• Poses a short-term risk to the project continuity</li> </ul> | <ul style="list-style-type: none"> <li>• Group complaints; Issues involving third parties (e.g., social, environmental impacts)</li> </ul>                |
| Medium                | Concern, claim or grievance from stakeholders (individual or as a group) that could impact the project reputation or compromise its development at medium term.                                                                                                           | <ul style="list-style-type: none"> <li>• Individual complaints.</li> <li>• Issues involving other departments within AMA, Contracting Entities</li> </ul> |
| Low                   | Concern, claim or grievance regarding lack of information or unclear information provided.                                                                                                                                                                                | <ul style="list-style-type: none"> <li>• Lack of information</li> </ul>                                                                                   |

### **Step 3: Examination**

As part of the “admissibility verification,” an examination of the grievances shall be undertaken in order to verify the validity of the complaint, determine its causes and develop corrective actions to minimize or avoid recurrence of the causes. Then, a file and registration number are assigned, giving treatment within a period no longer than 30 days. The resolution process should be performed within 10 working days after having finalized the examination process for high priority grievance, 14 working days for medium priority and 28 days for low priority. In that period, the corresponding response must be raised, whether the complaint is justified or not, and leave a record of what has been expressed. The timeframe will be communicated to the complainant, in written form if needed. The approach definition depends on the priority level of the issue raised. The actions and accountability of managing every grievance will be different.

**Table 8. 5      Grievance Actions**

| Step | Action                                                                               | Resolution Time |
|------|--------------------------------------------------------------------------------------|-----------------|
| 1    | Receive and register the grievance                                                   | within 5 Days   |
| 2    | Acknowledge, assess grievance and assign responsibility                              | within 7 Days   |
| 3    | Development of response                                                              | within 14 Days  |
| 4    | Implementation of response if an agreement is reached                                | within 1 Month  |
| 6    | Initiate a grievance review process if no agreement is reached at the first instance | within 1 Month  |
| 7    | Implement review recommendation and close grievance                                  | within 2 Months |
| 8    | Grievance taken to court by the complainant                                          | -               |

#### **Step 4: Grievance Closure**

Once a complaint has been investigated, a letter will be sent to the complainant, explaining the outcome of the investigation and the proposed course of action to resolve the grievance. The Communication Specialist or the PRCC, in the case where the grievances are addressed at the local level, will contact the complainant in person if this is required and explain the results of the investigation and the proposed course of action. If the complainant is satisfied that the complaint has been resolved, he/she will be required to sign a statement confirming that the complaint has been resolved. If the complaint has not been resolved by mutual agreement, a re-assessment may be undertaken if new information becomes available in support of the claim/complaint. If the complainant is still not satisfied with the resolution, the grievance will then go into mediation. If applicable, the grievance committee will monitor the implementation of the resolution and the claimant’s satisfaction with this implementation. Resolution and sign-off on the grievance captured will be noted in the grievance issues database. All grievances, regardless of their status, will be kept since it will provide proof in case of litigation.

#### **Step 5: Appeals**

Unresolved grievances will be investigated by a grievance committee formed at the level of the GARCC/AMA. This committee will only meet to resolve problems that cannot be resolved during steps one to four. AMA will allow for an independent arbitrator if grievances cannot be resolved internally. It is important to note that the project will not cover the expenses for the

services of the arbitrator. In exceptional cases, depending on the relevance of grievance, the project may consider taking care of only transport costs borne by the plaintiff or complainant. Special attention will be given to SEA/SH grievances (marked as confidential) to ensure confidentiality and to avoid intimidation of complainants or survivors, through the referral pathway for redressing GBV / SEA / SH cases, as described below under section 8.11.2.1.

#### ***8.12.2.1 Protocol for Referral of GBV/SEA/SH Cases***

The project GRM will have alternative channels for referral and handling Gender-based violence, Sexual Exploitation and Abuse, Sexual Harassment (GBV/SEA/ SH) cases, given that the general GRM may not be appropriate for reporting or handling the sensitivities associated with GBV / SEA / SH cases which require specific professional intervention to ensure minimized trauma and facilitation of recovery of the survivor. Therefore, referral mechanisms will be instituted to ensure that the survivor receives the right attention on an SEA / SH issue.

In each project MMDA, the relevant state and non-state agencies that are available and accessible can be used as both entry points and referral agencies for GBV/ SEA/ SH cases, including the Domestic Violence and Victims Support Unit (DOVVSU) of the Ghana Police Service and the Department of Social Welfare will be identified, mapped out and integrated into the GBV/ SEA/ SH procedure. Thus, for GBV/SEA/SH cases, the project GRM primarily serve to: (i) refer complainants to the GBV service provider; and (ii) record resolution of the complaint. Information on a GBV/SEA/SH case in the GRM will be treated confidentially, especially when related to the identity of the complainant. No identifiable information on the survivor is stored in the GRM. The GM will not ask for, or record, information on more than the following related to the SEA/SH complaints:

1. The nature of the complaint (what the complainant says in her/his own words without direct questioning);
2. If, to the best of the survivor's knowledge, the perpetrator was associated with the project;
3. If possible, the age and sex of the survivor; and
4. If possible, information on whether the survivor was referred to GBV services.

There will be multiple complaint channels for GBV/SEA/SH cases, including local community organizations, health care providers, etc. Project communities will be provided with functional toll-free helplines, notably, the Single Window Citizens Engagement Service (SWCES) and the Orange Support Centre, both of which are operated by the Ministry of Gender, Children and Social Protection. These helplines are linked to a wide range of service providers and offer comprehensive support for complainants.

