Submitted To:

Greater Cairo Air Pollution Management and Climate Change Project

Environmental & Social Management Plan for Al-Khanka Transfer Station

Presented By:

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Executive Summary

INTRODUCTION

This report provides the Environmental and Social Management Plan (ESMP) for the establishment of the domestic waste transfer station (TS) in Al-Khanka district, Qalyubia governorate, under the Greater Cairo Air Pollution Management and Climate Change Project implemented by the Ministry of Environment and financed by the World Bank.

The primary purpose of the ESMP is to identify, evaluate, and effectively manage potential environmental and social impacts, minimal as they may be, arising from the construction and operation of the specified Transfer Stations in Al-Khanka.

PROJECT DESCRIPTION

Location

The Khanka Transfer station is located in Arab El Olykat, situated among the villages of Al-Khanka Markaz within the Qalyubia Governorate of the Arab Republic of Egypt. Positioned along the Cairo-Ismailia agricultural road, it is approximately 18 kilometers away from Cairo. The total area of the entire site is approximately 18,000 square meters. In line with the surroundings, the site is situated approximately 1 km away from the Abu Zaabal dumpsite. It is on average 8 km from the service collection areas it serves, and about 500 m from the nearest residential area.

Site Selection

The Khanka site was selected as the ideal location for a municipal solid waste transfer station after a thorough evaluation of five options based on legal, environmental, and technical criteria. Key factors included compliance with Egyptian Environmental Law 4/1994 and Solid Waste Law 202/2020, safe distance from sensitive areas, and suitability for future waste capacity. Located within an industrial zone, Khanka is distant from residential areas, minimizing community impact. Its primary purpose is waste transfer rather than treatment due to spatial limitations and regulatory distance requirements in densely populated areas like Arab El Olayqat. Establishing this transfer station supports the GCCC project's waste management strategy by enabling efficient waste consolidation, reducing long-haul transport, and aligning with regional waste management goals. Since the land is state-owned, no displacement or land acquisition is required, allowing for smooth project implementation. Local community consultations confirmed support, and feedback has been incorporated into the impact assessment and mitigation measures with environmental and social recommendations integrated into the project design.

Main Construction Activities

Works components	Details of works
Works	**Preparatory works including surveys:** Geotechnical investigation surveys, existing utilities surveys, climatic, meteorological and wind-related surveys, seismic survey, and other necessary site investigations. **Temporary site facilities infrastructure:** The temporary facilities that are needed for the construction phase, such as warehouses, etc. will be constructed. These facilities will be dismantled after the construction phase ends. **Foundations and civil works:** After site excavation, the foundations are constructed for the buildings, structures, etc. During this stage, the following shall be conducted: • Mechanical and concrete structures will be constructed. • The facility access roads are paved, circulation networks, including sidewalks, as well as Parking lots for vehicles of administration staff and visitors etc., open spaces for storage of received bulky wastes and used tires. • The weighbridge and its control room shall be installed, • Connection to power supply shall be provided • Transformer station, switchgear rooms as required • The transfer station facilities with spare parts (for two years operation after the Defects liability period) and safety equipment
Buildings and Building services	• Administration building • A light metallic structure, roof-covered, transfer station facility. • Guard room • Basic maintenance area • Water, electrical and telephone supply systems and connections • Electrical plant buildings as needed to enclose transformers and other items of the electrical plant.
Ancillaries	• Process and service pipeline systems, • Connect to the existing potable water supply system • Fire detection and alarm system, and fire-fighting systems including fire extinguishers, hydrants and other amenities as detailed in later sections • Wastewater network and septic tanks as sewage shall be collected in holding tanks and transported through designated road tankers • Stormwater drainage network including oil and grease separator • Irrigation network • Instrumentation and control equipment as needed and applicable • Site Development works (peripheral Fencing, entrance Gates, and Landscaping) • Site lighting, Earth Grounding, Lightning protection systems, etc.

Labour

Throughout the construction phase of the TS, an estimated workforce of around 45 to 50 employees will be required, primarily consisting of civil engineers, vehicle operators, and machinery operators. This number is tentative and will be confirmed once the construction contractor is awarded the contract. The labour force will operate in shifts, each lasting 8 hours. Upon transitioning to the operational phase, the TS is anticipated to necessitate approximately 15 employees, including 10 drivers, hired through direct and indirect jobs. The operational workforce will be organized into two shifts, each spanning 8 hours.

A total number of 2-4 security guards will be recruited at the site during the construction phase. They will be unarmed and they will receive all required trainings including training on Code of Conduct in order to properly enable them to communicate with the workers and surrounding communities.

Duration

The anticipated duration of construction activities is 6 months while the estimate facility lifespan is 25 years.

Operation and Maintenance Activities

TS operations involve a systematic process for managing waste efficiently. Waste collection vehicles gather waste, primarily from residential areas, and upon arrival at the transfer station, the waste is documented and weighed for precise measurement. Compactors may compress the waste for efficient transportation, and temporary storage facilities at the transfer station facilitate proper waste flow management. Subsequently, designated trucks transport the waste from the transfer station, to the final treatment facility at the Integrated Waste Management Facility (IWMF) at 10th of Ramadan is ready to receive the wastes. Prior to operation of the IWMF, the waste will be disposed at the Abu Zaabal dumpsite during a 2-year interim period. Routine equipment maintenance, including inspections, repairs, and replacements, is essential to sustain effective waste handling processes throughout the operation of the transfer station.

Institutional and Legal Framework

The subproject will adhere to Egyptian legislations, WB Environmental and Social Standards and WBG EHSG guidelines related to waste sector [1].

National Egyptian Legislations

- Law number 4/1994 and its amendments by law 9/2009 concerning the environmental protection.
- Decrees number 1095/2011, 710/2012, 964/2015, 544/2016, 75/2017, 618/2017 and 1963/2017 for the amendment of the executive regulations of the environmental Law number 4/1994.
- Law number 38 /1967 concerning the general cleanliness and its executive regulations.
- Solid Waste Management Law No. 202 /2020 and Executive Regulations issued by a ministerial decree No. 722 of year 2022.
- Law No. 48/1982 concerning pollution protection of the River Nile and the water channels and its executive regulation.
- Law 93/1962 regulating the discharge of liquid waste to the public sewage network. The executive regulations of this law as amended by Minister of Housing decree 44/2000.
- Traffic law 66/1973 amended by law 121/2008 and updated in 2018
- Decrees 211, 134, and 126 of Law 12/2003 on labour and workforce safety
- Law 94/2003 on establishing the National Council for Human Rights (NCHR)

[1] The World Bank Group's Environmental, Health, and Safety Guidelines (EHSG) for the waste management sector provide comprehensive guidance on managing municipal solid waste and industrial waste. These guidelines emphasize safe and efficient waste collection and transport, proper handling, sorting, and storage to minimize environmental and health risks, and standards for landfill design, operation, and closure to prevent harm. They also cover treatment methods, including physico-chemical and biological processes like incineration, to reduce waste volume and toxicity. Additionally, the guidelines include specific recommendations for managing medical waste, municipal sewage, and waste from cement kilns, aiming to promote best practices and ensure that waste management activities protect both human health and the environment.

World Bank Environmental and Social Standards

The following table explains the applicability of the World Bank ESS to the subproject.

Environmental & Social Standard (ESS)	Title of the ESS	Applicability to the Sub-Project (Y/N)	Justification
ESS 1	Assessment and Management of Environmental and Social Risks and Impacts	Yes	ESS1 is relevant to this sub-project due to the environmental and social risks and impacts associated with the activities.
ESS 2	Labor and Working Conditions	Yes	ESS2 is relevant to this sub-project due to the need for workers and health and safety impacts associated with the nature of project activities.
ESS 3	Resource Efficiency and Pollution Prevention and Management	Yes	ESS3 is relevant to this sub-project due to activities involving consumption of resources and generation of pollution.
ESS 4	Community health, safety and security	Yes	ESS4 is relevant to the sub-project due to possible risks and impacts on the community health and safety from sub-project activities.
ESS 5	Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	No	ESS5 is not relevant to this sub-project as there is no need for land acquisition.
ESS 6	Biodiversity Conservation and Sustainable Management of Living Natural Resources	No	No natural habitat or natural protectorate property issues have been identified during site visits or desk studies, hence the risk of Sub-Project activities affecting natural habitats or natural protectorate property is considered minimal.
ESS 7	Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	No	No indigenous people are identified in connection the sub project's boundaries.
ESS 8	Cultural Heritage	No	ESS8 is not typically relevant to the sub-project given the absence of any archaeological sites in the project area. However, a Chance Finds Procedure has been developed in case of accidently finding any valuable archeological objects.
ESS 9	Financial Intermediaries	No	Not Applicable
ESS 10	Stakeholder Engagement and Information Disclosure	Yes	ESS10 is relevant to the sub-project due to the involvement of various stakeholders and complex implications of the project.

The World Bank Group's Environmental, Health, and Safety Guidelines (EHSG) for the waste management sector offer detailed guidance on managing both municipal solid waste and industrial waste. These guidelines focus on ensuring safe and efficient waste collection and transport, proper handling,

sorting, and storage to minimize environmental and health risks. They also set standards for landfill design, operation, and closure to prevent environmental harm.

Environmental and Socioeconomic Baseline

Project Area Surroundings

Given the location of the project which is affiliated to El Khanka city within the jurisdiction of El Khanka District- Qaluybia governorate, the consultant focused on El Khanka markaz. Additionally, the identified project site surroundings considered in the assessment are as follows:

- Adjacent to the land is an old municipal waste treatment facility that is currently out of service.
- 250 east of the site is a community club.
- To the southeast: Transport and Communications Training Camp - 570 meters away from project site.
- To the south: Arab El Olaykat Al-Qaluybia Housing Project- 1.7 km.
- To the southwest direction: Abu Zaabal Dumpsite 1 km and Armed Forces Authority Residences- 1.26 km.
- To the north: Nazlet Arab Juhayna, approximately 150m to 1.2 km away from the site
- To the northwest: There is a training camp for the armed forces 100 meters from the location of the Transfer station
- Port Said Road is located 50 meters from the Transfer station location
- There is also a group of foundries and factories surrounding the project site.
- There is a school complex about 500 m to the south east.

Environmental Baseline

Climate: Qalyubiya Governorate is characterized to have a subtropical desert climate. The majority of rain fall occurs during the months of, January, February, and March. Highest temperatures are recorded in July and August reaching 38 ºC.

Air Quality and Noise: Air quality and noise measurements were carried out in the project area showed compliance with the National guidelines as well as the permissible limits of the IFC General Guidelines.

Geology and Seismology: The subproject lies in the low-impact seismic zone.

Groundwater: The groundwater levels in Khanka site are shallow, 0.6 to 2.0 m.

Hydrographic context: The nearest surface water to Khanka Transfer Stations are open manmade ponds near Abu Zaabal Dumpsite. Isamelia canal is East from the TS. Surface water is more than 1 Km away so it will not be affected by construction activities.

Biological Environment: The project area consists of residential and industrial fields that are intersected or adjacent to irrigation and drain ditches. The fauna in the area primarily includes birds, domestic animals, and agricultural pests such as insects, worms, and rodents.

Biodiversity: No protected areas or endangered species (there is no critical or high biodiversity values that might be affected) in the vicinity of the subproject.

Socioeconomic Baseline

Administration Divisions:

Qalyubia Governorate includes 7 districts, 10 cities, 2 sub-districts, 50 rural neighborhoods, and 147 satellite villages. Focusing on Khanka city and Arab El Olaykat village, where The Khanka Transfer Station is located in. The borders of El Khanka city are Kafr Hamza Road (west), Ismailia Canal (east), Mashtoul Al Souq district (north), and Abu Zaabal village (south).

According to the Khanka City Council Information Center (2024), the total population of Al Khanka city stands at 89,707, with males comprising 50.9% (45,744) of the population. The city has 17,707 households, with an average family size of 5 members. The birth rate is approximately 1.028 per 1,000 people, and the natural increase rate is 2.014 per 1,000. The death rate is about 1.005 per 1,000 people.

When compared to the broader governorate data from 2021, provided by the Information and Decision Support Center, the birth rate in the governorate is significantly higher at 29.2 live births per 1,000 persons, while the death rate is 5.30 per 1,000 persons. This results in a natural increase rate of 23.90 per 1,000 persons. The average household size in the governorate is slightly lower at 4.06 persons.

Gender Relations and Women's Status: The conservative village sees women involved in education and various sectors, though industrial jobs are less accessible. Women face harassment and high divorce rates due to financial strains. Vulnerable groups include female-headed households and daily wage workers. Key needs identified are transportation, job opportunities, and financial support.

Health services: They are limited and distant, with no central hospital available. The nearest facility is a health unit located 2 kilometers away, which offers only basic services. Access to healthcare is particularly challenging for women and individuals with special needs, further complicating their ability to receive adequate care.

Vulnerable Groups: Identified vulnerable groups include; elderly and pensioners, women and children affected by environmental conditions, daily wage workers, people with chronic diseases, youth with limited access to services.

Water Services: The village has a general water grid, but water quality is poor.

Energy Services: The village is fully connected to the governmental power grid, facing issues like high bills and power outages.

Sanitation Services: Seventy-five percent of the area is connected to the sewage network, while the remaining 25% relies on trenches. This lack of comprehensive sewage infrastructure has led to health issues in the community.

Waste Management: The closest dumpsite is Abu Zaabal dumpsite. Waste collection is done by the city council and private contractors. Existing challenges are waste accumulation, sudden fires, and odors.

Traffic and Transportation Infrastructure: The main roads are Khanka-Al-Marj and Khanka- Al-Salam. Roads are narrow, unpaved, with inadequate transportation services affecting safety and movement.

Cultural Heritage: There are minimal culturally significant sites in Khanka, primarily gravesites and mosques, with no significant sites within the project area.

Environmental and Social Impacts

Positive Impacts of the Subproject

- Efficient waste handling
- Improved logistics
- Enhanced waste segregation and recycling
- Odor and pollution control.
- Job creation and economic opportunities
- Reduction in illegal dumping and littering
- Flexibility and adaptability

Cumulative Impacts of the Subproject

- It should be noted that prior to the operation of the 10th of Ramadan Waste facility, waste collected at the transfer station will be sent to the Abu Zaabal dumpsite for an interim period of 2- years. The cumulative impacts associated with the operation of the Khanka transfer station in tandem with the Abu Zaabal dumpsite during the two-year interim period will contribute to impacts associated with waste management at the dumpsite such as odor, air contamination, contamination associated with leachate, road traffic etc. However, during the simultaneous operation of Khanka TS and Abu Zaabal dumpsite, the total amount of waste collected from the community and processed will remain the same.

  An in-depth analysis of impacts of due to the closure of Abu Zaabal Dumpsite will be presented in the stand-alone **ESIA**, it is worth mentioning that the following measures will minimize the cumulative effects of both facilities to ensure that community concerns, of having two waste facilities operating simultaneously are addressed:

  i. With phased closure already planned for sections of Abu Zaabal dumpsite, closest to residential areas, cumulative impacts on community health and safety will be somewhat mitigated. By the time Khanka TS is in operation, phased closure will ensure that waste is directed to the sections of Abu Zaabal further from communities, which will reduce odor and airborne contaminants in residential zones.
  ii. Khanka transfer station is located 3 km from the nearest community and out of prevailing wind paths, limiting its direct impact on local populations, thus mitigating cumulative community exposure.
  iii. Environmental and social impacts resulting from the Khanka TS are expected to be limited given that waste does not exceed the 24-hour holding period at the TS, which limits decomposition and odor.
  iv. Regular monitoring of air, water, and soil quality, alongside adherence to the ESMP at both facilities, will play a critical role in managing cumulative impacts. This includes daily inspections at Khanka to ensure waste does not exceed the 24-hour holding period
  v. Close monitoring and follow up on the implementation of the mitigation measures during the interim period needs to be strictly followed.

- As mentioned in section 4.1, the transfer station is located in an industrial area surrounded by factories and foundries, and as elaborated in 4.4.5 the community surrounding the proposed TS site are relatively disadvantaged and with the existing industrial activities in the area that already contribute to imposing poor health conditions. The construction and operation of the transfer station will contribute to combined environmental effects in the area such as air and noise pollution, soil contamination and traffic. In addition, the well-being of workers in the area will be affected. The construction of the TS will contribute temporarily to the combined effects. The construction activities will require movement of heavy trucks and machinery in the area, whereas during the operation phase there will be an increased volume of trucks (reference to section 2.4.3) transporting waste to and from the TS. This will result in increased traffic in combination with the

existing traffic in the area including industrial and residential traffic. Cumulative impacts resulting from combined traffic will result in congestion, air pollution, and noise, and road safety impacts affecting the surrounding road network and nearby communities. As presented in the ESMP of section 6.3.2, a Traffic Management Plan will be developed to mitigate traffic impacts by implementing transportation schedules that will be coordinated to reduce peak-hour activity, and routes will be managed to prevent congestion near residential and high-traffic areas.

- However, with the operation of the 10 RIWMF and waste transferred to from the TS is set to improve the public health of the surrounding communities by ensuring safer, cleaner, and more sustainable waste management practices.
- Mitigation measures due to the direct impact of the Transfer station will need to be implemented and recommendation for the development of a Compliance Action Plan, will help mitigate combined environmental and social impacts in the industrial zone.

- Moreover, a **Summary of Environmental and Social Impacts during the construction and operation of the Transfer station is as follows:**

Construction Phase:

1. **Air Quality and Dust:** Construction activities generate dust that can impact soil, water, vegetation, and air quality, causing moderate respiratory issues.
2. **Noise and Vibration:** Noise and vibrations can disrupt habitats, affect residents, and cause hearing loss for workers, rated as major impacts due to high ambient noise levels at the site.
3. **Soils & Landscape:** Construction can lead to soil erosion, compaction, and contamination, with moderate impacts due to the limited area and duration.
4. **Groundwater and Surface Water:** Risk of contamination from spills, leaks, and runoff, with major impacts due to shallow groundwater levels.
5. **Waste Management:** Generation of various types of waste, including hazardous waste, requiring proper handling to mitigate moderate impacts.
6. **Temporary Labor Influx:** Risk of social conflict, crime, disease, and inflation due to labour influx, with moderate impacts.
7. **Road Traffic and Transportation:** Increased traffic and restricted access, considered major due to road safety impacts.
8. **Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH):** Risk of harassment and discrimination, with moderate impacts expected.
9. **Child Labor:** If risk of child labor is not monitored, it will result in moderate but significant impacts.
10. **Public Infrastructure:** Potential moderate impacts on infrastructure and utilities nearby.
11. **Occupational Health and Safety (OHS):** Multiple risks to workers from exposure to hazardous materials, noise, and other construction activities, rated as major impacts.
12. **Community Health and Safety:** Major impacts from dust, emissions, and accidents due to proximity to nearby communities.

Operation Phase:

1. **Air Quality and Dust:** Emissions from vehicles and waste handling affect air quality locally, with moderate impacts.
2. **Noise and Vibration:** Operational noise from machinery and waste handling causes moderate impacts on nearby residents.
3. **Soils and Landscape:** Soil compaction, erosion, and visual changes have moderate impacts.
4. **Groundwater:** Risk of leachate contaminating groundwater, considered major due to shallow groundwater levels.
5. **Surface Water:** Runoff and improper waste handling may cause moderate pollution.

6. **Waste Management:** Improper handling of hazardous and non-hazardous waste could result in major impacts on health and safety.
7. **Road Traffic:** Increased vehicle movement may cause major impacts on traffic, infrastructure, and road safety.
8. **Sexual Exploitation and Abuse & Sexual Harassment (SEA/SH):** Ongoing risks of SEA/SH, requiring mitigation, with moderate impacts.
9. **Occupational Health and Safety:** Risks from waste handling, equipment failure, and lack of protective measures, rated as major impacts.
10. **Community Health and Safety:** Risk of health and safety concerns due to waste handling, noise, odor, and pollution, with moderate impacts expected if not mitigated.

Environmental and Social Management and Monitoring Plan

The objective of the Environmental and Social Management and Monitoring Plan (ESMMP) is to outline actions for minimizing or eliminating potential negative impacts, as well as to monitor the implementation and performance of mitigation measures. Chapter 6 of this report addresses the ESMMP for different receptors, identifies roles and responsibilities for implementation, as well as the monitoring of mitigations during the construction and operation phases of the project.

The successful implementation of the Environmental and Social Management Plan (ESMP) relies on various entities managing mitigation and monitoring activities. Key considerations include ensuring the Environmental and Social Project Implementation team under Al-Qalyubia Governorate Solid Waste Management Unit, the contractor, and the operator are adequately staffed. The organizational structure of the Project Coordination Unit (PCU) reflects the necessary competencies. Proper documentation and tracking of environmental and social training, incidents, and grievances will be essential.

The main players in the project implementation include the PCU, the Solid Waste Management Unit in Al-Qalyubia, Khanka Local Unit, the environmental unit within the governorate, the Contractor and Operator Environmental, Social, and Health & Safety Units (CESHSU and OESHSU). Non-key players include the civil defense department.

The PCU, set up within the Ministry of Environment, coordinates all aspects of project implementation with technical support from consultants. The Khanka Local Unit and SWMU E&S Management team handle public cleansing and manage the solid waste system, including issuing operating tenders and monitoring operator performance.

The environmental unit within the governorate reviews Environmental Impact Assessments (EIAs), conducts site inspections, and monitors environmental aspects. The civil defense department reviews Emergency Response Plans, inspects firefighting and occupational health and safety (OHS) aspects, and manages emergency situations.

The construction contractor is responsible for implementing the E&S Management Policy, setting up the necessary organization and resources, appointing an E&S officer, providing regular monitoring indicators, training employees, and ensuring compliance with the E&S management system. The contractor must draft a Preliminary Environmental and Social Management Plan and submit it for review, ensuring all requirements are met by subcontractors and suppliers.

Stakeholder Consultations

The Consultant carried out stakeholder engagement activities in April, May, and June of 2024, through the following methods: interviews with community members surrounding the project area, as well as Focus Group Discussions (FGDs), in addition to a Public Hearing Event. The diversity of community representation was considered.

The key findings from the consultation events can be summarized as follows:

- Highlighted the current waste management system's weaknesses and proposed measures for improvement, including financial support and community awareness.
- Recommendations included constructing a fence and planting trees around the station.
- Health concerns related to the proposed transfer station and emphasized the need for health education seminars. Their concerns were addressed in the impact and mitigation sections.
- emphasizing the need for intervention in waste management.
- Social issues near the dumpsite were discussed and advocated for educational seminars.
- Stressed the need for better waste management and regular inspections.
- Female Waste Pickers at the Abu Zaabal dumpsite discussed their work conditions and concerns about future employment.
- Female Workers from Abu Zaabal Workshops expressed fears about the transfer station's negative impacts and demanded better services and environmental procedures.

The subproject has adopted a tailored GRM that was adjusted in full compliance with the WB requirements.

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Table of Abbreviations

Abbreviation	Description
AEWA	African-Eurasian Migratory Water birds
AoI	Area of Influence
AQM	Air Quality Management
BOD	Biochemical Oxygen Demand
CAA	Competent Administrative Authority
CESHSU	Contractor Environmental, Social and Health & Safety Unit
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CO	Carbon monoxide
CoC	Code of Conduct
COD	Chemical Oxygen Demand
COPD	Chronic Obstructive Pulmonary Disease
CRC	Convention on the Rights of the Child
CSD	Citizen Service Department
CTA	Cairo Transport Authority
DO	Dissolved Oxygen
EEAA	Egyptian Environmental Affairs Agency
EHS	Environmental, Health, and Safety
EIA	Environmental Impact Assessment
ER	Executive Regulations
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMMoP	Environmental and Social Management and Monitoring Plan
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standards
FGD	Focus Group Discussion
GCA	Greater Cairo Area
GCCC	Greater Cairo Air Pollution Management and Climate Change
GRM	Grievance Redress Mechanism
HAVS	Hand and vibration syndrome
IDA	Industrial Development Authority
ILO	International Labour Organization
ILS	International Labour Standards
IWMF	Integrated Waste Management Facility
K	Potassium
KII	Key Informant Interview
L&FS	Life and Fire Safety

Abbreviation	Description
LGU	Local Governmental Units
LRP	Livelihood Restoration Plan
M&E	Monitoring and Evaluation
MBT	Mechanical Biological Treatment
MCLD	Manager of Community Liaison Department
MoE	Ministry of Environment
MOIC	Ministry of International Cooperation
MoLD	Ministry of Local Development
MSW	Municipal Solid Waste
N	Nitrogen
NCHR	National Council for Human Rights
NGO	Non-Governmental Organization
NO2	Nitrogen dioxide
NSWMP	National Solid Waste Management Programme
NUCA	New Urban Communities Authority
OESHSU	Operator's Environmental, Social and Health & Safety Unit
OHS	Occupational Health and Safety
OSHA	Occupational health and safety Administration
P	Phosphorus
PAPs	Project Affected Persons
PCU	Project Coordination Unit
PM	Particulate Matter
PMP	Pest Management Plan
POM	Project Operational Manual
POP	Persistent Organic Pollutants
PTSD	Post-Traumatic Stress Disorder
PPE	Personal Protective Equipment
PRs	Project Requirements
PS	Performance Standard
QG	Qaluybia Governorate
RAP	Resettlement Action Plan
RF	Resettlement Framework
SDO	Social Development Officer
SE	Stakeholder Engagement
SEA/ SH	Sexual Exploitation and Abuse/Sexual Harassment
SEP	Stakeholder Engagement Plan
SW	Solid waste
SWERI	Soil, Water and Environment Research Institute

Abbreviation	Description
SWM	Solid Waste Management
ToR	Terms of Reference
TS	Transfer Station
TSP	Total Suspended Particulates
TSS	Total Suspended Solids
UNCBD	United Nations Convention on Biological Diversity
UPOPS	Unintended Persistent Organic Pollutants
VOCs	Volatile Organic Compounds
WB	World Bank
WMP	Waste Management Plan
WMRA	Waste Management Regulatory Authority

1 Introduction

1.1 Project Background

The Ministry of Environment is implementing the Greater Cairo Air Pollution Management and Climate Change Project, which is being financed by the World Bank (WB). The project aims to reduce air and climate pollution from critical sectors and increase resilience to air pollution in Greater Cairo (Cairo, Giza, and Qalyubia governorates). The project is being implemented in collaboration with various stakeholder agencies, including the Ministry of Local Development (MoLD), Qalyubia Governorate, Waste Management Regulatory Authority (WMRA), and Cairo Transport Authority (CTA).

Under Component 2, the GCCC Project will support the establishment of two environmentally controlled Transfer Stations (TS)s in Qalyubia Governorate at El Khanka and El Marsafa districts (hereinafter referred to Sub-project). Transfer stations are utilities for the loading and storage for a maximum of 24 hours as a supplementary system for the transport of Municipal waste and it is an extension path for vehicles collecting municipal waste from its source of generation in addition to the mechanical sweeping , with the aim of reducing the total cost for the collection operations and transport from sources of generation to the final treatment facilities at the Integrated Waste Management Facility (IWMF) at 10th Ramadan. The GCCC Project will support the preparation of detailed engineering studies for the transfer stations, bidding documents, necessary environmental and social risk management documents and supervision of the construction of the transfer stations.

1.2 Sub-Project Objectives

This report provides the Environmental and Social Management Plan (ESMP) for the establishment of the domestic waste transfer station in Al-Khanka district, Qalyubia governorate. The primary purpose of the ESMP is to identify, evaluate, and effectively manage potential environmental and social impacts, minimal as they may be, arising from the construction and operation of the specified Transfer Stations in Al-Khanka. By assessing the Sub-project's consequences on the natural and human environment, the ESMP aims to ensure that the Sub-project aligns with regulatory requirements, adheres to best practices, and minimizes adverse effects while maximizing benefits for the communities and the environment. The scope of the assessment encompasses the construction and operation phases, providing a comprehensive understanding of the project's potential effects throughout its lifecycle.

More specifically, key objectives of this ESMP are as follows:

- Describe the sub-project's components and activities of relevance to the environmental and social assessments;
- Identify relevant national and international legal requirements and guidelines;
- Assess the baseline status of environmental and social conditions;
- Evaluate potential site-specific environmental and social impacts of the project;
- Developing environmental & social management and monitoring plans in compliance with the relevant national and international legislation;
- Establish the roles and responsibilities of all parties involved in the project's environmental and social management;
- Document key environmental and social concerns raised by stakeholders during public consultation activities;
- Ensure the existence of a grievance redress mechanism (GRM) through for the lodging and handling of complaints.

1.3 ESMP Overview

1.3.1 Approach and Methodology

The approach employed in the development of this ESMP involves drawing upon a diverse array of resources to accurately assess the baseline conditions through the use of both primary and secondary data. This includes desktop research, field site visits, field measurements, and active stakeholder engagement. Throughout the study, the Consultant coordinated with the Technical Advisory Services Consultant to review the technical design documents, surveys, and studies to conduct the impact assessment to ensure that the environmental and social considerations are fully integrated in accordance with the national laws and the WB Environmental and Social Framework (ESF). Upon establishing a comprehensive understanding of the baseline conditions of the Sub-Project and the surrounding area, the ESMP team conducted an extensive impact assessment to evaluate the potential consequences of the Project.

2 Al-Khanka Transfer Station Description

2.1 Khanka TS Sub-Project Background

The Al Khanka Transfer Station is a state-owned land. The total area of the entire site is approximately 18,000 square meters located in Arab El Olaykat village in Al-Khanka District (Markaz), Qalyubia Governorate. It will receive municipal waste from Al Khanka Markaz and Sheben El Qanater city, the collected waste at the transfer station will be transported to the 10th of Ramadan IWMF. Al Khanka Transfer Station will have a design capacity of 1300 Tons/ Day.

Al Khanka transfer station will serve the area of Al Khanka and Sheben Al Qanater Markazs. These Markazs generate daily around 700 tons of MSW in 2024. Nevertheless, the design of the transfer station considers the anticipated growth rate of waste generation until 2040, ensuring that the facility is strategically planned to accommodate the evolving demands over this period. Based on the assumption of a 90% collection efficiency in the served areas and a generation rate of 0.805 kg/capita/day, it is projected that the collected Municipal Solid Waste (MSW) will reach approximately 1300 tons daily by the target year, as detailed below.

Table 2-1 Expected daily collected waste quantities with collection efficiency of 90% in 2040. (Ref: Khanka Transfer Station Design Report)

Markaz	Population in 2024 [Capita]	Generated Waste in 2040 [ton/d]	Collected Waste in 2040 [ton/d]
Al Khanka	701,609	790.85	711.77
Sheben Al Qanater	581,892	655.91	590.315
Total	1,283,501	1,446.76	1,302.08

2.2 Khanka Transfer Station Sub-Project Location

The Khanka Transfer station is located in Arab El Olaykat, situated among the villages of Al-Khanka Markaz within the Qalyubia Governorate of the Arab Republic of Egypt. Positioned along the Cairo-Ismailia agricultural road, it is approximately 18 kilometers away from Cairo. The total area of the entire site is approximately 18,000 square meters. In line with the surroundings, the site is situated approximately 1 km away from the Abu Zaabal dumpsite. It is on average 5 km from Sheben El Qanater, and about 500 m from the nearest residential area. Figure 2-1 below illustrate the project area.

The site located in the proximity of an armed force training site that has a separate access road. Accordingly, workers will not be affected or affect the armed force training site.

2.2.1 Sub-Project Site Selection

The site of Khanka was chosen among five options for waste transfer stations based on a series of criteria related to their suitability for transferring municipal solid waste.[2]The site was assessed for legal, environmental, and technical viability, with a focus on proximity to waste generation centers, residential areas, and water sources, and the ability to handle future waste capacity requirements.

The eligibility of the site has been examined according to the Egyptian environment Law 4 for year 1994, and the Egyptian waste law 202 for year 2020. The selection criteria focused on ensuring the sites comply

[2] *Greater Cairo Air Pollution Management and Climate Change Project: Suitability Analysis of Available Sites in Qalyubia Governorate*. Prepared by Chemonics Egypt for the Project Coordination Unit (PCU), August 6, 2023.

with legal distance requirements from sensitive areas such as agricultural zones, residential areas, and water bodies. Khanka site has been selected within an industrial zone being far enough from residential areas to limit any potential impact on the local community.

The Khanka site was selected solely for transfer facilities rather than treatment due to limitations in size and environmental factors. Khanka TS will support the anticipated capacity of waste for transfer, however only meets 10% of the requirements for waste treatment. In addition, both Law 4/1994 and Solid Waste Law 202/2020 require greater distances for treatment facilities in densely populated areas, as Arab El Olayqat.

On the other hand, establishing a transfer stations in Khanka will improve the projected waste management strategy of the GCCC project by; reducing the need for long-haul transport to remote treatment facilities by allowing waste consolidation closer to collection points, reducing the scope to transfer operations, potential environmental impacts, such as leachate or emissions from active treatment, are minimized., and will improve logistical efficiency by enabling more frequent collection and redistribution of waste, aligning with local and regional waste management goals.

The site was primarily state-owned land, which means there will be no need for land acquisition or economic displacement. This ensures that the project can proceed without causing any disruption to local landowners or affecting the livelihoods of community members.

Overall, Khanka site determined to be strategically beneficial for establishing waste transfer stations due to its location, compliance with regulatory criteria, and ability to manage projected waste volumes within their spatial limitations. As elaborated in further details in Section 7, selection of the project site has been discussed with the local community in Al-Khanka during various consultation activities to ensure that community concerns with regards to the location has been considered during the project design and during the Environmental and Social impact assessment. In addition, environmental and social non-technical recommendations with regards to the project site in addition to the design has been shared between the E&S consultant and design consultant as elaborated in the mitigation measures of section 6.3.

