Submitted To:

Greater Cairo Air Pollution Management and Climate Change Project

Environmental & Social Management Plan for Al-Marsafa Transfer Station

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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 in Al-Marsafa 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-Marsafa.

PROJECT DESCRIPTION

Location

The Marsafa Transfer Station is located in the rural village of Al-Marsafa within the Banha Center, Al-Qalyubia Governorate. It is located 48 kilometers north of Cairo in the Nile Delta region. It is situated on the Western Bank of the Damietta branch of the Nile River. Situated in Marsafa Village, Banha, the site spans approximately 4.29 feddans (18,000 square meters), with approx. 2.75 feddans (11,550 square meters) allocated for the transfer station. The land was primarily agricultural landscape standing on the Bahr Al-Baqar agricultural drain.

Site Selection

The Marsafa site was selected from five potential options as the most suitable location for a municipal solid waste transfer station, based on legal, environmental, and technical assessments. Key criteria included compliance with Egyptian Environmental Law 4/1994 and Solid Waste Law 202/2020, safe distances from sensitive areas, and future waste capacity needs. Located in an agricultural zone on non-active farmland, Marsafa's state-owned status minimizes legal hurdles, avoids land acquisition, and prevents economic displacement. Although chosen solely for transfer and not treatment due to size and environmental limitations, Marsafa aligns with the GCCC project's strategy by improving waste consolidation, reducing long-haul transport, and supporting efficient waste redistribution. Local community consultations have been conducted to ensure concerns are addressed in the Environmental and Social Impact Assessment, with environmental and social recommendations integrated into the project design and mitigation measures.

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: 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.

Labor

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 Labor 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.

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. 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)

World Bank Environmental and Social Standards

[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.

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	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	The land allocated for the Transfer Station was previously private land, however the governorate purchased it and allocated it for the development of the Transfer Station. 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 find 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.

The guidelines cover various treatment methods, including physico-chemical and biological processes such as incineration, aimed at reducing waste volume and toxicity. Additionally, they provide specific recommendations for managing medical waste, municipal sewage, and waste from cement kilns. The goal is to promote best practices in waste management to protect human health and the environment.

Environmental and Socioeconomic Baseline

Project Area Surroundings

Given the location of the project which is affiliated to **Marsafa village** within the jurisdiction of **Banha District**- Qaluybia governorate, the consultant focused on Marsafa village from where wastes can be collected.

- **Western border:** It is bordered to the west by the village of Farsis, which is affiliated to the local unit of Sindenhour
- **Eastern borders**: It is bordered to the east by the village of Niqbas - Kafr Atallah and Kafr El-Sheikh Ibrahim - Manshiyet Diab
- **Northern borders**: It is bordered to the north by Monsha'et Banha
- **Southern border:** It is bordered to the south by the local unit of the village of Mit Kenana, affiliated with the center of Toukh (and Ezbet Muhammad Agha - Ezbet Al-Omda and Ezbet Al-Qadri).

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 ^{o}C.

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.

Hydrographic context: 400 meters the west of Marsafa Transfer Station is an agriculture canal. From the south-east direction there is an agriculture drainage. The drainage has significant waste accumulated near the Transfer station site and on the drainage banks

Biological Environment: The project site is mainly encompassed by agricultural fields, interspersed with drainage systems used for farming purposes. The fauna in the area primarily includes birds, domestic animals, and agricultural pests such as insects, worms, and rodents. 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. The transfer site is in Marsafa, a village in Banha District, which is part of Al-Qalyubia Governorate, located 48 km north of Cairo. Banha Center covers 17.5 km² of the 1,001 km² governorate. Marsafa has five affiliated villages and the transfer site is situated on 9.5 Feddans of flat, irregular land, bordering agricultural land and water infrastructure.

Marsafa's population is 37,812 with a nearly equal gender split and 7,563 households averaging under 5 people each. Birth and death rates are 23.5 and 13 per 1,000 people, respectively. The community is deeply rooted with prominent families and faces challenges accessing services due to poor infrastructure.

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: Health services are limited and distant, with only small clinics and health units available locally. Major hospitals and specialized services are 9 km away in Banha. The village has inadequate emergency services and healthcare facilities. This should be thoroughly addressed during the preparation of the emergency response plan and explicitly identified in the risk assessment phase to ensure proper communication and safety measures are in place, particularly in the event of severe injuries.

Vulnerable Groups: Identified vulnerable groups include widows, divorcees, and daily wage workers, who need financial and social insurance for protection and stability.

Water Services: The village has a general water grid covering 90% of the area, 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: 70% of the area is connected to the sewage network, with the rest relying on waterways and trenches, causing health issues.

Waste Management: Private companies handle waste collection, but service accessibility is limited, leading to waste disposal in public areas.

Traffic and Transportation Infrastructure: Roads are poorly lit and paved, with inadequate transportation services affecting safety and movement.

Cultural Heritage: There are minimal culturally significant sites in Marsafa, 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. This will contribute to the impacts associated with waste management at the dumpsite such as odor, air contamination, contamination associated with leachate, road traffic etc. More details on the existing impacts of Abu Zaabal dumpsite can be found in the **Abu Zaabal Dumpsite Closure ESIA**, that is currently under preparation
- The construction of the TS 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. 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 mentioned in section 4.4.5, the community surrounding the proposed TS site are relatively disadvantaged and with the operation of the 10 RIWMF and waste transferred from the TS is set to improve the public health by ensuring safer, cleaner, and more sustainable waste management practices,

Summary of Environmental and Social Impacts

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 moderate impacts.
3. **Soils & Landscape:** Construction can lead to soil erosion, compaction, and contamination, with moderate impacts due to the limited area and duration.
4. **Groundwater:** Potential contamination from construction spills, leaks, and runoff moderately affecting groundwater quality.
5. **Surface Water** Construction can cause sedimentation, pollution, and altered water flow, majorly impacting aquatic habitats.
6. **Waste Management:** Generation of various types of waste, including hazardous waste, requiring proper handling to mitigate moderate impacts.
7. **Biodiversity**: Human activities, noise, and increased traffic may disturb local fauna, but the impact is minimal given the limited presence of sensitive species
8. **Temporary Labor Influx:** Risk of social conflict, crime, disease, and inflation due to Labour influx, with moderate impacts.
9. **Road Traffic and Transportation:** Project-related traffic may cause temporary congestion and accessibility issues. The impact is moderate due to its short-term nature.
10. **Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH):** Risk of harassment and discrimination, with moderate impacts expected.
11. **Child Labor:** Risk of child labor if not monitored, with moderate but significant impacts.

12. **Public Infrastructure:** Potential moderate impacts on infrastructure and utilities nearby.
13. **Occupational Health and Safety (OHS):** Multiple risks to workers from exposure to hazardous materials, noise, and other construction activities, rated as major impacts.
14. **Community Health and Safety:** Moderate 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 with moderate impacts.
5. **Surface Water:** Runoff and improper waste handling may cause pollution considered as a major impact.
6. **Waste Management:** Improper handling of hazardous and non-hazardous waste could result in major impacts on health and safety.
7. **Biodiversity**: Human activities, noise, and increased traffic may disturb local fauna, but the impact is minor given the limited presence of sensitive species
8. **Road Traffic:** Increased vehicle movement may cause major impacts on traffic, safety, and infrastructure.
9. **Sexual Exploitation and Abuse & Sexual Harassment (SEA/SH):** Ongoing risks of SEA/SH, requiring mitigation, with moderate impacts.
10. **Occupational Health and Safety:** Risks from waste handling, equipment failure, and lack of protective measures, rated as major impacts.
11. **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, Marsafa Local Unit, the environmental unit within the governorate, and 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 Marsafa 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:

- Need for training in communication and public relations.
- Increased crime rates
- Improper waste disposal issues.;
- Increased crime rates and improper waste disposal issues.
- Increase in health issues due to waste accumulation.
- Concerns about the proposed transfer station's impact on health, property values, and the environment.
- Positive impact on job opportunities and village development.
- Suggestion for a waste recycling workshop at a technical school.
- Advocacy for improved waste management and reduced fees.
- Support for the waste management project with concerns about waste accumulation and health risks.
- Support for the transfer station with recommendations for security measures and public awareness.
- Support for job opportunities.

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 Project
GRM	Grievance Redress Mechanism
HAVS	Hand and vibration syndrome
IDA	Industrial Development Authority
ILO	International Labor Organization
ILS	International Labor Standards
IWMF	Integrated Waste Management Facility
K	Potassium
KII	Key Informant Interview
L&FS	Life and Fire Safety
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

Abbreviation	Description
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
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-Marsafa 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-Marsafa. 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 management (GRM) system 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-Marsafa Transfer Station Description

2.1 Marsafa TS Sub-Project Background

The Marsafa TS site was originally private agricultural property which was later purchased by the Governorate. The site is expected to be rehabilitated by removal of existing accumulations and the construction of a transfer station able to transfer the municipal solid waste generated in Banha and Kafr Shokr cities to the final treatment facility at the planned Integrated Waste Management Facility (IWMF) at 10th of Ramadan. Marsafa Transfer Station will have a design capacity of 1000 tons/day.

Figure 2-1 Satellite Image of Marsafa Site, Qalyubia governorate

Al-Marsafa transfer station will serve the area of Kafr Shukr and Banha markazes. These markazes generate daily around 600 ton 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 900 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: Marsafa Transfer Station Design Report)

Markaz	Population in 2024 [Capita]	Generated Waste in 2040 [ton/d]	Collected Waste in 2040 [ton/d]
Kafr Shokr	203,522	270	220
Banha	705,858	780	700
Total	909,380	970	920

2.2 Marsafa Transfer Station Sub-Project Location

The Marsafa Transfer Station is located in the rural village of Al-Marsafa within the Banha Center, Al-Qalyubia Governorate. It is located 48 kilometers north of Cairo in the Nile Delta region. It is situated on the Western Bank of the Damietta branch of the Nile River. Situated in Marsafa Village, Banha, the site spans approximately 4.29 feddans (18,000 square meters), with approx. 2.75 feddans (11,550 square meters) allocated for the transfer station. The land was primarily agricultural land standing on the Bahr Al-Baqar agricultural drain. Bordering the site from the North, South, and West is agriculture lands and Bahr Al-Baqar drain in the East direction. The figures below illustrate the project area.

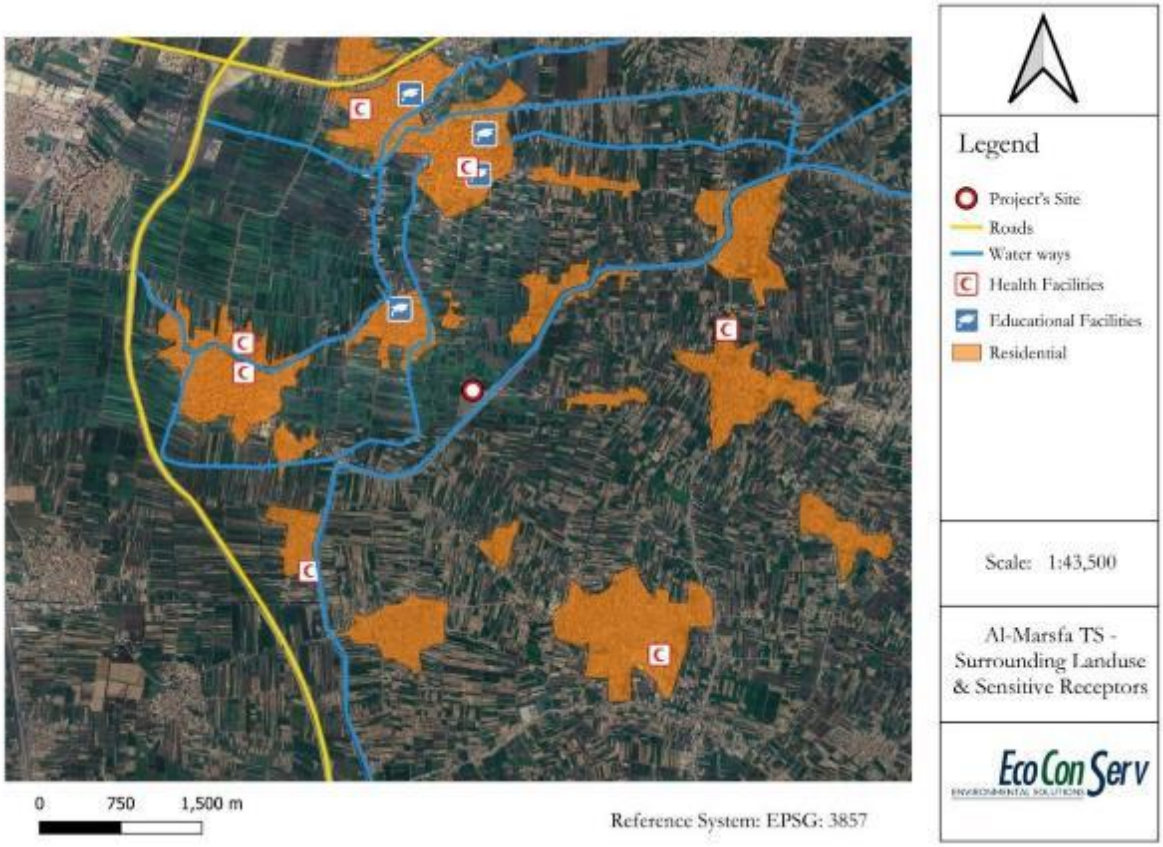


Figure 2-2 Marsafa TS Project Area

2.2.1 Sub-Project Site Selection

The site of Marsafa 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 with legal distance requirements from sensitive areas such as agricultural zones, residential areas, and water bodies. Marsafa site has been selected within an agricultural zone, on land that is not currently engaged in any agricultural activities, being far enough from residential areas to limit any potential impact on the local community. The site designated for the sub-project is confirmed to be state-owned and allocated to Marsafa

[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.