Immediately after receiving a complaint directly from a survivor, the GRM operator will assist the survivor by referring them to GBV service provider(s) for support, based on the list of service providers already available from the mapping exercise. However, if a case is first

received by the GBV service provider or through other identified reporting channels, the report will be sent to the GRM operator to ensure it is recorded in the GRM system.

With their consent, a survivor will be provided with information on their options regarding the processing and resolution of the case and clearly communicate to the survivor any mandatory legal reporting requirements depending on the nature of the case. As part of the established resolution process of an SEA/SH case, an agreement will be reached on a plan for resolution as well as the appropriate disciplinary action for the perpetrator, all within the shortest timeframe possible to avoid further trauma to the survivor. Through the GBV service provider, the appointed GRM operator will be informed about the resolution of the SEA/SH case, and it will then be closed in the GM and the World Bank will then be notified that the case is closed.

### **8.12.3 GRM Training**

The AMA, with support from GARCC, will conduct GRM training for all relevant stakeholders within the AMA and surrounding MMDAs. The main objective of the training is to ensure that beneficiaries and supply chain participants understand the levels, structures, complaint submission channels and how complaints can be addressed. A step-down training will be organized for the contractors and CGSCs. The training will aim at building the capacity of these structures to be able to handle grievances at the community level per the GRM structure.

### **8.12.4 GRM Budget**

The budget for operationalising the Grievance Mechanism is estimated at GHS 72,500 per year, including:

- Staffing – GHS 45,000
- Communication – GHS 10,000
- Training – GHS 4,000
- Record-keeping – GHS 5,000
- Awareness and M&E – GHS 6,000
- Contingency – GHS 2,500

## **8.13 Managing Changes**

As the project evolves, any modifications to the original plan must be reflected in the ESMP. A process will be developed to ensure that changes in design, location, or scope are evaluated for their environmental and social implications, and the ESMP updated accordingly.

## **8.14 Communication to Stakeholders**

Continuous communication with stakeholders will ensure transparency and build trust. Regular updates will be provided through community meetings, newsletters, social media, and official reports. Public engagement initiatives such as radio programmes or community outreach will also be used.

## **8.15 Emergency Preparedness and Response Plan**

### ***Purpose***

The purpose of the Emergency Preparedness and Response Plan (EPRP) is to ensure that the project is adequately prepared to respond to emergency situations that may arise during the construction and operation of the compost plant. The plan will provide a structured framework for identifying potential emergency scenarios, defining response procedures, and ensuring that personnel are trained and equipped to respond effectively in order to minimise risks to human health, the environment, and project infrastructure.

The EPRP will aim to ensure that emergencies are managed in a timely and coordinated manner and that appropriate measures are taken to prevent escalation of incidents and reduce potential impacts.

### ***Scope***

The EPRP will apply to all project personnel, contractors, and visitors involved in activities at the compost plant site during both the construction and operational phases. The plan will cover emergency situations that may arise as a result of project activities or external factors that could affect the facility.

Potential emergency situations that may be addressed in the EPRP include, but will not be limited to:

- Fire outbreaks within the facility or surrounding areas.
- Accidental spills of fuels, oils, or chemicals.
- Flooding or extreme rainfall events affecting facility operations.
- Major equipment failures or operational incidents.
- Serious worker accidents or medical emergencies.
- Traffic accidents involving project vehicles.
- Natural hazards such as severe storms.

The EPRP will outline procedures for emergency detection, reporting, communication, evacuation, and coordination with relevant emergency services. It will also define roles and responsibilities for emergency response, identify required emergency equipment, and establish training and drill requirements for workers.

A detailed EPRP will be developed by the project proponent and plant operator prior to commencement of operations. The plan will be periodically reviewed and updated as necessary to ensure that it remains relevant to the operational conditions of the facility.

## **8.16 Decommissioning**

At the decommissioning phase, there is potential soil and water contamination during the decommissioning phase due to excavation activities during the removal of temporary structures, especially closer to the Odaw River. Decommissioning activities can potentially impact negatively on communities located along the Ring Road West corridors (potential traffic and road accidents). Exposure to hazardous waste, air pollution, and accidents during dismantling may pose risks to workers and residents.

Waste generated from the excavation of the site and the other decommissioning activities will be managed properly to avoid any negative impacts on the environment and public health. Additionally, the repurposing of the land after decommissioning may raise community concerns over future use.

The decommissioning phase of the composting plant presents several key environmental and social concerns, particularly due to its sensitive location near the Odaw River and along the Ring Road West corridor. These concerns necessitate careful planning and the implementation of robust mitigation measures.

#### **8.16.1 Key Concerns**

- **Soil and Water Contamination:** Excavation during the removal of temporary structures poses a risk of releasing contaminants into the soil and water, especially near the already vulnerable Odaw River.
- **Traffic and Road Accidents:** Decommissioning activities may disrupt traffic flow along the Ring Road West corridor, increasing the risk of accidents.
- **Worker and Resident Safety:** Dismantling activities can expose both workers and nearby residents to hazardous waste, air pollution, and potential accidents.
- **Waste Management:** The proper management of waste generated from site excavation and dismantling is crucial to prevent negative impacts on the environment and public health.
- **Land Repurposing:** The future use of the land after decommissioning may raise community concerns and requires a transparent and consultative approach.

#### **8.16.2 Potential Impacts and Mitigation Measures:**

The following details the potential impacts and corresponding mitigation measures for the decommissioning phase:

- **Soil and Water Contamination:**

##### ***Impacts:***

Release of heavy metals, hydrocarbons, and other pollutants from contaminated soil or structures into the soil and groundwater.

Contamination of the Odaw River, affecting aquatic life and downstream water users.

##### ***Mitigation Measures:***

Thorough soil and groundwater testing before excavation will be conducted.