2.3 Khanka Transfer Station Sub-Project Components

Figure 2-2 displays the general layout of the TS. A clear image of the general layout and disposition of the TS buildings and structures can be found in Annex III.

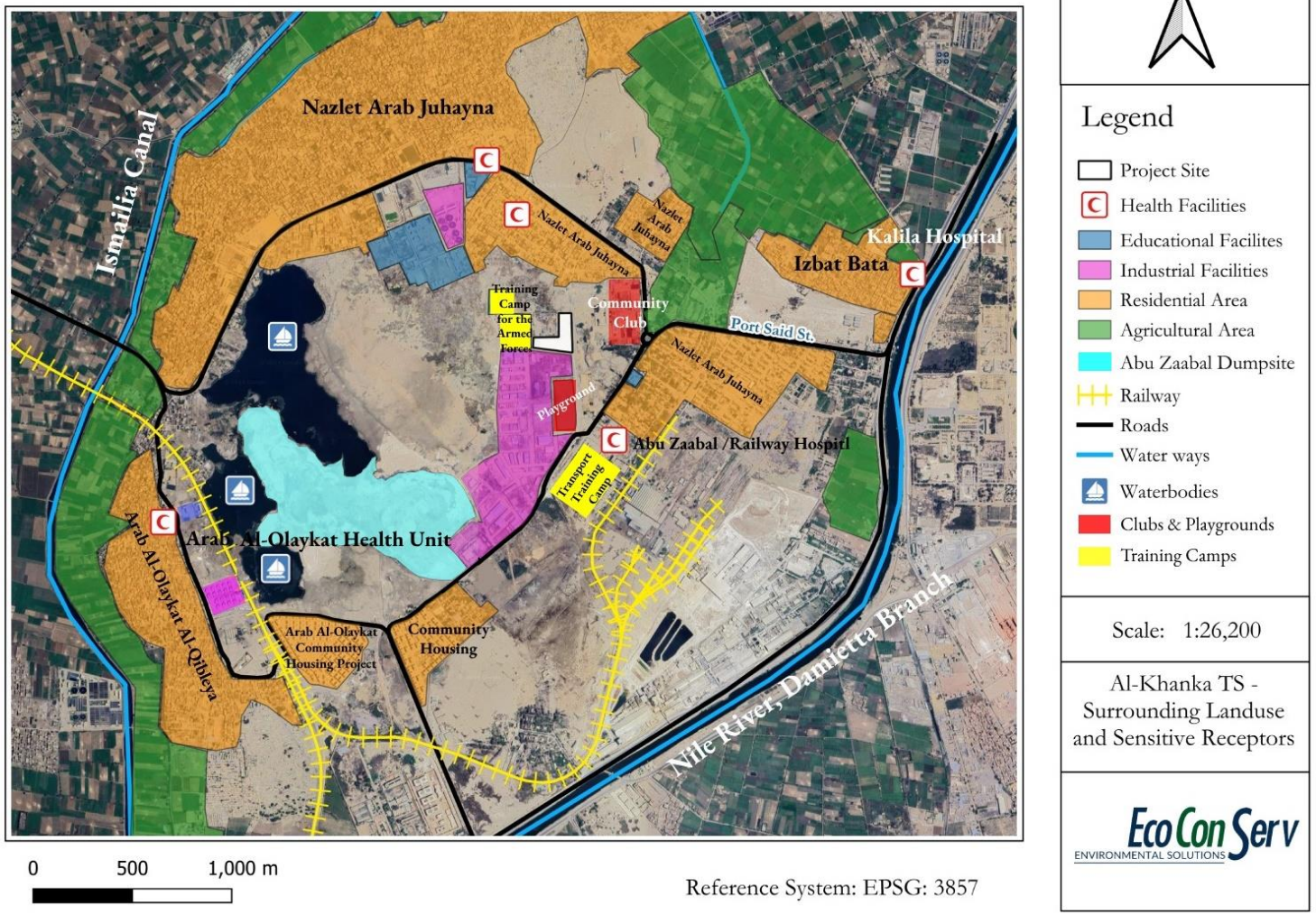


Figure 2-1 Khanka TS Project Area

PROJECT COMPONENTS:

No.	Usage	App. Area (m²)
1	ENTRY Gate	-
2	Guard Room	30
3	Weight Bridge Control Room	20
4	Administration and Labour Building	220
5	Loading and Unloading Platform	1,900
6	Maintenance Workshop	280
7	Weight Bridge	54
8	Firefighting Tank and Pump Room	60
9	Drain Tank	25
10	Cars Parking Shed	120
11	Equipment Parking Shed (1)	240
12	Equipment Parking Shed (2)	240
13	Septic Tank	21
14	EXIT Gate	-

POINT COORDINATES:

POINT	EASTING	NORTHING
1	343039.664	3352106.555
2	343097.433	3352102.618
3	343097.433	3351914.546
4	342910.826	3351938.171
5	342910.714	3351986.059
6	343039.946	3351986.476

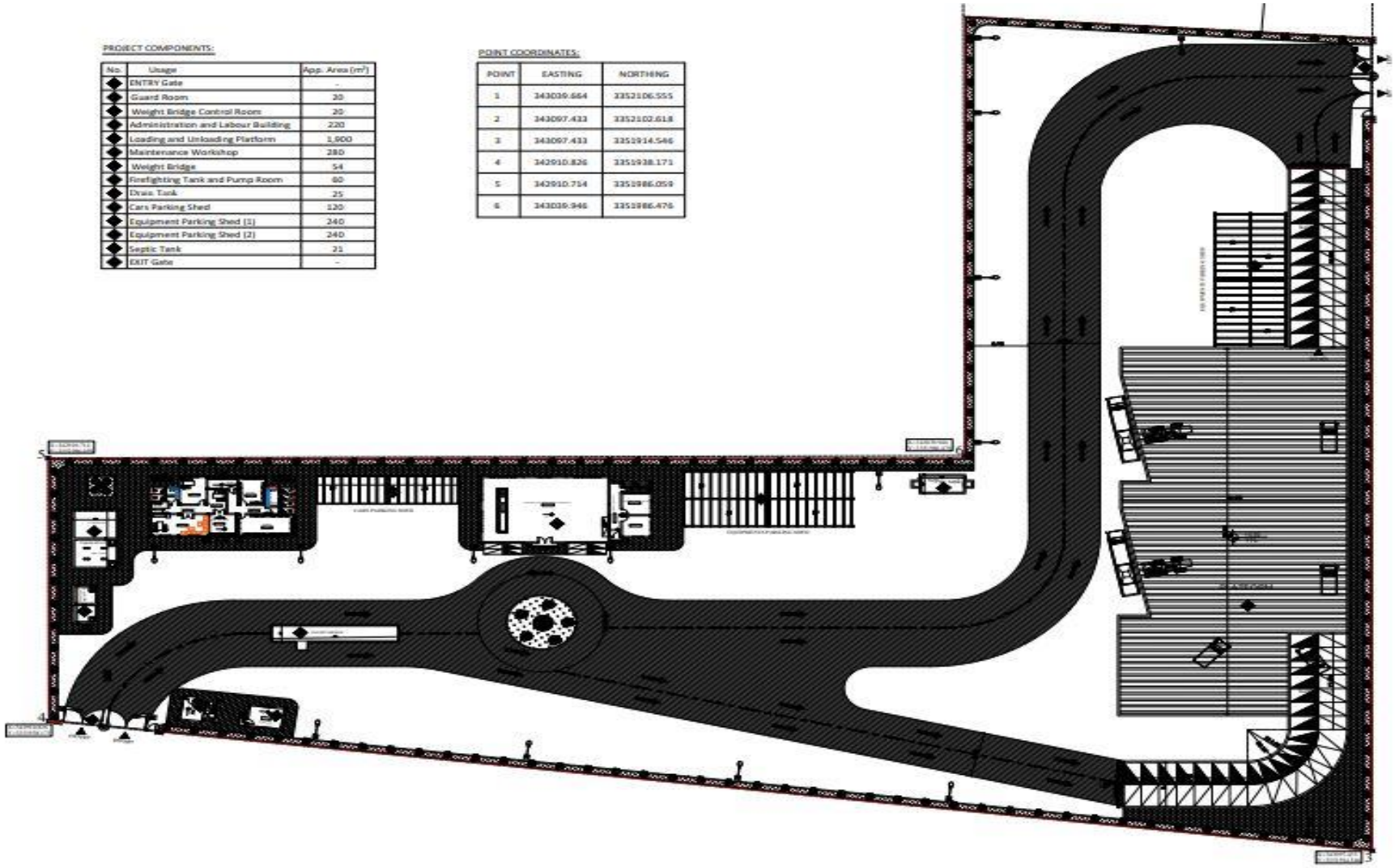


Figure 2-2 General Layout for the Khanka TS Facility

The main structures and spaces composing the transfer station are as follows while details of these components can be found in the "Khanka Transfer Station Design Report" in **Annex III**:

- Road entrance and exit
- Traffic flow routes on site to ensure smooth flow of vehicle movements
- Queuing area if needed in case of overflow
- Weighbridge
- Maintenance workshop
- Equipment garage
- Visitor parking area/garage
- Buffer area including open spaces, landscaping, trees and fences that reduce impact on the community
- Main loading/unloading platform including the tipping floor, ramps, etc.
- Fence
- Access Main Gate
- Guard Room
- Administration & Labour Building
- Weighbridge & Weighbridge Control Room
- Maintenance Workshop Building
- Car Parking Shed
- Loading & Unloading Area Platform
- Water Supply
- Electric Control Room
- Sewage system
- Greeneries

2.3.1 Accessibility

As shown in the figure below, the site has direct access roads from the southern and eastern sides. The roads dimensions (in terms of width, lanes, horizontal and vertical curves) are sufficient for the accessibility and the maneuvering of the collection and transfer trucks. The entrance is 15-20 meters in width, this represents an adequate entrance to facilitate trucks and transportation's entrance sufficiently. Figure 2-3 illustrates the general flow of direction inside and surrounding the TS.

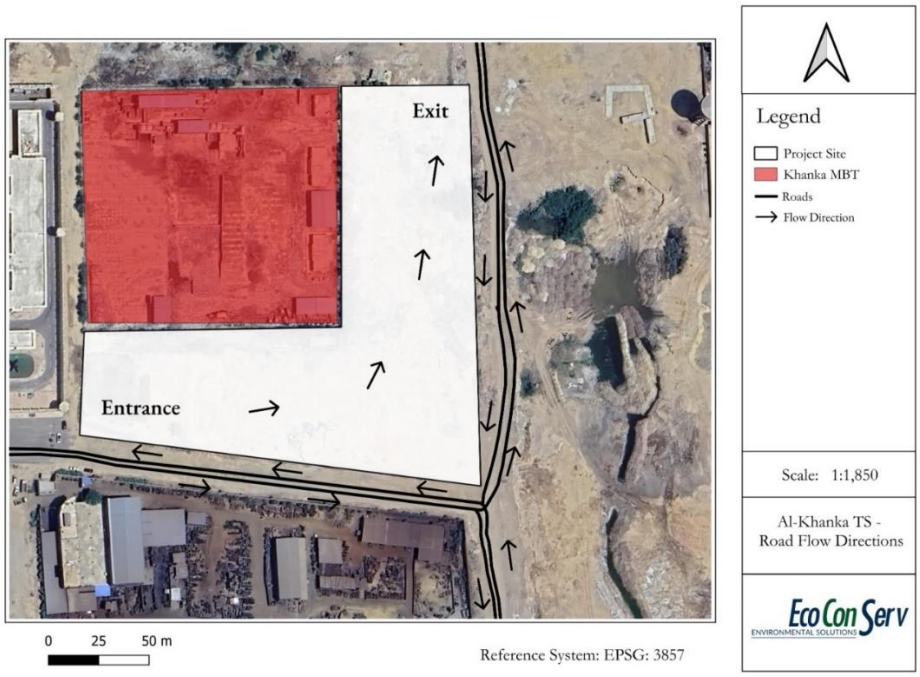


Figure 2-3 Access Roads to Khanka TS Site

Figure 2-4 illustrates the road network surrounding the transfer station. The map also indicates the flow of direction from the Khanka TS to Abu Zaabal dumpsite which will take place for the first 2 years of operation of the TS, in addition to the direction of flow to 10th of Ramadan where the waste will finally be disposed after the closure of Abu Zaabal dumpsite.

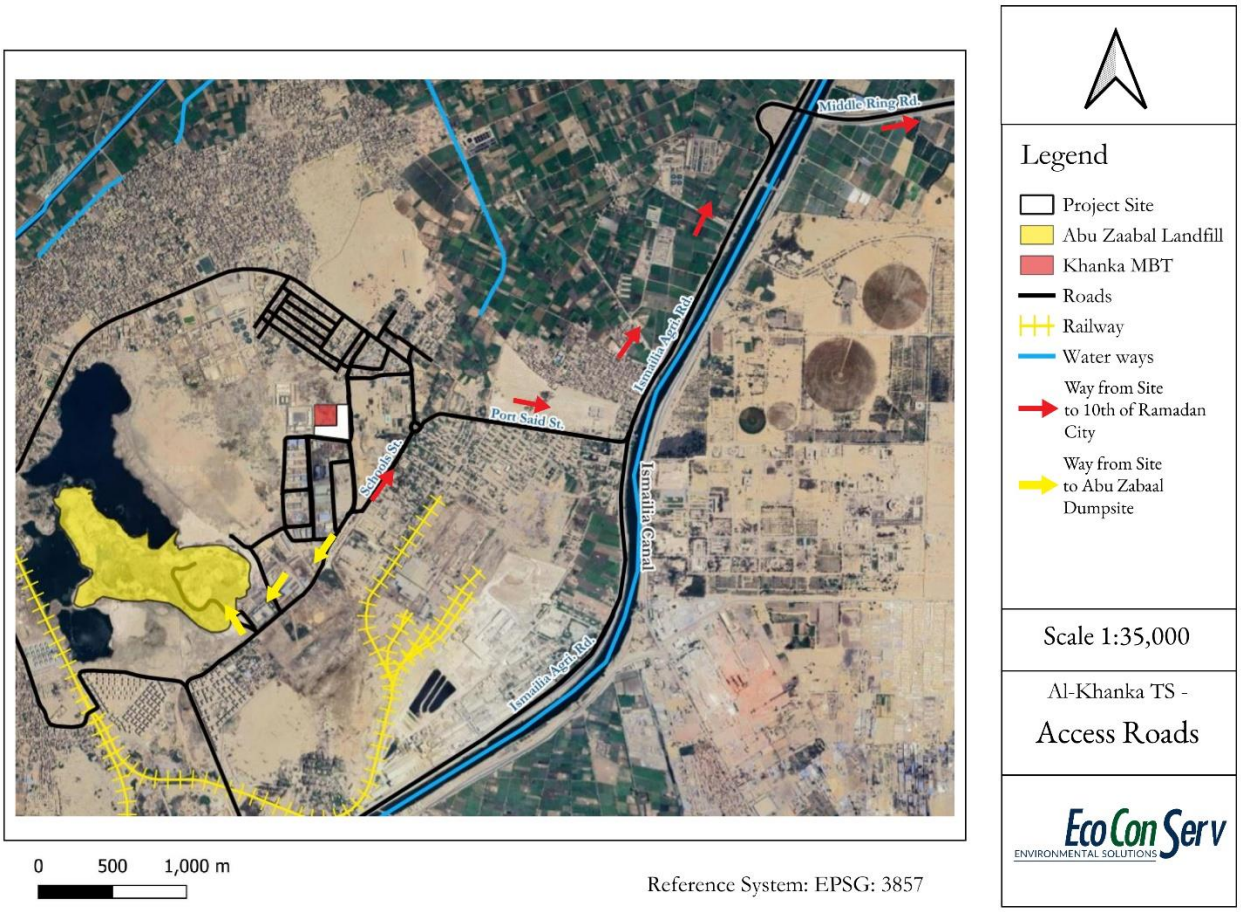


Figure 2-4 Access Roads Surrounding Khanka TS

2.4 Subproject Activities

2.4.1 **Preconstruction Activities:**

Prior to earthwork, the site shall be cleared of all obstruction, loose stones, shrubs, rank vegetation, grass, bushes, and any accumulated waste. The project involves proper site preparation, safety measures, and the establishment of a work zone before soil removal. Soil samples were collected for analysis to assess the nature of pollution[3]. Based on analysis results, the soil in the site is not contaminated. Excavation of all typestyles of soil including rock from ground level to the specified depths, followed by dewatering, and disposal of excavated materials to heaps off site will take place. Fencing of the site with the placement of relevant temporary information boards (billboards) during the construction works in accordance with the publicity and information requirements of the World Bank.

2.4.2 **Construction Activities:**

The overall construction, machinery installation, commissioning and stabilization of the proposed project components. Major construction activities will include construction of buildings, installation of electricity generator, weighbridge, testing, and commissioning. The table below summarizes the construction works for the TS. Further details of the TS can be found in the Khanka Transfer Station Design Report in **Annex III**.

[3] Geotechnical Investigation and Recommendations Report of Al-Khanka Municipal Waste Transfer Station in Al- Khanka Markaz Report in Annex 2

Table 2-2 Summary of Construction Works

Works components	**Details of works**
Works	**Preparatory works including surveys:** Geotechnical investigation surveys, existing utilities surveys, climatic, meteorological and wind-related surveys, seismic survey, and other necessary site investigations. **Temporary site facilities infrastructure:** The temporary facilities that are needed for the construction phase, such warehouses, etc. will be constructed. These facilities will be dismantled after the construction phase ends. **Foundations and civil works:** After site excavation, the foundations are constructed for the buildings, structures, etc. During this stage, the following shall be conducted: • Mechanical and concrete structures will be constructed. • The facility access roads are paved, circulation networks, including sidewalks, as well as Parking lots for vehicles of administration staff and visitors etc., open spaces for storage of received bulky wastes and used tires. • The weighbridge and its control room shall be installed, • Connection to power supply shall be provided • Transformer station, switchgear rooms as required • The transfer station facilities with spare parts (for two years operation after the Defects liability period) and safety equipment
Buildings and Building services	• Administration building • A light metallic structure, roof-covered, transfer station facility. • Guard room • Basic maintenance area • Water, electrical and telephone supply systems and connections • Electrical plant buildings as needed to enclose transformers and other items of the electrical plant.
Ancillaries	• Process and service pipeline systems, • Connect to the existing potable water supply system • Fire detection and alarm system, and fire-fighting systems including fire extinguishers, hydrants and other amenities as detailed in later sections • Wastewater network and septic tanks as sewage shall be collected in holding tanks and transported through designated road tankers • Stormwater drainage network including oil and grease separator • Irrigation network • Instrumentation and control equipment as needed and applicable
	• Site Development works (peripheral Fencing, entrance Gates, and Landscaping)
	• Site lighting, Earth Grounding, Lightning protection systems, etc.

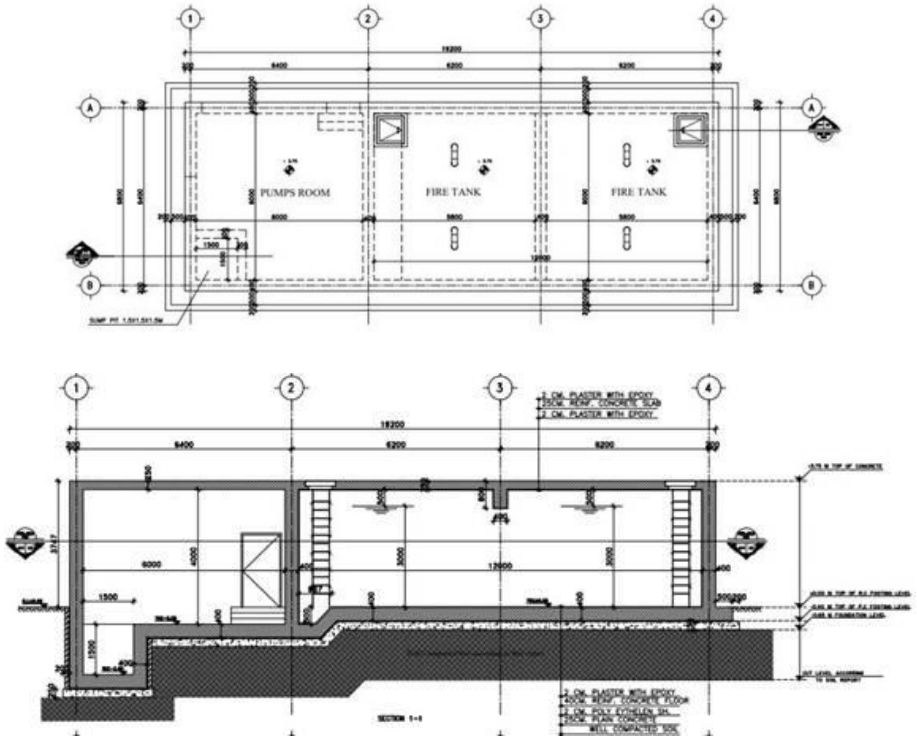
Works components	Details of works
Water Tank	It is constructed with reinforced concrete structural system with an area of 72 m² designed to firefighting system for the transfer station. The tank includes water room with area of 33.4 m² and pump room with area of 38.6 m². 

Figure 2-5: Water tank

Construction Materials

- **Raw Materials:** Based on similar recent projects, the main materials utilized in the construction process include cement, sand, gravel, steel, pipes, geotextile, blocks/bricks, etc. In addition, lubricating oils and materials required for maintenance of equipment in addition to diesel fuel. Raw material will be acquired from markets that source their material from commercially operating licensed quarries.
- **Water Consumption:** Potable water for the TS shall be obtained by connecting to the nearest existing water network.
- **Electricity:** The Works Contractor is responsible for connecting the TS facility to the electrical power grid within the site boundaries. The TS will require an estimated power supply of 30 KW of electricity in the construction phase per day based on similar projects.
- **Fuel:** Fuel used for the construction equipment is estimated to be of 0. 5 m3/day.

Construction Equipment

The Table Below shows a list of the main construction equipment for the project; however, not necessarily all the listed equipment will be on-site in the same time. Additional soil compaction equipment might be needed during the site preparation for construction works, this shall be confirmed by the construction contractor upon being awarded the project.

Table 2-3: List of main construction equipment

Name of equipment	Number of equipment
Excavator	1
Dump truck	1
Loader	1
Road Roller	1
Pick-Up	1
Cranes	1
Forklifts	1
Trailers	1
Scaffolding material	1
Concrete vibrators	2
Concrete mixers	1

2.4.3 Operation& Maintenance Activities:

TS operations involve a systematic process for managing waste efficiently. Waste collection vehicles gather waste, primarily from residential areas, and upon arrival at the transfer station, the waste is documented and weighed for precise measurement. Compactors may compress the waste for efficient transportation, and temporary storage facilities at the transfer station facilitate proper waste flow management. Subsequently, designated trucks transport the waste from the transfer station to the final treatment facility at the Integrated Waste Management Facility (IWMF) at 10th of Ramadan. Routine equipment maintenance, including inspections, repairs, and replacements, is essential to sustain effective waste handling processes throughout the operation of the transfer station.

The proposed facility will receive 1000 ton/day of solid waste, the design capacity of the TS is 1300 tons/day. The total loading time for compacting transfer truck taking 50 tons of MSW is estimated to be from 50 to 60 minutes. Total loading time for non-compacting transfer truck is estimated to be 20 minutes for loading 20 tons of MSW and 40 minutes for loading a truck taking 40 tons of waste.

The equipment and vehicles that will typically be used in the TS while implementing the direct loading method include: "5-ton" trucks (8 m3 compactor trucks), "10-ton" trucks (15-16 m3 compactor trucks), 14-20 m3 hook lift trucks, Waste collection trailers/ semi-trailers, Containers, and Weighbridge.

A permanent maintenance workshop will be built with separate areas for working and vehicle circulation. The facility will have a vehicle wash, workshop, warehouse, control room, workroom, spare parts store, and office. It will be able to accommodate two vehicles simultaneously and have a crane, pit, and equipment parking garage. The workshops will have work benches, standard hand tools, and electric tools for maintenance and repairs. It will also have a storage room for spare parts and cupboards for repair materials.

Traffic Flow: The design takes into account the following consideration to ensure a smooth traffic flow on site:

- Two separate Gates for entrance and exit to avoid any traffic in/out flows' conflict;
- Two ramps to ensure efficient flow for entering and exist the platform;
- Construct a roundabout of a sufficient radius onsite to facilitate the intersect movements of vehicles
- As illustrated in the following figures (reference to **Annex III**), workers' entrance and exit is separate from that of vehicles and heavy trucks.

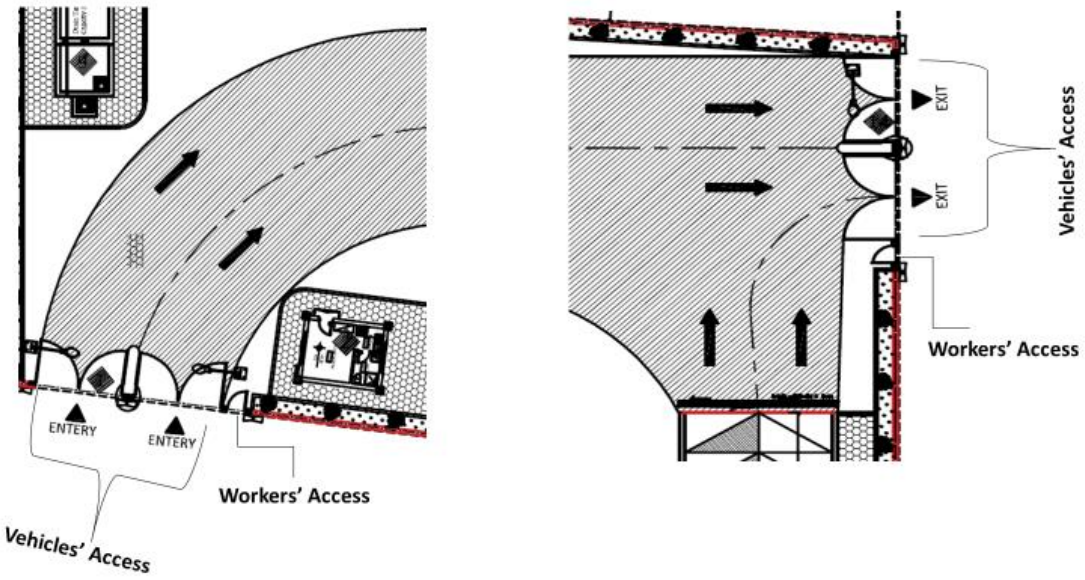


Figure 2-6 Segregated access for vehicles and workers at the entrance (left image) and exit (right image) of the TS

The TS is designed to accommodate an average of 26 vehicles per hour, assuming waiting time required for each incoming primary collection vehicle for the precedence process including:

- Evacuating the weighbridge from predecessor vehicle (2 min)
- Evacuate the platform with for a maximum capacity of 4 vehicles / cycle
- Shorten the loading process lead time using 2 loading shots to the transfer trucks.

2.5 Subproject Duration

The anticipated duration of construction activities is 6 months while the estimate facility lifespan is 25 years.

2.6 Labor

Throughout the construction phase of the TS, an estimated workforce of around 45-50 employees will be required, primarily consisting of civil engineers, vehicle operators, and machinery operators. This number is tentative and will be confirmed once the construction contractor is awarded the contract.

A total number of 2-4 security guards will be recruited at the site during the construction phase. They will be unarmed and they will receive all required trainings including training on Code of Conduct in order to properly enable them to communicate with the workers and surrounding communities.

The labor force will operate in shifts, each lasting 8 hours. Upon transitioning to the operational phase, the TS is anticipated to necessitate approximately 15 -20 employees, including 10 drivers, hired through direct and indirect jobs. The operational workforce will be organized into two shifts, each spanning 8 hours.

If laborers are to be accommodated by the contractor/sub-contractors, it is essential that the contractor and sub-contractors develop an Accommodation Management Plan to ensure that the accommodations meet minimum standards of IFC accommodation requirements. Some key requirements to consider:

- **Safety and Security:**
  a. Ensure the accommodation is secure and safe from potential hazards.
  b. Provide adequate lighting and security measures to protect the workers.

- **Living Conditions:**
    a. Ensure that living spaces are clean, well-ventilated, and spacious enough to avoid overcrowding.
    b. Provide access to clean drinking water and sanitation facilities, including toilets and showers.
- **Health and Hygiene:**
    a. Implement regular cleaning and maintenance schedules to maintain hygiene standards.
    b. Provide access to medical facilities or first aid kits for emergencies.
- **Comfort and Amenities:**
    a. Ensure that beds, mattresses, and other furniture are in good condition.
    b. Provide cooking facilities or access to nutritious meals.
- **Compliance with Regulations:**
    a. Ensure that the accommodation complies with local regulations and international standards for worker housing.
    b. Regularly inspect and audit the facilities to ensure ongoing compliance.

3 Legal and Institutional Framework

3.1 Overview

The Khanka Transfer Station Project will adhere to the National laws and to World Bank Environmental and Social Standards. A detailed legal framework in addition to a Gap Analysis Between National Standards and World Bank Standards is included under **Annex I**

3.2 National Laws and Regulations:

In Egypt, environmental regulations are governed by the Egyptian Environmental Affairs Agency (EEAA), which operates under the Ministry of Environment. The primary legal framework guiding environmental protection is Law No. 4 of 1994 concerning the Protection of the Environment. This law empowers the EEAA to regulate and control various environmental aspects, including air and water quality, waste management, and biodiversity conservation. The following are the most relevant laws for the project:

- Law number 4/1994 and its amendments by law 9/2009 concerning the environmental protection.
- Decrees number 1095/2011, 710/2012, 964/2015, 544/2016, 75/2017, 618/2017 and 1963/2017 for the amendment of the executive regulations of the environmental Law number 4/1994.
- Law number 38 /1967 concerning the general cleanliness and its executive regulations.
- Solid Waste Management Law No. 202 /2020 and Executive Regulations issued by a ministerial decree No. 722 of year 2022.
- Law No. 48/1982 concerning pollution protection of the River Nile and the water channels and its executive regulation.
- Law 93/1962 regulating the discharge of liquid waste to the public sewage network. The executive regulations of this law as amended by Minister of Housing decree 44/2000.
- Traffic law 66/1973 amended by law 121/2008 and updated in 2018
- Decrees number 211, 134, and 126 of Law 12/2003 on labor and workforce safety
- Law 94/2003 on establishing the National Council for Human Rights (NCHR)

3.3 World Bank Environmental and Social Standards

The World Bank Environmental and Social Framework[4] sets out the World Bank's commitment to sustainable development, through a Bank Policy and the ten Environmental and Social Standards which are designed to guide borrowers to operate in compliance with good international practices in the key areas of environmental and social issues and impacts. The table below shows all the E&S standards as stipulated by the WB and indicates their applicability to the Sub-Project. Details of each ESS is presented in details in **Annex I.** The ten Environmental and Social Standards establish the standards that the Borrower and the Sub-Project will meet through the Project life cycle, as follows:

[4] http://pubdocs.worldbank.org/en/837721522762050108/Environmental-and-Social-Framework.pdf

Table 3-1 Applicability of WB Environmental and Social Standard (ESS) to the Sub-Project

Environmental & Social Standard (ESS)	Title of the ESS	Applicability to the Sub-Project (Y/N)	Justification
ESS 1	Assessment and Management of Environmental and Social Risks and Impacts	Yes	ESS1 is relevant to this sub-project due to the environmental and social risks and impacts associated with the activities.
ESS 2	Labour and Working Conditions	Yes	ESS2 is relevant to this sub-project due to the need for workers and health and safety impacts associated with the nature of project activities.
ESS 3	Resource Efficiency and Pollution Prevention and Management	Yes	ESS3 is relevant to this sub-project due to activities involving consumption of resources and generation of pollution.
ESS 4	Community health, safety and security	Yes	ESS4 is relevant to the sub-project due to possible risks and impacts on the community health and safety from sub-project activities.
ESS 5	Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	No	ESS5 is not relevant to this sub-project as there is no need for land acquisition.
ESS 6	Biodiversity Conservation and Sustainable Management of Living Natural Resources	No	No natural habitat or natural protectorate property issues have been identified during site visits or desk studies, hence the risk of Sub-Project activities affecting natural habitats or natural protectorate property is considered minimal.
ESS 7	Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	No	No indigenous people are identified in connection the sub project's boundaries.
ESS 8	Cultural Heritage	No	ESS8 is not relevant to the sub-project given there are no archaeological sites in the project area. However, in case of finding any objects of cultural value a chance-finds procedure has been developed for the project.
ESS 9	Financial Intermediaries	No	Not Applicable
ESS 10	Stakeholder Engagement and Information Disclosure	Yes	ESS10 is relevant to the sub-project due to the involvement of various stakeholders and complex implications of the project.

3.3.1 EHS Guidelines (World Bank Group):

The Environmental, Health, and Safety (EHS) Guidelines established by the World Bank Group provide a comprehensive framework for conducting Environmental and Social Impact Assessments (ESIAs) for various projects.

3.3.2 Environmental, Health, and Safety Guidelines for Waste Management Facilities EHS5

The Environmental, Health, and Safety (EHS) Guidelines for Waste Management Facilities provide comprehensive guidance on managing municipal solid waste and industrial waste. These guidelines cover various aspects, including waste collection and transport, waste receipt, unloading, processing, and storage, as well as landfill disposal, physicochemical and biological treatment, and incineration projects. They also address industry-specific waste management activities, such as those related to medical waste, municipal sewage, and cement kilns.

The guidelines emphasize the importance of minimizing and reusing waste at the source and provide performance levels and measures that are generally achievable with existing technology at reasonable costs. They are designed to be used alongside the General EHS Guidelines, which offer guidance on common EHS issues applicable to all industry sector. For complex projects, multiple industry-sector guidelines may be necessary to address specific hazards and risks.