TS. The land was purchased based on willing buyer willing seller and free from any informal or unauthorized activities, and thus, the risk of adverse impacts related to land acquisition for the project is negligible which 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 Marsafa site was selected solely for transfer facilities rather than treatment due to limitations in size and environmental factors. Marsafa TS will support the anticipated capacity of waste for transfer, however only meets 39% of the requirements for waste treatment capacity. In addition, both Law 4/1994 and Solid Waste Law 202/2020 require greater distances for treatment facilities in agricultural active regions and within proximity of water sources.

On the other hand, establishing a transfer stations in Marsafa 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.

Overall, Marsafa 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-Marsafa 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.

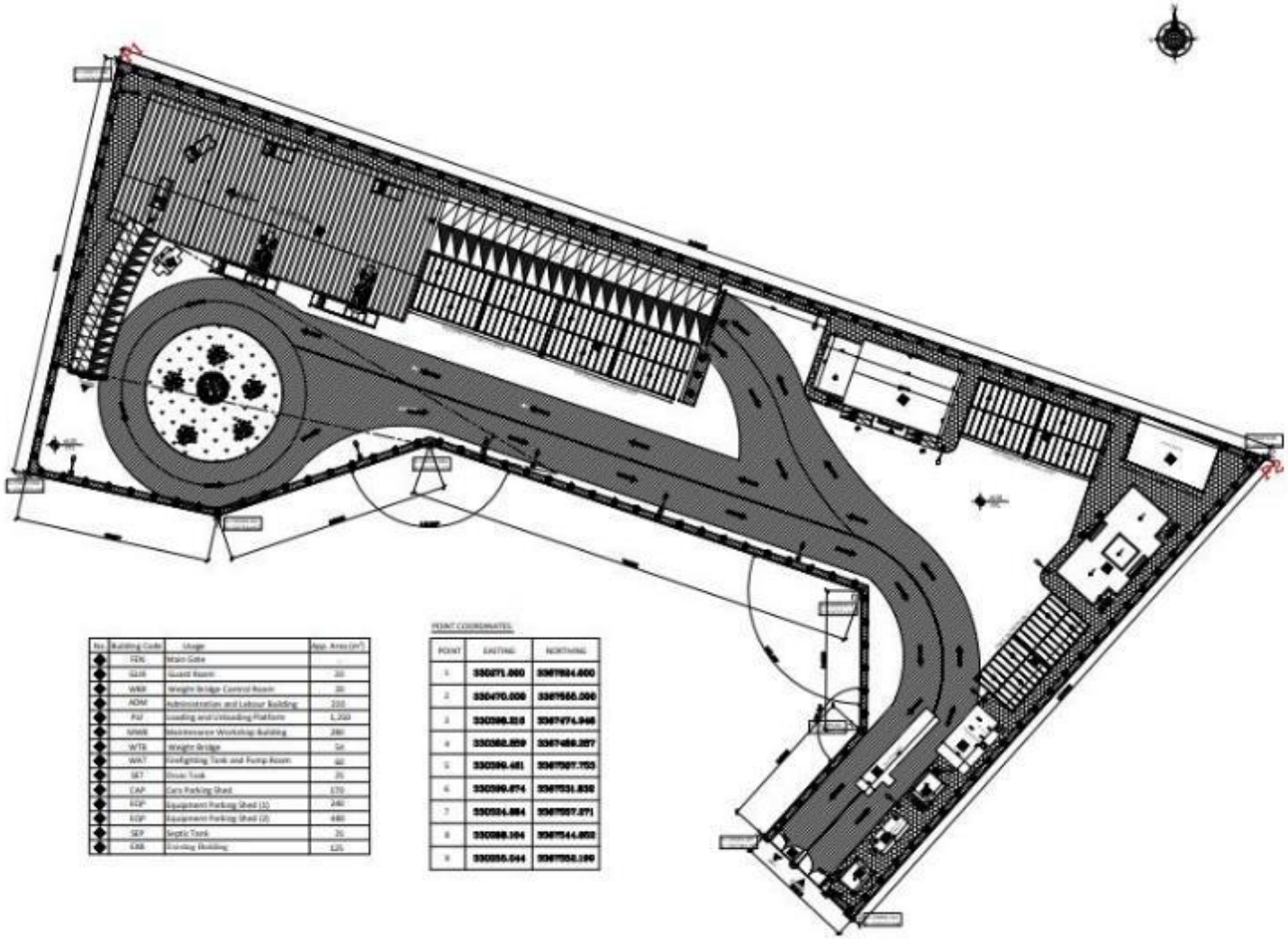
2.3 Marsafa Transfer Station Sub-Project Components

The following figure 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**.

The main structures and spaces composing the transfer station are as follows while details of these components can be found in the "Marsafa 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 & Labor Building
- Weighbridge & Weighbridge Control Room
- Maintenance Workshop Building
- Car Parking Shed
- Loading & Unloading Area Platform

- Water Supply
- Electric Control Room
- Sewage system
- Greeneries



No.	Building Code	Usage	App. Area (m²)
1	FDS	Main Gate	-
2	GUR	Guard Room	20
3	WBR	Weight Bridge Control Room	20
4	ADM	Administration and Labour Building	210
5	PLF	Loading and Unloading Platform	1,200
6	MWB	Maintenance Workshop Building	280
7	WTB	Weight Bridge	54
8	WAT	Firefighting Tank and Pump Room	60
9	SET	Drain Tank	35
10	CAP	Cars Parking Shed	170
11	EQP	Equipment Parking Shed (1)	240
12	EQP	Equipment Parking Shed (2)	480
13	SEP	Septic Tank	35
14	EXB	Existing Building	125

POINT	EASTING	NORTHING
1	330371.860	3367884.600
2	330470.008	3367560.200
3	330398.318	3367474.948
4	330382.859	3367488.227
5	330399.481	3367507.755
6	330399.874	3367531.838
7	330384.884	3367557.271
8	330388.304	3367544.858
9	330355.044	3367552.189

Figure 2-3 General Layout of Marsafa TS

2.3.1 Accessibility

As shown in the figure below, the site does not have direct road access. Instead, traffic must use a 30-meter long and 10-meter-wide bridge to access the site from the nearest main road, "Moshtouhr-Kafr Attallah" is sufficient for average daily traffic at level that maneuvering is not allowed with a speed less than 60 km/hr. It should be noted that there are 2 access bridges; one that connects the main road to the TS and the other bridge connects the access road to the main road. It is crucial to understand that the access road not only serves the TS, but also serves the community. The entrance is 15-20 meters in width, this represents an adequate entrance to facilitate trucks and transportation's entrance sufficiently. The main problem faced concerning traffic near and to the site of the project, is the poor lighting and paving of the road impacting safety especially at night, in addition to the lack of availability of transportation services at all times.

Figure 2-4 Access Roads to Marsafa TS Site

As seen in the figure above, access to the TS site is made through bridges and access road. It should be noted that there are two access bridges; one that connects the main road to the TS and the other bridge connects the access road and the main road. It is crucial to understand that the access road not only serves the TS, but also serves the community. It is worth noting that the western bridge will serve the TS during construction, and during operation for trucks transporting waste to the TS and to Abu Zaabal and 10th of Ramadan.

Assessment of the access bridge has been conducted by the E&S consultant and recommendations to ensure health, safety, and environmental impacts of using the bridge during both construction and operation have been provided to the design consultant at an early stage of the project and have also been recommended in the mitigation measures of Road Traffic in section 6.2.

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 Marsafa Transfer Station Design Report in **Annex III**.

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:** 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

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

Works components	Details of works
Water Tank	• 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. 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.

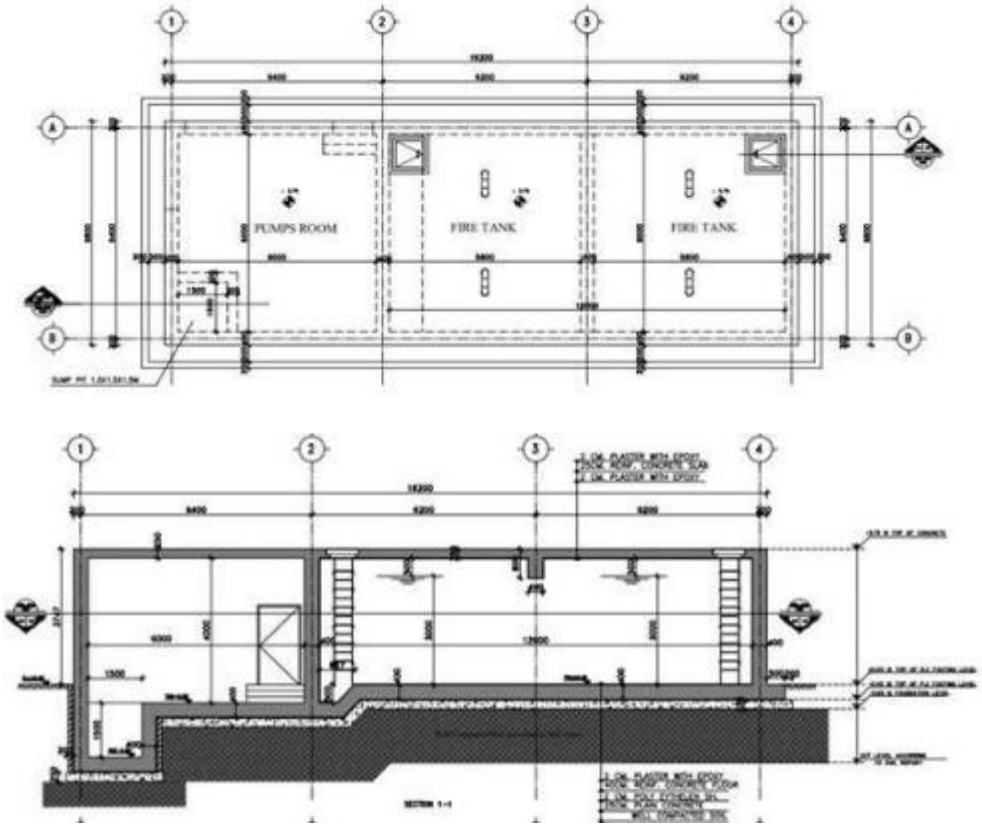


*Figure 2-5:*Water tank

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:** The 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. All equipment should be in a good shape and condition, calibrated with valid certificate.

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 is expected to receive up to 900 ton/day of solid waste in the targeted years (as explained earlier), the design capacity of the TS is 1000 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 assuming a traffic flow of 26 vehicles per hour:

- 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.

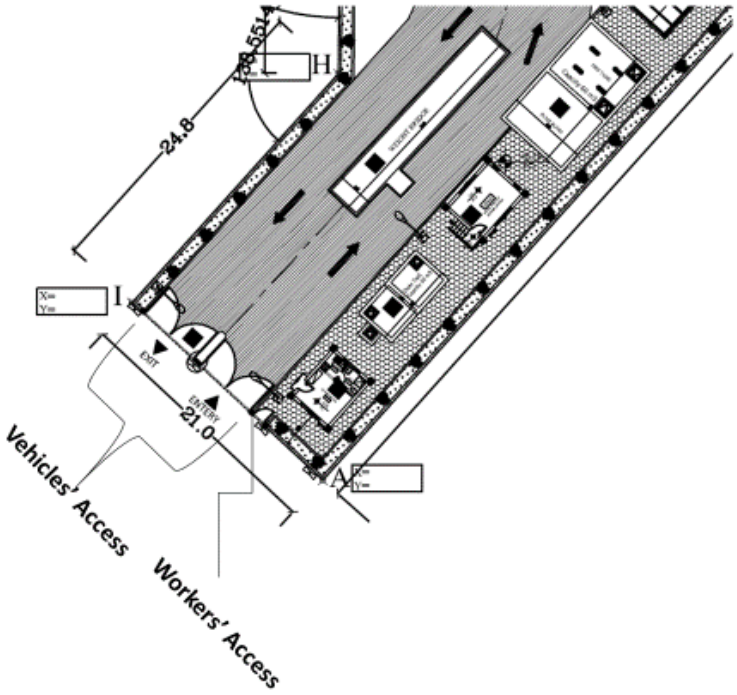


Figure 2-6 Segregated access for vehicles and workers to the TS

The TS is designed to accommodate an average of 26 vehicles per hour, assuming hourly operation as follows:

- The 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 ensure that the accommodation meets minimum standards of IFC accommodation requirements. Here are 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 Marsafa 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	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	The land allocated for the Transfer Station was previously private land, however the governorate purchased it and allocated it for the development of the Transfer Station. 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 might not be 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	Yes	ESS10 is relevant to the sub-project due to the involvement of various stakeholders and complex implications of the project.

Environmental & Social Standard (ESS)	Title of the ESS	Applicability to the Sub-Project (Y/N)	Justification
	Information Disclosure		

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.

3.3.3 Environmental, Health, and Safety Guidelines for Construction Materials Extraction6

The World Bank's EHS Guidelines for Construction Materials Extraction provide a comprehensive framework for managing environmental, health, and safety risks in the extraction of construction materials. Key recommendations include controlling air emissions and water contamination through dust suppression, efficient equipment use, and water management systems. The guidelines also stress the importance of noise and vibration control, especially near communities, and responsible waste management practices. Biodiversity considerations are essential, with site selection and ecosystem restoration plans aimed at minimizing impacts on local habitats. Community health and safety measures include traffic management and strict protocols for blasting. Worker health and safety are prioritized through hazard assessments, personal protective equipment, and safety management systems.

Labor 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 Labor influx, and how to manage those risks. It includes a list of Toolkits and methods for the assessment and management of Labor influx. The Guidance Note identifies the following potential Environmental and Social impacts. **Good Practice Note – Addressing Sexual**

[5] Waste Management Facilities - Final - December 7.doc (ifc.org)
[6] EHSG for Construction Materials Extraction
[7] Labor Influx Management Guidance Note - 2016

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 Labor Standards (ILS)

As stated in the International Labor Standard (ILS) website, ILSs are legal instruments, developed by the International Labor 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

- International Labor Organization Core Labor 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 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 ***Qalyubiya Governorate.*** According to the EEAA the project 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.