We will develop and implement a soil and groundwater management plan to address any identified contamination.

Erosion and sediment control measures to prevent runoff into the Odaw River will be implemented.

Impermeable barriers and containment systems during excavation activities will be used.

Proper disposal of contaminated soil and materials at approved facilities will be adhered to.

Post-decommissioning monitoring of groundwater quality will be conducted.

- **Traffic and Road Accidents:**

***Impacts:***

Increased traffic congestion along the Ring Road West corridor.

Elevated risk of accidents due to heavy equipment movement and road closures.

Delays for local residents and businesses.

***Mitigation Measures:***

A comprehensive traffic management plan in coordination with local authorities will be developed.

Traffic control measures, including flaggers, signage, and detours, will be put in place.

Heavy equipment movement during off-peak hours to minimize disruption will be scheduled to minimize traffic.

Advance notice to the community regarding planned road closures and traffic disruptions will be ensured.

We will maintain clear and safe pathways for pedestrians throughout the decommissioning process.

- **Worker and Resident Safety**

***Impacts:***

Exposure to hazardous materials, such as asbestos, heavy metals, and chemicals.

Air pollution from dust and particulate matter generated during dismantling.

Risk of accidents resulting from falling debris, equipment operation, and structural collapse.

***Mitigation Measures:***

We will conduct a thorough hazardous materials survey before the commencement of dismantling activities.

All workers will be provided with appropriate personal protective equipment (PPE).

Implement dust control measures, such as water spraying and covering of materials.

Develop a detailed safety plan and conduct regular safety training sessions for all personnel.

Establish exclusion zones to protect residents from potential hazards.

Conduct regular air quality monitoring throughout the decommissioning process.

- **Waste Management:**

***Impacts:***

Improper disposal of excavation waste and demolition debris, potentially leading to soil and water contamination.

Increased burden on landfill capacity.

Increased risk of illegal dumping.

***Mitigation Measures:***

Develop a waste management plan that prioritizes waste reduction, recycling, and reuse.

Implement a system for the segregation of waste materials to facilitate proper disposal.

Ensure that all waste is transported to approved landfills or recycling facilities.

Establish a system to monitor waste disposal activities and ensure compliance with all applicable regulations.

- **Land Repurposing:**

***Impacts:***

Community concerns regarding the future use of the land, including potential for industrial development or other incompatible land uses.

Potential negative impacts on property values in the surrounding area.

Potential loss of existing green space.

***Mitigation Measures:***

Conduct thorough and inclusive community consultations to gather input on land repurposing options.

Develop a land use plan that aligns with community needs, environmental considerations, and local development goals.

Give strong consideration to repurposing the land for green space, parks, or community gardens, where appropriate.

Maintain transparency throughout the land repurposing planning process.

Conduct environmental impact assessments for all proposed future land uses.

## **8.17 Conclusion**

This ESMP provides a comprehensive approach to managing the environmental and social impacts associated with the composting plant project. Through effective implementation, monitoring, and community engagement, the project can achieve its goals while safeguarding the environment and promoting social well-being.

Regular reviews of the ESMP will be conducted to ensure that the plan remains relevant and responsive to the evolving project dynamics.

## 9.0 CONCLUSION

The Accra Metropolitan Assembly (AMA), with technical assistance from the Cities Finance Facility (CFF), intends to implement a Municipal Solid Waste (MSW) Source Separation and Composting project as a strategic response to Accra's escalating waste management challenges. An ESIA was conducted to comply with Ghanaian EPA requirements and international best practices, particularly International Finance Corporation (IFC) Performance Standards (PS). This is aimed at identifying both potential environmental and socio-economic impacts across the project's lifecycle. In addition, the ESIA emphasizes the importance of mitigation measures, monitoring, and stakeholder engagement to ensure the project's environmental and social sustainability. Key impacts identified during the ESIA process include the following:

### **Environmental Impacts:**

- **Habitat Loss and Biodiversity:** Construction activities pose risks to local biodiversity, requiring mitigation measures such as habitat restoration and buffer zones.
- **Water Resources:** Increased water usage and potential pollution from construction necessitate strict erosion control, waste management, and water quality monitoring.
- **Soil Degradation:** Site preparation and heavy machinery use could lead to soil erosion that requires sediment control measures.
- **Air Quality and Noise Pollution:** Dust emissions and noise from construction necessitate dust suppression, speed limits, and limited daytime construction hours, along with regular monitoring.

### **Socio-Economic Impacts:**

- **Job Creation and Livelihood Opportunities:** The project is expected to create direct and indirect employment and enhance sanitation that needs training programmes for local residents, waste pickers, etc.
- **Land Acquisition and Resettlement:** Potential displacement necessitates a Resettlement Action Plan (RAP) with fair compensation and support for affected persons, particularly vulnerable groups (e.g., scrap dealers)
- **Community Health and Safety:** Increased traffic and construction activities pose safety risks, which need strict occupational health and safety standards, traffic management, and community health programmes, including gender-based violence prevention.
- **Impact on Vulnerable Groups:** Specific measures are needed to address the disproportionate effects on women, children, and the elderly, including targeted livelihood programmes and social protection initiatives.