Environmental, Health, and Safety Guidelines for Construction Materials Extraction6

3.3.3 Labour Influx Guidance Note (2016)[7]

This Guidance Note was established to support the World Bank in identifying risks to and Impacts on local communities associated with temporary labour influx, and how to manage those risks. It includes a list of Toolkits and methods for the assessment and management of labour influx. The Guidance Note identifies the following potential Environmental and Social impacts. **Good Practice Note – Addressing Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) in Investment Project Financing (2020)[8]**

3.3.4 Other Relevant International Standards and Guidelines

1. International Labour Standards (ILS)

As stated in the International Labour Standard (ILS) website, ILSs are legal instruments, developed by the International Labour Organization (ILO) constituents (governments, employers and workers). These set the basic principles and rights at work. They are either conventions, legally binding international treaties that may be ratified by member states, or recommendations, which serve as non-binding guidelines.

2. Hazardous Materials and Chemicals

- Convention Concerning Prevention and Control of Occupational Hazards Caused by Carcinogenic Substances and Agents-1974
- Bamako Convention on the Ban of the Import into Africa and the Control of Trans boundary Movement and Management of Hazardous Wastes within Africa-1991
- Amendment to the Basel Convention on the Control of Trans boundary Movements of Hazardous Wastes and Their Disposal-1995
- Stockholm Convention on Persistent Organic Pollutants (POPs)-2002

3. Atmosphere, Air Pollution and Climate Change

- United Nations Framework Convention on Climate Change -1992
- Montreal Protocol on substances that deplete the ozone -1987
- Kyoto Protocol: Calls for Implementing and/or further elaborating policies and measures that result in limitation and/or reduction of GHGs emission-1999
- Paris Agreement under the United Nations Framework Convention on Climate Change-2015

4. Health and Worker Safety

[5] Waste Management Facilities - Final - December 7.doc (ifc.org)
[6] EHSG for Construction Materials Extraction
[7] Labour Influx Management Guidance Note - 2016
[8] Good Practice Note - Addressing Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) in Investment Project Financing - 2020

- International Labour Organization Core Labour Standards-1936
- Convention Concerning the Protection of Workers Against Occupational Hazards in the Working Environment due to Air Pollution, Noise and Vibration-1977
- Occupational Safety and Health convention: Convention No. 155 on Occupational Safety and Health provides for the adoption of a coherent national occupational safety and health policy, as well as action to be taken by governments and within enterprises to promote occupational safety and health to improve-1979
- Convention on the Rights of the Child (CRC) -1990

3.3.5 Permitting

3.3.5.1 Egyptian Permitting Procedure

Developers must submit an environmental impact assessment (EIA) study to the Competent Administrative Authority (CAA), which ensures the study complies with the guidelines from the Egyptian Environmental Affairs Agency (EEAA). Upon verification, the CAA forwards the application to the EEAA, which evaluates it within 30 days. If necessary, EEAA may request amendments before approving the report. Approved management plans become legally binding for the developer. Projects are categorized (A-B-C-scoped B).

The CAA for this subproject is the ***Qaluybia Governorate.*** According to the EEAA, establishment of the Khanka TS falls under **Category B**, that requires a Form B ESIA including; a project description, baseline description, impact assessment, analysis of alternatives, and Environmental Management Plan.

3.3.5.2 Other Permits

Per Law 9/2009 and its amendments, establishments must keep environmental registers and notify EEAA of non-compliance. There are specific regulations for hazardous waste management and detailed documentation requirements. Various permits are needed for constructing and operating a Municipal Solid Waste Treatment facility, including approvals for civil defense, building height, construction, environment, operation, land acquisition, product approval, industrial registration, and wastewater discharge. These permits are issued by authorities such as the Civil Defense Authority, EEAA, Industrial Development Authority, and others.

4 Environmental and Social Baseline Assessment

4.1 Sub-Project Site Surroundings

Given the location of the project which is affiliated to El Khanka city within the jurisdiction of El Khanka District- Qaluybia governorate, the consultant focused on El Khanka markaz. The methodology for defining the Area of Influence is detailed in **Annex VII**. Additionally, the identified project site surroundings are as follows:

- Adjacent to the land is an old municipal waste treatment facility that is currently out of service.
- 250 east of the site is a community club.
- To the southeast: Transport and Communications Training Camp - 570 meters away from project site.
- To the south: Arab El Olaykat Al-Qaluybia Housing Project- 1.7 km.
- To the southwest direction: Abu Zaabal Dumpsite 1 km and Armed Forces Authority Residences- 1.26 km.
- To the north: Nazlet Arab Juhayna, approximately 150m to 1.2 km away from the site
- To the northwest: There is a training camp for the armed forces 100 meters from the location of the Transfer station
- Port Said Road is located 50 meters from the Transfer station location
- There is also a group of foundries and factories surrounding the project site.
- There is a school complex about 500 m to the south east.

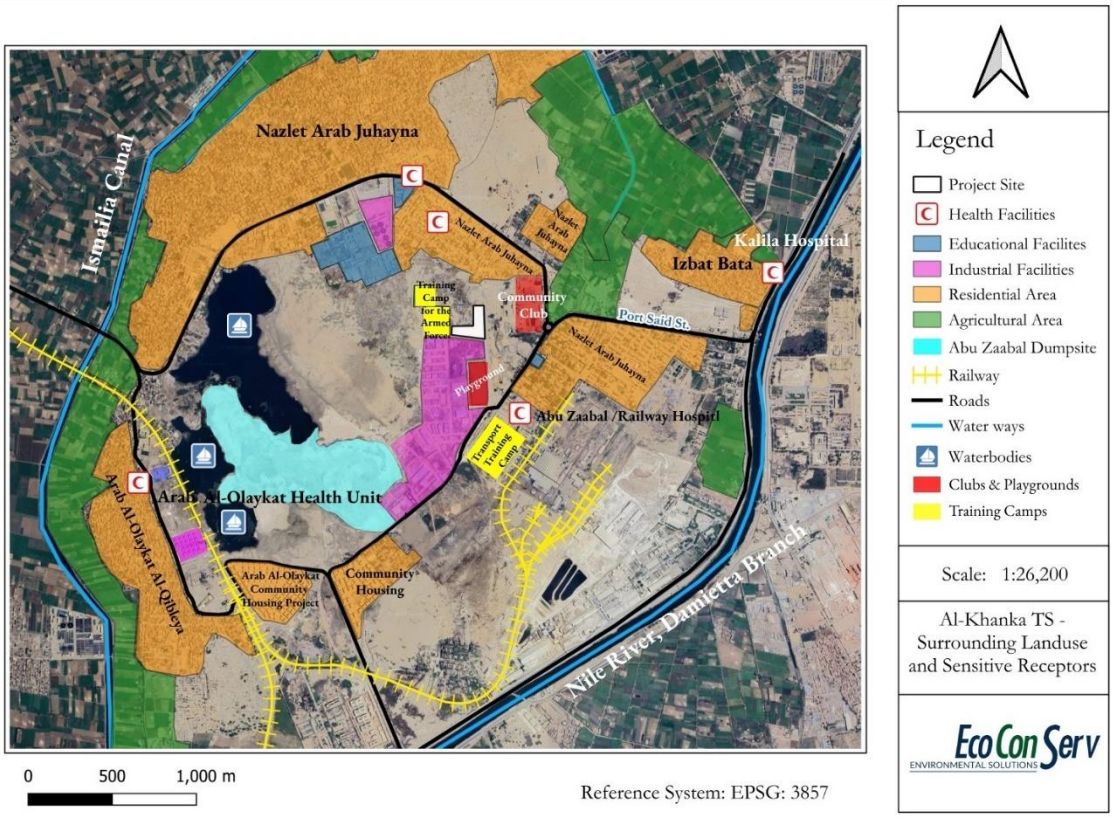


Figure 4-1 : Nearest settlements and human activities (Area of influence)

4.2 Baseline Methodology

4.2.1 Desktop Study and Secondary Sources

The consultant collected a significant amount of quantitative and qualitative information from multiple primary and secondary sources.

4.2.2 Consultations and Primary Sources

In addition to the literature review, structured site visits were undertaken to collect primary data directly from stakeholders in order to engage their perceptions about the project's predicted impacts.

4.2.3 Consultants' Site Visits

A Field visit to the project sites in Qalyubia governorate was arranged on the 2nd of April, 2024 to the proposed Khanka TS site.

4.2.4 Field Surveys and Measurements

Air quality and noise levels were measured late April 2024 and a soil study was conducted in December 2023.

4.3 Environmental Baseline

The environmental baseline for a Transfer Station (TS) refers to the existing environmental conditions and characteristics of the project area before the construction and operation of the facility. It serves as a reference point for assessing and comparing the potential environmental impacts associated with the facility.

4.3.1 Climate

The climatic features of Arab El-Olaykat (around 21 km to the south from Al Khanka TS) can be characterized as follows:

Temperature

The monthly average for the maximum temperature reaches its peak value in July and August (38 °C), and its minimum value in January (21 °C) whereas the monthly average of minimum temperature reaches its highest in July and August (21 °C) and its lowest in February (7 °C).

Rainfall

The mean annual precipitation in the last thirty years at the project area is 21 mm. The rainfall reaches its maximum value in January (4 mm). Furthermore, it reaches its minimum value in the months of June, July (0 mm).

Wind Speed

The average monthly wind speed ranges between 11 Km/h and 13 Km/h. Dry hot dust-laden winds which blows mainly from south and southwest, also, Khamasin winds blows occasionally for about 50 days during spring, from the Northeast direction. The prevailing winds at the project area blow from the North-west direction

4.3.2 Air Quality

A baseline measurement includes the sampling and analysis of active air, noise levels was conducted in the project area in April 2024 to describe the baseline conditions which will serve as a basis to undertake the impact assessment for the TS site. Ambient air quality measurements were undertaken for the pollutants of primary concern; in order to better characterize the ambient air quality, as part of the required environmental baseline measurements. The detailed methodology and results of the measurements are included in the Air and Noise Baseline Study Report, **Annex II.**

As indicated in the table below, the ambient air quality in the project region showed compliance with the National guidelines as well as the permissible limits of the IFC General Guidelines for Ambient Air Quality.

Table 4-1 Ambient Air Quality Baseline Measurements Results

	Air Quality Parameter					
	NO_2	SO_2	CO (mg/m³)	$PM_{2.5}$	PM_{10}	T.S.P
Point 1 Average Results (µg/m³)	٤٢,١١	٦٤,٣٨	٣,٧١	٣٨,٤	٥٧,٢	٧٥,٩
Point 2 Average Results (µg/m³)	٣٧,٣٩	٥٤,٩٣	٣,٣٧	٣١,٤	٥٢,٣	٦٥,٧
IFC Permissible Limit (µg/m³)	**200-1 hour**	**125**	**------**	**75**	**150**	**-----**
National Permissible Limit (µg/m³)	**150**	**125**	**10 (mg/m3**	**100**	**150**	**230**

4.3.3 Noise & Vibration

The results of ambient noise measurements were compared to the National limits of the Executive Regulation (D710/2012) and the guideline values of the IFC General Guidelines for the 'Day' and 'Night' intervals. The tables below list the noise measurement results and applicable national and WBG EHS Guidelines for ambient noise levels.

Table 4-2: WBG EHS Guidelines Ambient Noise Level

Permissible Limits LAeq (dBA)			
Industrial ambient noise		Residential; institutional; educational	
During Day (7 am to 10 pm)	During Night (10 pm to 7 am)	During Day (7 am to 10 pm)	During Night (10 pm to 7 am)
70	70	55	45

Table 4-3: National Requirements for Ambient Noise Levels

Permissible Limits LAeq (dBA) National Requirements			
Residential areas with within light industrial areas		Sensitive receptors (e.g. schools, hospitals, tourist resorts…etc.)	
During Day (7 am to 10 pm)	During Night (10 pm to 7 am)	During Day (7 am to 10 pm)	During Night (10 pm to 7 am)
70	60	50	40

Table 4-4: Ambient Noise Quality Baseline Measurements Results and Applicable Permissible Levels

Measurement Point	Average Sound Level Equivalent & Percentile Recordings in dBA	Applicable Noise Level[9] (National Requirements)
	LAeq	LAeq
Point 1 Day	64.7	70
Point 1 Night	55.0	60
Point 2 Day	59.5	50
Point 2 Night	52.6	40

As shown in the above tables, the ambient background noise levels exceed the national requirements for sensitive receptors (schools). As such, mitigation measures should be implemented to ensure that the ambient noise levels at the sensitive receptors (the nearby school, the community club and residential areas) do not result in a maximum increase in background levels of 3 dB as per the WBG EHS Guidelines.

4.3.4 Topography

Located in the eastern region of the Nile Delta, Qalyubia Governorate has a topography that is generally low, gradually descending from south to north. The elevation ranges from approximately 6 meters above sea level (asl) to sea level towards the Mediterranean Sea. The project area is situated at low lying area of 5-10 ms above sea level[10]. Current studies for Nile Delta have shown that the project's site lies in a Nile clay area, thus it may not support heavy vehicles and equipment necessary for the construction process.

4.3.5 Geology

Holocene sediments dominate the project area and include sand dunes, coastal deposits, sabkha deposits, and silty clay sediments covering the floodplain[11].

- **Specific Site Geology:**

Soil investigation was held by the Technical Advisory Consultant[12] in December 2023 at the area to assess the physical, chemical, and biological properties of the soil.

- **Soil profile and soil texture**

The soil profile investigation conducted within the two-meter depth of the excavated trench reveals a soil composition consisting of a layer of an inorganic clay soil of high plasticity, fat clay. This clay soil exhibits high impermeability, resulting in a slow seepage of groundwater into the borehole during excavation activities. Positioned as the uppermost layer of the primary aquifer in the Nile Delta, this soil layer acts as

[9] National requirements are more stringent than WBG guidelines for ambient noise levels.
[10] Mohammed El-Quilish et al., 2022:" Development and Accuracy Assessment of High-Resolution Digital Elevation Model Using GIS Approaches for the Nile Delta Region, Egyp", Published: December, 2018. available on: https://www.researchgate.net/publication/329686559_Development_and_Accuracy_Assessment_of_High-Resolution_Digital_Elevation_Model_Using_GIS_Approaches_for_the_Nile_Delta_Region_Egypt , accessed on 14/4/2024
[11] H. H. Elewa,et al., 2008: "Hydro-environmental status and soil management of the River Nile Delta, Egypt". Published on: May, 2008. Available on: https://link.springer.com/article/10.1007/s00254-008-1354-5 , accessed on: 25/7/2023
[12] Geotechnical Report Attached in Annex II

a protective barrier, preventing pollutants from reaching the main groundwater reservoir. The dark coloration in the soil profile may be attributed to the accumulation of organic matter.

4.3.6 Groundwater

- **Geological Characteristics of the Main Aquifer (Nile Aquifer) Systems**

The floodplain of the Nile Delta consists of four hydrogeological units: coastal deposits, Sabkha deposits, sand dunes, and Nile floodplain deposits. The Nile floodplain deposits are the most significant for groundwater exploitation in the project area. These deposits belong to the Nile Quaternary aquifer.

- **Recharge-Discharge Sources of the Aquifer Systems**

In the project area, the top clay layer and main Quaternary aquifer are primarily recharged by direct seepage from irrigation canals and drains, as well as downward leakage from excess irrigation. No groundwater extraction from the Quaternary aquifer is reported in the area surrounding the project site due to its high salinity, which makes it unsuitable for irrigation or drinking purposes.

- **Groundwater levels at executed Boreholes**

Results for groundwater depths around the transfer station represented in the figure above. As noticed, the groundwater levels at the site are considered shallow; therefore, mitigation measures to avoid groundwater contamination are elaborated in the ESMP.

BH No.	Ground water depth
1	1.30
2	1.30
3	1.50
4	1.10
5	2.00
6	2.00
7	1.40
8	0.60
9	0.60
10	1.40

Figure 4-2: Ground water level at the executed borehole

4.3.7 Surface Water

The nearest surface water to Khanka Transfer Stations are open manmade ponds near Abu Zaabal Dumpsite. Ismailia canal is East from the TS. Surface water is more than 1 Km away so it will not be affected by construction activities.

4.3.8 Protected Areas and Ecologically Sensitive Areas

The nearest protected areas to the project site are Lake Quroon (102 km southwest of the project area and El Burullus protected area (138km northwest of the project area), which will not be affected by the project activities.

4.3.9 Biodiversity

- **Habitats**

The project area consists of residential and industrial fields that are intersected or adjacent to irrigation and drain ditches. These arable lands are highly productive habitats. Qalyubia Governorate is known for its agricultural activities, particularly Maize, Cotton, wheats, citrus, fruits, bananas and oranges production.

Vegetation types include canal banks, cultivated lands, waste lands, and sandy plains, each supporting different plant communities.

The fauna in the area primarily includes birds, domestic animals, and agricultural pests such as insects, worms, and rodents.

Detailed Flora and Fauna Studies are included in the Baseline study Annex II.

4.3.10 Natural Hazards

Qalyubia Governorate in Egypt is prone to several natural hazards as follows:

- **Sandstorms:** Qalyubia Governorate is located in an arid region, and sandstorms can occur, particularly during windy periods. These storms can reduce visibility, damage crops, and affect air quality.
- **Heatwaves:** As an arid region, Qalyubia experiences high temperatures during summer months, which can lead to heatwaves. Prolonged exposure to extreme heat can pose health risks and increase the likelihood of heat-related illnesses.
- **Dust storms:** Similar to sandstorms, dust storms can occur in the governorate, especially during dry periods. These storms can carry fine dust particles, affecting visibility and air quality.
- **Earthquakes:** Qalyubia is located in a region of low to moderate seismic hazard, and is not considered a high-risk area for earthquakes. The area experiences scattered seismicity, making it challenging to delineate specific seismic zones.

4.4 Socioeconomic Baseline

4.4.1 Administrative Divisions

Based on Egypt's Description by Information 2021, Qalyubia Governorate consists of 7 local units for districts (Markaz), 10 cities, 2 sub-districts, 50 rural local unit neighborhoods 147 satellite villages.

Focusing on Khanka city and Arab El-Olaykat village, where The Khanka Transfer Station is located in. The borders of El Khanka city are as follows:

- Western border: Kafr Hamza Road, Sheben al-Qanater district
- Eastern border: Ismailia Canal (Abu Zaabal village)
- Northern borders: Mashtoul Al Souq district (Al Sharqiyah Governorate)
- Southern border: Abu Zaabal village

4.4.2 Total Area:

The total area of Al Khanka city is about 21.845 km2, of which 5.494 km2 is categorized as agricultural land (25.15% of the total area). However, 12.911 km2 is used for residential purposes (59.1% of the total area), and the total area of land designated for other purposes is 3.440 km2. It is worth noting that, in Khanka city, the agricultural lands are used for farming, with a cultivated area of 1308.20 acres. The main crops include wheat, corn, onions, and clover. It also contains all government buildings, including schools, Azhar institutes, shops, factories, workshops, and gardens. The city of Al-Khanka consists of a large group of families, the most famous of which are the Al-Jamal - Al-Qarsh - Al-Badrawi family. The area is considered attractive to residents of the neighboring villages due to the availability of all the services that the villages lack, and it is attractive to merchants. It has a college of Islamic studies for girls, and female students come to it from everywhere.

4.4.3 Demographic Characteristics

4.4.3.1 Population

Based on Khanka City Council Information Center (2024), the total population of Al Khanka city is 89,707, of which 50.9 % are males (45,744). The number of households is 17,707 with an average family size: 5.

It is also worth noting that the birth rate per 1,000 is approximately 1.028, with a rate of natural increase at 2.014. The death rate per 1,000 is around 1.005. In comparison with the governorate data 2021, the Information and Decision Support Center reported that the birth rate is 29.2 Live birth/ Thousand Persons, versus 5,30 Dead person/ Thousand Person. Accordingly, the natural increase is 23,90 Per thousand persons. With regards to the average household size, it is about 4,06 Person. There was significant variation between the city and village data and the governorate data.

The rate of immigrants does not exceed approximately 0.05%, and because the region is civilized, it does not lack the services of all available schools, and those who leave the region do so due to the working conditions.

The city of Khanka is categorized as one of the young areas in which approximately 43.5% of individuals under the age of 15 live. The number of residents in the economically active age group, which is those who have the ability to work between the ages of 15 and 65 years, is 54.9%. While the age group over 65 years does not exceed 1.6%. All of this works to consolidate the image of the community and describe it as a young and growing community. The following figure shows the relative population distribution according to gender and age groups according to the 2017 census.

4.4.4 Gender Relations and Women Status

Al Khanka city society is mixed of nature as it is composed of civil and tribal communities. Additionally, the Arab El-Olaykat residents are classified as conservative societies, even by Egyptian standards. The community residing the area of influence adopts norms and traditions of tribal communities and squatter residents. Given the nature of the industrial area in Arab El-Olaykat , where there are many factories (such as lead, coal, fertilizers, and tiles), women, as well as customs and traditions that place the work of the public other than in government jobs or work in factories near the village. Due to the improvement of family conditions, most women are educated and contribute to labour market in almost all fields. However, women contribution in industrial field is limited as the nature of the work is not suitable for women (long working hours – no maternity support – harassment). However, work in governmental sector and trading is more suitable for women, especially trading in vegetable and clothing, as well as waste recycling factories, chicken slaughterhouses and clothing factories in the Al Amal Industrial Zone. Among the challenges that women face is, the prevalence of harassment, as well as the spread of divorce cases due to financial circumstances along with the lack of suitable job opportunities.

The majority of women are not classified as vulnerable groups in the project AoI due to active participation in the social life, election process, access to support services …etc. However, female headed families', widowed, poor women, daily wage workers women are still within the vulnerable groups.

Consulted women in 2024 revealed that women in Arab El-Olaykat are terribly lacking: 1) Suitable job opportunities, 2) Increasing pensions and financial aid, 3) Providing workshops where they can be trained on handicrafts

4.4.5 Vulnerable groups

Based on the consultation activities, it was noticeable that the vulnerable groups are mainly:

1- Old people and pensioners who suffer due to lack of proper source of income. Additionally, they have problems with the dumpsite that affects their health.
2- Women and children who suffers from the deteriorated environmental conditions resulted from the current industrial areas and the dump site.
3- Daily wage workers who have limited income and suffer from the absence of health services.
4- People with chronic diseases who have limited health facilities. However, they are exposed to many hazards and risks (e.g. emissions from the industrial activities)
5- Young people who have limited access to all services and they are not politically active.

4.4.6 Land Use

Almost the majority of lands in the project area of influence is classified as industrial lands. About 1.5 km from the project site to the west, the agricultural lands were noticed. Within the AoI, Abu Zaabal Lake is noticed. The Abu Zaabal dumpsite is located within the project AoI

With regards to agriculture residential areas, private dwellings were constructed in Nazlet Juhayna village to the east and Arab El-Olaykat village to the west. However, housing projects are located to the south. A school complex was noticed to the south east of the project site.

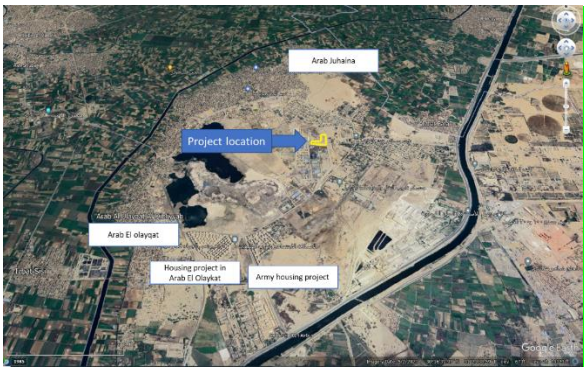


Figure 4-3 Land use within the project area of influence

Figure 4-4: Housing projects in Arab El-Olaykat

4.4.7 Human Development Profile

4.4.7.1 Poverty Profile

The number of families suffering from poverty in the city of Khanka is 11,509 (64.2% of the total families), according to what was stated by the information center of the local unit in the city of Khanka 2024. Additionally, the percentage of female breadwinners is 16.0%. They also reported that the annual per capita consumption rate is 17,500 Egyptian pounds, with a monthly average of 1,458.4 pounds per month.

4.4.7.2 Labor Profile

The total unemployment rates between males and females in the age category between (15 and 64 years) in the city of Khanka is approximately 41.0%, with 44.0% for males and 38.0% for females. However, it is recommended to put such percentage in their context which is that these estimates are purely impressionistic from the information centre and not based on recent surveys. It is worth noting that there was a large percentage of workers working in the field of reconstruction and construction, and all construction was halted during 2021-2024, which affected workers and resulted in significant increase in the unemployment rate among them.

With regards to the industrial activities within the city, there are a limited number of factories in the city, which are: 1) Al-Salam Company for chicken production, 2) Rossico Furniture Company, 3) S Abdel Egypt Company for Clothing Manufacturing, and MOM Metal Manufacturing Factory

As for the nature of work, it is obvious that the city has various job opportunities, especially in supermarkets, weekly markets, shops, clothing and metal factories, mobile repair shops and accessory sales, as well as work in the governmental and educational fields. Micro-enterprises suffer from residents copying the same activities that deem to be successful. Most people tend to imitate the same business, especially supermarkets. Having plenty of business that have the same nature may lead to the closure of some and reduction of profit.

It was reported by the local unit and the consulted groups that unemployed male youth might work in selling drugs and theft. However, the unemployed females depend on their families and charitable assistance.
There is a vocational training center in the city that provides crafts' training (plumbing, carpentry, lathing, electricity).
The city lacks several activities to support small projects, including:

- Home based projects for female breadwinners, such as sewing and handicraft workshops, such as handmade accessories and training on how to manufacture them.
- As well as productive projects such as carpet workshops and providing exhibitions for them

Figure 4-5: Bread Bakery

Figure 4-6 : Workshops

4.4.7.3 Child Labor

There is child labour in the area. Children – excluding girls - aged 10 years and younger, and up to 18 years, can be found working in workshops and shops as apprentices, learning crafts. Alternatively, they might work in private factories located at the 10th of Ramadan industrial zone, or in farming activities. As for children below 13 years of age, they work as blacksmith or in agriculture activities

4.4.7.4 Economic Activities

Al Khanka city is famous for various economic activities: Carpentry, plumbing, blacksmithing, tailoring, barbering, grocery selling. The table below highlights the main economic activities in Khanka City and the employment rates in said activities:

4.4.8 Education Profile and Facilities

With regards to the educational services available within the city of Khanka, there are many different services that work to provide an accessible educational style for the population. Despite this, the city suffers from limited schools and overcrowding of students in classrooms, which has led to the spread of illegal private tuition. In addition, all schools are connected to governmental electricity grid and the government sewage network.

Figure 4-7 Arab El-Olaykat School Complex

The data revealed that there is a clear disparity between males and females with regard to educational status, as the illiteracy rate among females reached 23.1%, while it reached 23.1%. Among males, 15.8%. Additionally, those who completed secondary education, especially technical education, counted to 20.7% among females and 23.7% among males. Obviously, males were keener on reaching the university stage, as 16.1% of the males had completed the university stage, while 13.1% of the females had completed that stage.

The interviews conducted with the local community in April 2024 revealed that there was a negative attitude towards the available educational services due to the lack of space in schools, overcrowding in classes, the difficulty of educational curricula, the unavailability of teachers, the failure of teachers to explain lessons to students, and reliance on private lessons. This trend in absolute terms cannot be treated as an established fact, but must be treated as merely an impressionistic opinion about educational service.

- There are limited technical schools in the city for girls, which leads to girls going to the city of Banha.
- There are also no universities or institutes in the city, which requires going to Banha. Therefore, there may be traffic congestion in the city during school.
- Students go to technical schools by transportation, as they are in the city of Banha. As for primary, preparatory and secondary schools, they are located in the city, but there is difficulty in transportation between villages, estates, and satellites, which leads to the absence of students.

4.4.9 Health Services and Facilities

As for health services, they are limited and not all specialties are available, especially in health units. The services are limited to family planning, enfant, and dentist only. In addition to the lack of a central hospital in the city to receive critical cases. The nearest health facility is located at Arab El-Olaykat 2 km away from the project site. They can provide primary health care. Additionally, Arab clinic is a private health facility located 4.5 km away might provide health care.

The community people face some problems related to the health unit, which are:

- High cost, especially after transfer from a general hospital to a specialized hospital
- Distance to receive health services
- Many specialties are not available, especially gynecologists

Women in particular struggle to obtain various services. Due to the difficulty of accessing health services, especially follow-up during pregnancy, and there is no follow-up from the health unit, and the long distance to obtain health services due to poor road conditions and the lack of transportation and service in the health unit. The construction contractor and the operator will select the most appropriate health service provider that will secure health care to all workers, particularly during emergency cases. Based on the interview conducted with the local unit in the city of Khanka in April 2024, they reported that cases of people with special needs are limited and do not exceed 2%, with mobility disabilities being 0.05%, hearing disabilities being 0.03%, and visual disabilities being 0.02%. As for the services available for people with special needs, they are almost non-existent within the city. However, Limited services are available to the people with special needs, represented by the rehabilitation office for issuing the *Disability Card* only. However, there are no venues available to provide medical care for the people with special needs rather than the Social Affairs Unit, which provides them with a solidarity and dignity "*Takaful and Karama*" pension. Its role is

limited to receiving official documents only. Lastly, there are no rehabilitation offices and no health care is provided for them or places designated for them in the area.

4.4.10 Solid Waste Management Services

- The closest dumpsite to the Transfer Station is the Abu Zaabal dumpsite, located in Arab El-Olaykat village.
- The city council is responsible for collecting waste from main streets and collecting waste from the boxes placed on the streets. In a part of the city (Abu Mutrad neighborhood), there is a contractor who collects garbage from households for a subscription fee of 30 Egyptian pounds per apartment.
- The residents in the area agreed that the throwing of waste onto the streets leads to accumulation, which adversely affects the operations of the city council's waste collection vehicles.
- Around 45% of the Abu Matrad neighborhood is covered by a contractor for waste collection, while the rest of the residents are relying on the city council to collect waste from the main streets.
- The amount of municipal waste generated ranges between 150-200 tons per day.
- Local council and private contractors are responsible for waste collection.

  Regarding future projects to improve the solid waste collection process, contracting with contractors (in Abu Mutrad neighborhood) has been experimented with, and the service is new. They come twice a week with a subscription fee of 30 LE. The trial will be extended to the rest of the city, and a contract will be signed with a cleaning company.

During consultations with stakeholders, residents within the project area of influence expressed their dissatisfaction with the current Abu Zaabal dumpsite, particularly due to the sudden fire incidents and the odor. Accordingly, they were obliged to leave the area. On the top of that, they were unable to lease or trade in their apartments. The governorate authority reported that the value of these residential projects decreased due to the current existing Abu Zaabal dumpsite.
The residents expressed their concerns that the establishment of the Khanka TS will exacerbate the negative impacts.
On the other hand, they acknowledged that any enhancement of waste management in the area, such as establishing a Transfer Station (TS) that will improve waste management and ensure appropriate disposal at the 10th of Ramadan Integrated Waste Management Facility (IWMF) far from the residents, could gain their support. This improvement would allow residents to return to the area or at least sell or lease their apartments.
Accordingly, these concerns will be discussed in details in the ESIA study for Abu Zaabal Dumpsite closure currently under preparation. The ESIA of Abu Zaabal dump site focuses on all concerns raised by the community residents and proposes practical mitigation measures. Additionally, on the 9th of October 2024, a meeting was carried out with the technical designer of Abu Zaabal Dump Site to discuss how community concerns are addressed.

4.4.11 Infrastructure

The general infrastructure of the vast majority of Khanka city is adequate, with water networks and electricity grid covering almost the whole area, as outlined further below.

There is a public water network, Khanka Water Station, covers the entirety of the Khanka City. It was reported by the community people and the local governmental unit that the water is potable most of the time, but that during maintenance, the water contains impurities and tastes like chlorine. Most residents drink their water from the taps in their houses, which is treated by a filter.

There is a public electricity network, covering the entirety of Al-Khanka center and all families are connected to the government and home electricity. However, there are problems with the cutting off of electricity to reduce consumption at the current time.

Based on the meetings carried out with the local governmental units of El Khanka and Arab El-Olaykat in April 2024, the following information summarized the main output regarding sewage service:

- 75% of the city's population is connected to the government sewage system.
- There are some houses, around 25% (connected to private sewage and septic tanks), not connected to the sewage system outside the urban area.
- It is worth noting that residents of Al Khanka pay 120 LE to remove the septic tanks.
- The septic tanks get removed 96 times a year via private cars, and the sewage gets disposed in Al Gabal Al Asfar sewage treatment plan.
- Among the problems that were raised in the Community Questionnaire is that sewage water gets dumped into the drains, leading to the spread of foul odors and insects, in places that are not connected to the public sewage network. Additionally, some drains in certain areas are blocked, resulting in the flooding of streets during Eid times. The water companies are contacted to clean the drains.

4.4.12 Roads and Traffic

There is a network of roads in the city of Khanka, and Khanka-Al-Marj is the main road, located over 10km away from the project area. As for the road to the project site, it is a narrow road surrounded by waste. The width of the roads varies due to unplanned constructions. However, the average width is about 5-8 meters. In general, there are unpaved roads with a lot of bumps and cracks, lack of lighting, lack of cars at all times, and theft at night because the roads are not illuminated. The roads surrounding the city of Khanka, all of which are located more than 10km away from the project site, can be summarized as follows:

- Al-Khanka Al-Marj Road: The road has a lot of cracks and is not paved. Part of it is not paved and is crowded due to reliance on it.
- Al-Khanka Al-Salam Road: There are many accidents because it is a highway, and accidents occur more in the winter than in the summer.
- Traffic density increases during the morning period (from 7 to 8 a.m.) and during the departure of schools and employees from (2 to 3 p.m.)
- Accidents are common on Kafr Al-Hamam Road due to the narrowness of the road and the lack of lighting. There are a lot of cracks and bumps, with approximately 6 to 8 accidents annually
- As for the available transportation, it is limited, such as tuk-tuk and microbus, and there are many impacts on society due to limited transportation:
- Difficulty of movement and the high cost of private transportation, which affects the movement of buying and selling and the rise in goods.
- Conductors are not constantly available, which leads to students being late and not going to school at the specified times.