[8] Good Practice Note - Addressing Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) in Investment Project Financing - 2020

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 **Marsafa village** within the jurisdiction of **Banha District**- Qaluybia governorate, the consultant focused on Marsafa village from where wastes can be collected.

- **Western border:** It is bordered to the west by the village of Farsis, which is affiliated to the local unit of Sindenhour
- **Eastern borders**: It is bordered to the east by the village of Niqbas - Kafr Atallah and Kafr El-Sheikh Ibrahim - Manshiyet Diab
- **Northern borders**: It is bordered to the north by Monsha'et Banha
- **Southern border:** It is bordered to the south by the local unit of the village of Mit Kenana, affiliated with the center of Toukh (and Ezbet Muhammad Agha - Ezbet Al-Omda and Ezbet Al-Qadri).

Based on the data provided by the Information Center about the village of Marsafa in April 2024, this village is one of the ancient villages that was mentioned in the dictionary of countries and was called Marj al-Safa due to the abundance of palm trees in it. Its name was also mentioned in the reconciliation plans as (Marsafi) with a fraction of a thousand as the country of knowledge. And faith. In the year (1278) a part was separated from the village and was named after Kafr Ahmad Hashish, and a decision was issued in 1903 to abolish the privacy of Kafr and next it to the village of Marsafa.

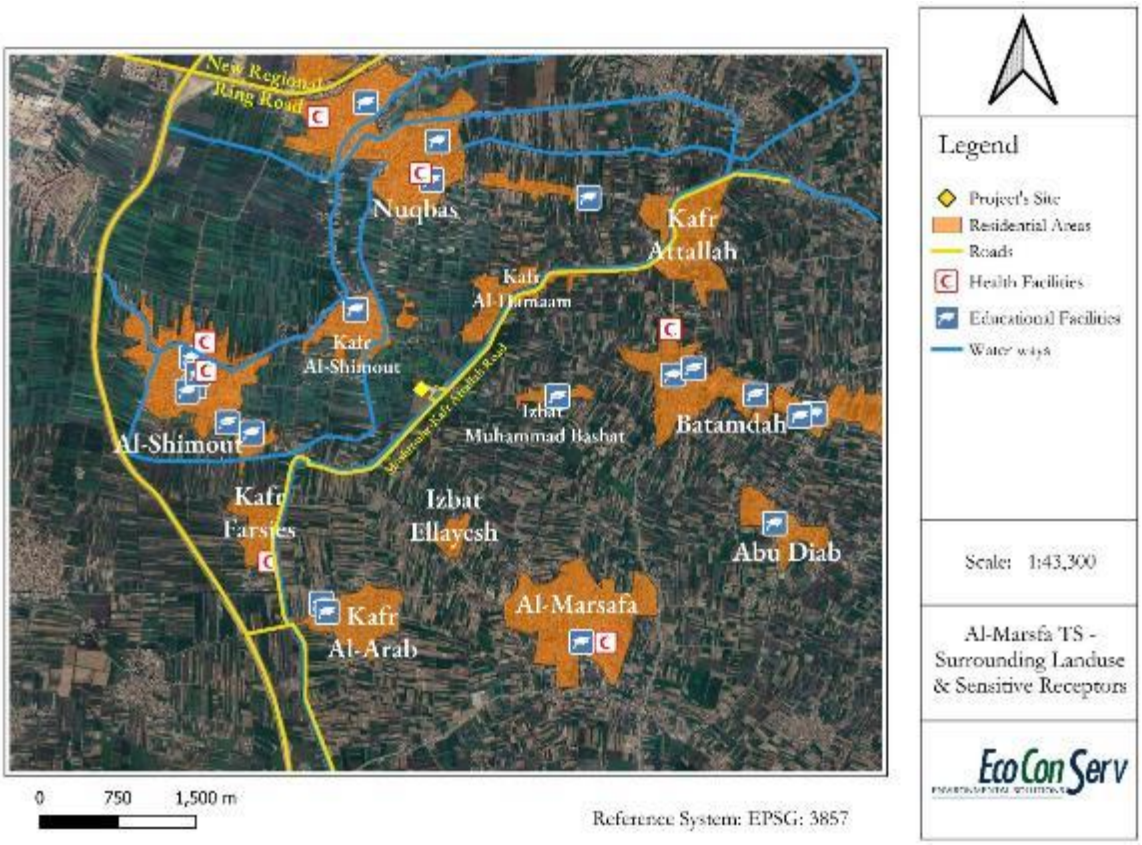


Figure 4-1 : Satellite Image of Al-Marsafa Village and the surrounding settlements

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 1st of April, 2024 to the proposed Marsafa 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 the project area can be characterized as follows:

Temperature

Located at an elevation of None meters (0 feet) above sea level, project site has a Subtropical desert climate. The monthly average for the maximum temperature reaches its peak value in July and August (38 °C), and its minimum value in January (٢١°C) whereas the monthly average of minimum temperature reaches its highest in August (21 °C) and its lowest in January and February (٧°C).

Rainfall

The mean annual precipitation in the last thirty years at the project area is 21 mm and has 13.5 rainy days annually. The rainfall reaches its maximum value in January, February and December (3 mm). Furthermore, June and July rarely experience any precipitation.

Wind Speed

According to Meteoblue meteorological data, the average monthly wind speed ranges between 11 Km/h and 13 Km/h. Dry hot dust-laden which blows mainly from south and southeast as Khamasin winds blows occasionally for about 50 days during spring. The prevailing winds at the project area blow from North and North West directions.

4.3.2 Air Quality

A baseline measurement includes the sampling and analysis of active air, noise levels was conducted in the project area to describe the baseline conditions, i.e. present air quality, noise levels, 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. 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/m^3)	$PM_{2.5}$	PM_{10}	T.S.P
Point 1 Average Results ($\mu g/m^3$)	**34.57**	**59.91**	**3.27**	**30.4**	48.3	60.1
Point 2 Average Results ($\mu g/m^3$)	**40.73**	**62.84**	**3.43**	31.9	50.6	62.1
IFC Permissible Limit ($\mu g/m^3$)	**200-1 hour**	**125**	**------**	**75**	**150**	**-----**
National Permissible Limit ($\mu g/m^3$)	**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 their corresponding applicable national and international permissible limits for ambient noise levels. In general, the ambient noise levels are within the permissible limits.

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 4-3 Ambient Noise Quality Baseline Measurements Results

Measurement Point	Average Sound Level Equivalent & Percentile Recordings in dBA	Applicable Permissible Limits LAeq (dBA)[9]
	LAeq	
Point 1 Day	54.4	**70**
Point 1 Night	48.5	**60**
Point 2 Day	58.5	**50**
Point 2 Night	51.9	**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 (should not result in a maximum increase in background levels of 3 dB.

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 # 2

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 table below.

BH No.	Ground water depth	
	Initial	Final
1	5.70	5.10
2	5.70	5.00
3	6.30	5.50
4	6.10	5.60
5	5.70	5.00
6	6.60	5.40
7	5.80	5.30
8	5.5	5.10
9	5.90	5.40
10	5.90	5.30

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

4.3.7 Surface Water

400 meters the west of Marsafa Transfer Station, as shown below, is an agriculture canal. From the south-east direction there is an agriculture drainage. The drainage has significant waste accumulated near the Transfer station site and on the drainage banks.

Figure 4-3: Nearest surface water to the Transfer Station

Figure 4-4: Waste Disposal on Drainage Banks

4.3.8 Protected Areas and Ecologically Sensitive Areas

The nearest protected areas to the project site are Lake Quroon (124 km southwest of the project area and El Burullus protected area (121km northwest of the project area), which will not be affected by the project activities.

4.3.9 Biodiversity

- **Habitats**

The project site is considered a modified habitat, mainly encompassed by agricultural fields, interspersed with drainage systems used for farming purposes. The area consists of agricultural fields that are intersected or adjacent to irrigation and drain ditches. These arable lands are highly productive. Qalyubia Governorate is known for its agricultural activities, particularly Maize, Cotton, wheats, citrus, fruits, bananas and oranges production.

The fauna in the area primarily includes birds, domestic animals, and agricultural pests such as insects, worms, and rodents. There are some patches of feral lands along canals, roads, railroad tracks, and field

edges, which, although small, usually contain native vegetation and serve as reservoirs for native species and wildlife refuges. The Marsafa TS site is surrounded by agricultural lands from three directions.

The closest drainage to Marsafa TS is Marsafa drainage canal with a width of 35m, located at the South-East border.

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.

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.
The transfer site is located in the rural village of Marsafa within the Banha District (Markaz). Banha represents a district within the greater governorate of Al-Qalyubia. It is located 48 kilometers north of Cairo in the Nile Delta region. It is situated on the Western Bank of the Damietta branch of the Nile River. The area of Al-Qalyubia governorate is approximately 1,001 km_2, of which the Banha Center comprises 17.5 km_2, including the village of Marsafa wherein stands the transfer site.

The Marsafa rural village involves five affiliated villages including Marsafa Kafr Ahmed AlHasheesh, Alshamoot, Kafr Al-Aarab, Kafr Al-Hamam, Kafr Al-Shamoot. The transfer site is located on a flat and irregularly shaped land. Bordering the site from the North: is a road beyond which is a water wheel and agricultural rehabilitation land, the South: agricultural land, the West: a private water wheel and agricultural land, the East: a public drain.

The land on which the transfer station is set to stand is owned by the governorate following its expropriation and is 9.5 Feddans, it further stands to overlook the Bahr Al-Baqar drain.

4.4.2 Population and Population Growth

4.4.2.1 Population

The population of the village of Marsafa is 37,812 people, divided into 51.59% males and 48.41% females. The approximate number of households is 7,563 households. As for the household size, it does not exceed 5 individuals per household on average. The birth rate is approximately 23.5 individuals per 1,000 people per year, while the death rate is 13 individuals per 1,000 people. Therefore, the natural increase can be estimated at around 10 individuals per 1,000 people per year.

The village's residents have established roots in the region spanning over a century, fostering bonds of kinship and lineage. Comprising families and hamlets, each household or cluster resides within. Such is the essence of rural society. Prominent among the village's lineage are the Abu Sowailm, Abu Hashish, Abu Zaidan, Abu Ajaj, Al-Shayoukh, and Al-Arfi families.

4.4.2.2 Population distribution by age category

The figure below denotes the age distribution of the population in Al-Marsafa. The village of Al-Marsafa includes 3,689 children at the age of one year or under, 16,090 between the ages of five and thirty, 8,073 between the ages of thirty-five and sixty, and 1,096 people at the age of sixty-five and upwards.

4.4.3 Gender Relations and women status

Due to the improvement of family conditions, most women are educated and contribute to Labor 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.

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 Marsafa are terribly lacking:

- Provision of transportation
- Suitable job opportunities
- Provision of financial support.

Delving into the status of women in Al-Marsafa village, we can observe the high rates of female participation and further the social hindrances faced by women in the village.

In addition to the data provided above concerning the status of women and their social and political participation in the village, we can identify the main area of work in which women contribute according to consultations held. Said fields of work mainly include;

- Working in agriculture
- Working in local businesses selling food or agricultural products
- Working in halvah factories
- Small percentage working in local government

We must further acknowledge the epidemic of gender-based violence (GBV) and sexual harassment, that women face in Egypt pervasively on a societal scale. This is evident when considering (36%) of ever-married women in Egypt between the ages of 15 and 49 have been exposed to (GBV).[13]

[13] United Nations Population Fund. (n.d.). Ending Gender-Based Violence and Harmful Practices in Egypt

4.4.4 Land Use

Al-Marsafa village is mainly dominated by agriculture activities, with vast expanses dedicated to farming. Winter crops, including wheat, clover, potatoes, and onions, thrive alongside summer staples like maize, rice, and oranges. The village not only features residential zones but also hosts workshops specializing in carpentry, marble craftsmanship, blacksmithing, and aluminum fabrication. Furthermore, poultry farms dot the area, contributing to its diverse economic activity.

Figure 4-5 : Agricultural land in Al- Marsafe Village

4.4.5 Human Development Profile

4.4.5.1 Poverty Profile

The number of families suffering from poverty in Marsafa is 3,950 (52.2% of the total families), according to what was stated by the information center of the local unit in Marsafa 2024, and the percentage of female breadwinners is 13.0%. (source: Local Governmental Unit of Marsafa 2024) for more details about poverty profile please refer to **Annex VI The detailed socioeconomic profile**

4.4.5.2 Economic Activities

The major percentage of the population participating in the workforce as opposed to unemployed (with 62% and 67% of women and men respectively participating in the labor force). What is further evident is the more prevalent role in the labor force played by men as opposed to women in Al-Marsafa village representing the subdued role of women in Al-Marsafa village typical of rural and traditional society in Egypt. Furthermore, this is further evident in the higher unemployment rates of women as opposed to men (51% compared to 24% respectively). We may further infer the impact of education on improving employment rates, as unemployment is observed to reduce among different education levels, both in male and female education rates. This is exemplified in the lower rates of unemployment in both men and women who have received higher education (5% and 6% respectively). In addition to this it is evident that no forced labor occurs in men or women in Al-Marsafa.

4.4.5.3 Child Labor

Children Labor is observed to be a common practice in the project area given the prevalence of workshops and commercial activities including in 10th of Ramadan industrial zone, or in farming activities. Boys are more engaged than girls in such activities and can get engaged in an age as young as 10 years old. It is noted that engaging the age of 16 years to learn a craft is also a very common practice. Even younger age can get engaged in agriculture activities on the farms level.

4.4.6 Education Profile and Facilities

Delving into Education in Al-Marsafa village; 101 people are recorded as having attended literacy classes, 2,240 as having attended primary school, 2,219 as having attended primary school, and 1,969 as having the e ability to read and write without obtaining a certificate. In respect to post-secondary education; 350 people are recorded as having attended post-secondary school, and 2,309 having attended university. It is also notable, that 5,658 remain illiterate in the village of Marsafa.