## BIBLIOGRAPHY

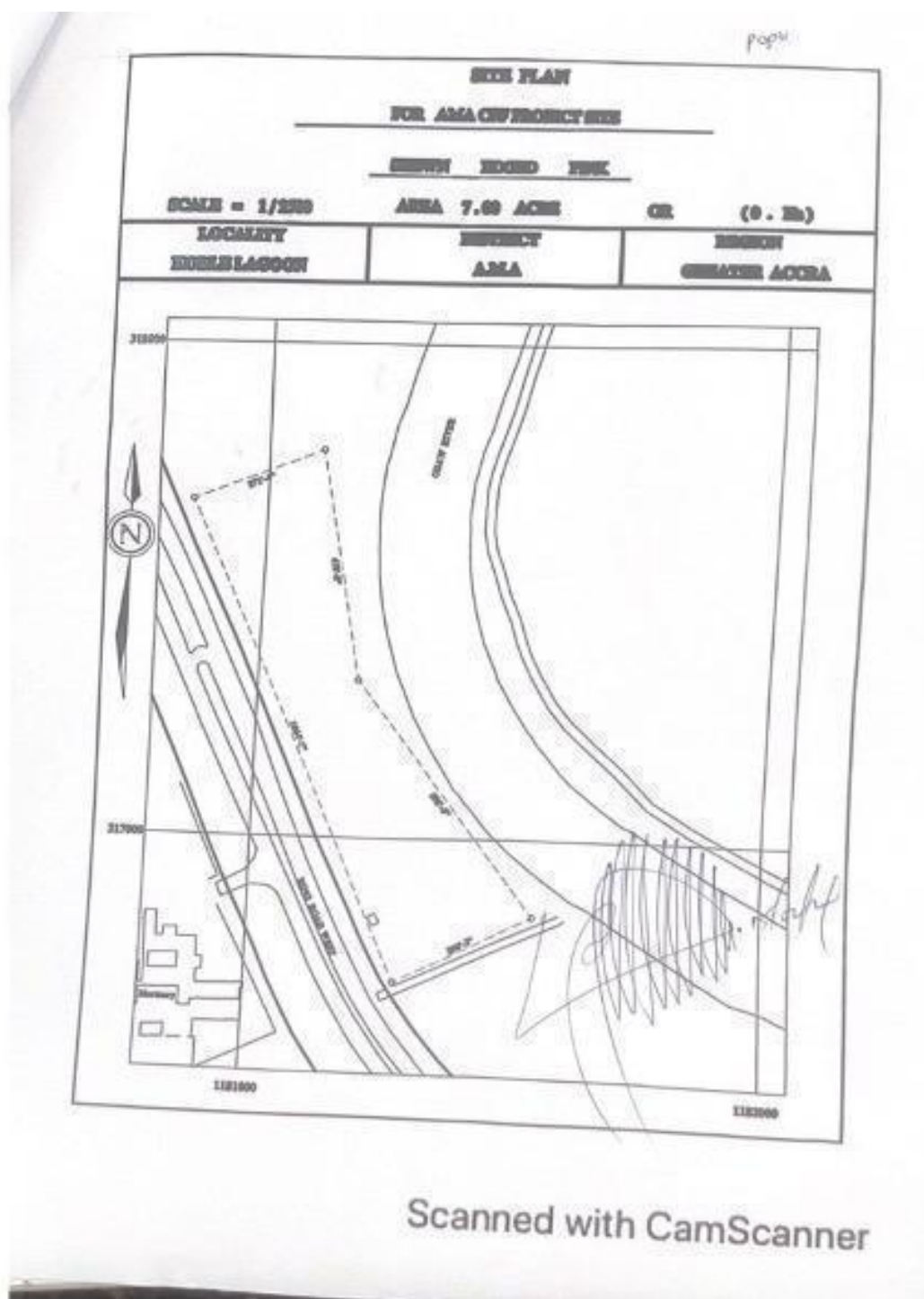
- Accra Metropolitan Assembly (2022). Medium Term Development Plan (2022-2025)
- Addae, B., & Oppelt, N. (2019). Land-use/land-cover change analysis and urban growth modelling in the Greater Accra Metropolitan Area (GAMA), Ghana. *Urban Science*, 3(1), 26.
- CFF (2023). Technical and Financial Feasibility Studies for a Municipal Solid Waste Source Separation and Compost Project in Accra, Ghana – Review, Data Collection and Interim Studies Report.
- Dwomoh, J., Ofori, S. A., Frimpong, D. K., Osei, C. N., Adongo, E., & Appiah, S. (2023). Invasive Plant Species in Ghana: Route of Spread, Socio-Economic and Environmental Impact. *Asian J. Environ. Ecol*, 20(4), 19-28.
- Ghana National Plastic Action Partnership. (2021). Gender analysis of the plastics and plastic waste sectors in Ghana: Baseline analysis report.
- Ghana Statistical Service (2021). Population and Housing Census. General Report Volume 3A. Population of Regions and Districts.
- Ghana Statistical Service. (2019). Ghana Living Standards Survey (GLSS) 7: Main report.
- Global Plastic Action Partnership, 2021. A roadmap for radical reduction of plastic pollution in Ghana, 1st Ed. Ghana: Ghana National Plastic Action Partnership.
- IFC/WBG (2007). Environmental, Health, and Safety General Guidelines <https://www.ifc.org/content/dam/ifc/doc/2000/2007-general-ehs-guidelines-en.pdf>
- Nikiema, J., Impraim, R., Cofie, O., Nartey, E., Jayathilake, N., Thiel, F. & Drechsel, P. (2020). Training Manual for faecal sludge-based compost production and application. <https://doi.org/10.5337/2020.200>
- Oduro-Appiah, K., & Afful, A. (2020). Sustainable pathway for closing solid waste data gaps: Implications for modernization strategies and resilient cities in developing countries. *Intech Open*. <https://doi.org/10.5772/intechopen.94384>
- Oduro-Appiah, K., Scheinberg, A., Miezah, K., Mensah, A., & de Vries, N. K. (2020). Existing realities and sustainable pathways for solid waste management in Ghana. In *Sustainable waste management challenges in developing countries* (pp. 115-143). IGI Global.
- Owusu Boadi, K., & Kuitunen, M. (2002). Urban waste pollution in the Korle lagoon, Accra, Ghana. *Environmentalist*, 22, 301-309
- Seureca. (2019). Baseline report: Accra plastics management project. DFID. P.O. No. 8425.