4.4.13 Cultural heritage/ Archaeological Sites

In this section, the main heritage sites in Al Khanka City are presented. These include Sultan Al-Ashraf Mosque, Abu-Motrod Mosque, and Ali Al-Shami Mosque, all of which are located more than 10km away from the project site. There are cemeteries in Arab El-Olaykat village as well. However, it is important to mention, that there are no **archaeological sites or cemeteries within the project areas or nearby. Additionally, there are no natural reserves in Al Khanka City. All reported cultural heritage is not within the project area of influence.**

During the consultations, it was revealed that community members highly valued Sultan Al-Ashraf Mosque because it hosts marriage contracts and general social events.

Within the project site and the area of influence, there are no foreseen cultural heritage sites.

4.5 Concluding Remarks

4.5.1 Environmental Concluding Remarks

The following environmental conditions should be considered during assessment and mitigation of impacts.

- **Air and Noise Quality**: Baseline measurements have indicated that the ambient air quality and ambient noise in the project region showed compliance with the National guidelines as well as the permissible limits of the IFC General Guidelines. However, it should be noted that ambient noise quality is at the borderline due to the surrounding industries in the area.
- **Topography:** Current studies for Nile Delta have shown that the project's site lies in a Nile clay area, thus it may not support heavy vehicles and equipment necessary for the construction process.
- **Groundwater levels**: the groundwater levels at the site are considered shallow; therefore, mitigation measures to avoid groundwater contamination are elaborated in the ESMP.
- **Surface Water**: The nearest surface water to Khanka Transfer Stations are open lakes near Abu Zaabal Dumpsite. Ismailia canal is East from the TS and there is another canal from the west. Surface water is more than 1 Km away so it will not be affected by construction activities
- **Biodiversity**: None of the species that may be present on or around the site are protected or endangered. No sensitive habitats in the study area will affect by the implementation of the project, as well, no protected areas are located on, or in the vicinity of the project area. Flora and fauna species recorded in the project area are presumably common and not affected by project activities

4.5.2 Social Concluding Remarks

- **Socioeconomic Conditions**
  - **Gender Relations:** The city is conservative, with limited job opportunities for women in industrial sectors due to societal norms and working conditions.
  - **Vulnerable Groups:** Old people, women, children, daily wage workers, and people with chronic diseases are particularly vulnerable due to poverty, lack of services, and environmental issues.
  - **Poverty:** A significant portion of the population lives below the poverty line, with female-headed households being especially vulnerable.
  - **Unemployment:** High unemployment rates, particularly among youth, are prevalent in the city.
  - **Economic Activities:** The city primarily relies on small-scale industries, agriculture, and services.
- **Infrastructure and Services**
  - **Land Use:** The majority of the land is industrial, with limited agricultural areas and a dumpsite.
  - **Housing:** Housing projects are located in the city, but some areas suffer from environmental pollution and infrastructure issues.
  - **Education:** The city has limited schools, leading to overcrowding and reliance on private tuition. Education disparities exist between males and females.
  - **Health:** Healthcare services are limited, with few specialized facilities and long distances to access care.
  - **Infrastructure:** The city has basic infrastructure, including water, electricity, and sewage networks, but there are issues with service quality and coverage.
  - **Waste Management:** The city faces challenges with waste management, including illegal dumping and inadequate collection services.
- **Cultural Heritage**
  - **Heritage Sites:** The city has several cultural heritage sites, including mosques and cemeteries, but no archaeological sites are located within the project area.
  - **Community Values:** Community members value the cultural heritage sites, particularly for social events.

5 Identification and Assessment of Potential Environmental and Social Impacts and Mitigation Measures During Construction and Operation Phases

This chapter addresses potential impacts of all planned project activities during the construction and operational phases. Details of the Impact Assessment methodology utilized can be found in **Annex VI.**

5.1 Overall Positive Impacts of The Project

With proper management, the project tends to have a positive environmental & socioeconomic impact.

- **Efficient waste handling:** Transfer stations provide a centralized location for waste collection, consolidation, and temporary storage of waste before it is transported to final disposal sites. This improves the overall efficiency of waste management operations.
- **Improved logistics:** Transfer stations help streamline waste transportation logistics by reducing the distance travelled by collection vehicles to reach distant disposal sites. This reduces fuel consumption, greenhouse gas emissions, and traffic congestion on roads.
- **Odor and pollution control:** By centralizing waste at transfer stations, measures can be implemented to control odors and minimize the potential for environmental pollution. Proper waste containment and management practices can significantly reduce the negative impacts on air and water quality.
- **Job creation and economic opportunities:** The establishment and operation of transfer stations create employment opportunities, ranging from facility staff to waste management professionals, drivers, and maintenance workers. This contributes to local economic growth and job creation. The total number of job opportunities anticipated based on similar sub-projects is 45-50 workers during construction phase and 15-20 during operation phase. Additionally, 2-4 security guards will be employed during the construction phase. The guards will not be armed.
- **Supply opportunities:** the establishment of the TS will result in positive economic impacts due to purchasing materials from commercially operating licensed firms with no adverse impacts on the natural resources e.g. quarries. The contracts between the contractor and the suppliers and receipts of construction material purchased should be checked monthly by the E&S Manager in the District Local Unit under the supervision of the Environmental Unit within the governorate.
- **Reduction in illegal dumping and littering:** With the availability of transfer stations, communities have a convenient and legal means of disposing of waste. This can help reduce illegal dumping and littering in public spaces, improving the overall cleanliness and appearance of the area.
- **Flexibility and adaptability:** Transfer stations offer flexibility in waste management systems, allowing for adjustments in response to changing waste composition, volumes, and regulations. They can accommodate different waste streams and provide a scalable solution for growing communities.

Cumulative Impacts of the Subproject

- It should be noted that prior to the operation of the 10th of Ramadan Waste facility, waste collected at the transfer station will be sent to the Abu Zaabal dumpsite for an interim period of 2- years. The cumulative impacts associated with the operation of the Khanka transfer station in tandem with the Abu Zaabal dumpsite during the two-year interim period will contribute to impacts associated with waste management at the dumpsite such as odor, air contamination, contamination associated with leachate, road traffic etc. However, during the simultaneous operation of Khanka TS and Abu Zaabal dumpsite, the total amount of waste collected from the community and processed will remain the same.

An in-depth analysis of impacts of due to the closure of Abu Zaabal Dumpsite will be presented in the stand-alone **ESIA**, it is worth mentioning that the following measures will minimize the cumulative effects of both facilities to ensure that community concerns, of having two waste facilities operating simultaneously are addressed:

i. With phased closure already planned for sections of Abu Zaabal dumpsite, closest to residential areas, cumulative impacts on community health and safety will be somewhat mitigated. By the time Khanka TS is in operation, phased closure will ensure that waste is directed to the sections of Abu Zaabal further from communities, which will reduce odor and airborne contaminants in residential zones.

ii. Khanka transfer station is located 3 km from the nearest community and out of prevailing wind paths, limiting its direct impact on local populations, thus mitigating cumulative community exposure.

iii. Environmental and social impacts resulting from the Khanka TS are expected to be limited given that waste does not exceed the 24-hour holding period at the TS, which limits decomposition and odor.

iv. Regular monitoring of air, water, and soil quality, alongside adherence to the ESMP at both facilities, will play a critical role in managing cumulative impacts. This includes daily inspections at Khanka to ensure waste does not exceed the 24-hour holding period

v. Close monitoring and follow up on the implementation of the mitigation measures during the interim period needs to be strictly followed

- As mentioned in section 4.1, the transfer station is located in an industrial area surrounded by factories and foundries, and as elaborated in 4.4.5 the community surrounding the proposed TS site are relatively disadvantaged and with the existing industrial activities in the area that already contribute to imposing poor health conditions. The construction and operation of the transfer station will contribute to combined environmental effects in the area such as air and noise pollution, soil contamination and traffic. In addition, the well-being of workers in the area will be affected. The construction of the TS will contribute temporarily to the combined effects. The construction activities will require movement of heavy trucks and machinery in the area, whereas during the operation phase there will be an increased volume of trucks (reference to section 2.4.3) transporting waste to and from the TS. This will result in increased traffic in combination with the existing traffic in the area including industrial and residential traffic. Cumulative impacts resulting from combined traffic will result in congestion, air pollution, and noise, and road safety impacts affecting the surrounding road network and nearby communities. As presented in the ESMP of section 6.3.2, a Traffic Management Plan will be developed to mitigate traffic impacts by implementing transportation schedules that will be coordinated to reduce peak-hour activity, and routes will be managed to prevent congestion near residential and high-traffic areas.
- However, with the operation of the 10 RIWMF and waste transferred to from the TS is set to improve the public health of the surrounding communities by ensuring safer, cleaner, and more sustainable waste management practices.
- Mitigation measures due to the direct impact of the Transfer station will need to be implemented and recommendation for the development of a Compliance Action Plan, will help mitigate combined environmental and social impacts in the industrial zone.

5.2 Impacts during Construction Phase

5.2.1 Environmental Impacts

5.2.1.1 Air Quality and Dust

Air quality may be impacted by dust and gaseous emissions. In the construction phase it shall be limited to dust.

5.2.1.2 Dust

The construction activities such as movement of heavy equipment and vehicles, levelling, excavation, backfilling, and mixing of building aggregates can generate dust.

- Dust generated during construction activities can contribute to soil erosion, impair water quality in nearby water bodies if sediment-laden runoff reaches them, and contaminate vegetation and ecosystems. Excessive dust can also settle on surfaces, including plants, buildings, and vehicles, impacting their cleanliness and aesthetic appearance.
- Dust particles released into the air during construction can degrade air quality. Fine particulate matter (PM10 and PM2.5), which includes dust particles, can be inhaled and cause respiratory problems, especially for sensitive individuals such as children, the elderly, and those with pre-existing respiratory conditions. Prolonged exposure to high levels of dust can lead to respiratory disorders and aggravate existing respiratory issues.
- Construction workers are particularly vulnerable to the health effects of dust exposure. Inhaling high concentrations of dust can lead to respiratory irritation, coughing, sneezing, and discomfort. Prolonged exposure to certain types of dust, such as silica dust, can cause serious lung diseases like silicosis, which is a chronic and irreversible condition.

The impacts of dust are expected to occur for a short duration during the construction phase, as the site falls in the direction of the prevailing wind (North east), thus the dust generated shall mainly affect the construction site and neighboring industries.

The Basic Impact Significance is considered **Low**, and the receptor is considered as **medium** for the presence of few houses in the area, also the presence of the site surrounded by agriculture land, therefore the basic impact index based on receptor sensitivity is considered as **MODERATE.**

5.2.1.3 Noise & Vibration

The predominant noise generation during construction will result from the operation of heavy equipment, and vehicle movement.

- Construction noise and vibration can have adverse effects on the natural environment. High noise levels can disrupt habitats, disturb nesting birds, and potentially impact sensitive ecosystems. Vibrations can also affect the stability of nearby structures, including buildings, bridges, and underground utilities.
- Construction noise can be a significant source of disturbance for nearby residents. Prolonged exposure to high noise levels can lead to annoyance, sleep disturbances, stress, and reduced quality of life for individuals in the vicinity. Construction vibrations can also cause vibrations in adjacent buildings, which may further contribute to discomfort for occupants.
- Construction workers are at risk of occupational noise exposure and related health issues. Prolonged exposure to loud construction noise can lead to hearing loss, tinnitus, and other hearing-related problems. Construction vibrations can also pose risks to worker safety if they are not properly managed, potentially causing discomfort or instability during work.

The approximate levels of noise produced by different operating machinery are shown in the following table.

Table 5-1 Noise Emission Levels dB (A) of Typical Construction Equipment

Equipment	Expected Noise Emission Levels	Equipment	Expected Noise Emission Levels
Bulldozer	80	Concrete mixer truck	81-85
Front End Loader	72-84	Dump truck	83-94
Jack Hammer	81-98	Crane	75-77
Backhoe	72-93	Welding Generator	71-82

As seen in section 4.3.3., the measured ambient noise levels at the location of the transfer station site are higher than the permissible limits within industrial areas. Similarly, the background noise at the sensitive receptors (school, community club and residential areas) is already above the permissible noise limits. Therefore, the magnitude of noise emissions is considered high at the transfer station, surrounding industries and the sensitive receptors Adhering to the mitigation measures presented in section 6-2 and close monitoring during the construction phase is necessary to ensure compliance with permissible noise levels.

The Basic Index is **low** and the receptor is considered **high** for the presence of few houses in the area, therefor the basic impact index based on receptor sensitivity is considered as **MAJOR.**

5.2.1.4 Soils and Landscape

The construction of TS can impact the soil of the construction site in several ways.

– The project's site lies in a Nile clay area; thus, it may not support heavy vehicles and equipment necessary for the construction process.

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- Excavation and construction activities can lead to soil disturbance, compaction, and erosion, affecting soil permeability and structure.
- Improper handling of construction materials and chemicals can result in soil and water contamination.
- Construction-related noise, vibrations, and increased traffic can disrupt wildlife and livestock behavior.
- Construction of waste management facilities near agricultural land can impact soil fertility and crop productivity.
- Construction waste can contain contaminants that can leach into soil and groundwater, posing risks to crops and the environment.
- The magnitude of the impact on soil is low, the spatial extent is very low as it is limited to the construction site, the duration of the impact is low because the most accurate construction period per site/segment is expected to be on average 6 months.

The calculated **basic** impact index which is **Low**, combined with a **Medium** receptor sensitivity leads to **MODERATE** significance.

5.2.1.5 Groundwater

Construction activities may cause soil contamination, also, potential impacts during construction may arise from domestic wastewater management, storage of materials and waste, and accidental spills from machinery.

- Excavation and soil disturbance can disrupt the natural composition and structure of the soil, increasing its permeability and allowing contaminants to infiltrate the groundwater.

- Accidental spills or leaks of construction materials, fuels, lubricants, or chemicals can seep into the ground and contaminate the groundwater, posing risks to its quality.
- Stormwater runoff from the construction site can carry sediment, debris, and pollutants into nearby water bodies or infiltrate the groundwater, potentially affecting its quality.
- Improper handling and disposal of construction waste, including hazardous materials, can lead to the leaching of contaminants into the soil and groundwater, posing a risk to water resources.

Basic Impact Index is **Low** and given the **High** vulnerability of the receptor because the groundwater is found at close level (0.6 to 2.0 m), the impact is considered **MAJOR**.

5.2.1.6 Surface water

- Soil erosion and sedimentation impact water clarity and disrupt aquatic habitats.
- Construction pollutants in stormwater runoff cause water pollution and harm aquatic ecosystems.
- Altered land grading affects water flow and can lead to drainage issues.
- Construction activities increase water temperature, impacting aquatic organisms.
- Habitat disruption and loss of biodiversity result from vegetation removal and ecosystem fragmentation.

Basic Impact Index is **Moderate**, giving that there are no nearby water areas within 500 m diameter the sensitivity of the receptor is considered Low, the significance of the construction phase on surface water is thus deemed low **Minor**.

5.2.1.7 Waste Management

- Non-Hazardous Solid Waste

Non-hazardous solid wastes generated during the construction of a waste management TS may include:

- Excavation and demolition debris including materials like concrete, bricks, stones, and other building materials that are generated during site preparation, demolition, and excavation activities.
- Landscaping and vegetation waste including waste generated from the removal of trees, shrubs, and other vegetation from the construction site.
- Packaging and wrapping waste including cardboard boxes, plastic wrapping, and other packaging materials that are used for transporting and storing construction materials.
- Scrap metal including any metal waste that is generated during construction activities, such as steel rebar, pipes, and wiring.
- Wood waste including waste generated from the removal of trees, as well as from the construction process itself, such as wooden pallets and scraps of lumber.

- Hazardous Waste

Hazardous wastes generated during the construction of a waste management TS may include materials such as asbestos-containing materials, chemicals, batteries, fluorescent tubes, and electronic waste. These materials are considered hazardous because they contain toxic or harmful substances that can be harmful to human health and the environment if not managed properly.

- Empty containers of chemicals, such as paint cans and cans of the pipe insulation material.
- Leakages from fuel tanks, spent lubricating oils, contaminated soil and any absorbent material used to clean up a spill

Uncontrolled disposal and improper handling of hazardous liquids and solid waste will have major health impacts for on-site workers, inhabitants in the project's area of influence and people who get in contact with waste during its transportation and disposal.

In addition, improper handling and storage of hazardous liquid waste, such as a barrel containing used oil, can cause soil contamination through direct contact or leaching.

- Wastewater

Wastewaters during the construction of a waste management TS may come from various sources such as the cleaning of equipment, vehicles, and tools, and the dewatering of excavations and foundations. This wastewater may contain sediment, debris, and various pollutants such as oils, grease, and chemicals used in construction. If not properly managed, this water waste may cause soil erosion and sedimentation, contaminate nearby water bodies, and harm aquatic wildlife.

Improper waste handling has a direct impact on the surrounding population and puts public health in danger, thus the magnitude of this impact is high, the spatial extent is low because the impact is local and restricted to the project areas. The duration of the impact will be categorized as very short term during construction.

The calculated basic impact index of **Moderate** combined with a **Medium** receptor sensitivity leads to Moderate significance. The receptor in this case is the surrounding population which is a few houses, these impacts are considered **MODERATE**

5.2.1.8 Biodiversity

The construction phase has duration of 6 months. Thus, it is expected that the impacts on biodiversity during this phase would be of short-term.

During the construction phase, the presence of humans, air emissions, noise, and vibrations may negatively impact the domestic animals. These stressors may cause fauna to flee from the area and disrupt nearby fauna in agricultural fields. The increase in traffic may also lead to more animal road kills. However, it is important to note that the current wildlife in the project site consists mostly of opportunistic and pest species, and there are no species of concern expected to be present in the nearby industrial areas. The impact of construction activities on local flora and fauna is considered negligible, with no significant sensitive habitats affected.

Impacts on biodiversity are considered **insignificant**.

5.2.2 Social Impacts

5.2.2.1 Temporary Labour Influx

The contractor will depend on recruiting workers during the construction phase. While the contractor intends to employ labour area when skills are available, there may be instance where workers from other regions or governorates are hired if local skills are insufficient. The presence of temporary workers from abroad regions may increase the risk of social conflict between workers, illicit behaviour and crime in the community and the risk of communicable diseases and burden on local health services as there is a probability to transmit diseases to community areas.

Labour influx impacts are generally linked to reputational risks. Consequently, the likelihood of significant labour influx impacts is assessed as moderate.

The magnitude is considered as moderate, the time span is short and the spatial extent is limited to the area of the project. Given the medium sensitivity of the receptor the significance is **Moderate.**

5.2.2.2 Road Traffic and Transportation

During the construction phase of clearing and cleaning the site, there can be several impacts on road traffic and transportation as follows:

- The activities involved in clearing and cleaning the site, such as heavy machinery movement and transportation of waste materials, can cause temporary disruptions to road traffic. This can lead to delays, congestion, and changes in traffic patterns in the surrounding area.
- The movement of heavy machinery and vehicles during the construction phase can result in increased wear and tear on roads. This can lead to potholes, uneven surfaces, and decreased road quality, potentially affecting the safety and efficiency of transportation routes.
- Dust generated from the clearing and cleaning activities, particularly during dry weather conditions, can impact road visibility and air quality. This can create hazardous conditions for drivers and pedestrians and increase the risk of respiratory issues for nearby communities.
- The use of heavy machinery and construction equipment can generate excessive noise levels, causing disturbances to nearby residents and road users. This can impact the overall comfort and quality of transportation in the vicinity.

The magnitude of the impact is considered high, while the time span is very short, and the spatial extent is limited to the project area. Due to the high sensitivity of the receptor, the overall significance of the impact is assessed as **Major**.

5.2.2.3 Sexual Exploitation and Abuse & Sexual Harassment (SEA/SH)) and Gender Issues

Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) at project sites can have profound and far-reaching impacts on both individuals and communities. One of the most immediate and severe consequences is the increased vulnerability of local populations, particularly women and children due to labour influx that can disrupt local social dynamics and create power imbalances, making it easier for SEA/SH incidents to occur. In many cases, these workers may exploit their positions of power, leading to harassment and abuse of local residents. This is particularly concerning in areas where violence against women and children is normalized, and survivors may face significant social stigma or retaliation if they come forward. The psychological trauma resulting from SEA/SH can be devastating, leading to long-term mental health issues such as depression, anxiety, and post-traumatic stress disorder (PTSD). Victims may also suffer from physical injuries and health complications, further exacerbating their vulnerability and reducing their quality of life.

The presence of SEA/SH at project sites also poses significant health and safety risks, not only for the victims but for the entire workforce and local community. A hostile and unsafe environment can emerge, affecting the overall well-being and productivity of workers. This can lead to decreased morale, increased absenteeism, and higher turnover rates, ultimately impacting the project's success. Moreover, the legal and financial consequences of failing to address SEA/SH can be severe.

Additionally, the broader community may lose trust in the project and its stakeholders, leading to resistance and opposition that can delay or halt project progress. Therefore, it is crucial for project managers and stakeholders to prioritize the prevention and response to SEA/SH, ensuring that robust policies, procedures, and support systems are in place to protect all individuals involved.

The surrounding communities, including Arab El-Olaykat , Arab Juhayna, and others, are situated approximately 500m – 2.5 Km from the Khanka Transfer Station. As a result, while the risk of SEA/SH due to interactions is moderate, the sensitivity of the issue necessitates careful monitoring and management.

Accordingly, the impact assessment of SEA/SH tends to be of **Moderate Significance.**

5.2.2.4 Child Labour

Child labour remains a significant issue in Egypt, despite the prohibitions set forth by the Egyptian Labour Law No. 12/2003, which bans the employment of children under 18 in hazardous work environments. The practice persists due to economic factors, as children often accept lower wages and have fewer demands compared to adult workers.

In the Qaluybia governorate, where child labour is notably prevalent, there is an additional concern that contractors, sub-contractors, and suppliers might employ children aged 12 to 17. These children may be employed because they appear older than their actual age, making it challenging to enforce age restrictions.

Given this context, there is a risk that child labour could be utilized within the project. To address this risk effectively, it is crucial to implement stringent safeguards. This includes incorporating strict contractual obligations for contractors, as well as rigorous monitoring and enforcement mechanisms to ensure compliance with labour laws and prevent the employment of underage workers on site.

While the impact of child labour is limited to the project area and the duration of the construction activities is low, the Child labour impact is considered of **MODERATE Significance.**

5.2.2.5 Public Infrastructure and Utilities

Due to the location of the chosen construction site, near Al Amal industrial zone and Khanka mechanical biological treatment (MBT) facility, the possibility of the impact of the construction phases on the Public Infrastructure and Utilities is increased. The sub-project can impact public utilities in several ways:

1. **Increased Demand:** Projects can strain water and electricity supplies, potentially leading to shortages and higher costs.
2. **Infrastructure Strain:** Construction activities may overload sewage systems and local roads, causing congestion and potential system failures.
3. **Service Disruptions:** Projects can cause temporary or permanent interruptions in utility services, affecting residents and businesses.
4. **Environmental Impact:** Increased utility demands may lead to higher pollution levels and resource depletion.
5. **Financial Implications:** Infrastructure upgrades required by projects can incur additional costs for utility providers, which may be passed on to consumers.
6. **Social Impact:** Disruptions in utility services can affect quality of life and exacerbate social inequalities.

Given the wide special zone and locating close to industrial and commercial areas with high demand to infrastructure, the impacts tend to be of moderate significance.

Effective planning and coordination with utility providers are crucial to managing and mitigating these impacts.

The Public Infrastructure and Utilities impact is considered as of **MODERATE Significance.**

5.2.2.6 Land Ownership and Use

According to the official records from a meeting conducted by the Qalyubia governorate on the 30th of August 2023, the land designated for the sub-project is confirmed to be state-owned and was allocated to Khanka TS. This ownership status was further validated during site visits conducted by the Environmental and Social Management Plan (ESMP) team in April and May 2024 as part of the data collection and screening process. During these visits, the team thoroughly assessed the site and found no evidence of encroachment or informal land use by local residents or other entities. Given these observations, it is concluded that the land is free from any informal or unauthorized activities, and thus, the risk of adverse impacts related to land acquisition for the project is negligible. This conclusion significantly reduces concerns about potential disputes or the need for resettlement, ensuring that the project can proceed without the complications typically associated with land acquisition.

The impact of land acquisition is considered **INSIGNIFICANT.**

5.2.2.7 Cultural Heritage

As the project activities do not involve deep excavation works, there is no probability to find antiquities on site. However, in case of the unlikely event of chance finds, the procedures as detailed in **Annex XI** will be applied, the possibilities for such chance-finds are not high.

In addition, the project area does not include any archaeological sites or nearby cultural value (places of worship and cemeteries), as the heritage sites in Qalyubia Governorate are a great distance from the project site. The construction activities are not likely to have any impact on these areas.

The magnitude is considered as **Minor**, the time span is very short and the spatial extent is very low limited to the area of the project.

5.2.2.8 Visual and Landscape Impacts

The project site, situated within proximity of the Abu Zaabal dump site, is currently a vacant lot characterized by a visually unappealing environment, exacerbated by extensive industrial and construction activities in the area.

During the pre-construction and construction phases, the presence of construction equipment and trucks will contribute to temporary visual disturbances. These impacts, while affecting the site's aesthetics for passersby, are expected to be short-lived and will diminish once construction activities are completed.

Therefore, the magnitude is considered **MINOR.**

5.2.3 Occupational Health and Safety

Workers at the transfer station may face several occupational health and safety risks. According to national laws and safety regulations outlined in Section 3.2 of this report (Article 217, Law 12/2003), employers are required to inform workers about the hazards associated with their jobs before they commence work. They must also enforce the use of prescribed protective measures, provide appropriate personal protective equipment (PPE), and train workers on its correct usage.

Additionally, in accordance with World Bank occupational health and safety OHS standards[13], it is essential that each worker receives comprehensive information about potential hazards and risks in the workplace. This ensures that all safety protocols are understood and adhered to, mitigating the risk of accidents and injuries.

The Occupational health and safety Administration (OSHA)[14] define the key risks, which arise from construction projects, and the following are the ones applicable to this subproject.

- **Excavation and Trenching** – drilling and trenching are considered one of the most dangerous works in any construction site.
- **Heavy Construction Equipment and Vehicles/Trucks.** The injury of the workers could happen if the equipment is malfunctioned (brakes are not working properly, unexpected starting of the equipment, unobvious movement during operation, etc.). In addition to equipment malfunctions, several other factors can pose significant hazards at the project site:

    1. **Improper Use:** Incorrect operation of heavy machinery or vehicles can lead to accidents and injuries.

[13] https://siteresources.worldbank.org/INTRANETENVIRONMENT/Resources/244351-1279901011064/OccupationalHealth.pdf

[14] https://www.osha.gov/

2. **Lack of Maintenance:** Equipment that is not regularly maintained may fail, causing potential hazards and accidents.
3. **Operator Error:** Mistakes made by equipment operators can create dangerous situations, leading to accidents.
4. **Inadequate Training:** Workers who have not received sufficient training on equipment operation and safety procedures are at a higher risk of accidents.
5. **Safety Violations:** Failure to adhere to established safety protocols or use appropriate protective measures can lead to safety breaches and incidents.
6. **Environmental Hazards:** Poor site conditions, such as uneven terrain or obstacles, can interfere with equipment operation and pose risks.
7. **Vehicle Collisions:** Accidents involving trucks or other vehicles on site, including crashes and strikes, can cause significant harm.

Addressing these factors through proper training, regular maintenance, adherence to safety protocols, and careful management of site conditions is essential to mitigate risks and ensure a safe working environment.

- **Weather conditions**: heavy rains, wind, high temperatures and fog. Additionally, heat stress and sun strike during the summer months.
- **Unstable surfaces** It can be difficult to assess the level of loading a surface can withstand; this is particularly significant because of the high load that will be exerted by the heavy construction machinery.
- **Working at height hazards** involve risks associated with tasks performed above ground level. Key hazards include:

1. **Unstable Platforms:** Insufficiently secured or unstable working surfaces can collapse.
2. **Stable and mobile stairs** - Fixed and mobile stairs are important causes of sever injuries and fatalities among construction workers.
3. **Incorrect Use of Equipment:** Misuse or failure of fall protection equipment like harnesses or guardrails.
4. **Weather Conditions:** Adverse weather (e.g., wind, rain) can increase the risk of slips and falls.
5. **Fall** - The usual cause of this accident is slipping or foot stumbling, or using a loose ladder. There are many reasons to be at risk of falling. To avoid these risks, the employer must have a fall protection program as part of the occupational health and safety program in the workplace.
6. **Falling Objects:** Tools or materials dropping from height, potentially injuring those below.
7. **Overhead Power Lines:** Proximity to power lines can pose electrocution risks.

- **Manual handling** many injuries occur due to the improper handling of equipment, or fatalities.
- **Musculoskeletal injuries**: body positioning, force of movement, etc. can negatively affect the workers.
- **Airborne fibers and toxins**: There are multiple sources of potential lung damage within the construction environment. These include:
    - Dust caused by stone masonry, removing rubble and general site clean-up
    - Wood dusts emitted from wood works

  - Toxic fibers that become airborne when laying carpet, inhaling isocyanates, which are used in paints, varnishes, glues, flooring and building insulation materials
  - Conditions created by breathing in these particles run the gambit from occupational asthma to silicosis, COPD (chronic obstructive pulmonary disease) and lung cancer.
  - Being infected by COVID-19 and other respiratory diseases

- **Hand and vibration syndrome:** Hand and vibration syndrome (HAVS) occurs when a worker continually uses handheld power tools particularly in the process of dismantling the concrete structures. While it is easily preventable, once someone has developed HAVS, the damage is permanent.
- **Noise:** Construction sites in particular can be problematic when it comes to hazardous noise levels.
- **Moving objects**: Constructions sites are typically a buzz of activity and, as with slips and trips, without proper work area management, being hit by a moving object can become a hazard. There are several reasons that a worker might be hit by a moving object. These include:
  - Untidy and cluttered work areas that hinder safe maneuvering
  - Lack of warning lights and/or beepers on moving vehicles
  - Poorly lit work areas
  - Working close to moving objects
  - Colliding with mobile elements such as machinery, pallets or boxes
  - The lack of warning signs at movement intersections
- **Exhaustion**: Construction work can be extremely laborious and often requires long hours of hard manual labour in sometimes harsh weather conditions. When a worker is physically or mentally exhausted, their level of attentiveness goes down, opening the door to poorly-thought-out decisions and costly mistakes.
- **Transmission of Diseases** – increased risk of infection associated with exposure to infected workers e.g. M. Pox COVID-19, Hepatitis B, Hepatitis C and HIV-AIDS.
- **Additional potential risks e**.g. hot works, lifting operations, electrical works, and risk of exposure to toxic gases, lack of oxygen, or limited access for emergency situations in confined spaces.

Accordingly, the impact on Occupational health and safety is considered of MAJOR significance due to the High magnitude of risks associated with construction works.

5.2.4 Community Health, Safety and Security

There are impacts to the local communities specifically the communities near the project site with regards to the transport of equipment to the site in preparation for construction, which could result in some risks for the local community who use the same roads to commute as those utilized to transfer equipment. Therefore, some incidents may occur, posing road safety risks to community health and safety.

Risk related to community health safety and security/ community dissatisfaction such as (e.g. odor, Noise, Litter, Physical and biological hazards) include:

  - Exposure to Hazardous Materials: During construction and operation, communities may be exposed to harmful substances, leading to potential health risks.

- Increased Traffic and Accidents: The project may result in higher traffic volumes, raising the likelihood of transportation-related accidents and injuries.
- Noise Pollution: Construction activities and project operations can generate significant noise, disrupting the daily lives of nearby residents and causing stress-related health issues.
- Disruption of Local Services: The project might interfere with local infrastructure and services, leading to reduced access to essential amenities like water, electricity, and healthcare.
- Social Tensions: The influx of workers can create social friction within the community, particularly if there is competition for local resources or employment opportunities.
- Spread of Communicable Diseases: New workers coming into the area may introduce or spread illnesses, particularly in communities with limited healthcare resources.
- Increase in Crime Rates: The presence of a large, transient workforce can potentially lead to an increase in crime, including theft and other antisocial behaviors.
- Environmental Pollution: Air and water pollution from project activities can have detrimental effects on the health of local residents, particularly vulnerable populations like children and the elderly.
- Temporary nuisance and inconvenience as a result of the construction activities including noise emissions, and road traffic.
- Increased background noise levels from operations of heavy equipment operating as well as other construction activities;
- The possibility of being infected by diseases or viruses from workers such as M-Box, COVID-19, Hepatitis B, Hepatitis C and HIV-AIDS.
- Potential recruitment of daily wage workers (less than 18 years old) by local subcontractors.
- Risks related to Sexual Exploitation & Abuse and Sexual harassment risks (SEA/SH).
- Unauthorized site access might cause injuries
- Potential risks related to fire eruption, electricity shocks and emergency situations.

The project will decrease open burning of waste, which is one of the top two contributors to air pollution.

With regards to security guards within the site, they will be limited to 2-4 people during construction per shift. Additionally, they will not be armed force.