Figure 4-6 A school in Marsafa

Figure 4-7Satellite Imagery of the school depicted

4.4.7 Health Services

4.4.7.1 Health Services

As in many villages across rural regions in Egypt, access to certain necessary services may be obfuscated and limited. In the case of Al-Marsafa, access to health services is limited and made difficult due to their alienation. This is evident in the distant facilities and limited availability of different health services and access to emergency aid and medication. This will be highlighted in the figure below detailing the different facilities

Table 4-4: Available health services

Type of Health Facility	Number of Facilities Available	Further Details Concerning the Availability of The Facility
General Hospital	0	Only Banha Hospital stands, at about 9km away.
Private Hospital	0	The Hospital of Al-Iman Al-Khairy stands 9km away in Banha.
Medical Center	0	Stands in Banha School Facility, standing 9km away.
Medical Clinic	2	Stands as a small facility, that does not present an ability to support the capacity of the population of the population in the village and the affiliated villages and farms.
Health Office	6	Presents sufficient provision due to the quantity, allowing it to service the population adequately.
Health Unit	6	Presents sufficient provision, however its services are limited to follow ups on pregnancies, vaccinations and Dentistry.
Ambulance	1	The number of ambulances available is insufficient.
Maternal and Childhood Care Center	0	There is one in Banha District (Markaz) and stands 9km away.
Family Planning Center	0	There is one in Banha District (Markaz) and stands 9km away.
Mobile Clinic	1	Is not an adequate service, as it only services the area once every three or four months, and only visits once.
Private Clinic	35	The number of clinics is sufficient; however, the service is costly for the population in the area.
Pharmacy	22	The number of pharmacies is sufficient; however, none operate on a 24-hour basis.

Source: Local Social Unit ,2024

Despite the limited number of hospitals near the area, there remains services close by. Kafr Al-Hammam is the nearest settlement to the Marsafa transfer station; standing 3km away in distance. A local health unit stands in this settlement.

4.4.8 Vulnerable Groups

Referring to the consultations held, select groups within the community of Al-Marsafa village have been identified as perceptually vulnerable. The groups referred to in consultation, have been identified with the explanation of the limited access to income. Said groups include;

- Widows/Widowers (who have limited access to income; Widow's pension)
- Divorcees (who have limited access to income; divorcee's pension)
- Workers paid on a daily rate (in agriculture or workshops; presenting limited and irregular income).

According to our consultations, the provision of insurance (both financially and socially) is what is needed for the protection of the identified vulnerable groups. Moreover, in reference to workers reliant daily-based pay, their need for protection and stable work is emphasized in the asserted need for ensuring owners of businesses and local factories are made to commit to the provision of insurance.

4.4.9 Infrastructure and Public Utility

4.4.9.1 Water Services

In reference to the water services provided, the village is connected to a general water grid that was introduced to the village in 1978. The operating water grid covers (90%) of the area of the village. In reference to the percentage of households and families who are connected and have access, (92%) have access and the others remain disconnected.

In regard to water access, the population of Al-Marsafa accesses water from local stations, where many pay a fee for filtered water. However, some families install their own filters in their own homes.

According to public records concerning the village, the quality of the water running in the village is inadequate; evident in the yellow appearance of the water, and its observance of a foul smell and taste. This may point to contamination of water sources in the village, further pointing to the inadequacy of the water services provided.

4.4.9.2 Energy Services

In reference to energy supply, Al-Marsafa village and the area where the project is located in the village is connected to the governmental power grid that was introduced to the village in 1976. Moreover, the village is fully connected to electricity sources that are governmental. Most families and households (99%) in the village are connected to governmental power sources. The energy supplies are further describes as being organized, according to our consultations.

The public in the village do face problems with the increase in electric bill pricing, and the occurrence of power outages.

A power station stands inside the transfer station of Al-Marsafa, this allows the inference that the transfer station is connected to adequate and sufficient energy supply.

4.4.9.3 Sanitation Services

Al-Marsafa village demonstrates an adequate sanitation service, as (70%) of the area is connected to the sewage disposal network. However, (30%) of the population is not connected to said network, relying on waterways, and water runoffs for their disposal. A small portion of the population further utilizes trenches for said disposal as well.

According to public record, the main problems faced in relation to sewage removal include;

- Sewers overflowing in streets, especially in Al-Shamoot village due to apparent technical problems in sewer pipes
- The disposal of sewage in waterway runoffs, resulting in disruption caused by the foul smell.

As a result of the current conditions concerning the sanitation services and sewage removal in Al-Marsafa, there is a prevalence of certain illnesses due to the prevalent sewage issue including;

- Rashes/Allergies
- Respiratory illnesses
- Gastrointestinal Flu

4.4.10 Waste Management in Al-Qalyubia Governorate

4.4.10.1 Current State of Waste Management in Marsafa Village

The private companies contracted to collect waste in the villages connected to Al-Marsafa in addition to Al-Marsafa village itself; present the authority on waste management and collection in the area. However, perceptions of the provision od said services by these companies are mediocre, due to the lack of accessibility of said services by farms and villages nearby, which results in the disposal of waste in public roads and streets.

4.4.10.2 Local Methods of Waste Management in Sub-Villages

In the village, as well as in several other similar communities, waste collection is managed informally by a community member who uses a tractor to gather household waste twice a week. For this service, each household pays 15 EGP per month, and the local unit does not monitor the process. Regarding traffic and transportation infrastructure, the primary access route to the project site is the Kafr Al-Hammam road, located near Rashid farm. Another significant route leading to the transfer station is the Marsafa-Banha road, which has a width of 15 meters. This width is adequate for regular traffic flow, making road expansion unnecessary. However, the main issues related to traffic near the project site include poor lighting and road paving, which affect safety, particularly at night. Additionally, the lack of consistent transportation services further exacerbates these challenges.

The entrance is 15-20 meters in width, this represents an adequate entrance to facilitate trucks and transportation's entrance sufficiently.

There is a perceived difficulty in finding transportation, in addition to finding appropriately priced transportation as prices have increased impacting movement, and subsequently transactional sales resulting in products' rise in price, according to our consultation with locals.

Figure 4-8: The Road Leading to the Location of the Project

Figure 4-9: The waste Disposed on the Road Leading to the Transfer Site

4.4.11 Cultural Heritage

In reference to the consultations carried out in April 2024, there stands a minimal list of relevant culturally significant sites in Al-Marsafa village. None of these sites are located within the site location or the vicinity areas. Generally, in Al-Marsafa gravesites, Tombs, and mosques are considered holy sites. As grave-sites are considered of great importance to the local public, while mosques are considered significantly holy sites.

Figure 4-11: A small mosque at Marsafa

Figure 4-10: Graveyard at the village

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.
- **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.
- **Surface Water**: 400 meters the west of Marsafa Transfer Station, as shown below, is an agriculture canal. From the south- east direction there is an agriculture drainage. The drainage has significant waste accumulated near the Transfer station site and on the drainage banks.
- **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

The social baseline reflects limited concerns pertaining to socioeconomic aspects. They are summarized as follows:

- **High Probability of Child Labor:** The site has a significant risk of child Labor , presenting serious ethical and legal challenges.
- **Inadequate Health Facilities:** The health facilities near the site are insufficient, requiring workers to depend on services in Banha city, which is 9 kilometers away.
- **Absence of Cultural Heritage Objects:** There are no cultural heritage objects at the site, simplifying compliance with heritage preservation requirements.
- **Polluted Canal:** The nearest canal is heavily polluted, indicating a severely deteriorated waste management situation that could impact the environment and public health.
- **Traffic and Transportation Infrastructure:**
    - The primary access route is the Kafr Al-Hammam road, near Rashid farm.
    - Another significant route is the Marsafa-Banha road, which is 15 meters wide, sufficient for regular traffic flow, and does not require expansion.

- Poor lighting and road paving around the site create safety risks, particularly at night.
- The lack of consistent transportation services further complicates accessibility.

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 VII**.

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.
- **Enhanced waste segregation and recycling:** Transfer stations facilitate better waste segregation, allowing for the separation of recyclable materials from general waste. This promotes recycling efforts and maximizes resource recovery, contributing to a more sustainable waste management approach.
- **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 recruited. 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.

5.1.1 Cumulative Impacts

5.1.2 Cumulative Impacts of the Subproject

5.1.3 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. This will contribute to the impacts associated with waste management at the dumpsite such as odor, air contamination, contamination associated with leachate, road traffic etc. More details on the existing impacts of Abu Zaabal dumpsite can be found in the Abu Zaabal Dumpsite Closure ESIA, that is currently under preparation

5.1.4 The construction of the TS 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. 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.

5.1.5 As mentioned in section 4.4.5, the community surrounding the proposed TS site are relatively disadvantaged and with the operation of the 10 RIWMF and waste transferred from the TS is set to improve the public health by ensuring safer, cleaner, and more sustainable waste management practices,

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.

- **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, neighboring farms, agro-fauna, and the nearby residential area.

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, therefor the basic impact index based on receptor sensitivity is considered as **MODERATE.**

5.2.1.2 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

The magnitude could be considered as low. The background noise already above the permissible levels, the noise generated from the construction activities of the transfer station should not exceed 3dB than the current background noise levels. The nearest sensitive receptors are located more than 1 km away from the project site, the spatial extent is very low for the immediate area of activity, and the duration is low as the foreseen construction period is 18 months. It is not expected that the construction activities will increase the current background noise levels beyond 3 dB. The Basic Index is **low** and the receptor is considered as **medium** for the presence of few houses in the area, therefor the basic impact index based on receptor sensitivity is considered as **MODERATE.**

5.2.1.3 Soils and Landscape

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

- 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 very 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 **Moderate** receptor sensitivity leads to **MODERATE** significance.

5.2.1.4 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 **Medium** vulnerability of the receptor because the groundwater is found at close level (2 to 2.5 m), the impact is considered **MODERATE**.

5.2.1.5 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 the **High** sensitivity of the receptor, the significance of the construction phase on surface water is thus deemed low **MAJOR**.

5.2.1.6 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**

5.2.1.7 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 agricultural areas. Nonetheless, it is important to take precautions to prevent any spillage from vehicles and mismanagement of sewage that may harm aquatic wildlife in the nearby canals and drains.

These impacts magnitude is low in intensity, of short term and localized at the study area level. Their magnitude is considered **Low**. Given the **Medium** importance of the receptors, these impacts are deemed **MINOR**.

5.2.2 Social Impacts During Construction phases

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 from the local area when skills are available, there may be instances 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 behavior 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 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. Additionally, the movement of heavy machinery and vehicles during construction phase exposing workers and road users to strike hazards.
- 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 assessed as moderate, with a short time span. However, the spatial extent exerts a medium influence on the area surrounding the project. Given the moderate sensitivity of the receptor, the overall significance of the impact is determined to be **MODERATE**.

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 project activities could potentially lead to(SEA/SH) incidents on-site. Currently, with a limited number of workers, most of whom are expected to be local, and the likelihood of female workers being present is low, the impacts might be of low risk. However, given the cultural context of the surrounding communities, which are conservative Arab societies sensitive to gender-related issues, the risks associated with gender aspects are escalated to be moderate. The nearby communities, Arab Juhyana and Arab Al Sawalha, are situated approximately 2-2.5 kilometers from the Marsafa Transfer Station. As a result, the risk of GBV due to interactions between workers and these communities is moderate, considering the sensitivity of the impact.

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

5.2.2.4 Child Labour

Child Labour remains a widespread issue across Egypt, despite the prohibition outlined in Egyptian Labour Law No. 12/2003, particularly in hazardous work environments. The employment of children under 18 years of age persists, driven by the lower wages they accept and the perception that they are less demanding. This practice is prevalent in the Qalyubiya governorate, as detailed in the socioeconomic baseline. Given the local context, there is a tangible risk that child Labour could be utilized in the project. To mitigate this risk, it is crucial to implement strict obligations and monitoring mechanisms within the contractor's responsibilities to ensure that child Labour is not employed 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, it is located near Al Amal industrial zone and Marsafa TS, close to facilities related to the water network, sewage, and communications, which increases the possibility of the impact of the pre-construction phase on the Public Infrastructure and Utilities.

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.

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 29th of November 2023, the land designated for the sub-project is confirmed to be state-owned and was allocated to Marsafa TS. The land was purchased based on willing buyer willing seller in March 2022 (please see purchasing contract attached in **Annex IV** 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. However, a chance find procedures are attached in **Annex XI**

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 at the present time is a vacant land- it is not operational and does not receive waste from other areas, therefore there is no accumulation of waste in the project site, and there are no impacts on the visual and landscape in the project area.

During the construction phase, there is likelihood that equipment as well as trucks needed for construction will be present on site. This equipment will not be aesthetically pleasing for by passers, but this going to be temporary. However, being close to residential and agricultural areas, the probability of having visual impacts remains unavoidable

Accordingly, the magnitude of visual land acquisition 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[14], it is essential that each worker receives comprehensive information about potential hazards and risks in the workplace.

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

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)[15] 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.
    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.
    8. **Lifting operations**
    9. **Hot works**
    10. **Electrical hazards**
    11. **Confined Spaces:** Risk of exposure to toxic gases, lack of oxygen, or limited access for emergency situations.

    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.

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

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**.**

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 risk 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. 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.

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.

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.

Residential areas in Marsafa are located in the prevailing wind direction, therefore it is expected to have impacts on 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 expected to be 25 years. Also, site measurements indicate that the ambient air quality at the site meets national regulations, and WB requirements. 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 High considering being in the prevailing wind direction. 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.

Regarding the impacts on communities and sensitive receptors, it is important to note that the background noise levels are already above the permissible limits. The nearest sensitive receptors, which are residential

areas, are situated more than 1 kilometer away from the transfer station. Consequently, the magnitude of the noise and vibration impact is considered low due to this significant distance. The spatial extent of the impact is also very limited, as it primarily affects the immediate vicinity of the project site and the nearby residential area. However, the duration of the impact is long-term, which is a significant factor. It is anticipated that the construction activities will not increase the current background noise levels by more than 3 dB

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:

- 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

During the operation of a direct loading transfer station, there can be potential impacts on groundwater. Some of these impacts include:

- 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.
- The nearby well used for drinking water or irrigation purposes, the operation of the TS can pose a risk of contaminant infiltration into the well water, compromising its quality and safety.