## WILDLIFE RESOURCES MANAGEMENT ACT, 2023 (ACT 1115)

- Wilson, D.C., Rodic, L., Cowing, M.J., Velis, C.A., Whiteman, A.D., Scheinberg, A., Vilches, R., Masterson, D., Stretz, J. and Oelz, B., 2015. 'Wasteaware' benchmark indicators for integrated sustainable waste management in cities. *Waste management*, 35, pp.329-342
- World Bank. (2021a). Solid Waste Improvement Plan – Final Report. Greater Accra Resilient and Integrated Development (GARID) Project.
- World Bank. (2021b). Assessment of municipal solid waste management service in low-income communities in Accra (Vol. 1). Greater Accra Resilient and Integrated Development (GARID) Project.
- World Health Organization. (2021). WHO global air quality guidelines: particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide. World Health Organization. <https://iris.who.int/handle/10665/345329>. License: CC BY-NC-SA 3.0 IGO

## APPENDICES

## Appendix 1 Proposed Project Site Plan



## Appendix 2 Project Site – Official Certificate of Result Search





P. O. Box CT 5008  
 Cantonments-Accra, Ghana  
 Tel: 0302 429760  
 Fax: 0302 761840  
 Email: info@lc.gov.gh  
 Web: www.lc.gov.gh

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**LANDS COMMISSION**

14th February, 2024

**OFFICIAL CERTIFICATE OF RESULT OF SEARCH**

Job Number: LCGACS35352762024

**To: AMA PROJECT SITE, ,P. O.BOX GPO 627 ACCRA**

Pursuant to your application dated 5th day of February, 2024 made by AMA PROJECT SITE, ,P. O.BOX GPO 627 ACCRA , a search has been made against the land delineated on the plan(s) attached with the following result(s):

**(Whole Site)**

**PVLMD**  
 State Land acquired under Certificate of Title dated 22/05/1981.  
 For: Korle Lagoon Development

**SMD**  
 Does not affect any plotted activity in our records.

**LRD**  
 Does not affect any Land Certificate in our records.

.....

The Seal of this Registry was affixed to this Certificate at the hour of 05:46:34 PM on the 14th day of February, 2024



.....

**SAMUEL BOATENG NKETIAH**  
 ASSISTANT LAND ADMINISTRATION OFFICER  
 FOR: REGIONAL LANDS OFFICER  
 LANDS COMMISSION

LCGACS35352762024 (Korle Lagoon)

Job Number: LCGACS35352762024

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### Appendix 3 List of Meetings with National and Local Government & Institutional Stakeholders

(RAP is being prepared and will provide details of the PAPs)

| Date                                                          | Stakeholder                                                                                               | Venue                                 | Participant(s)                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>National/Regional Agencies</b>                             |                                                                                                           |                                       |                                                                                                                                                                                                                                                                                                                                                                      |
| 25/11/24                                                      | Accra Metropolitan Assembly                                                                               | Accra Metropolitan Assembly, Accra    | •Victor Kotey (AMA focal officer for the project)                                                                                                                                                                                                                                                                                                                    |
|                                                               | GIZ – Project Team                                                                                        |                                       | •Abraham Afful (Senior Project Advisor)                                                                                                                                                                                                                                                                                                                              |
| 13/01/25                                                      | Environmental Protection Authority                                                                        | EPA Head Office, Accra                | •Andriana N.K. Nelson (Ag. Director, Environmental Assessment and Audit Department)<br>•Godson Cudjoe Voado (Director, Human Resettlement)                                                                                                                                                                                                                           |
| 14/01/25                                                      | Department of Community Development (Ministry of Local Government Decentralisation and Rural Development) | Head Office - Accra                   | •Samuel Blebu (Deputy Director)<br>•Kwasi Yeboah (Assistant Director)<br>•Philomina Mensah (C.T.I)<br>•Mavis Obodai (Assistant Director)<br>•Amooba Emmanuel (Principal)                                                                                                                                                                                             |
|                                                               | Forestry Commission (FSD, Wildlife Division)                                                              | Head Office, Accra                    | •Ernestina Annie (Public Relation Manager - WD)<br>•Grace Barnes (District Manager - FSD)                                                                                                                                                                                                                                                                            |
| 15/01/25                                                      | Council for Scientific and Industrial Research (CSIR) – Water Research Institute (WRI)                    | CSIR - WRI, Accra                     | •Saada Mohammed (Research Scientist)<br>•Martha Agyemang (Assistant Research Scientist)<br>•Michael Kumi (Senior Research Scientist)<br>•Jude Offei Quansah (Assistant Research Scientist)<br>•Patricia Graham (Assistant Research Scientist)<br>•Franklin Obiri-Nyarko (Research Scientist)<br>•Emmanuel Adu-Ofori (Assistant Research Scientist)                   |
| 16/01/25                                                      | Fisheries Commission                                                                                      | Head Office - Accra                   | •Esi B. Quayson (Director)<br>•Dr Charles Teye (Deputy Director)<br>•Eunice Ofoli-Anum (Deputy Director)<br>•Rosina Williams (Deputy Director)<br>•Hayford Agbekpornu (Head M&E)<br>•Abena Asante (Deputy Director)<br>•Samuel Onkwona (Assistant Manager)<br>•Jennifer E. Viglo (Deputy Director)<br>•Emmanuel Amevor (Officer)<br>•Alexander Adu (Deputy Director) |
| 24/02/25                                                      | Ghana National Fire Service (GNFS) - Korle Bu Divisional Office                                           | Korle Divisional Office, Korle Bu     | •Evans Osei Owusu (Deputy Regional Commander)                                                                                                                                                                                                                                                                                                                        |
| <b>Private Sector Associations &amp; Companies/Industries</b> |                                                                                                           |                                       |                                                                                                                                                                                                                                                                                                                                                                      |
| 13/01/25                                                      | Zoomlion - IRECOP                                                                                         | AMA - Oko Vanderpuije Conference Room | •Hardy Edem Agbevey (Head of Quality Control - IRECOP)                                                                                                                                                                                                                                                                                                               |
|                                                               | Jekora Ventures                                                                                           |                                       | •Emmanuel Chainortey (Innovations Manager - Jekora Ventures)                                                                                                                                                                                                                                                                                                         |
| 26/02/25                                                      | Environmental Service Providers Association (ESPA)                                                        | Head Office - Accra                   | •Eric Aryeetey (Project Assistant/Field Officer)                                                                                                                                                                                                                                                                                                                     |
| 26/02/25                                                      | Accra Compost and Recycling Plant (ACARP)                                                                 | ACARP Office - Nsawam                 | •Malik K. Ganyo (Operations Manager)<br>•Matilda Owusu (Senior Researcher)                                                                                                                                                                                                                                                                                           |