The magnitude of Impacts on community health safety and security is considered as moderate, the time span is short, and the spatial extent is very low limited to the area of the project. Given the Moderate sensitivity of the receptor the significance is **MODERATE**

5.3 Impacts during Operation Phase

5.3.1 Environmental Impacts

5.3.1.1 Gaseous Emissions

Gaseous emissions result from the following operation activities:

- Combustion of fossil fuels of vehicles used for waste transportation can generate carbon dioxide, nitrogen oxides, and Sulphur dioxide.
- Odour: The handling of waste can generate odours. The strength of these odours depends on factors such as the amount of odorous waste, the degree of degradation of organic materials, and the organic content in the waste. Odours can cause discomfort and are considered a form of pollution.
- Waste will come to the facility from collection points and could be 1-2 days old. The waste will be transported to the site in closed waste collection trucks in compliance with the Solid Waste Management Law 202/2020.

The project site is close to residential areas, but the prevailing wind direction does not directly affect these areas. The impact on air quality is considered high due to the site's location relative to the prevailing wind, but the affected area is limited to the local project area. The impact is expected to be long-term as the TS's lifespan is 25 years. Also, site measurements indicate that the ambient air quality at the site meets national regulations, and WB. Gaseous pollutants in the air are generally below permissible limits, but it's important to prevent concentrations from exceeding these limits to avoid toxic air composition.

The receptor sensitivity is considered Moderate the overall impact is **MODERATE.**

5.3.1.2 Noise & Vibration

Noise and vibration can be generated during the operation of a direct loading transfer station. The noise can come from various sources such as machinery, vehicle movement, and the handling of waste materials. Vibration can be caused by heavy machinery, compactors, and equipment used for waste handling.

Excessive noise and vibration can have negative impacts on both workers and nearby residents. Prolonged exposure to high levels of noise can lead to hearing loss, stress, and other health issues. Vibrations can cause discomfort, disrupt activities, and potentially damage nearby structures.

The magnitude of the noise and vibration impact is low because the emissions do not affect a large population. The spatial extent is very low because the impact is on scale of the immediate area of the project, few residential houses surrounding it and a community school and sports club. The duration of the impact is long term, thus high.

As seen in section 4.3.3., the measured ambient noise levels at the location of the transfer station site are higher than the permissible limits within industrial areas. Similarly, the background noise at the sensitive receptor (school) is above the permissible noise limits. mitigation measures should be implemented to ensure that the ambient noise levels at the sensitive receptor (nearby school) should not result in a maximum increase in background levels of 3 dB as per the WBG EHS Guidelines (i.e. 62.5 dB during the day and 55.6dB during night at the school borders).The Basic Index is **low** and the sensitivity of the receptor sensitivity is considered **Moderate**, therefore the significance is considered as **MODERATE**.

5.3.1.3 Soils and Landscape

The operation of waste management TS can have potential impacts on the soil of the site and the surrounding agriculture land. The following are some of the impacts:

- The project's site lies in a Nile clay area; thus, it may not support heavy vehicles and equipment necessary for the construction process.
- Heavy machinery and vehicles used in waste handling can cause soil compaction, which reduces the pore space in the soil and restricts water infiltration and root growth. Compacted soil can lead to decreased soil fertility and hinder the growth of vegetation.

- The movement of vehicles and equipment, as well as the handling of waste materials, can disturb the soil surface and cause soil erosion resulting in the loss of topsoil, which is rich in organic matter and nutrients necessary for plant growth.
- Improper storage or handling of waste materials can lead to the release of pollutants into the soil, causing soil contamination. Contaminants such as heavy metals, chemicals, or hazardous substances can pose risks to soil quality and affect the health of plants and other organisms.
- The presence of a transfer station can visually alter the landscape, particularly if it is located in an open or natural area. Structures, storage areas, and waste piles can change the aesthetic appeal of the surroundings and impact the visual quality of the landscape.
- The construction and operation of a transfer station can result in the removal of vegetation, including trees, shrubs, and other plant species. This can disrupt natural habitats, reduce biodiversity, and negatively impact the ecological balance of the area.

The magnitude of the impact on soil is High, the spatial extent is low because the impact is limited to the site, the duration of the impact is long. The basic impact index which is Moderate, combined with a medium receptor sensitivity leads to **MODERATE** significance.

5.3.1.4 Groundwater

- The TS operation may generate leachate, that can infiltrate the soil and potentially reach groundwater, leading to groundwater contamination.
- Improper storage, handling, or disposal of waste materials can result in the release of contaminants into the surrounding soil that could migrate and reach groundwater, posing risks to its quality and potentially rendering it unsuitable for drinking or other uses.
- Stormwater runoff from the TS, particularly during rainfall events, can carry pollutants and contaminants from the site into nearby surface water bodies. If these surface waters are hydrologically connected to groundwater, the contaminants can potentially infiltrate the groundwater system.

This impact is Moderate, localized, and long-term. The magnitude of the impact is deemed Major prior to the implementation of mitigation measures due to the shallow groundwater level. As the vulnerability of the receptor is considered Moderate, the significance of the impact is assessed as **Major**.

5.3.1.5 Surface Water

- Stormwater runoff from the site, particularly during rainfall events, can carry sediment, debris, and pollutants into nearby surface water bodies, leading to sedimentation, reduced water clarity, and potential water quality degradation.
- Improper storage, handling, or disposal of waste materials at the transfer station can result in the release of contaminants into the environment. If not properly managed, these contaminants can be transported by runoff and discharged into nearby surface water bodies, posing risks to aquatic ecosystems and potentially impacting water quality.
- The TS may receive waste materials that contain organic matter and nutrients. If these materials are not properly managed, excess nutrients such as nitrogen and phosphorus can be transported by runoff into surface water bodies, leading to eutrophication. Eutrophication can cause algal blooms, oxygen depletion, and disruptions to aquatic ecosystems.
- Site grading and alterations to natural drainage patterns, can modify the flow of surface water. This can lead to changes in water flow dynamics, increased runoff, and potential localized flooding or drainage issues, affecting the hydrological balance of the area.

This impact is High, district level, and long-term. The magnitude of the impact is deemed **Low** prior to the implementation of mitigation measures. As the vulnerability of the receptor is considered Low, the significance of the impact is assessed as **Moderate**.

5.3.1.6 Waste Management

It is important to highlight that there would be no sorting in the TS, yet the TS receives wastes that could be classified into the following:

- Non-Hazardous Solid Waste
  - The TS receives non-hazardous solid waste from various sources. Without proper management, there can be accumulation of waste at the site, leading to visual impacts and potential odor issues.
  - Handling and processing of waste can generate dust and particulate matter, especially during activities such as loading/unloading onto/from transport vehicles. This can result in air pollution and potential respiratory health concerns for workers and nearby communities.
  - The TS may generate runoff and leachate, particularly from waste that contains liquids or when rainwater comes into contact with the waste. If not properly managed, this runoff and leachate can carry contaminants into nearby surface water bodies, potentially polluting the water resources.
- Hazardous Solid Waste
  - The residues from the TS systems may contain hazardous substances, such as heavy metals or volatile organic compounds (VOCs).
  - TS may require the use of chemicals, such as disinfectants or leachate treatment agents. These chemicals may be hazardous and require careful handling and disposal.
  - If the waste being transferred contains asbestos-containing materials, then the TS may generate asbestos waste. Asbestos is according to the EEAA categorized as list S that include medical waste, radioactive waste, asbestos, waste oil and empty containers.
  - If the waste contains hazardous substances, such as lead-acid batteries or electronic waste, then the TS may generate hazardous waste.
- Wastewater

Wastewater generated during the operation of a TS can include:

- TS regular cleaning and maintenance involves the use of water for washdown activities, which can result in water waste if not properly managed.
- Improper handling of septic tanks
- Improper management of leachate can result in wastewater and potential pollution.
- Stormwater runoff during rainfall events may come into contact with waste stored at the TS. If not effectively managed, stormwater runoff can carry contaminants from the waste and contribute to water pollution.
- Improper waste handling has a direct impact on the surrounding population and puts public health in danger.

Their magnitude is considered **Medium**. The receptor sensitivity is **High** as it affects all physical and biological elements of the area along with residents. The receptor in this case is the surrounding population. The impact is considered **Major**

5.3.1.7 Biodiversity

The project site has no biodiversity to be affected.

Biodiversity impacts will be **insignificant**.

5.3.2 Social Impacts

5.3.2.1 Temporary Labour Influx

Given the limited number of permanent workers during operation (15-20 workers) and the majority might be from Qalyubia governorate who adopt the same norms and traditions, the labour influx is insignificant.

Accordingly, labour influx impacts tend to be **INSIGNIFICANT**.

5.3.2.2 Road Traffic and Transportation

The operation of the project will be linked to a permanent movement of trucks to and from the transfer station site because the operation process is based on the regular transportation of waste. Therefore, the operation will have impacts on traffic and increase the burden on the main and secondary roads leading to the project site.

A traffic study has not been prepared for the project/or similar projects in Al Qalyubia Governorate. Therefore, the consultant does not have clear information about:

- The annual rate of increase in the volume of traffic on the basis of which the volume of traffic for waste transport trucks that will operate in the project is added and the volume of traffic is estimated.
- The number of main roads and their specifications in terms of width, efficiency, peak traffic times and the number of vehicles on each road that can be used to transport waste generated in the Khanka area and the neighboring areas that will feed the transfer station.

But in general, it can be confirmed that the project will have a high impact on traffic and roads, depending on the Traffic Management Plan that must be developed by the Operator in coordination with Qalyubiya Governorate and approved by the General Traffic Authority.

The potential impacts are:

- Increased traffic flow on roads leading to and from the Khanka transfer station,
- Traffic jams and increased exposure of travelers and road users to exhaust and associated noise and possible accidents.

The magnitude is considered as moderate, the time span is long. Given the medium sensitivity of the receptor the significance is **Major**.

5.3.2.3 Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) and Gender Issues

The project can lead to an increased risk of SEA/SH, because working in the Transfer Station is likely to be male dominated, and female workers might encounter the risk of different forms of SEA/SH in the workplace. Therefore, SEA/SH risk in the workplace needs to be carefully mitigated.

SEA/SH can be manifested through multiple behaviors including:

- Sexual Harassment: Female workers are often targeted with unwelcome sexual advances, inappropriate comments, or physical contact. This could come from co-workers, supervisors, or even community members.
- Exploitation and Abuse: Some women may face coercion into sexual activities in exchange for job security, promotion, or other benefits. This abuse of power is often perpetrated by individuals in supervisory roles.

- Discrimination: Women may experience unequal pay, fewer opportunities for promotion, and biased treatment in hiring and work assignments. Gender-based discrimination leads to unequal professional development and financial security.
- Unsafe Working Conditions: Inadequate site design, such as poor lighting or unmonitored areas, can make workers, particularly women, more vulnerable to harassment or violence on the worksite.

Given the presence of conservative Arab tribes in the Area of Influence and the reputational risk associated with SEA/SH, the magnitude of SEA/SH impacts is considered moderate. The time span of these potential impacts is long, but the spatial extent is limited to the project area. Additionally, the number of workers is limited, and most are likely to be from the same governorate, which may help to mitigate some of the risks.

Given the sensitivity of the receptor, the significance is **Moderate**.

5.3.2.4 Child Labour

Child labour is a common practice in Egypt. Given the fact that the project will not recruit anyone that does not have an ID, it will be easy to detect child labour. All children below 18 should not be recruited.

The Solid Waste Management Unit (SWMU) Directorate and the transfer station management staff are fully aware that recruiting people below 18 years old is prohibited in all projects. The officials of the Khanka local unit will focus on applying rigid monitoring of the recruitment process.

The impact on child labour is considered **INSIGNIFICANT**.

5.3.2.5 Public Infrastructure and Utilities

The operation of the project will not affect the existing public infrastructure and utilities, as it will have its own supply of facilities and utilities.

The Public Infrastructure and Utilities impact is considered as **INSIGNIFICANT** significance.

5.3.2.6 Land Ownership and Use

There will be no impacts related to the acquisition of land during the operational phase.

The impact of land acquisition is considered **INSIGNIFICANT.**

5.3.2.7 Cultural Heritage

There are no expected impacts on cultural heritage sites during the project operation and maintenance.

The impact on cultural heritage is considered **INSIGNIFICANT**.

5.3.2.8 Visual and Landscape Impacts

The solid waste accumulation is an unfavorable seen for the Transfer Station (TS). However, the design of the project aimed at covering all wastes and surrounding the TS with trees and fences. Additionally, the vehicles transporting waste will be covered with sheets. Accordingly, such impact might be minor, as some vehicles might not follow the instructions related to using sheets to cover wastes.

Road users and by passers may notice the low aesthetic value of the area. Accordingly, a **Minor** impact is expected.

5.3.3 Occupational Health and Safety

- Workers at the TS could get injured by infectious sharps mixed with municipal waste and possibly infected by blood transmitted diseases,

- Wastes may have some hazardous components, such as broken glass, that could be difficult to separate and could cause injuries to packing workers and end users
- The accumulation of waste within the site and not dealing with it on a regular basis (regular operation of the facility) as a result of equipment breakdown or lack of maintenance will help the spread of rodents and insects, exposing workers to disease because they are the most sensitive receptor,
- Workers' non-compliance to use the Personal Protective Equipment can make them vulnerable to work-related injuries and dangerous diseases,
- Risks associated with accidents such as the outbreak of fire due to the accumulation of waste for long periods within the site
- Workers at TS facilities may face exposure to hazardous substances, leading to respiratory problems, skin irritations, or other health issues.
- Heavy machinery and equipment can lead to accidents and injuries if not operated and maintained properly.
- The manual handling of waste and heavy objects can cause physical strain and injuries to employees.
- TS sites can be prone to slippery surfaces, uneven terrain, and obstacles, increasing the risk of slips, trips, and falls.
- TS facilities can attract pests and insects, creating potential exposure to disease-carrying organisms.
- TS operations can generate high levels of noise and dust, which may lead to hearing damage and respiratory issues, if proper protection is not provided.
- The nature of the work at a TS-dealing with waste and sometimes difficult conditions- can lead to psychological stress and mental health concerns for employees.
- The probability of being bitten by stray dogs or other types of pests.

The magnitude of the impact is considered to be High and long term; thus, the Basic impact index is considered as Moderate, the receptor is considered as High, and consequently the significance is **MAJOR.**

5.3.4 Community Health and Safety

Although the project will reduce waste disposal, community health and safety risks/community dissatisfaction with the operation of the Transfer Station due to operation-related impacts, such as odor, noise, litter, fire, physical, chemical, and biological hazards.

- Litter can be spread beyond the waste management facilities boundaries by the effect of wind, vermin and vehicles. The litter can spread diseases or attract rats, which will disturb the community.
- Noise from waste processing, vehicles moving in and out of the site bringing waste and materials,
- Dust and odors can be nuisance to the surrounding community.
- Fire can be caused from the Transfer Station due to any actions e.g. smoking, accidental fires that might erupt due to any unforeseen reason.
- The probability of being bitten by stray dogs or other types of pests.

There's a risk of Communities' rejection for the SWM infrastructure during operation and the potential associated health impacts if the operation of the facilities is not done in a very hygienic way.

It should be noted that design of the transfer station assumes that by 2040 there will be 90% collection efficiency, therefore 10% of waste will remain uncollected and possibly disposed randomly.

The magnitude of Impacts on Community Health Safety and Security is considered as moderate, the time span is long, and the spatial extent is limited to the project area. Given the **Moderate** sensitivity of the receptor the significance is **MODERATE**.

6 Environmental and Social Management and Monitoring Plan (ESMMP)

6.1 Introduction

This chapter describes the environmental management procedures required to mitigate the residual negative impacts for which the mitigation measures do not essentially need to be integrated in the project design.

The environmental management plan consists of a set of mitigation measures that needs to be considered in order to eliminate, offset or reduce negative environmental and social impacts to acceptable levels in accordance with the Egyptian regulations, as well as WB guidelines. The management plan is a practical document that will be updated regularly by the project team to ensure that any potential changes within TS are taken into consideration.

6.2 Institutional Setup

The successful implementation of the ESMP will depend on a range of different entities and organization that will manage the mitigation and monitoring activities. To ensure the effective implementation and monitoring of the Environmental and Social Management Plan (ESMP), the Environmental and Social Project Implementation team under Al-Qalyubia Governorate Solid Waste Management Unit, along with the contractor and operator, must be adequately staffed. The organizational structure of the Project Coordination Unit (PCU) should reflect a comprehensive range of competencies necessary for these tasks. Qualified staff are essential for monitoring all activities, and the key qualifications for Environmental, Health, and Safety (EHS) supervision include:

- **Educational Background:** A bachelor's degree in Environmental Science, Occupational Health, Industrial Safety, Social and Human Resources, or a related field is generally required. Some positions may prefer candidates with a master's degree or additional certifications such as Certified Safety Professional (CSP) or Certified Industrial Hygienist (CIH).
- **Experience:** Relevant experience in EHS roles, typically ranging from 3 to 5 years minimum, is crucial. This experience should include increasing responsibilities in EHS and/or environmental programs, particularly in manufacturing, production, or service operations.
- **Skills:**
    - **Risk Assessment and Management:** Ability to conduct thorough risk assessments and implement effective risk management strategies.
    - **Regulatory Knowledge:** Understanding of local, regional, and World Bank EHS regulations and the ability to ensure compliance.
    - **Communication:** Strong communication skills to effectively train employees, report findings, and influence organizational change.
    - **Problem-Solving:** Proficiency in identifying issues and developing practical solutions.
    - **Leadership:** Experience in leading and developing EHS teams, including setting expectations and providing feedback.

Additionally, the development and management of registers for proper documentation and tracking of environmental and social training, incidents, and related grievances are essential. This ensures that all activities are well-documented and any issues are promptly addressed.
Based on the Institutional Capacity Assessment for Al-Qalyubia Governorate SWMU, the proposed institutional set up for project implementation is comprised of the following main **key players**:

- **Responsibilities of The Project Coordination Unit (PCU):** The PCU, established within the Ministry of Environment (MOE), coordinates all aspects of project implementation. It is

supported by consultants who provide technical assistance throughout the project stages, including studies, design, preparation of specifications and tender documents, and supervision of infrastructure facilities.

- **Khanka Local Unit and SWMU E&S Management Team:** This team is responsible for public cleansing within the city services structure, managing solid waste systems at both city and district levels. Their role includes issuing operating tenders, monitoring, and evaluating operator performance. They must appoint an E&S Manager to oversee the implementation of the Environmental and Social Management Plan (ESMP) and ensure compliance with World Bank requirements. They are also responsible for monitoring resettlement and livelihood restoration actions, conducting audits and inspections, and reporting on E&S performance.
- **Responsibility of the Environmental Unit with the Governorate:** This unit reviews Environmental Impact Assessments (EIAs) for sub-projects, conducts site inspections, monitors environmental aspects, and updates the environmental register.
- **Civil Defense General Department:** This department reviews Emergency Response Plans, conducts site inspections, monitors firefighting and Occupational Health and Safety (OHS) aspects, investigates firefighting equipment quality, manages emergency situations, reports incidents, and provides firefighting permits.
- **Responsibility of the Construction/Operation Contractor:** The contractor must implement the E&S Management Policy, set up the necessary organization and resources, appoint an E&S officer and an OHS expert, provide regular monitoring indicators, train employees, and ensure compliance with the E&S management system. They must draft a comprehensive Contractor Environmental and Social Management Plan, applicable to subcontractors and suppliers, and ensure effective implementation of all measures.

An assessment of the current capacity of the proposed entities that will manage the ESMPs and proposed capacity building can be found in **Annex VIII**

6.3 Environmental and Social Management plan (ESMP)

6.3.1 Construction Phase ESMP

Table 6-1: Environmental and Social Management plan During the Construction Phase

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual Impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
Construction Phase									
Air Quality and Dust	Construction generated dust can have the following impacts: • Soil erosion and water quality impairment in nearby water bodies. • Contamination of vegetation and ecosystems. • Settling on surfaces, affecting cleanliness and appearance. • Degradation of air quality, leading to respiratory problems for sensitive individuals. Health risks for construction workers, including respiratory irritation and serious lung diseases like silicosis.	**Moderate**	• Dust suppression using water. • Slowing driving speed of material transportation vehicles. • Providing worker awareness on safe driving and machinery usage. • Maintaining machinery and vehicles in good condition to reduce emissions. • Adjusting construction timing to favourable climate conditions. Developing a construction environmental management plan, including covering materials during transportation, using designated storage areas, dust suppression with water, regulating vehicle speed, and implementing preventive maintenance for vehicles and equipment.	ESS1 ESS2 ESS3	• Site inspection • Review the equipment, maintenance records. • Review the grievance log	**Minor**	Construction contractor	Khanka Local Unit, Environmental unit	Contractor's cost
Noise and Vibration	Construction related noise and vibrations can have the following impacts: • Disruption to the natural environment, affecting habitats and sensitive ecosystems. • Disturbance to nearby residents, leading to annoyance, sleep disturbances, and stress. • Potential damage to nearby structures and utilities due to vibrations. Occupational noise exposure and related health issues for construction workers, including hearing loss and discomfort.	**High**	During detailed design and engineering, ensure the following measures are considered: • Installation of noise controls for improved soundproofing, and other noise reducing features, • Acoustic enclosures are installed for noise generating equipment, • Use of sound insulating materials in construction (the site fence and green belt should also work as acoustic screen); • Ensure that ambient noise level doesn't exceed 3 dB above the background level at the school boundaries (during school days), community club and residential areas, by engineering control measures (e.g. design features and physical interventions) • Improve the acoustic performance of constructed buildings, by applying sound insulation • Maintain machinery and vehicles in good condition to reduce noise generation and adhere to permissible limits. • Keep site roads in good condition to minimize noise and vibrations from vehicle movements. • Create buffer zones or locate facilities away from sensitive areas. • Choose equipment with low noise emission levels. • Follow manufacturers' recommended maintenance schedules for engine and mechanical parts, including tire pressure. • Schedule construction activities during appropriate daytime hours without affecting the school-day activities in coordination with the school administration.	ESS1 ESS2 ESS3	• Site inspection • Review the equipment, maintenance records. • Review the complaints log	**Moderate**	Construction contractor	Khanka Local Unit, Environmental unit	Contractor's cost

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual Impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
			• Provide earmuffs/protective hearing equipment for all workers. • Turn off equipment when not in use in community areas. • Place noise generating sources (e.g., generators) as far as possible from sensitive receptors. • Use silencers or acoustically attenuating shields for stationary equipment. • Inform local residents of planned works, noise levels, and contact details for complaints. • Ensure that ambient noise level doesn't exceed 3 dB above the background level near the sensitive receptors. • Avoid simultaneous construction activities which increase noise levels beyond permissible levels.					
Soils & Landscape	The construction of the TS can impact the soil in these ways: As the project's site lies in a Nile clay area, thus it may not support heavy vehicles and equipment necessary for the construction process" • Disturbance, compaction, and erosion from excavation and construction activities. • Potential soil and water contamination from improper handling of materials and chemicals. • Disruption to wildlife and livestock behavior due to noise, vibrations, and increased traffic. • Potential impact on soil fertility and crop productivity near agricultural land. • Risk of soil and groundwater contamination from construction waste. Overall impact on soil is low due to limited spatial extent and short construction duration.	**Moderate**	To mitigate the potential impacts of preconstruction and construction on agriculture land, several measures can be implemented. • Given that the site topography is characterized as clay soil the following measures should be implemented by the contractor: i. Effective site planning and phasing are crucial when working on clay soils to minimize stress and ensure smooth operations. ii. Vehicle movement should be restricted to designated paths, and construction activities should be phased to reduce the load on the soil during critical stages. iii. Low-ground-pressure vehicles equipped with wide tires or tracks should be used to help distribute weight more evenly, minimizing the risk of soil deformation. iv. Temporary roads cans be constructed in the project site by laying down gravel or crushed stone layers to create a stable surface, and steel plates or composite mats can be used to spread vehicle loads over a larger area, ensuring safe and efficient movement of heavy equipment. Soil erosion control measures, such as the use of silt fences, sediment basins, and erosion control blankets, can be implemented to prevent soil erosion. Proper management of construction waste, such as segregating hazardous waste, implementing good construction management practices, and properly disposing of waste, can help prevent soil contamination.	ESS1 ESS3	• Site inspection • Review the equipment, maintenance records. • Review the complaints log	**Minor**	Construction contractor	Khanka Local Unit, Environmental unit	Contractor's cost
Groundwater	Construction activities can lead to groundwater contamination due to: • Soil disturbance and excavation altering natural soil composition and permeability. • Accidental spills or leaks of construction materials, fuels, lubricants, or chemicals.	**Major**	To mitigate potential impacts on soil and groundwater during preconstruction and construction: • Contractors must prevent spillages and conduct periodic equipment inspections. • Implement site management procedures, good housekeeping, and spill prevention measures.	ESS1 ESS3	• Site inspection	**Moderate**	Construction contractor	Khanka Local Unit, Environmental unit	Contractor's cost

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual Impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
	• Stormwater runoff carrying sediment and pollutants into nearby water bodies or groundwater. • Improper handling and disposal of construction waste, including hazardous materials. Shallow groundwater levels at the site increases the risk of contamination		• If on-site fuelling of construction equipment and vehicles is necessary, spill prevention measures should be adhered to. • Dispose of construction waste by a licensed contractor and hazardous waste by an accredited contractor. • Properly insulate sewage storage tanks and dispose of contents at wastewater treatment plants. • Comply with the Egyptian Code for temporary excavations and manage surface water with drainage systems. • Consider well point and/or educator's installation and dewatering for groundwater conditions. • Design a drainage system to collect rainwater and prevent leakage under foundations.						
Surface Water	• Soil erosion and sedimentation impact water clarity and disrupt aquatic habitats. • Construction pollutants in stormwater runoff cause water pollution and harm aquatic ecosystems. • Altered land grading affects water flow and can lead to drainage issues. • Construction activities increase water temperature, impacting aquatic organisms. • Habitat disruption and loss of biodiversity result from vegetation removal and ecosystem fragmentation.	**Minor**	• Contractors are required to prevent spillages and minimize potential impact on surface water. • Contracts with construction contractors will include covering material transporting trucks. • Various measures will be implemented, such as dust suppression using water, reducing driving speed, providing workers with good driving and machinery usage practices, and ensuring proper waste management and storage. • Periodic equipment and machinery inspections will help minimize spills and leaks. • Other measures include spill prevention, proper waste collection and disposal, proper insulation of sewage storage tanks, proper management of hazardous waste, temporary excavations in accordance with the Egyptian Code, and managing any surface water entering excavations during construction. • A drainage system will be designed to collect rainwater from the site and discharge it to the public networks to prevent contamination of adjacent surface water bodies.	ESS1 ESS3	• Site inspection	**Insignificant**	Construction contractor	Khanka Local Unit, water and wastewater unit	Contractor's cost
Waste Management	During the construction of a waste management TS, various types of waste can be generated, including non-hazardous solid waste, hazardous waste, and liquid waste: • Non-hazardous Solid Waste: Excavation and demolition debris (e.g., concrete, bricks). Landscaping and vegetation waste (e.g., trees, shrubs). Packaging and wrapping waste (e.g., cardboard boxes, plastic wrapping). Scrap metal (e.g., steel rebar, pipes). Wood waste (e.g., trees, wooden pallets). • Hazardous Waste: Asbestos containing materials, chemicals, batteries, fluorescent tubes, and electronic waste.	**Moderate**	To manage preconstruction and construction waste and mitigate potential impacts: • Collect and haul construction waste to approved disposal sites. • Ensure proper washing and maintenance of concrete mixer trucks to avoid spills. • Provide covered bins for solid and hazardous waste collection, dispose of them at approved sites. • Conduct awareness campaigns and training to prevent oil and petrol spills. • Establish communication with local authorities for regular waste disposal and risk reduction. • Provide collection tanks for wastewater and regularly remove and dispose of sewage/septage. For non-hazardous solid waste:	ESS1 ESS2 ESS3	• Site inspection • Review the equipment, maintenance records. • Review the grievance log	**Minor**	Construction contractor	Khanka Local Unit, Solid waste management unit (SWMU)	Contractor's cost

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual Impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
	Empty containers of chemicals and material leakages. • Wastewater Wastewater from equipment cleaning, dewatering, and other sources containing sediment, debris, and pollutants. Improper waste handling poses health risks to workers, nearby inhabitants, and the environment. Impact magnitude is high, spatial extent is low, and duration is short term during construction. Proper waste management is crucial to mitigate these impacts.		• Segregate waste at the source and promote recycling and reuse. • Develop a waste management plan and monitor waste generation and practices. • Provide adequate storage facilities to prevent littering and illegal dumping. • Dispose of non-hazardous waste in compliance with regulations. For hazardous solid waste: • Identify, segregate, handle, and transport hazardous waste properly. • Store hazardous waste securely in designated areas and conduct regular inspections. • Dispose of hazardous waste at authorized facilities and have an emergency response plan. • Train workers on hazardous waste management and safety measures. For wastewater:: • Minimize water usage and treat wastewater for reuse. • Implement erosion and sediment control measures. • Use impermeable materials and maintain equipment to prevent leaks. Train workers on proper waste handling and monitor water quality.					
Temporary Labour Influx	The contractor will depend on recruiting workers during construction phase. The temporary labour influx and presence of additional workers in small cities or villages might have impacts on the project areas in terms of: - Risk of social conflict: There are no potential effects of temporary labour influx on the culture of the society in the project area; this is due to the focus of the implementing company on the labour, whom are often from areas (cities villages) adjacent to the project site. The temporary workers also have the same culture and values as those in the project areas. - Increased risk of illicit behaviour and crime: the implementation company and the contractors should revise the criminal records of the workers, in order to avoid the risk of illicit behaviour and crime in the project areas; - Increased risk of communicable diseases and burden on local health services: there is a probability to transmit diseases to community areas;	**Moderate**	In order to minimize impacts pertaining to labour influx the following should be thoroughly implemented. • Preparation and implementation of Code of Conduct and corresponding training concerning commitment of labour towards the community and the different behaviour that should be avoided. This includes but is not limited to: respect for the beliefs and customs of the populations and community relations, SEA/SH risk mitigation, safety rules, forbidding substance abuse, and environmental sensitivity of the area. • All workers should be trained on the code of conduct. • Code of conduct to be signed by the subcontractor • Code of conduct induction to be done every 2 weeks for the recurrent workers and the newcomers before starting work. • Induction training to be provided to newly recruited people. In case of re-recruit of any laborers, they should receive the induction training. • Apply Penalties to workers violating the code of conduct. • Providing workers with the necessary training and awareness raising sessions on issues regarding SEA/SH. • Verifying that GRM is adequately implemented to record complaints from the surrounding communities	ESS1 ESS2 ESS4	• Field investigations • Review the complaint log. • Review the project CoC • Review consultation activities report and training reports	**Minor**	Construction contractor Contractor Social Specialist	• Khanka Local Unit, • Labour bureau • Social Development officer)SDO) • Environmental and waste management officers in QG, WMRA • Social specialist in QG • Design Consultant	Contractor's cost

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual Impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
	- Local inflation of prices: There is a probability to result in increase in food prices Given the limited number of workers and being from the same project areas, the probability of labour influx impacts tends to be moderate.		• Applying the full requirements related to operating the grievance mechanism including anonymous channels • Raising awareness of the local populations about the project commitment towards communities' and the measures taken for that through consultation activities. • The grievance mechanism developed by the PCU will be adopted, particularly, the aspects related to SEA/SH.						
Road Traffic and Transportation	• The project site is connected to a network of main and secondary roads. • Heavy machinery mobilization during the project may temporarily restrict traffic and accessibility in the surrounding areas. • The impact on traffic flow and local access depends on the type and volume of traffic on the roads near the project site. • The closest road to the site is narrow with limited traffic volume, minimizing the impact on road accessibility. • Transportation of equipment and materials may occupy one lane during specific time periods, typically during the night to morning. • The overall impact on traffic is considered low to moderate, as the disruptions are short term and lasting for a few hours. • Sufficient storage area onsite can accommodate raw materials and standby equipment, reducing the impact on the main roads.	**Major**	The Contractor shall develop a Traffic Management Plan to manage the movement of construction vehicles that includes, but is not limited to the following: • Schedule construction during off-peak hours. • Provide advance notice of road closures. • Use signage and barriers to guide traffic. • Maintain communication with transportation authorities. • Optimize logistics planning to reduce trips. • Monitor traffic conditions and adjust activities. • Ensure compliance with safety regulations. • Regular maintenance of vehicles and use of manufacturer approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure. • Training of drivers on road safety • Periodic drug testing of drivers	ESS1 ESS4	• Field investigations • Reviewing the project Traffic Management Plan • Review the complaint log	**Moderate**	Construction contractor	• Khanka Local Unit, • Social Development officer (SDO) • Solid Waste Management unit (SWMU) • Social specialist in QG • Environmental and waste management officers in QG, and WMRA • Design Consultant	Contractor's cost
Sexual Exploitation and Abuse & Sexual Harassment (SEA/SH) and Gender Issues	Sexual Exploitation and Abuse & Sexual Harassment (SEA/SH) refers to violence that stems from gender discrimination and involves the misuse of power, threats, coercion, harm, violations of universal human rights, and a lack of informed consent. On the project site, potential SEA/SH impacts include: - Sexual harassment of women and girls by workers, which could lead to serious consequences such as honor crimes. - Discrimination against women in employment opportunities. However, the subproject activities are unlikely to restrict the movement of women and young girls, as the project is located in Al Amal Industrial Zone, and the site does not serve as a primary access path to surrounding areas.	**Moderate**	• Ensure that the Code of Conduct and corresponding training concerning commitment of labour towards the community, and the different behaviour that should be avoided emphasize zero tolerance of (SEA/SH) i.e., sexual harassment, sexual exploitation and sexual abuse. • The grievance mechanism developed by the PCU will be adopted, particularly, the aspects related to SEA/SH. • Apply penalties to workers violating the Code of Conduct • The contractor to prepare an awareness session/training on SEA/SH issues for workers, • The contractor to ensure all available capacity building trainings are accessible to both male and female workers, • Implement all facets of the established grievance mechanism, while ensuring that anonymous channels are available.	ESS1 ESS4	• Field investigations • Review the complaint log • Review the project CoC • Review awareness sessions/ trainings reports • Review consultation activities report	**Minor**	Construction contractor	• Khanka Local Unit, • Social Development officer (SDO) • Solid Waste Management unit (SWMU) • Social specialist in QG	Contractor's cost