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

5.3.1.5 Surface Water

During the operation of a direct loading transfer station, there can be potential impacts on surface water. Some of these impacts include:

- 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 (4). The magnitude of the impact is deemed **High** prior to the implementation of mitigation measures. As the vulnerability of the receptor is considered High, the significance of the impact is assessed as **MAJOR**.

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 waste sorting or 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. 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-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 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 **Major**.

5.3.1.7 Biodiversity

Impacts on biodiversity during the operational phase include the following:

- Disturbance to local animals

Mismanagement of waste, leachate or wastewater, and oil spillage can result in disturbance to the life nearby, such as amphibians that may inhabit the drains and canals.

- Attraction of pests

Nuisance problems can be caused by pests such as insects, rodents, and stray dogs and cats. In addition, poor waste management can attract reptiles and birds. Proper waste management in the TS can help to reduce the number of pests in the area. However, mismanagement of the TS can attract pests as they provide a food source for vermin and insects, and pests can also serve as disease vectors.

These impacts are low in intensity, of long term, and localized at the project area level. Their magnitude is considered **Low**. Given the **Medium** importance of the receptors, these impacts are considered **Moderate.**

5.3.2 Social Impacts during Operation

5.3.2.1 Temporary Labour Influx

Given the limited number of permanent workers during operation (15-20 workers) and the majority will be from the project area, 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 Al-Marsafa area and the neighboring areas that will feed the transfer station and the surrounding community from the Transfer station to the Main road then to 10 RIWMF \

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 Marsafa transfer station,
- Traffic jams and increased exposure of travelers and road users to exhaust and associated noise and possible accidents.
- Traffic incidents and accidents might occur

The magnitude is considered as moderate, the time span is short. However, as there is a high probability of accidents, and the high sensitivity of the receptor the significance is **Major**.

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

The sub-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 of long nature, 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.. .

The magnitude of Impacts on SEA/SH 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**.

5.3.2.4 Child Labour

Child Labor 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 Labor. 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 Marsafa 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. As afore mentioned, the project site is currently a vacant land in Marsafa near Kafr Al-Hammam, so there is an insignificant risk of waste pollution.

However, the access roads might be affected due to the truck's movement.

The Public Infrastructure and Utilities impact is considered as **Minor** 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), composting and recycling plants.

The operation of landfills, and composting/recycling plants is also associated with litter dispersion by wind which adds to the negative visual impacts. The operation of the TS equipment and generated dust also adds to the bad scene at the site.

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

The proposed project aims to receive Municipal Solid Waste (MSW) collected only from residential, commercial, and institutional locations. The probability of encountering hazardous waste should not be high, but it should be considered that co-mixing hazardous waste with MSW and/or disposing of hazardous waste at the TS site can cause different risks to workers on the site.

Operating a waste management TS presents various impacts on Occupational Health and Safety (OHS) for workers, visitors, and the surrounding community, as follows:

- Waste 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
- Some hazardous chemicals could be corrosive and could cause health risks to the TS workers if exposed to these chemicals through skin contact, eye contact or breathing. Hazardous materials can be used in the activities related to maintenance.

- 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.
- Road safety and the probability of facing accidents.

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.

With regards to security guards within the site, they will be limited to 2-4 people during operation phase per shift. Additionally, they will not be armed. Their capacity will be enhanced by training them on all required trainings.

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.

- **Marsafa 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**	The following mitigation measures will be communicated in the contractors' contracts: • 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	Marsafa 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.	**Moderate**	During detailed design and engineering, consider the following measures: • 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 The following mitigation measures will be obligated in the contractors' contracts: • Ensure that ambient noise level doesn't exceed 3 dB above the background level near the sensitive receptors.	ESS1 ESS2 ESS3	• Site inspection • Review the equipment, maintenance records. • Review the complaints log	**Minor**	Construction contractor	Marsafa 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	
			• 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. • 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. • 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: • 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 behaviour 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. 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	Marsafa Local Unit, Environmental unit	Contractor's cost
Groundwater	Construction activities can lead to soil contamination due to:	**Moderate**	To mitigate potential impacts on soil and groundwater during preconstruction and construction:	ESS1 ESS3	• Site inspection	**Minor**	Construction contractor	Marsafa 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	
	• Soil disturbance and excavation altering natural soil composition and permeability. • Accidental spills or leaks of construction materials, fuels, lubricants, or chemicals. • Stormwater runoff carrying sediment and pollutants into nearby water bodies or groundwater. Improper handling and disposal of construction waste, including hazardous materials.		• Contractors must prevent spillages and conduct periodic equipment inspections. • Implement site management procedures, good housekeeping, and spill prevention measures. • 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.	**Major**	• 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	**Minor**	Construction contractor	Marsafa Local Unit, water and wastewater unit	Contractor's cost
Waste Management	During the construction of a waste management TS, various types of waste can	**Moderate**	To manage preconstruction and construction waste and mitigate potential impacts:	ESS1 ESS2 ESS3	• Site inspection • Review the equipment,	**Minor**	Construction contractor	Marsafa Local Unit, Solid waste	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	
	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. - 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.		• 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: • 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.		maintenance records. • Review the grievance log			management unit (SWMU)	
Biodiversity	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	**Minor**	- Proper waste management: It is important to implement a proper waste management plan that includes sorting and segregation of waste, as well as the use of impermeable materials for waste handling areas to prevent leakage and spillage. This will help to minimize the availability of food and shelter for pests.	ESS1 ESS3	• Site Inspection	**Insignificant**	Construction contractor	Marsafa 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	
	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 agricultural areas. Nonetheless, it is important to take precautions to prevent any spillage from vehicles and mismanagement of sewage that may harm aquatic wildlife in the nearby canals and drains.		- Regular cleaning: Regular cleaning of the facility and the surrounding areas is necessary to remove any waste or debris that could attract pests. - Effective pest control measures: The facility can implement pest control measures such as bait stations, traps, and rodenticides to control the population of rodents and insects. However, these measures should be used with caution to avoid harm to non-target species and the environment. - Proper storage and disposal of waste: Proper storage and disposal of waste is crucial to prevent pests from being attracted to the area. Waste should be stored in sealed containers and disposed of in a timely manner to avoid accumulation. - Education and awareness: Educating employees and the local community on the importance of proper waste management and the risks of attracting pests can help to prevent the facility from becoming a breeding ground for pests.						
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;	**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 sub-contractor • Code of conduct induction to be done every 2 weeks for the recurrent workers and the newcomers before starting work. • Apply Penalties to workers violating the code of conduct. • Providing workers with the necessary training and awareness raising sessions on issues regarding SEA/SH.	ESS1 ESS2 ESS4	• Field investigations • Review the grievance log • Review the project CoC • Review consultation activities report and training reports	**Minor**	• Construction contractor • Contractor Social Specialist	• Marsafa Local Unit, • Labour bureau • Social Development officer (SDO) • Environmental and waste management officers in QG, And 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	
	- Increased risk of communicable diseases and burden on local health services: there is a probability to transmit diseases to community areas; - 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.		• Verifying that GRM is adequately implemented to record complaints from the surrounding communities • 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	• 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 satisfactory in width 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.	**Moderate**	• 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 • 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.	ESS1 ESS4	• Field investigations • Reviewing the project Traffic Management Plan • Review the grievance log	**Minor**	Construction contractor	• Marsafa Local Unit, • Social Development officer (SDO) • Environmental and waste management officers in QG, And WMRA. • Social specialist in QG	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.	**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,	ESS1 ESS4	• Field investigations • Review the grievance log • Review the project CoC • Review awareness sessions/ trainings reports • Review consultation activities reports	**Minor**	Construction contractor	• Marsafa Local Unit, • Social Development officer (SDO) • Environmental and waste management officers in QG, And WMRA. • 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	
	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.		• 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. • Conduct ongoing consultations with women and girls (only those that are understandable and culturally appropriate). • Establish a grievance mechanism that is sensitive to gender by assigning a female SDO in case of SEA/SH incidents, 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 monetary penalty • A unified recruiting policy prohibiting child labour must be shared with 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	• Marsafa Local Unit, • Social Development officer (SDO) • Environmental and waste management officers in QG, And WMRA. • 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	
			• 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						
Public Infrastructure and Utilities	As mentioned before in the pre-construction phase, the project site in Marsafa, meaning that it's close to infrastructure/ utilities related to the water, sewage and communications networks. This increases the possibility of the construction phase affecting public infrastructure and utilities.	**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 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.	ESS1 ESS4	• Field investigations • Review MoMs • Review reports of accidents	**Minor**	Construction contractor	• Marsafa Local Unit, • Social Development officer (SDO) • Environmental and waste management officers in QG, And WMRA. • Social specialist in QG	Contractor's cost
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.	**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	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	• Marsafa Local Unit, • Social Development officer (SDO) • Environmental and waste management officers in QG, And WMRA. • 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	
	• 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 well-being 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 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.		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. • 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						

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
			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					

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
			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. **Worker's Accommodation** • If laborers are to be accommodated by the sub-project contractor , it is crucial that the contractor and sub-contractors ensure the accommodations meet minimum 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,	**Moderate**	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)	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	**Minor**	Construction contractor	• Marsafa Local Unit, • Social Development officer (SDO) • Environmental and waste management officers in QG, and WMRA • 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	
	specifically on the respiratory health, • Noise and Vibration: During construction, noise and vibration can impact the community in inducing nuisance, • Temporary Labour Influx: Increased risk of communicable diseases can take place through influx of workers as they might transmit diseases to the surrounding communities, • Fire: Any fire occurring at the construction facility can further disseminate in neighbouring buildings, • Traffic Safety: Traffic accidents can arise from usage of vehicles entering 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 reside in the nearest settlement in Kafr Al-Hammam, the impacts on the local community will be moderate severity; Because the area is not densely populated.		• The construction site to be fenced and guarded by security personnel in order to prevent any unauthorized access to the site • In case of transporting heavy equipment, the nearby population should be notified in advance • Security team 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 • Security team will not be armed. Develop and implement a well communicated and accessible grievance mechanism for community members to address any complaints		related to security 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[16]									
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 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 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; • Use windrow turning equipment specially designed to minimize emissions to air; • 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 odors; • 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 odors; Establish and implement Odor Management Plan (OMP) including a telephone line for community complains regarding odor; address the complains immediately.	ESS1 ESS2 ESS3	• Site inspection • Review the equipment, maintenance records. • Review the complaints log	**Minor**	The operator	Marsafa 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	**Moderate**	• Use administrative control measures (e.g. changing working shifts to avoid disturbing residential areas at night). • Installation of noise controls for improved sound-proofing, and other noise reducing features, Acoustic enclosures are installed for	ESS1 ESS2 ESS3	• Site inspection • Review the equipment, maintenance records.	**Minor**	The operator	Marsafa Local Unit, Environmental unit •	Should be included in operator budget

[16] 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	
	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.		noise generating equipment, wherever possible; • Only procure noise generating machines and equipment which are designed to meet statutory regulations concerning noise; • Fit silencing equipment to plant, e.g. baffles/mufflers; • 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. • 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).		• Review the grievance log				
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.	**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	ESS1 ESS3	• Site inspection • Review the equipment, maintenance records. • Review the grievance log	**Minor**	The operator	Marsafa 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	
	• TS can visually alter the landscape, impacting the aesthetics of the surrounding area.		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.						
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	**Moderate**	• 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. • 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.	ESS1 ESS3	• Site inspection • Review the equipment, maintenance records. • Review the grievance log	**Minor**	The operator	Marsafa 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	
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.	**Major**	• 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	**Moderate**	The operator	• Marsafa 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. • 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.	**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 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 non-toxic chemicals in the process can help reduce the amount of hazardous waste generated.	ESS1 ESS2 ESS3	• Site inspection • Review the equipment, maintenance records. • Review the grievance log	**Minor**	The operator	• Marsafa 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	
	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 treated 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 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.		• 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 wastewater 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.					
Biodiversity	• Disturbance to local animals Mismanagement of waste, leachate or wastewater, and oil spillage can result in disturbance to the life nearby, such as amphibians that may inhabit the drains and canals. • Attraction of pests Nuisance problems can be caused by pests such as insects, rodents, and stray dogs and cats. In addition, poor waste management can attract reptiles and birds. Proper waste management in the TS can help to reduce the	**Minor**	- Enforce speed control and prohibit off-track driving to minimize the risk of animal road kills. - Proper waste management: It is important to implement a proper waste management plan that includes sorting and segregation of waste, as well as the use of impermeable materials for waste handling areas to prevent leakage and spillage. This will help to minimize the availability of food and shelter for pests. - Regular cleaning: Regular cleaning of the facility and the surrounding areas is	ESS1 ESS3	• Site Inspection	**Insignificant**	Construction contractor	Marsafa Local Unit, Solid waste management unit (SWMU)	Operation Cost

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
	number of pests in the area. However, mismanagement of the TS can attract pests as they provide a food source for vermin and insects, and pests can also serve as disease vectors.		necessary to remove any waste or debris that could attract pests. - Effective pest control measures: The facility can implement pest control measures such as bait stations, traps, and rodenticides to control the population of rodents and insects. However, these measures should be used with caution to avoid harm to non-target species and the environment. - Proper storage and disposal of waste: Proper storage and disposal of waste is crucial to prevent pests from being attracted to the area. Waste should be stored in sealed containers and disposed of in a timely manner to avoid accumulation. • Education and awareness: Educating employees and the local community on the importance of proper waste management and the risks of attracting pests can help to prevent the facility from becoming a breeding ground for pests.						
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. • 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 in Kafr Al Hammam There is a risk of the deterioration of road surfaces, increased maintenance requirements, and potential disruptions to transportation infrastructure.	**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: ○ 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	ESS1 ESS4	• Minutes of meetings carried out with the local authorities • Notices shared with the local authorities • Review of duration of trips • Monitoring reports of traffic • Review incidents related to traffic • Review the drug test of all drivers	**Moderate**	Marsafa Local Unit	• Social Development officer (SDO) • Environmental and waste management officers in QG, And WMRA. • 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	
			○ 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 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). • While the bridges have been recently rehabilitated, the bridges are 10 meters wide, thus wide enough for the trucks that will be travelling to and from the TS during both construction and operation phases. However, to ensure safety, load-bearing studies should be done on both bridges. • The width of the access road is sufficient; however, it requires rehabilitation including; clearing of waste accumulations, pavement, lighting, and possibly security checkpoints to prevent criminal activity along the road. • Given that the width of the access road is sufficient, and the land allocated to the TS is large enough, no land acquisition is required for the access road.					