|                   |                                         |                                                          |                                                                                                                                                                                                                                                                                                                             |
|-------------------|-----------------------------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 21/03/25          | Triple C Company                        | Triple C Office, Mudor                                   | •Nii Sowah-Mensah (Administration)<br>•Stella Tsetse (Secretary)                                                                                                                                                                                                                                                            |
| 21/03/25          | Bukom Boxing Arena                      | Bukom Boxing Arena, Bukom                                | •Edward Buxton (Facilities & Operations Manager)<br>•Rena Enkson (HR & Admin Sup.)<br>•Thomas Budu (HR & Admin Manager)                                                                                                                                                                                                     |
| 06/05/25          | Waste Pickers Association               | Phone call                                               | •Mr. Divine (Chairman)<br>•Mr. Karim (Organiser WIEDO)                                                                                                                                                                                                                                                                      |
| Local Authorities |                                         |                                                          |                                                                                                                                                                                                                                                                                                                             |
| 15/01/25          | Sempe Korle-Bu Mantse                   | Sempe Korle-Bu Palace                                    | •Ni Adotey Kan Fra (Mantse/Chief)<br>•Nii Laryea Korle Bu (Akwashongtse I)<br>•Nii Armah Quaye (Secretary)<br>•Nii Gonwulu (Akwashongtse)<br>•Nii Sanoi Sentse (Stool Father)<br>•Ransford Quaye (Assembly Member - Korle Gonno)<br>•Richard Taigo (Assembly Member - Korle Bu)<br>•Musah Zayad (Assembly Member - Amamomo) |
| 17/01/25          | Gbese Mantse (Paramount Chief of Gbese) | The Gbese Palace                                         | •Numo Ayitey Cobblah III                                                                                                                                                                                                                                                                                                    |
| 17/01/25          | Korle Wulormor                          | The Wulormor Palace                                      | •Nii Ayibontey II                                                                                                                                                                                                                                                                                                           |
| Communities       |                                         |                                                          |                                                                                                                                                                                                                                                                                                                             |
| 18/01/25          | Amamomo/Jamestown                       | Ghana Muslim Mission, National Headquarters, Korle Gonno | Residents, youth and women’s groups, Persons with Disability, urban farming groups, market traders, food vendors, scrap dealers                                                                                                                                                                                             |
|                   | Korle Gonno                             |                                                          |                                                                                                                                                                                                                                                                                                                             |
|                   | Korle Budor                             |                                                          |                                                                                                                                                                                                                                                                                                                             |
|                   | Holy Fadama                             |                                                          |                                                                                                                                                                                                                                                                                                                             |
|                   | Agbogbloshie                            |                                                          |                                                                                                                                                                                                                                                                                                                             |
|                   | Mamprobi                                |                                                          |                                                                                                                                                                                                                                                                                                                             |
|                   | Bukom                                   |                                                          |                                                                                                                                                                                                                                                                                                                             |
| 21/03/25          | Mudor                                   | Church of Christ (Spiritual Movement), Mudor             |                                                                                                                                                                                                                                                                                                                             |
|                   | Korle Wokon                             |                                                          |                                                                                                                                                                                                                                                                                                                             |
|                   | Adadienkpo                              |                                                          |                                                                                                                                                                                                                                                                                                                             |

#### Appendix 4 List of Meetings with Representatives of Communities and Religious Organisations in the Project Area

(RAP is being prepared will provide details of the PAPs)