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual Impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
			• Conduct ongoing consultations with women and girls (only those that are understandable and culturally appropriate). • Apply the full requirements related to operating the grievance mechanism including anonymous channels • Establish a grievance mechanism on the project site level that is sensitive to gender , Apply the full requirements related to operating the grievance mechanism including anonymous channels.						
Child Labour	Child labour if not monitored and controlled during the construction phase might be one of the risks resulting from the project. The impacts of Child labour can be described as being direct, short term, local to regional, and reversible.	**Moderate**	• Security personnel will check workers' IDs at the entry gate and inspect vehicles to prevent any child from entering the site. • The contractor will retain copies of all laborers' IDs to monitor age compliance. The signed contract will also oblige the contractor/subcontractor, primary suppliers, and service provisions to keep a copy of IDs of labourers in order to facilitate the monitoring of the presence of hired staff below 18 years. • Daily attendance records are to be maintained to verify that no workers under 18 are present on-site. • Suppliers are required to have a clear policy against child labour. • An appendix to be added to all subcontractor contracts, prohibiting child labor and detailing penalties for violations. The appendix should include the following: o If a child is found, they should not be permitted on-site and should be escorted out of the site. o The contractor covers the cost of the child's return home and should compensate the child's daily wage. o The social officer of the contractor ensures the child's safe return home. o For repeated violations, the contractor will face a fine. • A unified recruiting policy prohibiting child labour must be shared with the contractors and sub-contractors • Rigid obligations and penalties will be added to the contractor/subcontractors' ToR in order to guarantee that no child labour occurs in the project and to reiterate the zero-tolerance policy to child labour. • Gate control measures will be applied combined with the fining system for the contractors and sub-contractors	ESS1 ESS4	• Field investigations • Reviewing the daily statements of workers' registration • Reviewing employment contracts • Reviewing the ID of all workers on site. • Penalty system and the course of actions enforced in cases of non-compliance	**Minor**	Construction contractor	• Khanka Local Unit, • Social Development officer (SDO) • Solid Waste Management unit (SWMU) • Social specialist in QG • Labour Bureau	Contractor's cost
Public Infrastructure and Utilities	As mentioned before in the preconstruction phase, the project site in Khanka is located near Al Amal Industrial zone and Khanka MBT, meaning that it's close to infrastructure/ utilities related to the water, sewage and communications networks. This increases the	**Moderate**	• The contractor shall coordinate with the different authorities of potable water, wastewater, electricity and telecom authorities to obtain maps to determine the existing infrastructure in the project area in order to avoid any damage (If feasible). • In case an underground utility and infrastructure pipe has been damaged, standard procedures should	ESS1 ESS4	• Field investigations • Review MoMs • Review reports of accidents	**Minor**	Construction contractor	• Khanka Local Unit, • Social Development officer (SDO)	Contractor's cost

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual Impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
	possibility of the construction phase affecting public infrastructure and utilities.		be followed (the contractor should repair them immediately and inform the affected people) in addition to preparing a documentation report for the accident. The contractor should cover the waste transport trucks in order to ensure that the waste is transported properly and does not affect the resources of the local community.					• Solid Waste Management unit (SWMU) • Social specialist in QG • Water and wastewater company	
Occupational Health and Safety	The construction of a TS may have several impacts on the OHS, such as: • Exposure to hazardous substances and materials used in construction, such as chemicals, fuels, and construction waste, which can pose risks to the health and safety of workers. This includes the potential for inhalation, skin contact, or ingestion of harmful substances • Construction sites can have various physical hazards, including falls from heights, tripping hazards, and exposure to moving machinery or equipment. These hazards can result in injuries or accidents, if proper safety measures are not in place. • Noise and vibration generated by construction activities can impact the hearing health of workers and contribute to stress and fatigue. • Dust and airborne particles, especially during excavation and earthmoving, can cause respiratory issues, if not properly controlled. • Manual handling of heavy objects and repetitive tasks can lead to musculoskeletal injuries if ergonomic considerations and proper lifting techniques are not followed. • Inadequate training and lack of awareness about occupational health and safety measures can increase the risk of accidents and injuries. • Changes in work environments, such as working at heights, in confined spaces, or near moving machinery, require specific safety protocols to be followed to prevent accidents and injuries. • Adverse weather conditions, such as extreme heat or cold, can affect the wellbeing and safety of workers if appropriate protective measures are not in place. • Increased traffic and movement of vehicles in and around the construction site can pose risks to	**Major**	• According to the OHSA standards that were outlined in Labour Law No 12 of 2003 and its amendments, the main mitigation measures to prevent common construction hazards are: • The development of occupational health and safety procedures or plan by the contractor. • Medical check-up should be considered according to the Egyptian laws and WBG requirements for all workers prior to join site activities. • Workers should be trained to identify and evaluate fall hazards and be fully aware of how to control exposure to such risks as well as knowhow to use fall protection equipment properly. • Job hazard analysis training should be delivered to all workers, followed by brief introduction to the permit to work system. • Workers must comply with OHSA's general rule for the safe use of ladders and stairways • To prevent Heavy Construction Equipment risk, workers should follow all construction safety guidelines necessary to eliminate the exposure to such injuries and accidents. • Submitting drug test for any driver involves in the project activities • The health and safety risk on the workers should be covered with appropriate insurance schemes for all the types of workers. In addition, the Insurance should be covering work related accidents (injuries and fatalities), as well as insurance for third parties. • The contractor also will be obliged to maintain daily attendance sheets in order to verify the attendance of workers in case of accidents and provide the injured persons with proper health insurance. • The best way is to identify the intersection points at early-stage prior work takes place, then to apply mitigation measures according to the hierarchy of controls • Other precautionary measures include guarding and insulating of the vehicle from which they might work. This would help prevent electrical hazards while working.	ESS1 ESS2 ESS4	• Field investigations • Review of plans and documents • Review of incident and accident documents • Review training logs and documentation • Review risk assessment • Review job hazard analysis • Review the daily attendance sheet • Review the penalties on the contractor • Check the number of supervisors • Check drug tests • Review grievance log • Daily site inspection reports	**Minor**	Construction contractor	• Khanka Local Unit, • Social Development officer (SDO) • Solid Waste Management unit (SWMU) • Social specialist in QG • Labour Bureau • Civil defence	Contractor's cost

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual Impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
	workers and require proper traffic management and signalling. • **Additional potential risks e**.g. hot works, lifting operations, electrical works, and risk of exposure to toxic gases, lack of oxygen, or limited access for emergency situations in confined spaces.		• Rigid obligations and penalties will be added to the contractor/subcontractors' ToR to guarantee that no child labour occurs in the project. • Sufficient number of OHS supervisors should be assigned to minimize the breaching of OHS requirements. • Daily toolbox should be given to workers to share any information about OHS. • Daily site safety inspection should be conducted according to the Egyptian Laws and safety regulations • A worker's grievance mechanism must be made available to workers on site • All workers should wear appropriate PPE • In the event of dust storms, work should take place during appropriate time periods and avoid working during the peak of a storm, workers should wear face-masks for protection from fine particles. **Chemical Risk Mitigation** The contractor should review the requirements of WBG EHS Guidelines for waste management facilities for more details. However, the minimum procedures to mitigate chemical risks are: • To mitigate risks related to chemicals at construction sites, it is essential to implement a combination of engineering controls, administrative measures, and personal protective equipment (PPE). Engineering controls such as proper ventilation systems and isolation barriers can significantly reduce the concentration of hazardous chemicals in the air. • Administrative controls, including comprehensive training on the safe handling, storage, and disposal of chemicals, along with strict safety protocols for emergencies, are crucial. Additionally, ensuring that workers are equipped with appropriate PPE, such as gloves, masks, goggles, and respirators, provides a vital layer of protection against chemical exposure. These combined efforts help create a safer working environment by minimizing the potential for harmful chemical interactions. **Pathogen Risk Mitigation** • Mitigating risks associated with pathogens involves promoting stringent hygiene practices, health monitoring, and thoughtful workplace design. Encouraging regular hand washing with soap and water, providing hand sanitizers, and ensuring the frequent cleaning and disinfection of common areas and equipment are					

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual Impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
			fundamental hygiene practices. Regular health screenings and promoting vaccinations for preventable diseases help in early detection and management of infections. Designing the workplace to minimize close contact, ensuring proper distancing, and maintaining good ventilation are also critical in reducing the spread of airborne pathogens. These measures collectively contribute to a healthier work environment, protecting workers from infectious diseases. **Accommodation** • If laborers are to be accommodated by the sub-project contractor , it is crucial that the contractor and sub-contractors develop an Accommodation Management Plan to ensure the accommodations meet IFC standards. These include providing safe and secure living conditions, clean and well-ventilated spaces, access to clean drinking water and sanitation facilities, regular maintenance for hygiene, medical facilities or first aid kits, and comfortable amenities such as beds and cooking facilities. Compliance with local regulations and international standards is essential, with regular inspections to maintain these standards. This ensures a safe, healthy, and comfortable environment for the laborers, positively impacting their well-being and productivity. • An accommodation log, accommodation inspection checklist and grievance mechanism must be applied • Code of Conduct should be complied to.					
Community Health and Safety	In general, the project will affect the community health and safety. Impacts are expected to result from the following activities: • Dust, gaseous emissions (CO, CO2, NOX, SOX, VOC) and other hazardous substances (as cement and ceramics), • Construction site activities and exhaust of heavy machinery can emit many types of hazardous substances to ambient air, which can be of public health concern. • Transportation of hazardous material: Inappropriate transportation of hazardous substances can have negative health impacts on the community, specifically on the respiratory health, • Traffic Safety: Traffic accidents can arise from usage of vehicles entering	**Major**	The proposed mitigation measures are as follows: • Information related to community health and safety to be shared regularly and systematically as per stakeholder engagement plan (SEP) • Awareness raising campaigns should be tailored in cooperation with the community-based organization • Using caution tapes that help to keep people away of the site • Using hard barricades to prevent people away of the site in addition to the caution tapes • Development and implementation of a Traffic Management Plan (including routes and alternative routes, truck movements, transport of workers, and short-term closure of roads (if necessary) • The construction site to be fenced and guarded by security personnel in order to prevent any unauthorized access to the site. • The security guards will be unarmed and they will receive all required trainings including training on Code of Conduct in order to properly enable them	ESS1 ESS4	• Review of stakeholder engagement activities and log. • Review the reports related to awareness raising • Field visit to oversee the site arrangements • Notifications shared with the community • Review of the grievance mechanism • Training sessions documents	**Moderate**	Construction contractor	• Khanka Local Unit, • Social Development officer (SDO) • Solid Waste Management unit (SWMU) • Social specialist in QG • Civil defence	Contractor's cost

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual Impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
	the construction site. This can lead to injuries and fatalities among members of the community, • Unauthorized entry to construction site: The presence of an unauthorized individual from the public to the construction site (without appropriate PPE) can lead to accidents and injuries • The project will decrease open burning of waste, which is one of the top two contributors to air pollution. Due to the lack of residential areas adjacent to the project site: the nearest communities are Arab El-Olaykat and Arab Juhayna at approximately 2km to 2.5 km from the construction site of the TS, the impacts on the local community will be moderate severity; Because the area is not densely populated.		to communicate with the workers and surrounding communities. . • In case of transporting heavy equipment, the nearby population should be notified in advance • Develop and implement a well communicated and accessible grievance mechanism for community members to address any complaints		related to security guard trainings				

6.3.2 Operation Phase ESMP

Table 6-2 Environmental and Social Management plan During the Operation Phase

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual Impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
Operation Phase[15]									
Air Quality and Dust	Gaseous emissions result from the following operation activities: • Combustion of fossil fuels in vehicles used for waste transportation and onsite power generation results in carbon dioxide, nitrogen oxides, and sulphur dioxide • In the context of waste management transfer stations, the handling of waste can generate odours. The strength of these odours depends on factors such as the amount of odorous waste, the degree of degradation of organic materials, and the organic content in the waste. Odours can cause discomfort and are considered a form of pollution. • Waste will come to the facility from collection points and could be 12 days old. The waste will be transported to the site in closed waste collection trucks in compliance with the Solid Waste Management Law 202/2020. The project site is close to residential areas, but the prevailing wind direction does not directly affect these areas. The impact on air quality is considered high due to the site's location relative to the prevailing wind, but the affected area is limited to the local project area and nearby residential houses. The impact is expected to be long-term as the TS's lifespan is 25 years. Also, site measurements indicate that the ambient air quality at the site meets national regulations, WB, but the levels of PM2.5 and PM10 exceed EU limits. Gaseous pollutants in the air are generally below permissible limits, but it's important to prevent concentrations from exceeding these limits to avoid toxic air composition.	**Moderate**	The governorate should ensure that the operators will carry out the necessary measures to minimize impacts. Mitigation measures would include: • Automatic misting system; • Building orientation with respect to predominant wind direction; • Provide adequate storage for waste; • Consider use of enclosed/covered areas for organic waste storage • Install a three-meter fence to trap windblown litter; • Implement good housekeeping procedures based on specific checklist; • Enclose leachate drains to reduce the emission of odours; • Carry out monitoring tests for the generator and ensure their compliance with the national laws; • Inspect and maintain the machinery and vehicles to keep them in good working conditions to minimize fugitive emissions; and • Clean and wash vehicles routinely; • Plant trees as a barrier to absorb and disperse odours; Establish and implement Odour Management Plan (OMP) including a telephone line for community complains regarding odour; address the complains immediately.	ESS1 ESS2 ESS3	• Site inspection • Review the equipment, maintenance records. • Review the grievance log	**Minor**	The operator	Khanka Local Unit, Environmental unit	Should be included in operator budget
Noise and Vibration	• Noise and vibration can be generated during the operation of a direct loading transfer station. The noise can come from various sources such as machinery, vehicle movement, and the handling of waste materials. Vibration can be caused by heavy machinery, compactors, and equipment used for waste handling. • Excessive noise and vibration can have negative impacts on both workers and nearby residents. Prolonged exposure to high levels of noise can lead to hearing loss, stress, and other health issues. Vibrations can cause	**Moderate**	• Use administrative control measures (e.g. changing working shifts to avoid disturbing school classes during the day and residential areas at night). • to • Only procure noise generating machines and equipment which are designed to meet statutory regulations concerning noise; • Use buildings to contain inherently noisy fixed plant equipment (e.g., locate waste shredder in the tipping hall enclosed from all sides) • Implement regular inspection and maintenance of equipment.	ESS1 ESS2 ESS3	• Site inspection • Review the equipment, maintenance records. • Review the grievance log	**Minor**	The operator	Khanka Local Unit, Environmental unit	Should be included in operator budget

[15] The core basis of management activities during operation phase is that the waste should not be kept in the TS for more than 24 hours.

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual Impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
	discomfort, disrupt activities, and potentially damage nearby structures.		• Ensure that the equipment is well maintained, properly aligned, and regularly inspected to minimize vibration levels. • Measures that will be carried out during operational phase: - Periodic monitoring needs to be carried out to ensure compliance to standards at the sensitive receptor locations. - Procure equipment with lower sound power levels, - Install silencers for fans, - Install suitable mufflers on engine exhausts and compressor components, - Install acoustic enclosures for equipment casing radiating noise, - Install acoustic barriers if all above measures couldn't meet the permissible noise levels at the sensitive receptors. - Workers will need to adhere to OHS requirements, which includes the use of hearing protection should be enforced actively capable of reducing sound levels at the ear to at least 85 dB(A).					
Soils& Landscape	• Waste management transfer station operations can lead to soil compaction due to the use of heavy machinery and vehicles • The movement of equipment and waste handling can cause soil erosion, leading to the loss of topsoil and nutrients necessary for vegetation. • Improper waste handling can release pollutants, such as heavy metals and chemicals, into the soil, causing contamination and harming plants and organisms. • TS can visually alter the landscape, impacting the aesthetics of the surrounding area.	**Moderate**	Mitigation measures include soil conservation practices, proper waste storage, vegetation restoration, and community engagement. • Use erosion control measures such as sediment barriers, vegetation buffers, and erosion control blankets to prevent soil erosion and protect soil quality. • Use proper waste management practices to minimize the release of contaminants into the soil. Such as proper storage, handling, and disposal of waste materials, and regular monitoring of soil quality. • Implement landscaping and restoration plans to minimize the visual impact and restore the natural aesthetics of the area. This can include planting native vegetation, creating green spaces, and incorporating visual screening elements. • Adopt soil management practices such as soil aeration, organic matter addition, and soil amendment applications to mitigate soil compaction and enhance soil fertility. • Promote revegetation and habitat restoration efforts to compensate for any vegetation or habitat disruption caused by the transfer station. • Regular monitoring and personnel training are crucial for sustainable waste management and minimizing negative environmental impacts.	ESS1 ESS3	• Site inspection • Review the equipment, maintenance records. • Review the grievance log	**Minor**	The operator	Khanka Local Unit, Environmental unit	Should be included in operator budget
Groundwater	• The TS operation may generate leachate, that can infiltrate the soil and potentially reach groundwater, leading to groundwater contamination. • Improper storage, handling, or disposal of waste materials can result in the release of	**Major**	• The Contractor will use impermeable materials such as concrete for roads, waste handling areas, and vehicle washing areas and install curbs to prevent runoff to permeable areas. • The Contractor will construct the flooring of the TS from concrete to prevent leakages to the ground.	ESS1 ESS3	• Site inspection • Review the equipment, maintenance records. • Review the grievance log	**Moderate**	The operator	Khanka Local Unit, Environmental unit	Should be included in operator budget

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual Impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
	contaminants into the surrounding soil that could migrate and reach groundwater, posing risks to its quality and potentially rendering it unsuitable for drinking or other uses. • Stormwater runoff from the TS, particularly during rainfall events, can carry pollutants and contaminants from the site into nearby surface water bodies. If these surface waters are hydrologically connected to groundwater, the contaminants can potentially infiltrate the groundwater system • Shallow groundwater levels at the project site increases the risk of contamination		• Regularly inspect and maintain equipment and storage areas to prevent leaks and spills that could contaminate the soil and groundwater. • Conduct regular staff training on proper operation activities and waste management procedures to ensure compliance with best practices. • Install appropriate drainage systems and containment measures to prevent leachate from infiltrating into the soil and groundwater. • Store leachate in a lined earthen basin or aboveground storage tanks. • Equip waste collection trucks with leachate tanks that will be emptied at designated facilities. • Coordinate with licensed contractors for the proper collection and disposal of leachate and other waste materials to authorized treatment facilities. • Continuously monitor groundwater quality to detect any changes or contamination and take immediate corrective actions if needed. • Regularly update and review the waste management plan to adapt to changing conditions and regulations and ensure effective waste management throughout the TS operation.					
Surface Water	During the operation of a direct loading transfer station, potential impacts on surface water include stormwater runoff carrying sediment, debris, and pollutants into nearby water bodies, improper waste handling leading to contamination, potential eutrophication from excess nutrients, and alterations to natural drainage patterns causing changes in water flow dynamics and localized flooding.	**Moderate**	• Properly store, handle, and dispose of waste materials to prevent the release of contaminants into the environment and minimize the risk of surface water pollution. • Regularly monitor water quality in nearby surface water bodies to detect any changes or contamination and take appropriate corrective actions if necessary. • Implement best management practices to manage organic waste and nutrients to prevent eutrophication in surface water bodies. • Avoid altering natural drainage patterns and maintain the natural flow of surface water to prevent drainage issues and localized flooding. • Conduct regular inspections and maintenance of stormwater management systems to ensure their effectiveness in preventing surface water pollution. • Provide proper training and education to staff on the importance of protecting surface water and the proper procedures for waste handling and stormwater management. • Coordinate with local environmental authorities to ensure compliance with regulations and guidelines related to surface water protection.	ESS1 ESS3	• Site inspection • Review the equipment, maintenance records. • Review the grievance log	**Minor**	The operator	Khanka Local Unit, water and wastewater management unit	Should be included in operator budget
Waste Management	**Non-hazardous Solid Waste** • The TS receives non-hazardous solid waste from various sources. Without proper management, there can be accumulation of waste at the site, leading to visual impacts and potential odour issues.	**Major**	• Hazardous waste should be segregated and handled separately from non-hazardous waste. Proper hazardous waste management practices should be implemented, including labelling, storage, transportation, and disposal. • Good management practices, such as regular maintenance and monitoring of equipment, can help	ESS1 ESS2 ESS3	• Site inspection • Review the equipment, maintenance records. • Review the grievance log	**Moderate**	The operator	Khanka Local Unit, Solid waste management unit (SWMU)	Should be included in operator budget

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual Impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
	• Handling and processing of waste can generate dust and particulate matter, especially during activities such as waste loading onto transport vehicles. This can result in air pollution and potential respiratory health concerns for workers and nearby communities. • The TS may generate runoff and leachate, particularly from waste that contains liquids or when rainwater comes into contact with the waste. If not properly managed, this runoff and leachate can carry contaminants into nearby surface water bodies, potentially polluting the water resources. **Hazardous Solid Waste** • The residues from the TS systems may contain hazardous substances, such as heavy metals or volatile organic compounds (VOCs). • TS may require the use of chemicals, such as disinfectants or leachate treatment agents. These chemicals may be hazardous and require careful handling and disposal. • If the waste being transferred contains asbestos containing materials, then the TS may generate asbestos waste. • If the waste contains hazardous substances, such as lead acid batteries or electronic waste, then the TS may generate hazardous waste. **Wastewater** Wastewater generated during the operation of a TS can include: • TS regular cleaning and maintenance involves the use of water for washdown activities, which can result in water waste if not properly managed. • Improper handling of septic tanks • Improper management of leachate can result in water waste and potential pollution. • Stormwater runoff during rainfall events may come into contact with waste stored at the TS. If not effectively managed, stormwater runoff can carry contaminants from the waste and contribute to water pollution. Improper waste handling has a direct impact on the surrounding population and puts public health in danger.		prevent leaks and spills that can contaminate soil and water. • Recycling and reuse: Where possible, waste should be recycled or reused to reduce the amount of waste that needs to be disposed of. • Proper disposal: Any waste that cannot be recycled or reused should be disposed of properly in accordance with applicable regulations. • Implementing effective air pollution control systems or using nontoxic chemicals in the process can help reduce the amount of hazardous waste generated. • Include regular training and awareness raising for employees, implementing a hazardous waste management plan, and conducting regular inspections and audits. • Providing appropriate PPE, such as gloves, masks, and respirators, can help protect workers from exposure to hazardous substances. • Implementing a wastewater treatment system to help remove contaminants from leachate, condensate, and process water before discharge or reuse. • Separating and treating different types of wastewaters separately can help optimize treatment efficiency and reduce the volume of wastewater requiring treatment. • Regular monitoring and maintenance of equipment to prevent leaks and spills that can contaminate water and soil. • Regular monitoring of water quality and discharge volumes can help ensure compliance with regulatory requirements and identify potential issues before they become significant problems.					
Road Traffic	• The movement of waste collection vehicles, trucks, and other vehicles for the transportation of waste to and from the facility can result in increased traffic volume in the surrounding areas, and accidents especially during peak operational hours.	**Major**	• Development and implementation of a **Traffic Management Plan** to be approved by the General Traffic Authority in coordination with Qalyubiya governorate. The plan will minimize disruptions to traffic flow and ensure safe access to the project site. The plan should include, but not limited to, the following:	ESS1 ESS4	• Minutes of meetings carried out with the local authorities • Notices shared with the local authorities • Review of duration of trips	**Minor**	The operator	• Khanka Local Unit, • Social Development officer (SDO)	Should be included in operator budget

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual Impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
	• The increased traffic volume associated with the operation of a TS can lead to congestion and delays on nearby roads and intersections. This can affect the efficiency of transportation and cause delays for commuters and other road users. • TS activities can generate noise and emissions, including dust and exhaust gases. These pollutants can contribute to air pollution and have potential health impacts on nearby communities, mainly Arab El-Olaykat and Arab Juhayna. There is a risk of the deterioration of road surfaces, increased maintenance requirements, and potential disruptions to transportation infrastructure.		○ Allocation of lanes or routes for the community versus the trucks ○ Measures to control vehicle speed ○ Possibility of deployment of traffic unit/ officer to organize traffic ○ Considering redesigning intersections to accommodate truck movement ○ Consider alternative transportation routes. ○ Avoid use of residential roads ○ Placing traffic signs to facilitate movement smoothly and safely on the surrounding roads leading to the station ○ Pedestrian sidewalks inside the station to protect pedestrians from vehicular movement during the operation period ○ Pedestrian Restriction of Access: Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc. Include median diverters, closing streets to create pedestrian zones • Submitting drug test for any driver involved in the project activities • Training of drivers on road safety • Communicate with the local community and provide advance notice of any road closures or temporary traffic diversions to minimize inconvenience. • Employ efficient logistics planning to minimize the number of trips and reduce the duration of transportation activities, thereby minimizing the impact on traffic. • Regularly monitor traffic conditions and adjust construction activities as necessary to alleviate any congestion or traffic related issues. • Ensure compliance with all applicable traffic and safety regulations to ensure the safety of workers, commuters, and the general public (surrounding communities).		• Monitoring reports of traffic • Review incidents related to traffic • Review the drug test of all drivers			• Solid Waste Management unit (SWMU) • Social specialist in QG	
SEA/SH and Gender Issues	The project may lead to an increased risk of (SEA/SH), particularly because the Transfer Station is likely to be a male-dominated workplace. Female workers could face various forms of SEA/SH, which must be carefully mitigated. SEA/SH in the workplace can manifest through behaviours such as: - Sexual Harassment: Female workers are often targeted with unwelcome sexual advances, inappropriate comments, or physical contact. This could come from co-workers, supervisors, or even community members. - Exploitation and Abuse: Some women may face coercion into sexual activities in exchange for job security, promotion, or	**Moderate**	• Preparation of an appropriate Code of Conduct that stipulates the commitment of labour towards community groups and behaviours that should be avoided. • All workers should be trained on the Code of Conduct. • Code of Conduct to be developed and signed by the operator. It should include prevention of sexual exploitation, sexual abuse, and sexual harassment (SEA/SH) in the workplace. • Apply the full requirements related to operating the grievance mechanism including anonymous channels. • Specified grievance mechanism channels for SEA/SH will be announced, and coordination will take place with the appropriate governmental entity (e.g., National Council for Women).	ESS1 ESS2 ESS4	• Code of conduct established, disclosed and workers are trained on • The monitoring of workers' compliance to the Code of Conduct • Inspection of complaints • Inspection of training records • Number and documentation of awareness raising activities	**Minor**	The operator	• Khanka Local Unit, • Social Development officer (SDO) • Solid Waste Management unit (SWMU) • Social specialist in QG	Should be included in operator budget

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual Impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
	other benefits. This abuse of power is often perpetrated by individuals in supervisory roles. - Discrimination: Women may experience unequal pay, fewer opportunities for promotion, and biased treatment in hiring and work assignments. Gender-based discrimination leads to unequal professional development and financial security. - Unsafe Working Conditions: Inadequate site design, such as poor lighting or unmonitored areas, can make workers, particularly women, more vulnerable to harassment or violence on the worksite.		• Raise awareness of the local community about the project commitment towards communities' and the measures taken for that through public consultation and focus group discussions. • Apply penalties to workers violating the Code of Conduct. • Random drug and alcohol tests to be conducted. •		• Inspection of drug tests and alcohol tests conducted • Numbers of penalties applied				
Occupational Health and Safety	The risk of Occupational Health and Safety can be summarized as follows: • Waste handlers at the Transfer Station could get injured by infectious sharps mixed with municipal waste and possibly infected by blood transmitted diseases; • Waste handlers may be exposed to hazardous materials including pesticides. • The accumulation of waste within the site and not dealing with it on a regular basis (regular operation of the facility) as a result of equipment breakdown or lack of maintenance will cause the spread of rodents and insects, which exposes workers to disease because they are the most sensitive receptor. • Workers' noncompliance to use the Personal Protective Equipment can make them vulnerable to work-related injuries and dangerous diseases. There are risks associated with accidents, such as the outbreak of fire, due to the accumulation of waste for long periods within the site	**Major**	• Training of all workers on the Transfer Station with regards to health and safety aspects will start with the induction training and will be renewed semi-annually. In the case of re-recruitment of workers, induction is given again. • The operator must develop a detailed OHS plan that must be reviewed by the PCU and WB. • The OHS plan must contain a list of all training activities required based on the type of job. (**Annex XII** of this report sheds light on the required tentative training aspects within the OHS. The developed OHS management plan will further discuss this aspect. • Enforcement on the use of Personal Protective Equipment whilst on site • Recording of all accidents and investigating them for establishing root causes and instigating corrective measures • Training on fire safety and first aid for staff • Restricting the unauthorized access to the TS area through applying security procedures, gate check-ups, …etc. • Control of vermin, insects, and birds by application of cover materials according to the waste filling plan. • All workers of the Transfer Station should receive adequate training on the types of hazardous waste that could be found, the type of hazards and the appropriate methods of handling. • Coverage with appropriate insurance schemes (health and social insurance coverage) for all the types of workers, including casual workers (if any). • Anyone entering the project site will register in an attendance sheet/logbook • Records of copies of national IDs will be kept for all types of labourers, including casual labourers hired by subcontractors and contractors.	ESS1 ESS2	• Health records about occupational injuries and infectious diseases among workers • Inspection of workers complaints • Inspection of OHS training records • Number and documentation of OHS awareness raising activities • Control procedures applied at the site • Insurance scheme applied • National IDs copies are available	**Moderate**	The operator	• Khanka Local Unit, • Social Development officer (SDO) • Solid Waste Management unit (SWMU) • Social specialist in QG	Should be included in operator budget

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual Impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
			• All workers should conduct medical check-up prior to join, then every 6 months is a good practice • Development of emergency plans. Emergency plan should include the nearest hospital provides emergency medical services and the poisons centre to the site. The law requires physical assessment to conducted to assess the distance and time between the site and the assigned hospital provides EMS. • Entrance gates for vehicles and workers to the TS should remain segregated as per the design • In the event of dust storms, work should take place during appropriate time periods and avoid working during the peak of a storm, workers should wear face-masks for protection from fine particles. **Chemical Risk Mitigation** The contractor should review the requirements of WBG EHS Guidelines for waste management facilities for more details. However, the minimum procedures to mitigate chemical risks are: • To mitigate risks related to chemicals at construction sites, it is essential to implement a combination of engineering controls, administrative measures, and personal protective equipment (PPE). Engineering controls such as proper ventilation systems and isolation barriers can significantly reduce the concentration of hazardous chemicals in the air. • Administrative controls, including comprehensive training on the safe handling, storage, and disposal of chemicals, along with strict safety protocols for emergencies, are crucial. Additionally, ensuring that workers are equipped with appropriate PPE, such as gloves, masks, goggles, and respirators, provides a vital layer of protection against chemical exposure. These combined efforts help create a safer working environment by minimizing the potential for harmful chemical interactions. **Pathogen Risk Mitigation** • Mitigating risks associated with pathogens involves promoting stringent hygiene practices, health monitoring, and thoughtful workplace design. Encouraging regular hand washing with soap and water, providing hand sanitizers, and ensuring the frequent cleaning and disinfection of common areas and equipment are fundamental hygiene practices. Regular health screenings and promoting vaccinations for preventable diseases help in early detection and management of infections. Designing the workplace to minimize close contact, ensuring proper distancing, and maintaining good ventilation are also critical in reducing the spread of airborne pathogens. These measures					

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual Impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
			collectively contribute to a healthier work environment, protecting workers from infectious diseases.						
Community Health and Safety	Although the project will reduce waste disposal by open burning, which is one of the top two contributors to air pollution, there are risks to community health and safety/community dissatisfaction with the operation of the Transfer Station due to operation related impacts, such as odour, noise, litter, fire, physical, chemical and biological hazards: • Litter can be spread beyond the TS boundaries by the effect of wind, vermin and vehicles can spread diseases or attract rats, which will disturb the community, • Noise can arise from waste processing, vehicles moving in and out of the site bringing waste and materials, • Dust and odours can be nuisance to the surrounding community. • Fire can be caused from the Transfer Station. There is a potential risk of Communities' unacceptability for the SWM infrastructure during operation (mainly Arab Juhayna and Arab El-Olaykat), and also associated health impacts if the operation of the facilities is not done in a very hygienic way. It should be noted that design of the transfer station assumes that by 2040 there will be 90% collection efficiency, therefore 10% of waste will remain uncollected and possibly disposed randomly.	**Moderate**	• Follow the mitigation measures mentioned in sections (Air Quality, Noise) same as mentioned above to ensure that operational impacts are minimized and that community satisfaction is maintained, • Provide a grievance mechanism for the community, • Regular consultation as well as information sharing with surrounding communities to ensure the sustainable operation of the project. <u>Fire:</u> • Provide sufficient firefighting equipment onsite and train workers on using them The provisions related to fire safety under Egyptian Labour Law No. 12 of 2003 are covered under Article 214-218. This article outlines the employer's responsibility to provide necessary fire safety equipment and ensure workers are trained in its use, among other safety measures. The law emphasizes the importance of workplace safety and mandates compliance with fire prevention and protection standards to safeguard workers. • Design the facility for access by firefighting equipment, including access to an adequate water supply. The nearest firefighting facility is located 5 km away at the industrial zone. While the nearest source of water for firefighting is reported to be 1 km away by QG, the OHS specialist should identify the most suitable water sources for extinguishing fires. • Post emergency telephone numbers in clearly visible points. Additionally, post the photo of emergency response staff members. • Establish fire prevention and control plan • Infestation by flies and vermin: • Incoming fresh waste and separated organic should not be stored on site for more than 24 hours • Install wheel washing facility at entry and exit points to the site • Perform daily cleaning for the facility and storage areas • Controlling rats and other vermin such as feral animals <u>Control of litter:</u> • Facilities are to be cleaned daily • All vehicles entering the site should have their containers covered • Cover waste promptly after discharge from the vehicle delivering the waste • Provide perimeter planting, landscaping, or fences to reduce wind.	ESS1 ESS4 ESS10	• Community grievance log • Review of community consultation reports • Interview with community members • Monitor temperature at depth around suspected fire zones • Monitor gas composition (methane, oxygen, and carbon monoxide) at depth • Same monitoring for temperature as that mentioned above	**Minor**	The operator	• Khanka Local Unit, • Social Development officer (SDO) • Solid Waste Management unit (SWMU) • Social specialist in QG	Should be included in operator budget