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
			• Given that the access road is also used by the community, the Traffic Management Plan should be implemented to avoid traffic congestion and protect community safety.						
Sexual Exploitation and Abuse & Sexual Harassment (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 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.	**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). • 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.	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 • Inspection of drug tests and alcohol tests conducted • Numbers of penalties applied	**Minor**	The operator	• Marsafa Local Unit, • Social Development officer (SDO) • Environmental and waste management officers in QG, And WMRA. • Social specialist in QG •	Should be included in operator budget
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	**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.	ESS1 ESS4	• Health records about occupational injuries and infectious	**Moderate**	The operator	• Marsafa 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	
	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.		• 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 Laborers, including casual laborers hired by subcontractors and contractors. • All workers should conduct medical check-up prior to join, then every 6 months is a good practice • The employer must decide to conduct the periodic medical examinations once every six months to ensure the fitness of workers and to uncover possible upcoming risks of occupational diseases in its early stages. • Development of emergency plans. Emergency plan should include the nearest hospital provides emergency medical services and the poisons center to the site. The law requires physical assessment to conducted to assess the distance and time		diseases among workers • Inspection of workers complaints • Inspection of OHS training records • Number and documentation of OHS awareness raising activities •			• Environmental and waste management officers in QG, And WMRA. • Social specialist in QG •	

Receptor / EHS Aspect	Impact	Impact Significance	Mitigation Measures	Relevant WB ESS	Means of supervision	Residual impact	Responsibility		Est. Cost (EGP)
							Implementation	Supervision	
			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 • 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						
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 waste management facilities 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), 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 OHS expert to be recruited by the operator must identify the required water and the nearest water point to be utilized in case of any fire incidents. • 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:	ESS1 ESS4 ESS10	• Community grievance log • Review of community consultation reports • Interview with community members • Recording temperature and moisture content of the compost pile • 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	• Marsafa Local Unit, • Social Development officer (SDO) • Environmental and waste management officers in QG, And WMRA. • 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	
			• 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.					

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 sub-contractors supervised by the Marsafa Local Unit and Solid Waste Management Unit (SWMU)	- Standard air measurements monthly - Daily visual inspection will be carried out continuously	On site	• Site observation • Following up with complaints • Maintenance logs • Grievance log • In case of compliant: the contractor shall conduct air, measurement and ensure the compliance to the following: - 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	230 USD /point measurement Operator Management Cost
Noise and Vibration	Increases noise levels and vibration	• Number of complaints related to noise level. • Ambient noise will be monitored during the project construction phase • Equipment performance and maintenance	- Daily measurements by well-trained staff - Follow up on complaints will be continuous	On site	• Site observation • Following up with complaints • Measuring ambient noise (if needed) • Maintenance logs • Grievance log	
Soils	Degradation of soil quality	• Increased littering of domestic wastes • Evidence of fuel spills and lubricants • Leachate	- Daily visual inspection will be carried out continuously	On site	• 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	On site	• 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	On site	• Site observation with photos documentation	Contractor Management Cost

Receptor / EHS Aspect	Impact	Monitoring Indicators	Responsibility of Monitoring	Frequency	Location	Method & Target	Est. Cost (EGP)
Biodiversity	Habitats, ecosystem	• Spills • Deceased domestic animals or birds • Appearance of invasive species		Daily	On site	• Site observation with photos documentation	Contractor Management Cost
Local Community	Socio Economic Opportunities	• Number of people employed from the local community. • Employment selection criteria. • Number of community grievances related to employment.	Contractors and sub-contractors supervised by the Marsafa Local Unit and Solid Waste Management Unit (SWMU)	3 times; prior, during, and after construction	Construction site	• Field investigations • Review employment contracts • Reviewing the lists that include who have been employed from the local community	No additional costs
		•				•	
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 Marsafa Local Unit, Social Development officer (SDO), Solid Waste Management unit (SWMU) and Social specialist in QG	Monthly during pre-construction 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. • 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. • Contractor to record any road accidents due to construction vehicles • All trucks to be in compliance with standard safety conditions • Drivers to be licensed and randomly checked for drugs at least once during construction	Contractors and subcontractors supervised by the Marsafa Local Unit, Social Development officer (SDO), Solid Waste Management unit (SWMU) and Social specialist in QG	Continuously during pre-construction 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 costs
Local Community	Sexual Exploitation and Abuse & Sexual Harassment (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	Contractors and subcontractors supervised by the Marsafa Local Unit, Social Development officer (SDO), Solid Waste Management unit (SWMU) and Social specialist in QG	Monthly during pre-construction 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

Receptor / EHS Aspect	Impact	Monitoring Indicators	Responsibility of Monitoring	Frequency	Location	Method & Target	Est. Cost (EGP)
		• % of workers trained on SEA/SH.					
Local Community	Child Labour	• Record of workers • Labour registry • Grievance log	Contractors and subcontractors supervised by the Marsafa Local Unit, Social Development officer (SDO),Solid Waste Management unit (SWMU) and Social specialist in QG	Monthly during pre-construction 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 Marsafa 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
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.	Contractors and subcontractors supervised by the Marsafa 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 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

Receptor / EHS Aspect	Impact	Monitoring Indicators	Responsibility of Monitoring	Frequency	Location	Method & Target	Est. Cost (EGP)
		• Number of Hazard observations by workers according to Labour law that obligate the workers to report any hazard to the employer. • Number of safety violations. • Number of non conformities. •					

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	On site 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	On site 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
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.	On site	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,	Included in Operator Management Cost

Receptor / EHS Aspect	Impact	Monitoring Indicators	Responsibility of Monitoring	Frequency	Location	Method & Target	Est. Cost (EGP)
						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	
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 upon complain - Daily visual inspection will be carried out continuously	On site	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
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.	- Yearly measurement as the EEAA requirement or upon complain - 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) • Colour, Odour, Conductivity (electrical conductivity)	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)
			• Waste management activities are supervised by the Environmental Officer within the SWMU			• 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 faecal contamination) • Pesticides and herbicides • Oil and grease • Site observation with photos documentation	
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 supervised by the Marsafa Local Unit, Social Development officer (SDO),Solid Waste Management unit (SWMU) and Social specialist in QG.	- Quarterly measurements - Daily visual inspection will be carried out continuously	On site 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 supervised by the Marsafa Local Unit, Social Development officer (SDO),Solid Waste Management unit (SWMU) and Social specialist in QG.	- Daily visual inspection will be carried out continuously	On site and area of influence	• Site observation with photos documentation	Included in Operator Management Cost
Local Community	Socio Economic Opportunities	• Number of people employed from the local community • Employment selection criteria • Number of community grievances related to employment	Operator under supervised by the Marsafa Local Unit, Social Development officer (SDO),Solid Waste Management unit (SWMU) and Social specialist in QG.	Prior and during the operation	On site and area of influence	• Inspection of recruitment strategy • Inspection of employment contracts • Maintaining records of the offered jobs for the neighboring communities. • Community grievance log • Review employment contracts • Review the lists that include who have been employed from the local community	No additional costs
		•		-		•	
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 supervised by the Marsafa 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	On site 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
Local Community	Sexual Exploitation and Abuse & Sexual Harassment (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.	Operator under supervised by the Marsafa 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	On site and area of influence	• Review periodic reports • Review Grievance log • Site observation • Review Worker Code of Conduct	No additional costs

Receptor / EHS Aspect	Impact	Monitoring Indicators	Responsibility of Monitoring	Frequency	Location	Method & Target	Est. Cost (EGP)
		• Complaints raised due to SEA/SH. • Documentation of corrective measures adopted • % of workers trained on Code of Conduct • % of workers trained on SEA/SH.				• Engagement with women minutes of meetings	
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 supervised by the Marsafa 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	On site 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 Marsafa 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 toilet 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
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	Operator under supervision of the Marsafa 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	Included in Operator Management Cost

Receptor / EHS Aspect	Impact	Monitoring Indicators	Responsibility of Monitoring	Frequency	Location	Method & Target	Est. Cost (EGP)
		• 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				• Regular reporting of any accidents. • Review and update the emergency response plan, if necessary.	

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 the foundation upon which a strong, constructive, and responsive relationship between the client and their stakeholders can be built, which is indispensable for the management of a project's environmental and social impacts successfully. Stakeholder engagement is an ongoing process that may involve, in varying degrees, the following elements: stakeholder identification and analysis, stakeholder engagement planning, disclosure of information, meaningful consultation, implementation of a grievance mechanism, and ongoing reporting to relevant stakeholders.[17] The nature and frequency of stakeholder engagement should be commensurate with the potential negative environmental or social risks and impacts, the nature and scale of the project, and the level of stakeholder interest.

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 effect 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)".[18] 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.

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

[17] World Bank, 2017, "World Bank Environmental and Social Standard 10: Stakeholder Engagement and Information Disclosure," *Environmental and Social Framework* (Washington: World Bank Group), 97
[18] World Bank, 2017, "World Bank Environmental and Social Standard 10: Stakeholder Engagement and Information Disclosure," *Environmental and Social Framework* (Washington: World Bank Group), 98

input was effectively incorporated into the planning and development processes of each individual project component.

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 Banha Center**, **local unit in Al-Marsafa village**, **Al-Marsafa and Ezbet Rashed Health Units**, **Preventive medicine in health administration**, **youth center in Al-Marsafa and Ezbet Rashed** and **Al-Marsafa, Kafr Al-Arab NGOs**, as well as Focus Group Discussions (FGDs) with women from the community surrounding the project area. The diversity of community representation was considered 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 following stakeholder groups have been identified:

    - Deputy Governor of Qalyubia,
    - Officials of the Solid Waste Management Unit in Qalyubia Governorate,
    - Community Lisher officer CLO in Qalyubia Governorate
    - Officials of the Banha City Council,
    - Officials in Al-Marsafa local unit,
    - Officials in Al-Marsafa and Ezbet Rashed Health units, Preventive Medicine,
    - The NGOs in Al-Marsafa, Kafr Al-Arab
    - Residents in the nearest residential areas to the project site: Ezbet Rashid, Kafr El-Hamam and Kafr Al-Shamout
    - officials at the youth center in Ezbet Rashed and Ezbet Rashed
    - Waste collection contractor
    - In addition to the above, the study team conducted a field survey with the agricultural land brokers and farmers in the project area and surrounding areas in order to know the agricultural lands market price in the area.

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 **16** females, in addition to **16** 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.

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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 to date, and the main outcomes obtained.

Table 7-1: 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, discussed the details of a waste transfer station in Al-Marsafa. The nearest community is Kafr Al-Hammam, which includes the local unit and health unit. Interviews with officials were scheduled to gather baseline data. The transfer station is located on 9.5 acres of land, which was privately owned and revoked in 2021. The land is irrigated from two other canals, and waste is burned on the drain. The main road is 15 meters wide and will connect Al-Marsafa to Banha. The station will receive waste from Banha to Kafr Shukr, with an estimated daily volume of 920 tons.	- Added in the baseline section 4.1 - Land tenure was presented under the impact section 5.2.2.6 and project description section 2
Director of Solid Waste Management Department in Qalyubia Governorate	Dr. Mohamed Abdullah, the director of Solid Waste Management in Qalyubia Governorate, discussed the current waste management system in the governorate, Cairo city, and subsidiary cities. He reported that 16 employees and highlighted weaknesses in government systems, such as ineffective enforcement of regulations, insufficient human resource allocation, and high maintenance costs. He also highlighted the benefits of private sector involvement in waste management, such as financial resources, flexibility, and community satisfaction. Mitigation measures include providing protective equipment, avoiding prolonged solid waste exposure, and preventing children from working on the site.	- Added in the consultation section - The mitigation measures are reflected in ESMP table (subsection 6.3 and 6.4)
Director of the Community Communication Department in Qalyubia Governorate	The Director of the Community Communication Department in Qalyubia Governorate has indicated her thorough communication with all relevant government entities and communities in Masrafa in addition to other villages in Banha. Through this consultation, the need for several training sessions to be provided to the Director of the Community Communication Department in Qalyubia Governorate. involving the following was indicated; 1. Communication and Public relations and how to deal with the public. 2. Capacity building and competency enhancement. 3. Self-control techniques during challenging situations. 4. Community communication plan. 5. Needs assessment	Added in the consultation section
Local Governance and Health Units in Marsafa Head of the Local Unit in Al-Marsafa	The challenges faced in the accessibility of basic services between villages was highlighted. What was further cited by extension, included the lack of transportation and poor road conditions, particularly on main roads like Banha Al-Shamout Road and Kafr Al-Hammam Road. (The mentioned roads are not within the sub-project scope) The cited issues were further detailed to have led to increased crime rates and accidents.	Added in the consultation section and the ESMP section 6