| Date     | Activity                                                                                                                                                                                                                                                    | Location/Venue                                                              | Participants                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18/01/25 | Consultation with community members: Participants include residents, youth and women groups, PWDs, urban farming groups, etc. (Participating communities include: Amamomo/Jamestown, Korle Gonno, Korle Budor, Holy Fadama, Agbogloboshie, Mamprobi, Bukom) | Ghana Muslim Mission, National Headquarters, Korle Gonno                    | <ul style="list-style-type: none"> <li>•Ni Adotey Kan Fra (Mantse/Chief)</li> <li>•Nii Laryea Korle Bu (Akwashongtse I)</li> <li>•Nii Armah Quaye (Secretary)</li> <li>•Nii Gonwulu (Akwashongtse)</li> <li>•Nii Sanoi Sentse (Stool Father)</li> <li>•Ransford Quaye (Assembly Member - Korle Gonno)</li> <li>•Richard Taigo (Assembly Member - Korle Bu)</li> <li>Musah Zayad (Assembly Member - Amamomo)</li> </ul> |
| 18/01/25 | Focus Group Discussion with women, market traders, and food vendors                                                                                                                                                                                         | Ghana Muslim Mission, National Headquarters, Korle Gonno                    | <ul style="list-style-type: none"> <li>•Edward Buxton (Facilities &amp; Operations Manager)</li> <li>•Rena Enkson (HR &amp; Admin Sup.)</li> <li>Thomas Budu (HR &amp; Admin Manager)</li> </ul>                                                                                                                                                                                                                       |
| 18/01/25 | Focus Group Discussion with informal service providers (Mortuary Road Scrap Dealers)                                                                                                                                                                        | Ghana Muslim Mission, National Headquarters, Korle Gonno                    | <ul style="list-style-type: none"> <li>•Edward Buxton (Facilities &amp; Operations Manager)</li> <li>•Rena Enkson (HR &amp; Admin Sup.)</li> <li>Thomas Budu (HR &amp; Admin Manager)</li> </ul>                                                                                                                                                                                                                       |
| 21/03/25 | Community Forum (Mudor Electoral Area): Communities include Mudor, Korle Wokon <ul style="list-style-type: none"> <li>• Adadienkpo</li> </ul>                                                                                                               | Church of Christ (Spiritual Movement), Mudor                                | <ul style="list-style-type: none"> <li>•Mr. Divine (Chairman)</li> <li>Mr. Karim (Organiser WIEDO)</li> </ul>                                                                                                                                                                                                                                                                                                          |
| 22/03/25 | Community Forum (Amamomo Electoral Area): Communities include <ul style="list-style-type: none"> <li>• Amamomo</li> <li>• Agbogloboshie</li> <li>• Old Fadama</li> <li>• Timber Market</li> </ul>                                                           | Charles Quartey Boxing Foundation, Amamomo                                  |                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 23/03/25 | Community Forum: Communities include <ul style="list-style-type: none"> <li>• Jamestown</li> </ul>                                                                                                                                                          | Nii Lante Bannerman Community Centre, Jamestown Police Station Headquarters |                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 21/3/25  | <ul style="list-style-type: none"> <li>• International Central Gospel Church &amp; School (ICGC)</li> </ul>                                                                                                                                                 | ICGC, Christ Temple, Abossey Okai                                           | <ul style="list-style-type: none"> <li>•Nii Sowah-Mensah (Administration)</li> <li>Stella Tsetse (Secretary)</li> </ul>                                                                                                                                                                                                                                                                                                |
| 21/03/25 | <ul style="list-style-type: none"> <li>• Abossey Okai Central Mosque</li> </ul>                                                                                                                                                                             | Abossey Okai Central Mosque, Abossey Okai                                   |                                                                                                                                                                                                                                                                                                                                                                                                                        |

## Appendix 5 Environmental Permit



**ENVIRONMENTAL PROTECTION AUTHORITY**

*Environmental Permit*

EPA/EAA/EIS/CH2614/25/01

ENVIRONMENTAL PROTECTION ACT, 2025 (ACT 1124)  
**ENVIRONMENTAL ASSESSMENT REGULATIONS, 1999 (LI 1652)**

*This is to Certify that*

Authorisation has been given to

**ACCRA METROPOLITAN ASSEMBLY**

To commence the proposed construction and operation of a composting facility located at Jamestown in the Accra Metropolis of the Greater Accra Region

**From 7<sup>th</sup> July 2025 to 6<sup>th</sup> January 2027**



Prof. Nana Ama Browne Klutse  
Ag. Chief Executive Officer

**7<sup>th</sup> July 2025**  
Date Issued

NB: This Permit is only valid with the seal of the Environmental Protection Authority and the schedule to the permit

  
**0042075**

*Pollution Prevention Pays*

## **Appendix 6 Environmental and Social Clauses for Construction Contractor**

### ***1. Purpose***

These Environmental and Social (E&S) Clauses define the minimum environmental, social, labour, health and safety requirements that the Construction Contractor shall comply with during the construction of the compost plant. These requirements are derived from the provisional Environmental and Social Management Plan (ESMP) prepared for the project and are intended to ensure that construction activities are carried out in compliance with national environmental regulations and good international environmental and social practices.

The Contractor shall comply with all applicable environmental laws and regulations in Ghana and shall implement all relevant mitigation measures specified in the ESMP.

### ***2. Environmental and Social Management Plan Compliance***

The Contractor shall implement all mitigation and management measures assigned to the Contractor in the ESMP. The Contractor shall ensure that construction activities are conducted in a manner that prevents environmental pollution, minimises social disruption, and protects worker health and safety.

Before commencement of works, the Contractor shall review the ESMP and prepare a Construction Environmental and Social Management Plan (C-ESMP) describing how the ESMP requirements will be implemented.

### ***3. Waste Management***

The Contractor shall ensure that all construction-related waste is managed responsibly.

Construction waste such as scrap materials, packaging, and surplus materials shall be collected, stored in designated areas, and disposed of through approved waste management arrangements. Waste shall not be burned or dumped on-site or in surrounding areas.

Sanitary facilities shall be provided for construction workers, and wastewater generated from worker facilities shall be managed in a hygienic and environmentally acceptable manner.

### ***4. Protection of Soil and Water Resources***

Construction activities shall be carried out in a manner that minimises soil erosion, sedimentation, and contamination of water resources.

The Contractor shall implement erosion control measures where necessary, including temporary drainage channels and sediment barriers. Construction materials such as fuels, oils, and chemicals shall be stored in designated areas to prevent accidental spills or leaks.

Any spills of fuel, oil, or chemicals shall be immediately contained and cleaned up using appropriate methods.