6.4 Environmental and Social Monitoring plan (ESMoP)

6.4.1 Construction Phase ESMoP

Table 6-3: Environmental and Social Monitoring Plan (ESMoP) During the Construction Phase

Receptor / EHS Aspect	Impact	Monitoring Indicators	Responsibility of Monitoring	Frequency	Location	Method & Target	Est. Cost (EGP)
Construction Phase							
Air Quality	Increased air emissions	• Number of complaints related to air quality. • Equipment performance and maintenance frequency • Emissions visibility (black smoke, dust for example) • Ambient Air quality measurement results of the main pollutants (CO, SO2, NO2 TSP and PM10) - Ambient air quality (PM_{10}) - Concentrations of gaseous pollutants including SO_2, CO and NO_x - Evidence of covering trucks and loose/friable materials. - Frequency of water spraying on roads - Number of complaints related to air quality	- During construction, the Contractor's Environmental, Social and Health & Safety Unit (CESHSU) - Environmental Monitoring activities are supervised by the E&S Manager in the District Local Unit under the supervision of the Environmental Unit within the governorate. - Waste management activities are supervised by the Environmental Officer within the SWMU. Contractors and subcontractors supervised by the Khanka Local Unit and Solid Waste Management Unit (SWMU)	- Standard air measurements monthly - Daily visual inspection will be carried out continuously	Onsite	• Site observation • Following up with complaints • Maintenance logs • Grievance log	230 USD /point measurement Operator Management Cost
Noise and Vibration	Increases noise levels and vibration	• Number of complaints related to noise level. • Ambient noise measurements results • Equipment performance and maintenance	- Daily measurements by well-trained staff - Follow up on complaints will be continuous	Onsite	• Site observation • Following up with complaints • Measuring ambient noise (if needed) • Maintenance logs • Grievance log	
Soils	Degradation of soil quality	• Observation of accumulation of hazardous materials • Evidence of fuel spills and lubricants • Leachate	- Daily visual inspection will be carried out continuously	Onsite	• Compliance of test samples with regulatory standards (upon complaint) • Site observation with photos documentation	Contractor Management Cost
Groundwater	Ground water contamination	• Signs of spills (visual inspection) • Tests in cases of accidental spills • Leachate	- Daily visual inspection will be carried out continuously	Onsite	• Compliance of test samples with regulatory standards (upon complaint) • Site observation with photos documentation	Contractor Management Cost
Surface Water	Surface water contamination	• Observation of accumulation of hazardous materials • Evidence of fuel spills and lubricants • Leachate	- Daily visual inspection will be carried out continuously	Upstream and downstream of the TS location	• Compliance of test samples with regulatory standards (upon complaint) • Site observation with photos documentation	Contractor Management Cost
Waste Management	Waste accumulation and Accumulative impacts	• Status of waste management processes • Contracts with waste management contractors • Disposal receipts • Cleanliness of the areas where work will take place.	Daily	Onsite	• Site observation with photos documentation	Contractor Management Cost
Biodiversity	Habitats, ecosystem	• Spills • Deceased domestic animals or birds • Appearance of invasive species	Daily	Onsite	• Site observation with photos documentation	Contractor Management Cost

Receptor / EHS Aspect	Impact	Monitoring Indicators	Responsibility of Monitoring	Frequency	Location	Method & Target	Est. Cost (EGP)
Local Community	Temporary Labour Influx	• Availability of the Code of Conduct • Total number of trained workers on the Code of Conduct • Signed Code of Conduct • Penalties and disciplinary action taken against workers who violate the Code of Conduct • Complaints raised due to Labour influx • Documentation of corrective measures adopted	Contractors and subcontractors supervised by the Khanka Local Unit and Solid Waste Management Unit (SWMU)	Continuously during preconstruction and construction	Construction site	• Lists of workers trained • Disciplinary actions taken • Review Grievance log • Site observation • Review Worker Code of Conduct • Engagement with women minutes of meetings	No additional costs
Local Community	Road and traffic flow	• Vehicle's safety inspections are available. • Incident report to be verified • Installed boards and warning signs for speed limits and construction vehicles. • Implementation of the Traffic Management Plan. • Raised complaints about traffic system by the communities surrounding the project's site. • Notifications to communities of changing traffic patterns.	Contractors and subcontractors supervised by the Khanka Local Unit, Social Development officer (SDO), Solid Waste Management unit (SWMU) and social specialist in QG	Monthly during preconstruction and construction	Construction site	• Site inspection with photo documentation • Monthly reports and grievance log • Review Grievance log • Review Accidents log (if applicable)	Included in Construction cost
Local Community	SEA/SH and Gender Issues	• The monitoring of workers' compliance to the Code of Conduct when interacting with the surrounding communities to avoid behaviors, such as SEA/SH. • Complaints raised due to SEA/SH. • Documentation of corrective measures adopted • % of workers trained on Code of Conduct • % of workers trained on SEA/SH.	Contractors and subcontractors supervised by the Khanka Local Unit, Social Development officer (SDO), Solid Waste Management unit (SWMU) and social specialist in QG	Monthly during preconstruction and construction	Construction site	• Periodic reports • Review Grievance log • Site observation • Review Worker's Code of Conduct • Engagement with women minutes of meetings	No additional costs
Local Community	Child Labour	• Record of workers • Labour registry • Grievance log	Contractors and subcontractors supervised by the Khanka Local Unit, Social Development officer (SDO), Solid Waste Management unit (SWMU) and social specialist in QG	Monthly during preconstruction and construction	Construction site	• Verifying contracts • Inspection of complaints • Inspection of Human Resources Policy • Inspection of employment contracts • Grievance log Review Labour registry and IDs	Included in Construction costs
Utilities	Public Infrastructure and Utilities	• Waste transport monitoring reports outside the project site • Number of local community complaints related to the performance of the contractor for construction activities • Documentation of affected infrastructure and corrective procedures taken	Contractors and subcontractors supervised by the Khanka Local Unit, Social Development officer (SDO), Solid Waste Management unit (SWMU) and social specialist in QG	Monthly	Construction site	• Site inspection with photo documentation • Monthly reports and grievance log • Review Grievance log • Review Accidents log (if applicable) • Periodic reports • Review documentation of affected infrastructure and corrective procedures taken • Apply all monitoring methods related to waste management	Included in Construction costs

Receptor / EHS Aspect	Impact	Monitoring Indicators	Responsibility of Monitoring	Frequency	Location	Method & Target	Est. Cost (EGP)
Work force	Occupational Health and Safety	• That a health and safety plan is developed and available • Safety samplings (e.g. concentration of dust, level of noise) • Routine safety inspection report. • Daily site safety inspection report • Periodic medical examinations and record of health complaints. • Records of regular maintenance of electric equipment • Records of inspecting available fire extinguisher and functional fire system. • Records of fire drills and audits. • Trainings performed and recorded • Number of accidents/ injuries • PPE used by workers • Available and regularly sufficient first aid kits for mentioned hazards. • Number of JHA and PTW against activities on site. • Number of checklists for Hands and power tools. • Number of checklists for heavy equipment and vehicles. • Number of TBT against JHA and PTW. • Number of Hazard observations by workers according to labor law that obligate the workers to report any hazard to the employer. • Number of safety violations. • Number of non-conformities.	Contractors and subcontractors supervised by the Khanka Local Unit, Social Development officer (SDO), Solid Waste Management unit (SWMU) and social specialist in QG Occupational Health & Safety specialist	Monthly during preconstruction and construction Ad-hock based on the level of compliance	Construction site	• Exposure monitoring of contaminant dusts, vapors, and gases. • Regular safety inspection program. • Health surveillance program to examine workers before entering workplace for any signs of infection, along with proper health monitoring during operation. • Monitoring of noise • Regular reporting of any accidents. • Regular check on the workers attendance sheet • Fire drills should be done regularly and external audit. • Regular inspection and maintenance of electric equipment, plugs and wires. • Daily check of toilet and accommodation cleanliness and follow up on continuous disinfection of the rest areas as well as presence of clean potable water. • Check that the health insurance covers all workers on site, including work injuries.	Included in Construction costs
Local Community	Community Health and Safety	• The results of dust samples and gas emissions around the site. • Training records for driving, transportation of hazardous substances and emergency response. • Truck maintenance program monitoring reports • Number of traffic related accidents. • Number of health complaints for communicable diseases • Number of community complaints related to driver behavior. • Existence of an emergency response plan. • Number of complaints on various SEA/SH and traffic. • Site visit reports.	Contractors and subcontractors supervised by the Khanka Local Unit, Social Development officer (SDO), Solid Waste Management unit (SWMU) and social specialist in QG	Monthly during preconstruction and construction	Construction site	• Review reports of the results of dust samples and gaseous emissions around the Transfer Station. • Review records of driver's training, hazardous materials' transportation and emergency response. • Review truck maintenance program monitoring reports • Review the grievance log, the procedures taken to resolve complaints and pending complaints. • Review and update the emergency response plan, if necessary. • Review site visit reports	Included in Construction costs

6.4.2 Operation Phase ESMoP

Table 6-4 Environmental and Social Monitoring Plan (ESMoP) During the Operation Phase

Receptor / EHS Aspect	Impact	Monitoring Indicators	Responsibility of Monitoring	Frequency	Location	Method & Target	Est. Cost (EGP)
Operation Phase							
Air Quality	Increased air emissions	• Number of complaints related to air quality. • Equipment performance and maintenance frequency • Emissions visibility (black smoke, dust for example) • Ambient Air quality measurement results of the main pollutants (CO, SO2, NO2 TSP and PM10) - Ambient air quality (PM_{10}) - Concentrations of gaseous pollutants including SO_2, CO and NO_x • Evidence of covering trucks and loose/friable materials. • Frequency of water spraying on roads • Number of complaints related to air quality	• During operation: The Operator's Environmental, Social and Health & Safety Unit (OESHSU). • Environmental Monitoring activities are supervised by the E&S Manager in the District Local Unit under the supervision of the Environmental Unit within the governorate. • Waste management activities are supervised by the Environmental Officer within the SWMU	- Standard ambient air measurements quarterly or as soon as receiving a complaint	Onsite Area of Influence	The operator is required to keep an - Environmental Register that includes measurements results that shows compliance with the regulatory standards of the EEAA and WB standards - PM10 < 0.1 in µg/Nm3 - SO2 < 0.5mg/Nm3 for 10 mins - CO < 150 g/Nm3 for less than 15 mins. - NOx < 150 g/Nm3 for 24 hours - Pb < 1.5 g/Nm3 for 24 hours Grievance log	Included in Operator Management Cost
Noise and Vibration	Increases noise levels and vibration	• Noise level • Complaints related to high noise level		- Standard noise measurements quarterly or as soon as receiving a complaint	Onsite Area of Influence	The operator is required to keep an *Environmental Register* that includes measurements results that shows compliance with the regulatory standards of the EEAA and WB standards: • Site observation • Following up with complaints • Measuring ambient noise**:** Evaluate the impact of transfer station activities on noise and vibration levels, considering factors like vehicle movements, equipment operations, and waste handling. • Maintenance logs • Grievance log	Included in Operator Management Cost

Receptor / EHS Aspect	Impact	Monitoring Indicators	Responsibility of Monitoring	Frequency	Location	Method & Target	Est. Cost (EGP)
Soils	Degradation of soil quality	• Observation of accumulation of hazardous materials • Evidence of fuel spills and lubricants • Leachate		- Quarterly measurements Daily visual inspection will be carried out continuously - Quarterly site inspections to visually assess the soil conditions and identify any visible signs of potential contamination or impacts. This includes observing the areas where waste is handled, stored, or treated, as well as monitoring for any soil erosion or runoff issues.	Onsite	The operator is required to keep an Environmental Register that includes measurements results that shows compliance with the regulatory standards of the EEAA and WB standards: • pH Level: it can affect the toxicity of certain contaminants. • Soil Moisture Content: influence the transport of contaminants. • Heavy Metals (e.g., Lead, Cadmium, Mercury): pose risks to human health and the environment. • Organic Compounds (e.g., Benzene, Toluene, Ethylbenzene, Xylenes BTEX): may originate from waste materials. • Nutrients and Fertilizers: Nitrogen (N), Phosphorus (P), Potassium (K): Assess the levels of nutrients and fertilizers, which can impact soil fertility. • Ammonium and Nitrate Concentrations: especially if there is a potential for leaching into groundwater. Site observation with photos documentation	Included in Operator Management Cost

Receptor / EHS Aspect	Impact	Monitoring Indicators	Responsibility of Monitoring	Frequency	Location	Method & Target	Est. Cost (EGP)
Groundwater	**Ground water contamination**	• Signs of spills (visual inspection) • Tests in cases of accidental spills • Leachate	• During operation: The Operator's Environmental, Social and Health & Safety Unit (OESHSU). • Environmental Monitoring activities are supervised by the E&S Manager in the District Local Unit under the supervision of the Environmental Unit within the governorate. • Waste management activities are supervised by the Environmental Officer within the SWMU	- Yearly measurement as the EEAA requirement or immediately upon complaint - Daily visual inspection will be carried out continuously	Onsite	The operator is required to keep an Environmental Register that includes measurements results that shows compliance with the regulatory standards of the EEAA and WB standards: • Heavy Metals: lead, mercury, cadmium, and chromium. • pH Levels: Extreme pH levels can affect the solubility of certain contaminants. • BOD (Biochemical Oxygen Demand): High BOD levels indicate the presence of biodegradable contaminants. • COD (Chemical Oxygen Demand): It provides an overall indication of water quality. • Nutrients: Monitor levels of nutrients such as nitrogen and phosphorus, which can originate from organic waste and fertilizers. • Leachate Quality: Analyze leachate from the waste management facility, as it can be a direct indicator of potential groundwater contamination. • Groundwater Level: to understand variations and potential impacts on contamination. • Turbidity: High turbidity levels may indicate the presence of contaminants. • Conductivity: Changes in conductivity can indicate contamination. • Site observation with photos documentation	Included in Operator Management Cost 300 USD /point measurement

Receptor / EHS Aspect	Impact	Monitoring Indicators	Responsibility of Monitoring	Frequency	Location	Method & Target	Est. Cost (EGP)
Surface Water	**Surface water contamination**	• Observation of accumulation of hazardous materials • Evidence of fuel spills and lubricants • Leachate	• During operation: The Operator's Environmental, Social and Health & Safety Unit (OESHSU). • Environmental Monitoring activities are supervised by the E&S Manager in the District Local Unit under the supervision of the Environmental Unit within the governorate. • Waste management activities are supervised by the Environmental Officer within the SWMU	- Yearly measurement as the EEAA requirement or upon receiving a complaint - Daily visual inspection will be carried out continuously	Upstream and downstream of the TS location	The operator is required to keep an Environmental Register that includes measurements results that shows compliance with the regulatory standards of the EEAA and WB standards: • Physical Parameters: Temperature • pH (acidity or alkalinity), Turbidity (clarity) • Color, Odor, Conductivity (electrical conductivity) • Chemical Parameters: Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD) • Nutrients (nitrogen and phosphorus compounds), Total Suspended Solids (TSS) • Heavy metals (e.g., mercury, lead, cadmium) • Biological Parameters: Presence of indicator organisms (e.g., E. coli for Feacal contamination) • Pesticides and herbicides • Oil and grease • Site observation with photos documentation	Included in Operator Management Cost 300 USD /point measurement
Waste Management	**Waste accumulation and accumulative impacts**	• Status of waste management processes • Contracts with waste management contractors • Disposal receipts • Cleanliness of the areas where work will take place.	Operator under supervision of the Khanka Local Unit and Solid Waste Management Unit (SWMU)	- Quarterly measurements - Daily visual inspection will be carried out continuously	Onsite and area of influence	• Site observation with photos documentation	Included in Operator Management Cost
Biodiversity	**Habitats, ecosystem**	• Monitor relevant environmental parameters, such as air quality, water quality, and soil quality, to assess their potential impact on biodiversity	Operator under supervision of the Khanka Local Unit and Solid Waste Management Unit (SWMU)	- Daily visual inspection will be carried out continuously	Onsite and area of influence	• Site observation with photos documentation	Included in Operator Management Cost
Local Community	Road and Traffic flow	• Vehicle's safety inspections are available • Installed boards and warning signs for speed limits • Implementation of the Traffic Management Plan • Raised complaints about traffic system by the communities surrounding the project's site • Notifications to communities of changing traffic patterns, if any.	Operator under supervision of the Khanka Local Unit and Solid Waste Management Unit (SWMU)	- Quarterly or as soon as receiving a complaint Follow up on complaints will be continuous	Onsite and area of influence	• Site inspection with photo documentation • Monthly reports and grievance log • Review Grievance log • Review Accidents log (if applicable)	Included in Operator Management Cost

Receptor / EHS Aspect	Impact	Monitoring Indicators	Responsibility of Monitoring	Frequency	Location	Method & Target	Est. Cost (EGP)
Local Community	SEA/SH and Gender Issues	• The monitoring of workers' compliance to the Code of Conduct when interacting with the surrounding communities to avoid behaviors such as SEA/SH. • Complaints raised due to SEA/SH. • Documentation of corrective measures adopted • % of workers trained on Code of Conduct • % of workers trained on SEA/SH.	Operator under supervision of the Khanka Local Unit and Solid Waste Management Unit (SWMU)	- Quarterly or as soon as receiving a complaint - Follow up on complaints will be continuous	Onsite and area of influence	• Review periodic reports • Review Grievance log • Site observation • Review Worker Code of Conduct • Engagement with women minutes of meetings	No additional costs
Utilities	Public Infrastructure and Utilities	• Waste transport monitoring reports outside the project site • Number of local community complaints related to the performance of the contractor for construction activities • Documentation of affected infrastructure and corrective procedures taken	Operator under supervision of the Khanka Local Unit and Solid Waste Management Unit (SWMU)	- Quarterly or as soon as receiving a complaint - Follow up on complaints will be continuous	Onsite and area of influence	• Site inspection with photo documentation • Review Accidents log (if applicable) • Periodic reports • Review the documentation of affected infrastructure and corrective procedures taken • Review Grievance log • Apply all monitoring methods related to waste management	Included in Operator Management Cost
Work force	Occupational Health and Safety	• That a health and safety plan is developed and available • Safety samplings (e.g. concentration of dust, level of noise) • Routine safety inspection report. • Periodic medical examinations and record of health complaints. • Records of regular maintenance of electric equipment • Records of inspecting available fire extinguisher and functional fire system. • Records of fire drills and audits. • Trainings performed and recorded • Number of accidents/ injuries • PPE used by workers • Available and regularly sufficient first aid kits for mentioned hazards. • Random site inspection	Operator under supervision of the Khanka Local Unit, Social Development officer (SDO),Solid Waste Management unit (SWMU) and Social specialist in QG.	- Quarterly or as soon as receiving a complaint - Follow up on complaints will be continuous	Onsite and area of influence	• Exposure monitoring of contaminant dusts, vapors, and gases. • Regular safety inspection program. • Health surveillance program to examine workers before entering the workplace for any signs of infection, along with proper health monitoring during operation. • Monitoring of noise • Regular reporting of any accidents. • Regular check on the workers attendance sheet • Fire drills should be done regularly and external audit. • Regular inspection and maintenance of electric equipment, plugs and wires. • Regular check of toilets and accommodation cleanliness, and follow up on continuous disinfection of the rest areas, as well as presence of clean potable water. • Check that the health insurance covers all workers on site, including work injuries.	Included in Operator Management Cost

Receptor / EHS Aspect	Impact	Monitoring Indicators	Responsibility of Monitoring	Frequency	Location	Method & Target	Est. Cost (EGP)
Local Community	Community Health and Safety	• Number of community complaints related to odors, insects, rodents, and noise • Feedback of consultation activities related to community health and safety risks • Availability of adequate firefighting equipment on site and records of training in its use • Availability of a water source and appropriate passages for firefighting equipment • Availability of emergency phone numbers at clear points • Availability of a fire prevention plan • Methods of storing fresh waste • Procedures established for cleaning the facility and storage areas and monitoring reports • Procedures established to control rats and insects • Monitoring reports and coverage of waste transport trucks • Site inspection reports	Operator under supervision of the Khanka Local Unit, Social Development officer (SDO), Solid Waste Management unit (SWMU) and social specialist in QG.	- Quarterly or as soon as receiving a complaint - Follow up on complaints will be continuous	Onsite and area of influence	• Review community complaints related to odors, insects, rodents, and noise • Review the actions taken to resolve community complaints and pending complaints • Review the consultation results with the local community • Regular site visits to inspect the site and check firefighting procedures and equipment, waste storage methods, facility cleaning and rat control procedures • Review all monitoring reports related to operation and waste transportation • Regular reporting of any accidents. • Review and update the emergency response plan, if necessary.	Included in Operator Management Cost

7 Stakeholders Consultation and Public Disclosure

This Chapter discusses the stakeholder consultation and engagement undertaken as part of the ESMP process for the project and provides an overview of the findings.

7.1 Introduction

Stakeholder engagement is an integral part of the impact assessment good practice and is a statutory requirement of the World Bank (ESS 10). Further, EEAA requires Environmental Impact Assessment for Form B projects. Therefore, the project owner will need to develop an EIA form B. The project owner is committed to a technically and culturally appropriate approach to consultation and engagement with all stakeholders affected either directly or indirectly by the project. The consultation program for the project is based on informed consultation and participation in line with good international practice requirements with affected people and is designed to be both fair and inclusive. Consultation activities have been an ongoing process since the commencement of the study in March 2024.

7.2 Objectives

In line with the World Bank ESS 10, the objectives of this stakeholder engagement plan are to:

- Delineate an approach to stakeholder engagement that is systematic and will help in building and maintaining a constructive relationship between the client and their stakeholders;
- Provide means for engagement with project stakeholders that is inclusive and effective throughout the project cycle;
- Ensure that appropriate environmental and social information is disclosed and meaningful consultation with project stakeholders is held and, where appropriate, feedback provided by stakeholders during consultations is taken into consideration; and
- Ensure that stakeholders' grievances are responded to and managed appropriately.

7.3 Stakeholder Identification and Analysis

The first step in the stakeholder engagement process is the stakeholder identification, which is the determination of the various categories of project stakeholder groups and their needs or interests in it. As per the World Bank Environmental and Social Standard (ESS10), stakeholders are "the various individuals or groups who: (i) are affected or likely to be affected by the project (affected parties) and other individuals or groups that may have an interest in the project (other interested parties)".[16] To be able to carry out effective stakeholder engagement activities, the identification of stakeholder representatives is key. Not only do the identified stakeholders inform the project and its potential impacts with their valuable information, but they also serve as communication channels to disseminate information to large groups of people as well as to receive feedback on their comments or concerns about the project.

Annex IX describes the potential stakeholders.

7.4 Engagement During the ESMP Preparation

7.4.1 Scoping Consultation Activities

7.4.1.1 Consultation Methodology and Activities Undertaken to Date

- The Consultant carried out consultation activities in April, May 2024, through the following methods: Key Informant Interview (KII) with **Qalyubia governate**, the **City Council in Khanka Center**, **local unit in Arab El-Olaykat village**, **Khanka Health Units**, **Health Administration in Khanka**, **The Railway Club in Warsh Abu Zaabal Residences, Arab El-Olaykat and El Tayseer NGO in Warsh Abu Zaabal Residences,** as well as Focus Group Discussions (FGDs) with women from the community surrounding the project area. The diversity of community representation was considered

[16]World Bank, 2017, "World Bank Environmental and Social Standard 10: Stakeholder Engagement and Information Disclosure," *Environmental and Social Framework* (Washington: World Bank Group), 98

through the inclusion of the males, females, elderly and community leaders. The identification of relevant stakeholders to the project considered two factors, namely the geographical proximity of the potential stakeholders to the project area, and the level of influence on/by the project, to include specific groups of stakeholders depending on several levels, to achieve the objectives of the current study.

The consultation activities were conducted across various sub-projects, including other Transfer Stations (TS) and the closure of the Abu Zaabal (AZ) site. It is pertinent to note that while the stakeholder consultations during the scoping phase addressed multiple sub-projects, the feedback and insights gathered were meticulously utilized to inform the design and the Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP) for each specific sub-project. This approach ensures that stakeholder input was effectively incorporated into the planning and development processes of each individual project component.

Following are the main consultation activities conducted:

- The study team conducted site visits to location of the proposed activities. In addition, field observations were organized at project activities points to define various stakeholders, and the potential impacts of the project,
- Provide information on the project, in order to enable the competent stakeholders to determine the concerns, requirements, and recommendations,

The consultant carried out **3** focus group discussions with **16** males and **١٥** females, in addition to **٢٠** KIIs with different stakeholders.

Consultations were conducted with the local community (randomly selected near the projects areas) and other relevant stakeholders to:

- Gain a more in-depth understanding of the local context,
- Obtain community feedback on the project,
- Discuss project activities and anticipate its environmental and social impacts
- Propose mitigation measures
- Disclose information regarding the project

The feedback received was an important component to the formulation of mitigation measures and outcomes presented in this ESMP report.

All activities conducted were documented with lists of participants in order to guarantee an appropriate level of transparency. The table below is a condensed breakdown of the stakeholder categories that were engaged.

Table 7-1: Summary of the consultation activities that were conducted in project area

Stakeholder	Number		Method	Date
	Males	Females		
Deputy Governor of Qalyubia	1	-	KII	April 1, 2024
Official of the Solid Waste Management Unit in Qalyubia Governorate	1	-	KII	April 1, 2024
Community Liaison officer CLO in Qalyubia Governorate	-	1	KII	April 1, 2024
Officials of the Khanka City Council	1	3 Information center employees	KII	April 29, 2024
Officials in Arab El-Olaykat local unit	1 Deputy	1 Information center employee	KII	May 1, 2024

Stakeholder	Number		Method	Date
	Males	Females		
Officials at the Railway Club in Warsh Abu Zaabal Residences	3 Youth center officials	-	KII	May 7, 2024
Khanka Health Units and Health Administration in Khanka	1 Deputy	1 Supervisor of health department	KII	April 29, 2024
NGO in Arab El-Olaykat, El Tayseer in Warsh Abu Zaabal Residences	1 chairman	2 NGO officials	KII	May 1, 2024 May 7, 2024
Women in the community in Warsh Abu Zaabal Residences	-	١٥	1 FGDs	May 7, 2024
Potential Affected Communities in Residences 113, Residences 59 in Arab El-Olaykat and Warsh Abu Zaabal Residences	16	-	2 FGDs	May 1, 2024
Community leaders in Arab El-Olaykat	١	-	KII	May 1, 2024
The informal sector -woman Waste sorters	-	2	KII	May 7, 2024
Total	٢٦	٢٥		

7.4.1.2 Consultation Outcomes

The following table presents the consultation activities conducted by the consultant during the site visits to the project areas in May 2024, and the main outcomes obtained.

The following table presents the stakeholder engagement activities conducted by the consultant during the site visits to the project areas to date, and the main outcomes obtained

Table 7-2 Summary of Key Points of Discussion

Stakeholder	Consultation Outcomes	Incorporation in ESMP
Deputy Governor of Qalyubia Governorate	- The Deputy Governor of Qalyubia, Dr. Eman Rayan, identified several residential areas near the transfer station in Arab El-Olaykat village, including New Social Housing Building No. 113 and Building No. 59. - Additionally, the area hosts a closed waste recycling factory. The land for the waste transfer station is situated next to the closed recycling factory and will undergo development for future operation. - A decision has been made to allocate the land, measuring 25,000 square meters, for the Al-Khanka center and city, with surveying to be carried out by the Ground Networks Information Center.	- Added in the baseline section 4.1 - Land tenure was presented under the impact section 5.2.2.6 and project description section 2 - A standalone ESIA will be carried out for Abu Zaabal dumpsite closure and concerns related to the dumpsite will be incorporated in the ESIA
Director of Solid Waste Management Department in Qalyubia Governorate	Dr. Mohamed Abdullah, the Director of Waste Management Department in Qalyubia Governorate, outlines the current waste management system, covering solid waste management, monitoring, planning, and awareness. The system involves approximately 16 employees operating in various areas within the governorate, including residential neighbourhoods and villages, and relies on facilities such as the Abu Zaabal and Al Obour dump sites. Weaknesses in the system include inadequate implementation of fines, financial constraints, and insufficient human resources. The informal sector plays a significant role in waste management, albeit with its own set of challenges and benefits. The governorate has enlisted private sector involvement to improve waste management in specific areas, emphasizing financial support, efficiency, and resident satisfaction. Measures to mitigate negative impacts and improve community awareness are identified, along with the need for environmental and safety management at waste recycling plants. Various environmental monitoring authorities are involved in overseeing waste management activities, and a committee is proposed to enhance project monitoring and compliance. Additionally, a complaint system is in place to address citizen concerns promptly.	- Added in the consultation section - Relevant information was added in the social baseline section 4.4
Community liaison manager in Qalyubia Governorate	Ms. Walaa Salah, Director of the Community Communication Department in Qalyubia Governorate, engages with various governmental and community entities in the study communities of Al-Khanka - Abu Zaabal. She communicates through solidarity initiatives, civil associations, local units, youth centers, health units, and the Ministry of Health. Communication channels include youth committees, meetings within the governorate and targeted areas, local	Added in the consultation section. Additionally, added to the social baseline section 4.4 Considered in the GRM

Stakeholder	Consultation Outcomes	Incorporation in ESMP
	community development associations, and youth centers like the Railway Club in Masakin and the Abu Zaabal workshops. Additionally, she utilizes WhatsApp for ongoing communication to address citizen concerns and inform governorate deputies of urgent issues, aiming for swift resolution.	
Director of Waste Recycling Facility in Arab El-Olaykat Village	The director of the waste recycling factory in Arab El-Olaykat and the workers' supervisor explained that the factory ceased operations in April 2020 due to the COVID-19 pandemic but is undergoing maintenance and development for future reopening. The factory, operational since 2010 under a contract with Gaba, a subsidiary of Titan Cement, serves as a waste sorting facility. Currently, there are only 8 employees compared to the previous staff of around 25. Plans include the resumption of operations with 10 administrative and security workers, with potential workforce expansion later. Training sessions will cover environmental regulations, workers' rights, and community engagement. The factory focuses on RDF and organic fertilizer production and has basic infrastructure for water and power supply. Despite past complaints against the nearby dump site, there have been none against the factory. Workers have received vaccinations and safety training, although security personnel are deemed insufficient. Nearby facilities include health units, youth centers, and schools, with the nearest residential areas being the Abu Zaabal workshops.	Added in the consultation section Detailed data was presented in the social baseline 4.4
Vice President of the Municipal Council of Al Khanka	The vice president emphasized the importance of establishing a Transfer station in Arab El-Olaykat village for waste recycling, highlighting that most houses in the village are state-owned with ample vacant land around them, minimizing potential impact on residents. She stressed the need for environmentally friendly practices at the station, including immediate waste sorting upon receipt and accepting only household waste, avoiding incineration and construction waste. Educating citizens about waste sorting at the source was recommended to facilitate the station's operation. Additionally, she suggested constructing a fence and planting trees around the station and contracting with private companies for proper waste collection and transportation. The Vice President of Al Khanka city identified nearby residential areas to the transfer station and highlighted the land's allocation for the station, bordered by various streets. An executive decision was issued to determine the station's purpose, enabling interventions for the World Bank project. Activities at the station will include waste receiving, loading, and unloading, with plans to transfer waste to the Abu Zaabal dumpsite until its closure, then to the 10th of Ramadan landfill.	Presented in the consultation section and the mitigation measures section 6.3
The head of the local unit in the village of Arab El-Olaykat in the Khanka Markaz	The head of the local unit in Arab El-Olaykat, Khanka Markaz, delineated the boundaries of Arab El-Olaykat village, which includes residential areas like Abu Zaabal Workers' Quarters and Madinat Al-Amal. The village hosts various factories, a police checkpoint, and a local community development association overseeing waste collection.	The socioeconomic baseline shed light on the shared information (section 4.4)