Stakeholder	Consultation Outcomes	Incorporation in ESMP
	The consultation further incurred information concerning villages' lacking in waste collection services, leading to improper disposal methods such as burning, further causing environmental and health hazards. It was further highlighted that unemployed youth in various industries are seeking job opportunities in waste recycling and manufacturing, as there are limited options available locally.	
Local Health Unit in Al-Marsafa Village	Officials emphasized the increase in allergies and gastrointestinal infections due to insect infestations caused by waste accumulation. It was further disclosed that residents primarily seek treatment at local health units before turning to government hospitals. The proposed transfer station is expected to to bring about instances to increase health concerns such as odours and insect proliferation, prompting residents to relocate and decrease property valuable. The health unit conducts health education seminars covering disease prevention and treatment, collaborating with local authorities and community pillars. These seminars aim to address the harmful effects of waste and associated diseases.	Presented in the consultation section, the sub-section 4.4.7 and the ESMP section 6
Local Health Unit in Ezbet Rasheed (Under the jurisdiction of Al-Marsafa village)	Consulted officials reported a prevalence of internal gastrointestinal infections due to mosquito infestations. Water disposal issues were further cited, with the local governing units acting to combat this problem through the issuance of fines. Limited transportation options were further cited as a main factor leading resident to rely on the local health unit for medical needs, with referrals to larger hospitals occurring when necessary. Concerns were communicated concerning the negative impact of the transfer station in Al-Marsafa; citing road damage, waste spread, air pollution, and odours as contributing factors to rising local health problems such as respiratory diseases. The health unit conducts educational seminars on various health topics, with potential for addressing waste-related diseases and emphasizing proper waste management practices.	- Presented in the consultation section and the sub-section 4.4.7 - The impacts were taken into consideration in the impact system section 5
Youth Centers Marsafa and Ezbet Rasheed Youth Centers	The Marsafa Youth Center officials highlighted their contribution to the development of the village through the hosting of seminars, conducting awareness campaigns and collaborating on civil projects.	The positive impacts of the project were outlined in section 5.1

Stakeholder	Consultation Outcomes	Incorporation in ESMP
	Ezbet Rasheed Youth Center further highlighted the fact that the sub- project is expected to create more job opportunities for youth, improve roads, and enhance security by installing lighting on main roads leading to the station. Moreover, the project aims to reduce waste disposal costs for citizens by allowing them to transport waste themselves to the station. The officials also emphasized the importance of maintaining cleanliness and raising awareness in the village and neighbouring areas. Additionally, they proposed establishing a workshop for waste recycling at a technical industrial school under construction, aiming to educate students and benefit agricultural lands in the village. The estimated price is 70,000 Egyptian pounds per acre for agricultural land and 3,000 Egyptian pounds per square meter for building land.	
Local NGO and Local Community Development Groups in Al-Marsafa Village and Kafr Al-Arab	A community development group in Marsafa is implementing a waste collection and transportation project for 800 families, focusing on environmental pollution and waste management. The group is advocating for improved waste management and reducing fees. Meanwhile, the Kafr Al-Arab group is partnering with Al-Ikhlas to handle solid waste collection, but residents are unhappy with the increased fee. The proposed waste recycling stations aim to benefit the entire area.	Their activities were presented under the consultation section 7
Solid Waste Collection and Transportation Contractors Collection and Transportation of Solid Waste Contractor in Al-Marsafa	The contractor, operating a private waste collection company in Marsafa village, collects waste from households three times a week for a fee of 30 Egyptian pounds per family, serving approximately 1,350 families. Each family receives 12 plastic bags for waste collection, with collection done using tricycles. The company possesses one jumbo truck, three tricycles, and leased land for waste collection. Waste is transported to the Abu Zaabal dumpsite using the jumbo truck, with a permit costing 550 Egyptian pounds per trip. The project employs six workers, sorting waste and selling recyclables. The contractor attends meetings with the governorate and plans to expand operations. Proposed measures include placing waste containers, tree planting, citizen education, and worker insurance. Risks include vehicle breakdowns, injuries, accidents, maintenance costs, and waste accumulation due to breakdowns.	Their activities were presented under the consultation section 7
Group of Male Residents from Kafr Al-Hammam under the Jurisdiction of Marsafa Village	Residents of Kafr El-Hamam demonstrated strong support for the waste management project in Marsafa, agreeing to the establishment of the transfer station. They anticipate cleaner surroundings and job opportunities from a waste recycling factory. Concerns include waste accumulation at the station, foul odours, and health risks. They propose stricter waste transport regulations and criticize the current collection system's shortcomings. Community engagement strategies involve mosque radio broadcasts and discussions with farmers and community leaders. Recommendations include road expansion for waste transportation and ongoing government monitoring.	The impacts of the project are outlined in section 5 Community engagement activities shed light on their feedback related to communication section 7
Group of Male Residents from Ezbet Bledi in Kafr Al-Shamout, Under the Jursidiction of Al-Marsafa Village	Community leaders from Azbet Bledi in Kafr Al-Shamout, situated 2 kilometers from the planned intermediate station in Marsafa, express their support for the station's establishment. They believe it will enhance cleanliness, provide jobs, and improve safety by deterring thieves and ensuring well-lit roads. They recommend security measures like 24/7 guards, a nearby police checkpoint, and environmental protections during construction. The lack of a waste collection system in Kafr El-	Their feedback is highlighted in terms of securing guards (section 6.3).

Stakeholder	Consultation Outcomes	Incorporation in ESMP
	Shamout leads to waste disposal in the canal, prompting concerns about insects and reptiles. They stress the importance of public awareness campaigns about the project's benefits and proper waste disposal practices.	However, securing police check point goes beyond project activities. Public awareness campaigns are recommended in this table and will be part of the Stakeholder Engagement plan
Group of Women from Kafr Al-Hammam, Under the Jurisdiction of Al-Marsafa Village	The consulted women in Kafr Al-Hammam expressed concerns about waste accumulation at the proposed station for more than two days, fearing it could lead to health issues for children due to foul odours and insect presence. They further criticized the irregular waste collection schedule and absence of the contractor. However, others supported the construction of a waste recycling station in Marsafa village, seeing it as a job opportunity for unemployed youth and a means to improve cleanliness. They emphasized the need for swift waste collection, sorting, and recycling, along with measures like covering vehicles during transportation to prevent scattering. They further suggested raising awareness of the project's importance through educational seminars at health centers, mosque gatherings, and radio broadcasts	Their concern should be taken into consideration through operation phase. A prerequisite was added in section 6.3.2 informing about the importance of moving wastes in less than 24 hours. Raising awareness is outlined in the SEP
Group of Women from Ezbet Rasheed Under the Jurisdiction of Al-Marsafa Village	The consulted women expressed their satisfaction with the establishment of a transfer station to improve cleanliness in the villages and hamlets. However, they voiced concerns about potential waste accumulation at the station, which could lead to foul odours and insect infestations, posing health risks to children and causing discomfort. They noted that due to high monthly waste collection fees, many residents resort to dumping waste on the streets. They suggested raising awareness through seminars at health centers, mosques, and radio broadcasts, emphasizing the importance of proper waste management and village cleanliness.	Their concern should be taken into consideration through operation phase. A prerequisite was added in section 6.3.2 informing about the importance of moving wastes in less than 24 hours. Raising awareness is outlined in the SEP

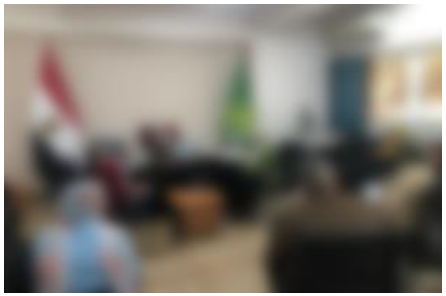

Figure 7-1: Deputy Governor of Qalyubia

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

Figure 7-3: Consultation with Heads of the Local Health Unit in Marsafa

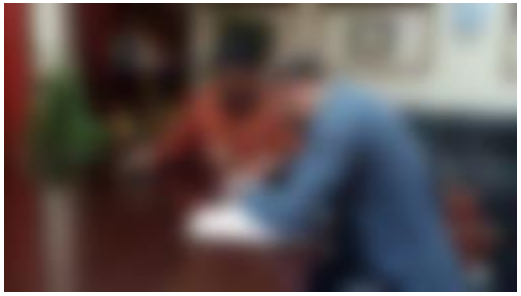

Figure 7-4 Consultation with the Head of the Local Unit in Al-Marsafa

Figure 7-5: Consultation with the Mayor of Banha City Council

Figure 7-6: Consultation with an official from the Local Community Development Association in Al-Marsafa

Figure 7-7: Consultation with Heads of the Local Health Unit

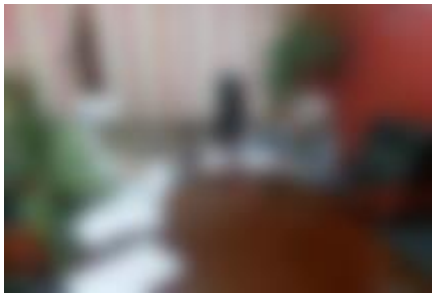

Figure 7-8: Consultation with the Community Relations Officer in Qalyubia Governorate

Figure 7-9: Interview with the Staff of The Local Information Center

Figure 7-10: A Resident in Al-Marsafa Village

Figure 7-11: Consultations with a group of Local Women from Ezbet Rasheed Near Al-Marsafa

Figure 7-12: Consultations with a Group of Local Men from Kafr Al-Hammam Near Al-Marsafa

7.4.2 Final Public Hearing

The data presents a gender distribution analysis within Al-Marsafa, where a total of 55 participants attended. Among these participants, 32 were male, representing 58.2% of the total, and 23 were female, accounting for 41.8%. This nearly balanced distribution indicates that there is a slightly higher proportion of males compared to females in Marsafa. 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 31.3% of the total male participants. This is followed by "Community (non-working)" and "Environmental" sectors, each constituting 9.4% of male participants. The smallest representation comes from the armed force.
- **Female Participants**: The largest group among females is also from the "Government & community member" sector, contributing to 52.2% of the total female participants. This is followed by "Environmental" counting to 17.4% and "governmental sectors, accounting for 17.4%. The "health" sector has the least representation among female participants at 4.3%.
- **Overall Distribution**: Across all participants, the "Government & community member" sector remains the most represented, with 40.0% of the total participants. This is followed by the "Governmental sector " and "Environmental" sectors, counting to in total 29.1%. The least represented sectors overall are Armed Force with 1.8%.

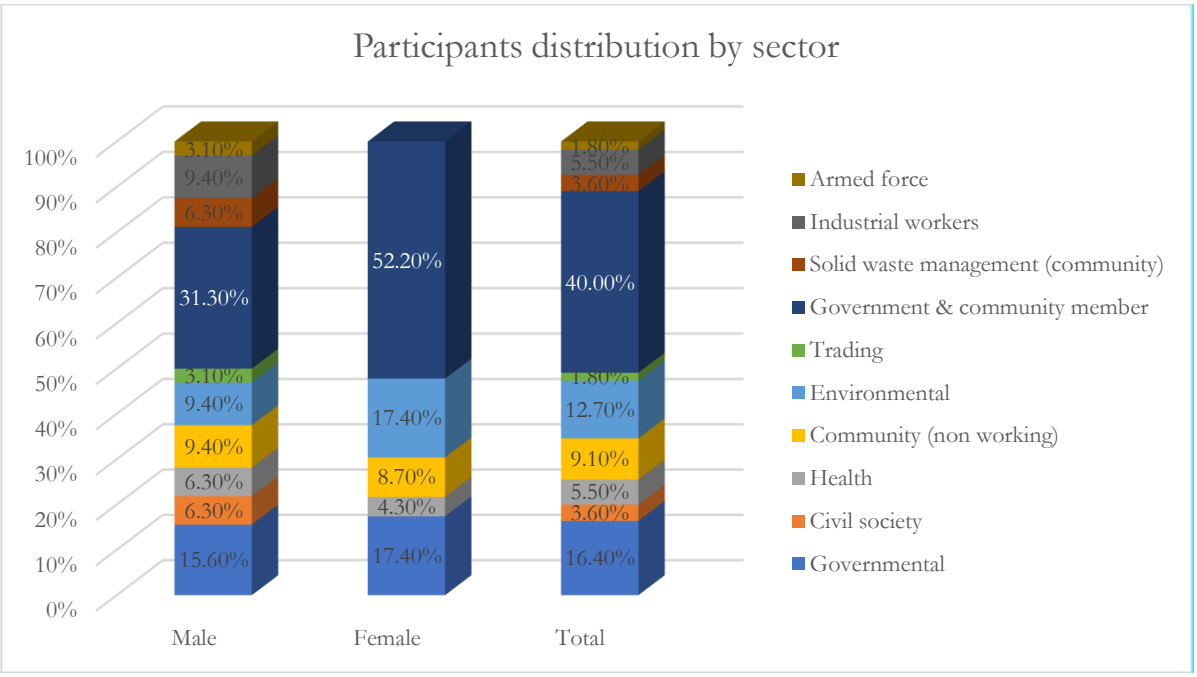

Figure 7-13: % distribution of participants by sector

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 7-2 : Distribution of participants by sector/ organization

Occupation	Male	Female	Percentage of total participants
Legislators, senior officials and managers	25.80%	8.70%	18.50%
Specialists	6.50%	17.40%	11.10%
Clerks	32.30%	60.90%	44.40%
Workers in service professions and sales in markets and shops	9.70%		5.60%
Craftsmen and related professions	3.20%	4.30%	3.70%
Workers in primary professions	9.70%		5.60%
Armed Forces	3.20%		1.90%
Pension	6.50%		3.70%
Student	3.20%		1.90%
Housewife		8.70%	3.70%
Total	100%	100%	100%

Summary of the Consultation Process

A large number of stakeholders attended the community consultation session totaling to 55 participants whom attended. Through the public hearing event, Design Consultant Egypt presented the eventual design. Additionally, ESIA Consultant presented the EHS impacts and mitigation measures.