**5. Resource Efficiency**

The Contractor shall take reasonable measures to ensure efficient use of water, fuel, and construction materials.

Construction materials shall be properly stored to prevent damage or loss. Equipment and vehicles shall be maintained in good condition to reduce unnecessary fuel consumption. Water used during construction activities shall be used efficiently and leaks in temporary supply systems shall be promptly repaired.

**6. Traffic and Transport Management**

The Contractor shall ensure that construction traffic does not create unnecessary risks for workers, nearby residents, or road users.

Vehicle movements shall be organised to minimise congestion and disruption. Drivers shall follow safe driving practices and comply with traffic regulations. Construction vehicles shall be maintained in safe operating condition.

Where necessary, appropriate warning signs shall be placed around construction areas.

**7. Climate and Weather Considerations**

The Contractor shall plan construction activities in consideration of seasonal weather conditions, particularly heavy rainfall events.

Temporary drainage systems shall be provided where necessary to prevent water accumulation in work areas and to reduce erosion and sediment runoff from exposed surfaces.

**8. Labour and Working Conditions**

The Contractor shall ensure that all workers are employed in accordance with national labour laws.

Workers shall receive written contracts or clear terms of employment, including information on wages, working hours, and working conditions. Child labour and forced labour shall not be permitted.

Workers shall be paid fairly and on time.

**9. Worker Grievance Mechanism**

The Contractor shall establish a worker grievance mechanism that allows workers to raise concerns or complaints related to their employment conditions. The mechanism shall be accessible to all workers and grievances shall be addressed in a timely and transparent manner.

**10. Occupational Health and Safety**

The Contractor shall provide a safe working environment for all workers.

Appropriate personal protective equipment (PPE) shall be provided to workers where necessary. Workers shall receive safety training relevant to their tasks. Adequate drinking water, sanitation facilities, and shaded rest areas shall be provided.

Any accidents or injuries occurring on site shall be recorded and reported.

#### ***11. Environmental and Social Monitoring***

The Contractor shall cooperate with the Project Proponent and supervising consultants in monitoring environmental and social performance.

The Contractor shall maintain records related to waste management, worker safety, labour conditions, and implementation of ESMP measures.

#### ***12. Non-Compliance***

Failure by the Contractor to comply with these Environmental and Social Clauses may result in corrective actions, suspension of works, or other contractual remedies as determined by the Project Proponent.

## **Appendix 7 Environmental and Social Clauses for Operation/Plant Contractor**

### ***1. Purpose***

These Environmental and Social (E&S) Clauses define the minimum environmental and social requirements for the operation of the compost plant. The purpose of these clauses is to ensure that plant operations are conducted in a manner that protects the environment, promotes safe working conditions, and supports sustainable waste management practices.

The Plant Operator shall implement all relevant mitigation and management measures specified in the Environmental and Social Management Plan (ESMP).

### ***2. Environmental Management***

The Plant Operator shall operate the compost facility in a manner that prevents environmental pollution and minimises nuisance impacts.

Operational areas shall be maintained in good condition, and waste handling operations shall be organised to minimise odour generation, littering, and pest infestation.

Incoming organic waste shall be inspected to ensure it meets the facility's waste acceptance criteria.

### ***3. Waste and Feedstock Management***

The Plant Operator shall ensure that organic waste received at the facility is properly managed.

Incoming waste shall be screened to remove non-compostable materials where necessary. Contaminated waste loads may be rejected in accordance with established waste acceptance procedures.

Rejected waste shall be transferred to approved waste disposal facilities.

### ***4. Management of Leachate and Stormwater***

The Plant Operator shall ensure that leachate and stormwater generated at the facility are properly managed.

Drainage systems and leachate collection infrastructure shall be maintained in good working condition. Leachate shall be contained and treated or disposed of according to approved procedures.

Regular inspections of drainage infrastructure shall be conducted, particularly during the rainy season.

### ***5. Resource Efficiency***

The Plant Operator shall promote efficient use of energy and water within the facility.

Operational equipment shall be maintained regularly to ensure efficient energy use. Water used in composting and cleaning activities shall be used responsibly and leaks in water supply systems shall be repaired promptly.

The composting process shall be monitored to ensure optimal moisture levels and efficient decomposition.

#### ***6. Worker Health and Safety***

The Plant Operator shall ensure safe working conditions for all facility workers.

Workers involved in waste handling and composting operations shall receive appropriate personal protective equipment, including gloves, boots, masks, and protective clothing where necessary.

Safety training shall be provided to all workers and workplace hazards shall be clearly communicated.

#### ***7. Labour Rights and Working Conditions***

All workers employed at the facility shall be engaged in accordance with national labour laws.

Workers shall receive fair wages, reasonable working hours, and written employment conditions. Discrimination in recruitment or employment practices shall not be permitted.

#### ***8. Worker Grievance Mechanism***

The Plant Operator shall maintain a grievance mechanism that allows workers to report workplace concerns.

Workers shall be informed of the grievance mechanism and complaints shall be recorded and addressed promptly.

#### ***9. Environmental Monitoring and Record Keeping***

The Plant Operator shall maintain records related to waste acceptance, compost production, resource use, and environmental management measures.

Operational records shall be made available for inspection by relevant regulatory authorities and project supervisors.

#### ***10. Continuous Improvement***

The Plant Operator shall periodically review operational practices and implement improvements where necessary to enhance environmental performance and worker safety.

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## Registered offices

### **Bonn and Eschborn,**

Germany  
Potsdamer Platz 10  
10785 Berlin

### **London,**

Great Britain  
3 Queen Victoria Street  
EC4N 4TQ, London

**contact@c40cff.org**  
**c40cff.org**