Stakeholder	Consultation Outcomes	Incorporation in ESMP
	Environmental issues are often resolved through traditional sessions led by village elders, with fines imposed on offenders. Road conditions are precarious, posing risks, especially during winter. There are plans to close the Abu Zaabal dumpsite, but implementation has been delayed, causing frustration among citizens. Drug use and health hazards are prevalent at the dump site. Additionally, a polluted lake poses environmental concerns. Establishing a new Transfer station is met with resistance from locals. Customary sessions, led by elders, are prevalent for conflict resolution, with fines imposed for offenses ranging from injuries to adultery.	
The health unit in the village of Arab El-Olaykat	The responsible doctors at the health unit in Arab El-Olaykat village reported a rise in internal diseases, gastrointestinal infections, colds, and influenza due to mosquito proliferation. Locals primarily rely on the health unit for treatment due to transportation limitations, typically using tuk-tuks, motorcycles, or private cars for access. Patients are often referred to larger hospitals like Sheben Hospital or Al-Khanka Central Hospital for further treatment. The doctors expressed concerns about establishing a waste transfer station in the village, foreseeing it becoming akin to a small dump site. They highlighted potential negative impacts such as road damage during construction, waste spread leading to air pollution, foul odours, diseases, and increased insect presence. The health unit conducts various health education seminars, including topics like women's and children's health, breast cancer awareness, handwashing importance, and infection control, with potential for seminars addressing waste dangers and associated diseases.	All their concerns were addressed in the impact section 5.3.2 and 5.3.4 and the mitigation section 6.3
Senior supervisors at the Health Administration in Al Khanka Centre	The head of supervisors at the Health Administration in Al Khanka city outlined their responsibilities, which encompass overseeing public cemeteries, mosques, churches, factories, and the water sector, including water analysis and sampling. Prevalent diseases in the area include typhoid, paratyphoid, gastrointestinal diseases, encephalitis, common colds, pulmonary fibrosis, skin diseases, allergies, and food poisoning. Citizens typically seek treatment at health units or Al Khanka Central Hospital, with referrals to other Hospital when necessary. Waste accumulation in streets and gathering places leads to foul odours, flies, and malaria infections, necessitating intervention from health directorates and local units. Complaints prompt street spraying and fines ranging from 500 to 5000 Egyptian pounds, with repeat complaints referred to the public prosecutor.	The raised feedback was presented in the stakeholder engagement section and the socioeconomic baseline 4.4
Railway Club and Abu Zaabal Workshops in the village of Arab El-Olaykat, located in the Khanka center	The officials of the Railway Club, Masakin, and Abu Zaabal Workshops in Arab El-Olaykat emphasized the club's role in serving social housing areas and attracting locals, especially youth and children, for sports and recreational activities. They expressed concerns about drug use, dealing, theft, and violence near the Abu Zaabal dump site. They advocated for educational	The socioeconomic baseline shed light on the shared information (section 4.4) section 7

Stakeholder	Consultation Outcomes	Incorporation in ESMP
	seminars to inform residents about the importance of closing and rehabilitating the dump site, suggesting police-secured seminars with participation from local leaders. Waste disposal complaints prompt investigations and actions by the local unit, resulting in environmental reports sent to the prosecution for fines. Leaders, public figures, and elders in Arab El-Olaykat, along with civil society organizations, are poised to support the dump site closure project and educate residents, with the club facilitating internal and social media announcements.	
Local Community Development Association in Arab El-Olaykat , Khanka Centre **Al-Taysir Association in the Abu Zaabal workshop housing area in the village of Arab El-Olaykat , Khanka city**	The residents resort to burning waste or discarding it in streets, drains, and canals. An association official stressed the need for concerted efforts from local and health units to enhance waste management, including regular inspections, warnings, and citations for violators. The association officials are appreciative of the project to close the dumpsite, recognizing its positive impact on citizens' psychological well-being and their right to a clean environment. Waste collection from homes is irregular and dissatisfactory, managed by a community member for a fee. The association addresses environmental complaints through the Ministry of Environment's hotline and once contacted the police about smoke emissions from a fertilizer factory, promptly resolved. They plan to engage civil society organizations and citizens in raising awareness and supporting the project through community committees and social media platforms.	All their concerns were addressed in the mitigation measures and the ESMP section 6 of this report.
Female waste pickers at the Abu Zaabal dump site in the village of Arab El-Olaykat	The study team conducted group discussions with waste collectors at the Abu Zaabal dump site in Arab El-Olaykat village. Among those interviewed were two women, one elderly, whose adult children also work at the dump site. They mentioned that there are 60 men and 6 women working there, with children also joining during school holidays. Working periods for women range from 20 to 28 years, with flexible hours and no vacations. Workers receive no formal training; instead, they learn from peers initially, focusing on sorting shoes, cups, and cans. They face risks of injury from sharp waste like glass and syringes. While not ideal, waste sorting provides additional income for their families, complementing pensions or social assistance. Average monthly incomes range from 3000 to 3600 Egyptian pounds. Workers are concerned about their future if the dump site closes due to the proposed project. They desire permanent employment, fixed salaries, and social and medical insurance, either during rehabilitation or after engaging in other projects. Their leader ensures regular wage payments and provides social support.	The socioeconomic baseline shed light on the shared information (section 4.4)
Female workers from Abu Zaabal Workshops, Al-Amal, and Al-Shoubak	Women from social housing in Buildings 95 and 113, as well as Abu Zaabal Workshops, expressed distress over the Abu Zaabal **dump site** and fear the establishment of an transfer waste transfer station, foreseeing similar negative impacts. They argue that citizens have the constitutional right	The socioeconomic baseline shed light on the shared information (section 4.4).

Stakeholder	Consultation Outcomes	Incorporation in ESMP
	not to have a dump site near their homes or workplaces. They reject medical incinerators due to health hazards, especially for vulnerable groups like children, women, and the elderly, leading to respiratory and skin problems. Moreover, they face challenges like poor services, bad water quality, lack of transportation, high tuk-tuk fares, inadequate healthcare, insects, foul odours, and stray dogs. Children with disabilities in Arab El-Olaykat village might be affected by environmental factors, with no waste collection service, leading to waste disposal around the dump site, lake, and canal. During the dump site rehabilitation period, they fear crawling insects, reptiles, worms, and stray dogs. They demand urgent establishment of a service complex post-dump site closure, including educational, health, communication, and entertainment services, along with installing fences or barriers, implementing good environmental and health procedures during waste removal, and ensuring ambulance and firefighting services are available.	Concerns related to the Abu Zaabal dumpsite closure will be incorporated in the ESIA for the Abu Zaabal Dumpsite Closure

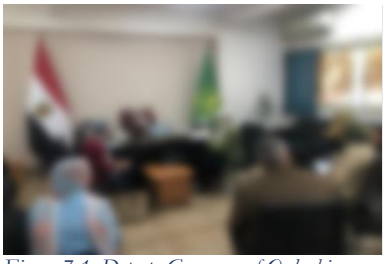

Figure 7-1: Deputy Governor of Qalyubia

Figure 7-2: Director of Solid Waste Management Department in Qaluybia governorate

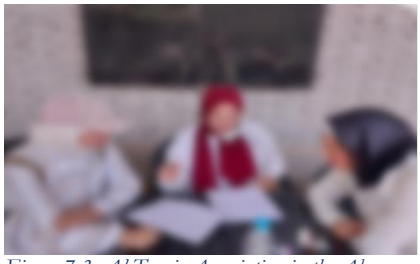

Figure 7-3: Al-Taysir Association in the Abu Zaabal Workshop housing area, located in Arab El-Olaykat village, Khanka Centre

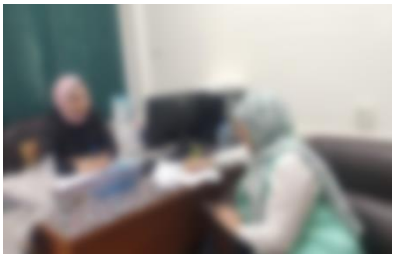

Figure 7-4: Community liaison manager in Qalyubia governorate

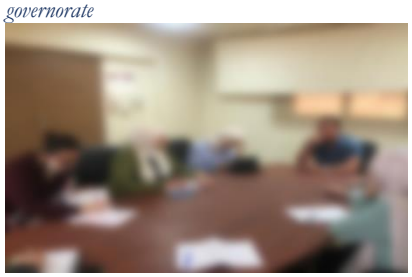

Figure 7-5: Director of the Waste Recycling Facility in Arab El-Olaykat Village

Figure 7-6: A group of women in the Abu Zaabal workshops - Al-Amal - mineral resources in the village of Arab El-Olaykat in Al-Khanka City

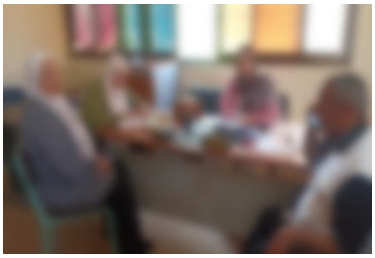

Figure 7-7: Vice President of the Municipal Council of Al Khanka

Figure 7-8: Head of Local unit in the village of Arab El-Olaykat in the Khanka Centre

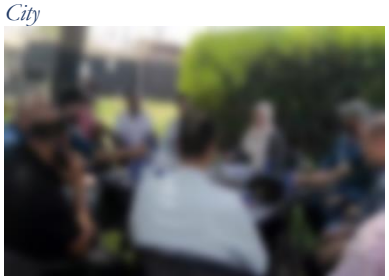

Figure 7-9: Residents from the 113 buildings (Housing Project) and - Buildings 59 in front of the Transfer station and Abu Zaabal dump in Arab El-Olaykat village in Al-Khanka center

Figure 7-10: Senior Supervisor at the Health Administration in Al-Khanka Centre

Figure 7-11: Consultations in Railway Club and Abu Zaabal workshops in the Arab Al-Olaykat village, located in Al-Khanka Centre

Figure 7-12: Community leader

7.4.2 Final Public Hearing

A final public hearing event was carried out on the 9th of July at Arab El-Olaykat local unit located less than 1 km from the project site. Below is a summary of activities. Through the public hearing event, Design Consultant presented the conceptual design. Additionally, ESIA Consultant presented the EHS impacts and mitigation measures.

7.4.2.1 Distribution of participants

The data presents a gender distribution analysis within Khanka, where a total of 42 participants attended. Among these participants, 22 were male, representing 52.4% of the total, and 20 were female, accounting for 47.6%. This nearly balanced distribution indicates that there is a slightly higher proportion of males compared to females in Khanka. The participants reflected various sectors as illustrated in the figure below:

The figure represents the distribution of participants by sector, categorized by gender and overall. The data reveals the following key points:

- **Male Participants**: The largest group among males is from the "Government & community member" sector, making up 22.7% of the total male participants. This is followed by "Community (non-working)" and "Education" sectors, each constituting 18.2% of male participants. The smallest representation comes from the "Health" sector, with only 4.5%.
- **Female Participants**: The largest group among females is also from the "Government & community member" sector, contributing to 20% of the total female participants. This is followed by "Environmental" and "Community (non-working)" sectors, each accounting for 15%. The "Trading" sector has the least representation among female participants at 5%.
- **Overall Distribution**: Across all participants, the "Government & community member" sector remains the most represented, with 14.3% of the total participants. This is followed by the "Community (non-working)" and "Education" sectors, each making up 16.7% and 11.9%, respectively. The least represented sectors overall are "Health" and "Political Parties," with each contributing 4.8% and 2.4% of the total participants.

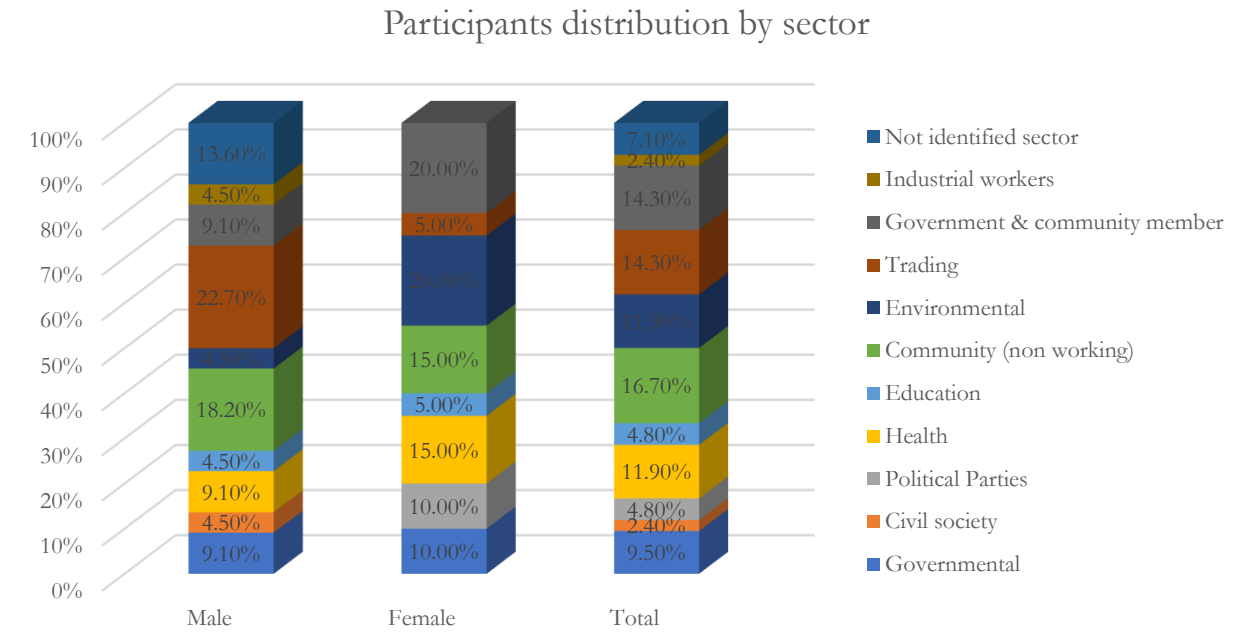

Figure 7-13: % distribution of participants by sector

The local unit invited all residents through calls, disclosure of details about the consultation at the local units, informing the NGOs, religious places …. Etc. The table below presents the percentage distribution by occupation.

Table 7-3 : Distribution of participants by sector/organization

Occupation	Male	Female	Percentage of total participants
Legislators, senior officials and managers	4.50%		2.40%
Specialists	18.20%	35.00%	26.20%
Technicians and assistant specialists		10.00%	4.80%
Clerks	18.20%	35.00%	26.20%
Workers in service professions and sales in markets and shops	22.70%	5.00%	14.30%
Craftsmen and related professions	13.60%		7.10%
Workers in primary professions	4.50%		2.40%
Pension	18.20%		9.50%
Housewife		15.00%	7.10%
Total	100%	100%	100%

7.4.2.2 Summary of the Consultation Process

A large number of stakeholders attended the community consultation session totaling 42 participants he key speakers of this session were:

1- Ms. Walaa Salah El-Din, Community Liaison Department Manager
2- Mr. Fahd Desouki Al-Sayed - Head of the local unit in the village of Arab El-Olaykat.
3- Ms. Walaa Mohamed Mahmoud, Vice President of the Khanka City Council
4- Ms. Zainab Hafez, social expert, ESIA Consultant.
5- Ms. Hanaa Abbas, Social Expert ESIA Consultant.
6- Dr. Kareem, a technical staff member and project design consultant from Design Consultant .

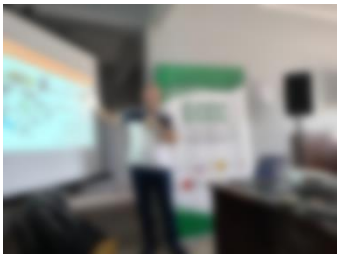

Figure 7-14:Design consultant

Figure 7-15:Female participation

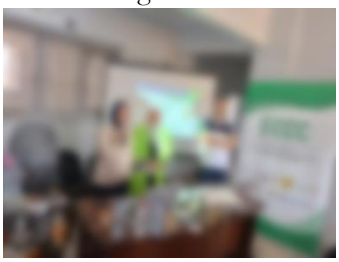

Figure 7-16: Community Liaison Department Manager Governorate

Figure 7-17: Social consultant for the air pollution and climate change management project in Greater Cairo

Figure 7-18:Community leaders and old people with disability

Figure 7-19: Social Expert (ESIA Consultant)

Figure 7-20:Location of the final consultation event at Arab El Olaykat

Figure 7-21: Disclosed announcement in the Local Unit

7.4.2.3 Summary of Discussions

Table 7-4: Comments and concerns raised during the public consultation session

Aspect	Questions and points of concern	Responses	How concerns were responded to in the ESIA
Hazardous medical waste	The head of nursing at the health unit in Arab El-Olaykat village, asked about the status of sanitary waste after the closure of the Abu Zaabal dump site.	Dr. Karim, consultant in Design Consultant company indicated. that all waste will be transferred to the 10th of Ramadan landfills, including hazardous medical waste.	This point was described in the waste transfer process within section 2 project description and components.
Covering waste transport vehicles	One of the community leaders a from Arab El-Olaykat , asked about the coverage of vehicles coming to the transfer station, their size (large - small). A resident of Arab El-Olaykat , reported that the sub-project is seen as civilized project with a high-quality design, but the cars currently loaded with waste are uncovered, and the waste falls from them and stray dogs run over them.	The Ministry of Environment is implementing a new waste management system in Qalyubia Governorate, involving the legalization of waste collection and transportation companies. The new system will involve trucks, small vehicles, and large vehicles that will be covered. Additionally, a fence will be installed and trees will be planted to prevent odor and dust. The Ministry of Environment will also apply governance principles, requiring companies to comply with new standards and pay fines for non-compliance. The system was implemented in Shubra El-Khaimah by Nahdet Misr Company, and fines are applied for non-compliance.	This part was included in the project description section 2 that discusses project components and activities. In addition, measures to mitigate odor, dust, and waste litter by trucks is presented in the ESMP in section 6
Citizens' opinions	One of the community leaders in a private transportation office in Arab Al-Sawalha, stressed the need to take the opinion of citizens in establishing projects.	Ms. Walaa Salah El-Din, representing the Governorate, noted that the participants present were key representatives of the community. She emphasized that the governorate has proactively engaged with the community through various meetings to resolve pressing issues, such as those concerning Buildings 59 and 113. She also stressed the importance of attending the technical presentation on the transfer station, describing it as a comprehensive and detailed presentation that would effectively address the majority of the participants' inquiries. She added that a stakeholder engagement plan was developed and will be implemented. The QG in cooperation with the PCU and the contractor will carry out continuous engagement activities during the project life.	Stakeholder engagement requirements is presented under section 7 of this report
Benefiting the villagers	A driver in Arab El-Olaykat, reported that citizens have never benefit from any project held in the village.	Ms. Zainab Hafez mentioned that the project would require a significant number of workers, particularly youth from the village of Arab El-Olaykat, provided they possess the necessary skills for employment at the transfer station. She also highlighted the existence of a grievance mechanism and shared the contact details for the community liaison manager in the Governorate, ensuring that any concerns or issues related to the project can be promptly addressed.	The project positive impacts during construction and operation are highlighted under section 5.2
Stray dogs	An employee of the local unit in the village of Arab El-Olaykat and a resident of the village, noted the presence of stray dogs around the dumpsite and possibly around the transfer station.	Ms. Zainab Hafez, reported that the ESMP recommends to includes a complete plan to combat stray animals and dogs around the transfer station. Coordination and communication will be made with the Veterinary Medicine Directorate.	This point should be shared with the operator as part of the mitigation measures. It was considered as an OHS and CHS risk. Proper waste management and fencing the TS will avoid the attraction of stray dogs
Waste collection companies	A teacher from Arab El-Olaykat, asked about the company that will be responsible for collecting waste from the village of Arab El-Olaykat.	Dr .Karim said that the Arab El -Olaykat the company has not been selected to date. However, Local Community Development Association could seek to obtain a license to collect and transport waste.	This point should be discussed in the inclusion of informal sector document
Unpaved roads	A housewife from Arab El-Olaykat , reported that all roads are not paved in the village of Arab El-Olaykat and the neighboring villages.	Ms. Walaa Salah El-Din, Governorate, said that the session included officials from the Khanka City Council and that the region's problems would be resolved with the citizens after the completion of today's public consultation session.	The roads condition is presented in the baseline section 4.3.12 and in the impact on roads 5.3.2.2 and 5.2.2.2
Area problems	A representative from a political party and a resident of the Abu Zaabal workshops housing, said that the village has many problems, next to it is an industrial zone, unsafe, harmful to citizens. It was also reported that the Abu Zaabal dumpsite is the largest dumpsite in Egypt	Dr. Karim reported that all the problems of the area will be solved when the Abu Zaabal dumpsite is closed, the transfer station is established, roads are paved, illuminated, waste is collected and transported through private companies affiliated with the new waste system, streets are cleaned, infrastructure is paid attention to (water - Electricity - sanitation - health - education).	The social baseline shed light on all problems. Additionally, the consultation section highlighted these problems.

Aspect	Questions and points of concern	Responses	How concerns were responded to in the ESIA
		He also pointed out that it is not permissible for any citizen or private company not to abide by the system or the laws, as the shape, configuration of the station was explained in the technical presentation, it will take place in reality.	
Duration of project implementation	One of the citizens, an employee from Arab El-Olaykat, asked about the duration of the implementation of the transfer station, how far it is from the residential area, why it is near the residential area and the railway club. The best location for it is next to the industrial zone.	Dr. Karim said that the implementation period of the transfer station construction activities will take 6 months from the starting date of construction. The transfer station in Khanka will be about 500 square meters away from the residential area, as it has a tight design, will be near the residential area to serve citizens while collecting waste. Mr. Fahd, head of the local unit in the village of Arab Al- Olaykat, said that the transfer station is about 2 km away from the residential area, it is an integrated, civilized and beautiful project.	The duration of the sub-project was presented in many sections of this report
Project impacts	A communications specialist from the area's residents about the side effects of the project and the extent of infrastructure repair (sewage).	Dr. Karim reported that Design Consultant has developed the project design, the World Bank has approved the design. The governorate will also monitor, along with Design Consultant , the implementation of the project at the time of construction and operation. Grievance mechanism for complaints.	Monitoring section 6.4 has a full monitoring plan. Additionally, the GM section 7.5 shed light on communication channels related to complaints.

7.5 Proposed Grievance Mechanism

This section aims to highlight the importance of the Grievance Mechanism and the main contents that should be included during the different project life stages.
An effective grievance redress mechanism serves as a guide shedding light on the strengths and weaknesses of the project procedures and implementation. It helps achieve project objectives and improves the quality of project activities and results. People who want to make complaints or raise any concerns will not do so unlessthere is trust that their complaints and grievances will be dealt with in an effective, respectful, impartial, courteous manner and devoid of fear of retaliation.

The PCU has developed a detailed Grievance Mechanism and enclosed it to the Stakeholder Engagement Plan. For general enquiries about a TS subproject managed by citizens service department of QG through the following channels:

- WhatsApp :٠١٢٧٣١٣٣٩١٧ - ٠١١٢٩٩٤٧١٦٢
- Email: Khdmetmwatnen@gmail.com
- In case of any appeal, the complaint should be sent to the PCU for appeal

The Project grievance mechanism is operational as per the link (https://www.eeaa.gov.eg/Project/127/Details) and based on an agreement between the GCCC Project and the QG, the citizens service department will be responsible for the implementation of the GM. Additionally, the grievance mechanism has been set up and maintained in line with the WB ESS10.

For more details (**Annex V**) the grievance manual includes the full details about the GRM to be adopted.
With regards to official complaints, The EEAA uses the general grievance mechanism of the government which is a complaint system used by all entities/ministries in Egypt. A page on the EEAA website provides information on the process and where to lodge a complaint: http://www.eeaa.gov.eg/en-us/services/complaintinquiry.aspx. The link redirects plaintiffs to the Council of Ministers' e-portal: https://www.shakwa.eg/GCP/Default.aspx. This page also provides a hotline number: 16528 which is the hotline of Council's GM.
The aggrieved person should be informed that they can take the case to the court If need arises, aggrieved people would however remain free to open a Court case without having registered their grievance with the GM.

The World Bank's approach to addressing sexual exploitation, abuse, and harassment in its financed projects includes a grievance mechanism for handling allegations. To effectively mitigate risks associated with various project activities, clear procedures must be established within the grievance and complaints handling mechanism for dealing with such grievances. These procedures should align with the World Bank's "Good Practice Note on Sexual Exploitation, Abuse and Harassment in the Financing of Investment Projects Involving Major Civil Works." Special attention should be given to the SEA/SH in cooperation with the National Council for Women [17] as they are the entrusted entity that provides direct services as well as referral to survivors of SEA/SH.

To ensure that the current complaints management mechanism is effective and comprehensive, the following basic principles must be observed:

[17] The **Egyptian National Council for Women (NCW)** is an independent government body dedicated to promoting women's rights and empowerment in Egypt. It was established in 2000 and is affiliated with the President of the Republic. The NCW works to ensure that Egyptian women have equal opportunities in all aspects of life, including politics, economics, social, and cultural spheres.

1. Accessibility and participation

All information related to the grievances and complaints mechanism should be made available to the various stakeholders in a simple and consistent manner. The grievance mechanism is tailored to fit for all stakeholders' culture and educational levels. The GM targets the stakeholders directly or indirectly affected by the project, including vulnerable groups. It contains methods, channels and means that enable any person to file a complaint or raise concerns easily and without any hassle.

2. Fairness and justice

Grievances and complaints must be fairly assessed and dealt with. The grievances and complaints system must deal with all complaints submitted with fairness and attention, and must be subject to clear, strict, transparent and public procedures.

There need to be effective communication channels between those in charge of the project and the community regarding the status of the complaints and the actions being taken.

3. Responsiveness and effectiveness

Those responsible for managing complaints must deal with them seriously and adhere to the timeframe agreed upon to resolve them.

Complaints should be considered as a priority, and the complainant should be informed of all developments during the process. He or she should be informed of the duration required for the complaint to be resolved and closed.

4. Privacy and confidentiality

The GM must provide private and confidential channels to the persons submitting the claim and must ensure anonymity for those who do not wish for their identity to be revealed., Those administering the complaints must respect the privacy and confidentiality of the complainants and of the information collected during the investigation, especially complaints related to sexual and gender-based violence. Such information must only be used within the framework of the GRM with the intent to deal with and resolve the complaint or resolve issues that may arise from it.

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5. Preventing the risk of retaliation

Individuals who file a complaint with the GM should not be subject to any accusation, retaliation, abuse, or any type of discrimination. In light of this, the GM must ensure the safety of the complainants, and this can be achieved by applying the previous principles, especially confidentiality e.

> It is the right of any complainant to demand anonymity of their complaints. In addition, if there is a risk of retaliation occurring, any information that would reveal the identity of the person submitting the complaint must not be shared with other stakeholders. The GM will establish clearly defined timelines for acknowledgment, update and final feedback to the complainant. To enhance accountability, these timelines will be disseminated widely to the project stakeholders. The timeframe for resolving the complaint shall not exceed 30 days from the time that it was originally received; if an issue is still pending by the end of 30 days the complainant will be provided with update regarding the status of the grievance and the estimated time by which it will be resolved.

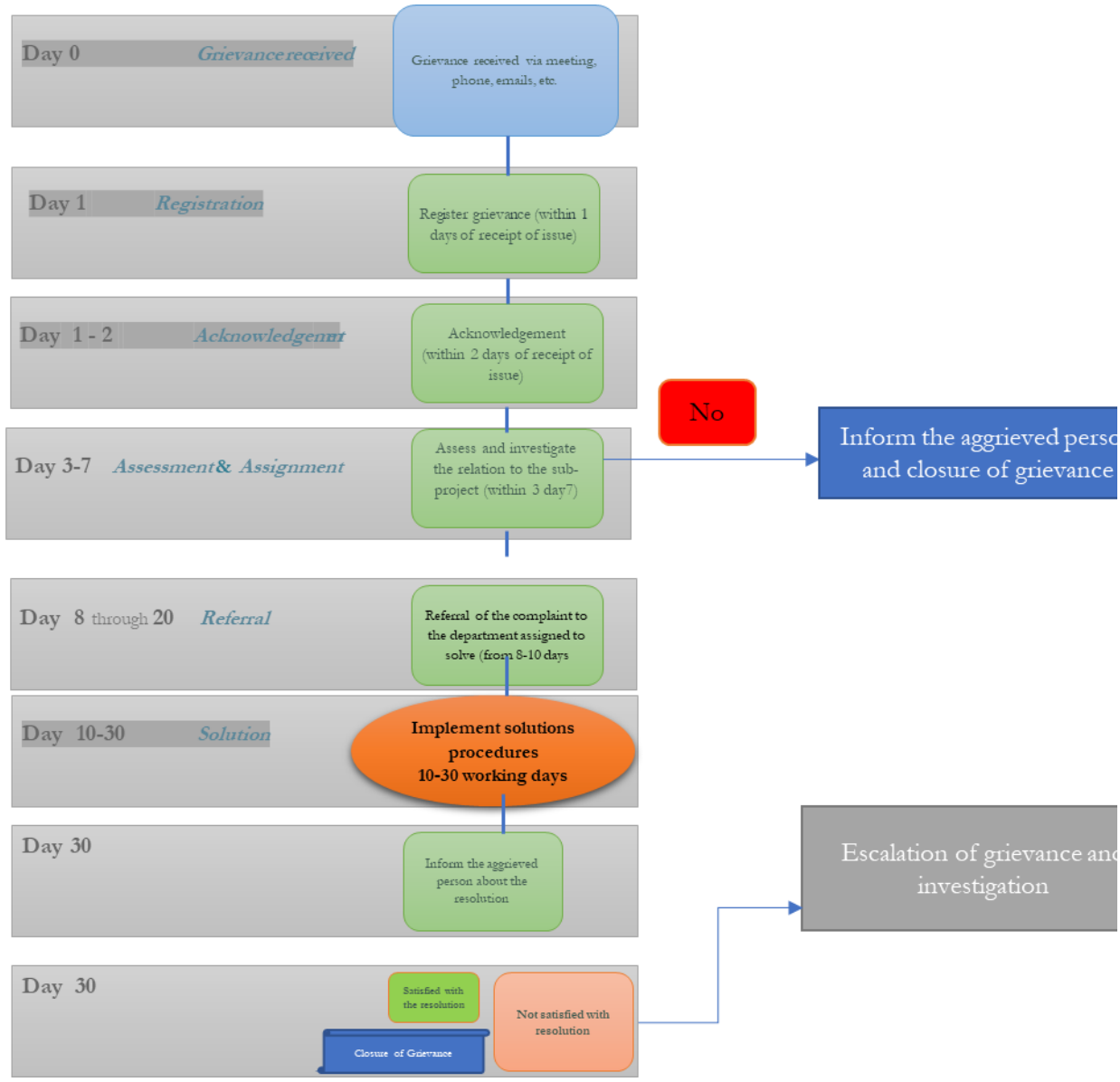

Figure 7-22: Time line of the GM

The grievance management process outlines the steps that complaints go through, starting from receiving, registering, and resolving the grievances.

The PCU has developed a detailed Grievance Mechanism and enclosed it to the Stakeholder Engagement Plan as follows:

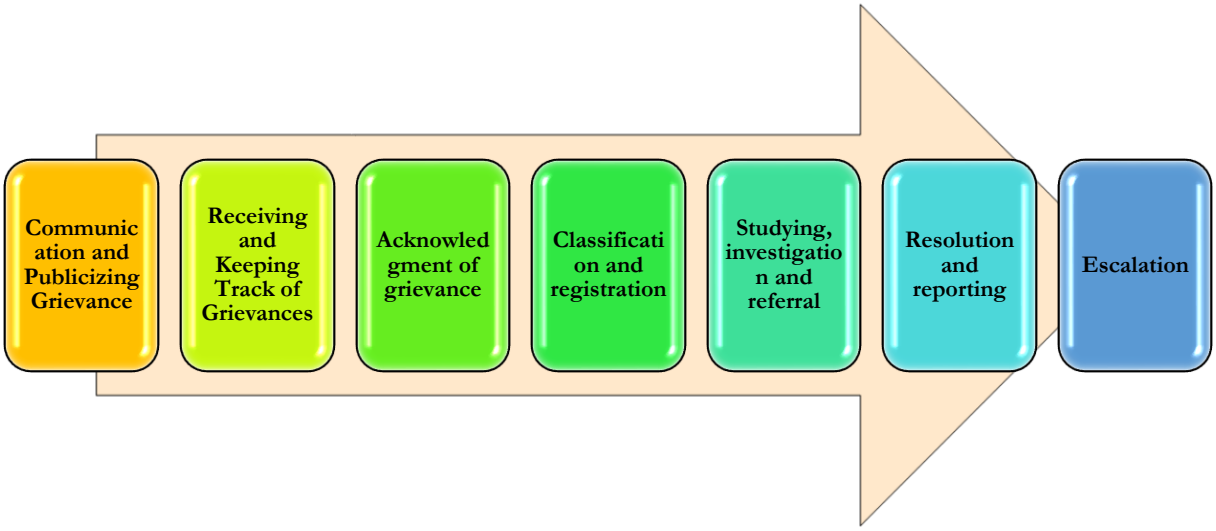

Figure 7-23:Steps of grievance mechanism

Below are the guiding steps for the development of the GM system as per the grievance manual:

Annex V sheds light on the GM procedures in full compliance with the GM framework developed by GCCC and approved by the WB.

8 References

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9 Appendices

9.1 Annex I: Details of the Legal and Institutional Framework

9.2 Annex II: Project Design Documents

9.3 Annex III: Baseline Measurements Report

9.4 Annex IV: Khanka Land Documents

9.5 Annex V: GCCC Project Grievance Redress Mechanism

9.6 Annex VI: Detailed Baseline

9.7 Annex VII: Impact Assessment Methodology

9.8 Annex VIII: Capacity Assessment of Proposed Institution

9.9 Annex IX: Stakeholders Analysis

9.10 Annex X: Surveying tools

9.11 Annex XI: Chance Finds Procedure

9.12 Annex XII: Preliminary Training Aspects Within OHS Plan