The key speakers of this session were:

1- Dr. Eman Rayan, Deputy Governor of Qalyubia.
2- Mr. Abdel- Khaleq Ahmed Abdel- Khaleq, Head of the local unit in Al- Marsafa.
3- Dr. Mahmoud Allam is an environmental expert at ESIA Consultant Environmental
4- Dr. Ramadan Awadallah, a technical staff member and project design consultant from Design Consultant.
5- Dr. Sara Adam, Environmental Expert ESIA Consultant.
6- Ms. Hanaa Abbas, Social Expert ESIA Consultant.
7- M. Rasha Kamel, solid waste expert ESIA Consultant.

Figure 7-14: Social consultant of the GCCC

Figure 7-15: Project officials

Figure 7-16:Deputy Governor of Qalyubia

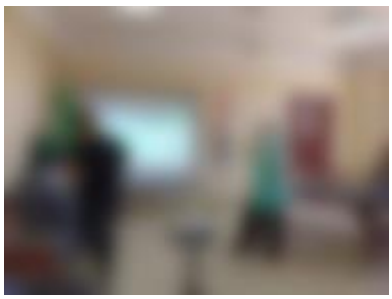

Figure 7-17: Social Expert (ESIA Consultant)

Figure 7-18: Contribution in the discussion

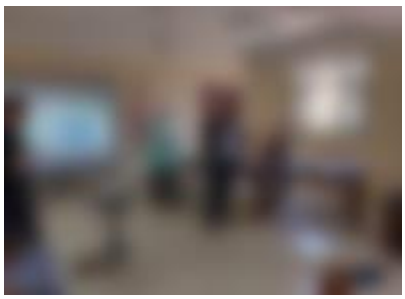

Figure 7-19: Environmental Expert (ESIA Consultant)

Figure 7-20: Female participation

Figure 7-21: Design Consultant technical consultant

Figure 7-22: Solid waste expert (ESIA Consultant)

Summary of Public Hearing Discussions

The table below sheds lights on the key points of discussion during the Public Hearing:

Table 7-3: Key points of discussion raised during the final public consultation

Aspect	Questions and points of concern	Responses	Incorporation in the ESMP
Employing the project's human resources	Muhammad Bishr Arafa, one of the citizens, general manager of the pension in the village of Marsafa, referred to the need to employ human resources in the villages adjacent to the project (transfer station).	Eng. Rasha Kamel, emphasized the importance of providing job opportunities for young people and women from the project's surroundings. The social and environmental management plan mandates the project operators to offer employment to those who benefit from the project. Miss. Mona Abu Bakr, the project's social consultant, highlighted the need for skilled Labor and technical expertise from the local community members during the project's operation and construction if the required skills are available. - Job opportunities for young people and women from the project's surroundings - Involvement of local community members in providing skilled Labor and technical expertise	Section 5.2 pertaining to positive impacts
Paving roads	Mr. Said, Chairman of Ezbet Rashid Youth Center shed light on the need to pave the infrastructure of roads in the villages and areas surrounding the transfer station, as well as drains and access roads for cars entering and from the project, such as (the Bahr al-Bakr area), as well as expanding the road, lighting, and placing poles. He pointed out Both sides of the drain are owned by the Ministry of Irrigation, and he proposed that the project be implemented within a year.	Ms. Hanaa Abbas, social ESIA consultant, reported that one of the goals of the project is to repair the infrastructure of the roads leading to the project and place lighting and lighting poles on both sides of the streets leading to the project to avoid accidents, thefts and blocking the road, as some have reported.	Roads and traffic impact assessment in chapter 5 sheds light on the traffic and roads impacts
Transportation	Hassan Zidan from Kafr Al-Shamout in Ezbet Bledy, affiliated with the village of Marsafa, pointed out that there are no means of transportation in the village and the neighboring villages, and neighboring farms, he asked when	- Eng. Rasha Kamel from ESIA Consultant reported that clearing drains is necessary to begin the pre-construction phase. - Dr. Eman Rayan, Deputy Governor of Qalyubia, highlighted the widening of roads and the	Road and traffic conditions are explained in the socioeconomic baseline.

Aspect	Questions and points of concern	Responses	Incorporation in the ESMP
	the canals are cleared by irrigation, will the results of the excavations be removed.	implementation of Waste Law 202 of 2020 for waste removal. – - Hanaa Abbas, a social consultant at ESIA Consultant, emphasized the importance of citizen awareness campaigns for environmental preservation. - Wafa Muhammad, a local unit employee, stressed the need for surveillance cameras to monitor waste disposal and hold citizens accountable. This comprehensive plan involves multiple stakeholders to address solid waste management effectively.	
Canal cleansing	Ahmed Abdel Baqy, a contractor for collecting and transporting waste from homes in the village of Marsafa, noted that there was a lot of waste and bags inside the Al-Nabaa Canal, which branches off from the Nile River and is next to Meet Kenana.	Dr. Iman Rayan, Deputy Governor of Qalyubia, asked about the extent of irrigation disinfection of this canal, and what is the NGOs with it. The head of the local unit said that it was not cleared by irrigation because it contains stones, and it is affiliated with the Local Meet Kenana NGOs	Socioeconomic baseline outlines the canal cleansing issues.
Transport and collection of waste	Muhammad Sweilem, a contractor for collecting and transporting waste from homes in the village of Marsafa, said that the transfer station will save contractors the costs of transporting large cars to the Abu Zaabal dumpsite, as the contractors transport waste twice a day to the Abu Zaabal dumpsite.	Dr. Iman Rayan, Deputy Governor of Qalyubia indicated that the intermediate station is a transfer station and not a waste dumpsite, and the waste does not exceed 12 hours there. The waste will be transported in small cars from the villages, passing through the intermediate station and then leaving it in large covered cars. Wind directions have also been studied. The waste will remain for two days at peak times and holidays. And for special occasions only. The station will be established with the latest design followed by the Ministry of Environment, and of course it will save contractors the expenses of transporting waste to the Abu Zaabal dump site.	Section 5.2 outlines the positive impacts of the project
The official waste system	Mustafa Abdel Shafi, a waste collection and transport contractor in the village of Al-Shamout, is asked about the contractors' entry into the official system.	Dr. Eman Rayan, Deputy Governor of Qalyubia, announced the implementation of a new law for waste management in the governorate, including the requirement for official contracts between the governorate and contractors.	Info included in the consultation section and the legislation section 3

Aspect	Questions and points of concern	Responses	Incorporation in the ESMP
		- Contractors are urged to prepare necessary documents and participate in consultation sessions to work officially and legally with the governorate. - An ongoing evaluation will involve opinion polls conducted with citizens and housewives during the waste collection and transportation process. - Waste will be transported to designated treatment and disposal areas, with specific instructions for waste sorting and adherence to environmental regulations. - Contractors are expected to adhere to the governorate's policies, and entry into the official system will occur within the coming weeks, with full implementation expected within 6 months.	
Awareness	Saeeda Mansy Abdel Wahed from Kafr Al-Hamam pointed out the necessity of carrying out awareness seminars on not throwing agricultural waste or throwing dead birds on canals and drains, which causes the people to become infected with many diseases.	Mustafa Abdel Shafi proposes enacting a strict law to make waste collection subscription fees mandatory for all residents to prevent waste dumping in public areas. Rasha Kamel emphasizes the importance of educating households about the significance of waste management and involving civil society organizations in citizen education. - Eman Rayan, Deputy Governor of Qalyubia, advocates for allocating specific contractors to work in designated areas, issuing standardized papers from the Waste Management Authority, and ensuring that collected waste is covered and secured during transportation.	Awareness raising is an essential section of the stakeholder engagement plan
Lighting the road	Farhat, one of the citizens in the Benha center, said that the road in Ezbet Abu Hashish is without lighting, and thefts occur and thieves who block the road.	Dr. Eman Rayan, Deputy Governor of Qalyubia, said that the first batch of lighting poles will be installed on this road to protect it.	The baseline shed lights on the road safety

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 activities andresults. People who want to make complaints or raise any concerns will not do so unless there 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 [19] as they are the entrusted entity that provides direct services as well as referral to survivors of GBV.

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

1. ***Accessibility and participation***

[19] 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.

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 stakeholder's 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.

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.

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.

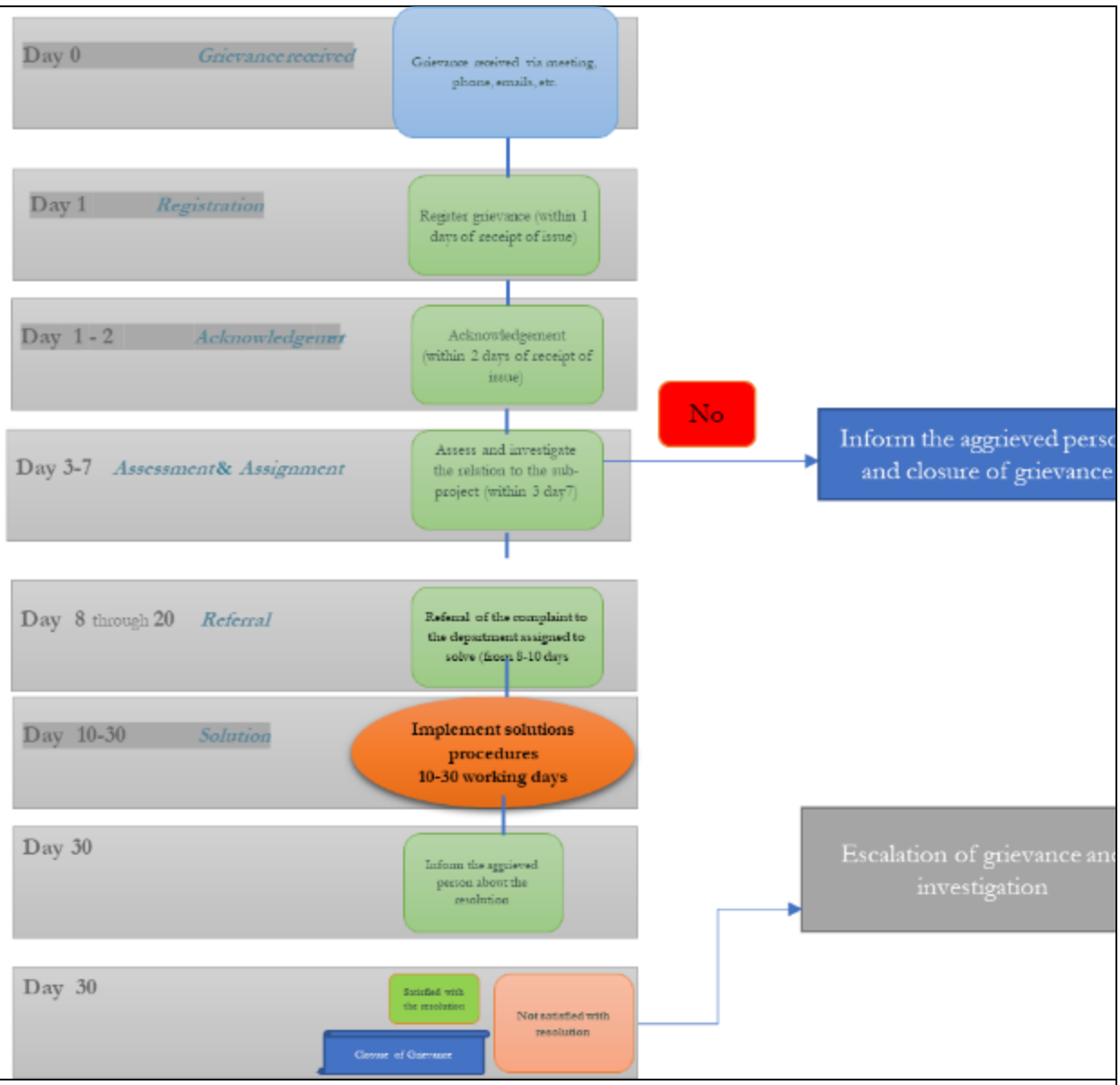

Figure 7-23: Time line of the GM

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:

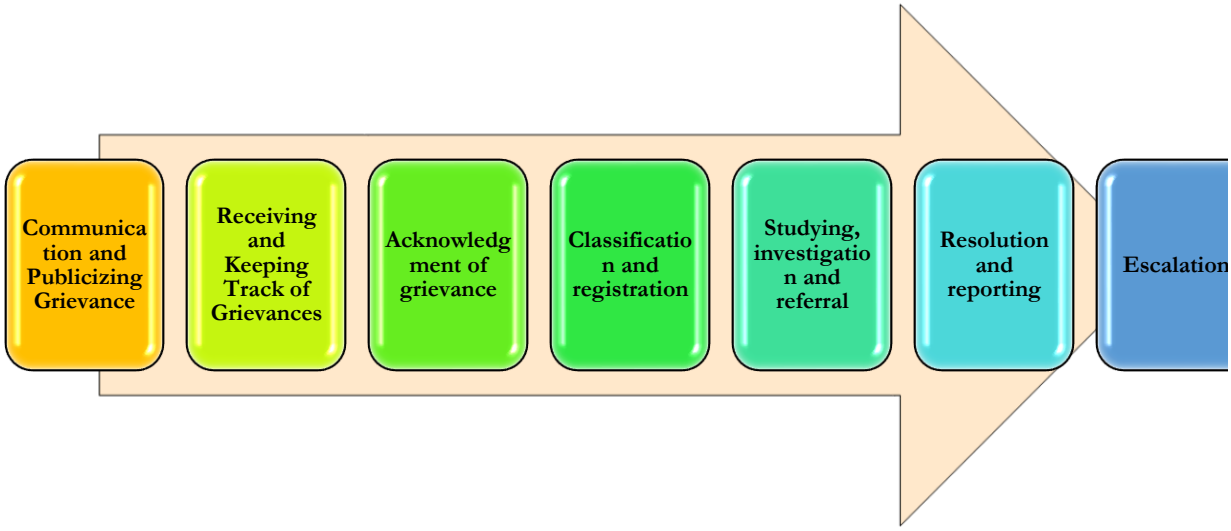

Figure 7-24:Steps of grievance mechanism

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 Studies

9.4 Annex IV: Marsafa 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 Find Procedures

9.12 Annex XII: Preliminary Training Aspects within OHS