Emergency Food Security and Resilience Support Project (P178926)

Environmental and Social Management Plan (ESMP) for Taramsa Silo, Qena, Egypt

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LIST OF ABBREVIATIONS

Abbreviation	Definition
ARC	Agriculture Research Center
CAPMS	Central Agency for Public Mobilization and Statistics
EEAA	Egyptian Environmental Affairs Agency
EHCSS	Egyptian Holding Company for Silos and Storage
EHS	Environment, Health, and Safety
ESIA	Environmental and Social Impact Assessment
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESIA	Environmental and Social Impacts Assessment
ESMP	Environmental and Social Management Plan
FAO	Food and Agriculture Organization
FGD	Focus Group Discussions
GBV	Gender Based Violence
GCSS	General Company for Silos and Storage
GM	Grievances Mechanism
HW	Hazardous Waste
IBA	Important Bird Area
IPM	Integrated Pest Management
MOE	Ministry of Environment
MOHP	Ministry of Health and Population
MOMI	Ministry of Manpower and Immigration
MOSIT	The Ministry of Supply and Internal Trade
MOT	The Ministry of Transport
NCSCR	National Center for Social and Criminological Research
NCW	National Council for Women
OHS	Occupational Health and Safety
PMP	Pest Management Plan
PMU	Project Management Unit
PPE	Personal Protective Equipment
SCA	Supreme Council of Antiquities
SEA/SH	Sexual Exploitation, Abuse and Sexual Harassment
SEP	Stakeholder Engagement Plan
TMP	Traffic Management Plan
WB	World Bank
WBP	World Food Program

EXCUTIVE SUMMARY

Background: Egypt is among the countries most vulnerable to the economic impacts of the war in Ukraine globally (WTO, 2022). The suspension of grain exports from the Black Sea region has delivered a major supply and food import bill shock, leading to drastic reductions in wheat reserves. Egypt imports approximately 12 million metric tons of wheat annually, which accounts for nearly 62 percent of total wheat use in the country. Up to 66 percent and 25 percent of these imports are from the Russian Federation and from Ukraine respectively. Wheat prices averaged US$ 284 per metric ton during the first quarter of 2021 and reached US$ 486 per metric ton in March 2024. In December 2021, the Government of Egypt indicated that the country had stocks of around 5.7 months of wheat consumption in silos. By mid-April 2022, strategic wheat reserves were down to 2.6 months of domestic consumption, reflecting difficulties in securing imports from global markets since March 2022. Egypt suspended its tendering from international markets in March 2022 following two unsuccessful tenders due to high prices and low response.

Domestic wheat purchases did not compensate for the significant decline in imports from the Russian Federation and Ukraine. Egypt had projected to increase domestic wheat purchases from an annual average of 4.5 million metric tons to up to 6 million metric tons during the harvest of April to June 2022 by offering higher prices to farmers, but this increase did not, however, compensate for the significant decline in imports from the Russian Federation and Ukraine. Furthermore, the production of bread required locally produced wheat to be mixed with matching quantities of imported wheat to address quality issues. Continued imports were therefore needed for the rest of the year in view of low stock levels.

In this regard, the World Bank will provide support to Egypt with a $500 million loan to help the country secure its wheat needs in emergencies under Emergency Food Security and Resilience Support Project (P178926), which was established to help Egypt mitigate the impact of food price shocks and improve its food security. This project has the following three components: a) Component 1: Emergency Response Measures, b) Component 2: Strengthening Preparedness and Response to Shocks, and c) Component 3: Project Management and Knowledge Management.

The current activity focuses on sub-component 2.1 which targets improving the resilience of the wheat supply chain and reducing loss and waste (US$ 112 million). This sub-component will finance the upgrading of Egypt's strategic wheat storage capacity. The sub-component will provide financing to the Egyptian Holding Company for Silos and Storage (EHCSS) to expand the network of modern, energy efficient silos integrated with rail and river transportation system and strategically located in areas with substantial wheat production. The

current Environmental and Social Management Plan (ESMP) focuses on the expansion of the existing Taramsa Silo subproject. EHCSS expects that the construction of the expansions of Taramsa Silos will increase the capacity of the existing Silos in storing grains, as well as improving the resilience of the wheat supply chain and reducing loss and waste. The subproject will not include rail or river transportation. Grain transportation to and from Taramsa silos rely on trucks.

The Environmental and Social Management Plan (ESMP) is a plan or program that seeks to achieve the required state and describes how activities that have or could have an adverse impact on the environment, will be mitigated, controlled, and monitored. Any project has negative and positive impacts on the surrounding environment. The environment is composed of both biophysical and social components. All due concern must be given to the environment, including the social environment, during the implementation of a project, to minimize negative impacts.

The main objective of this ESMP is to provide a tool that will ensure environmentally friendly development and operation of the proposed expansion silos for the Taramsa Silo Complex. This ESMP implements appropriate environmental controls and monitoring procedures during all phases of the project. Site-specific environmental and social management protocol will be established to provide practical mechanisms to manage the impacts of all activities and to ensure environmental responsibilities are implemented and documented. These are based upon international best practices, designed to effectively address local practices, EEAA requirements and environmental and social conditions, as well as the requirements of the funding organization (ESSs of the World Bank).

Project description: Taramsa Silos is located near Al Taramsa village in Qena governorate in the western side of the Nile Valley. Taramsa Silo Complex covers an area of 20,000 m^2 and consists of 12 cells with a total capacity of 60,000 tons, it is equipped with the latest storage technology, including inventory management and control system, steaming system and stock temperature control, firefighting system, and wireless system.

The current situation in Taramsa Silos include twelve main storage cells with a conical concrete bottom with storage capacity of five thousand tons, in addition to four lifters for handling wheat and transporting it in a vertical direction, a number of chain belts for handling wheat and transporting it in a horizontal direction, pit hole receive, rotating magnet, truck scale, machinery tower, dust extraction system consisting of three filters, reciprocating sieve, electronic scales, fixed magnet, auxiliary systems (fire extinguishing - fire alarm - aircraft warning - wireless and communications, and administrative and service buildings.

The expansion project will focus on the implementation of additional six main storage cells with a conical concrete bottom, including a) excavation works, b) concrete works in accordance with the nature of the soil contained in the soil investigations report and the site's calculation notes, c) the cell sheets will be imported and supplied on site, assembled in different thicknesses, and installed on the concrete base. Importing track belt parts and components, supplying them on site, assembling and installing them. Supplying walkers and belt supports and

installing them on site. Implementation of regular concrete slabs in the general site, as well as reinforced concrete slabs in the trailer path.

The mobilization phase involves the following activities: a) Site preparation: This includes clearing the site of vegetation and debris (if there are any vegetation in the site), levelling or flattening the ground, and installing erosion control measures, b) Establishment of construction facilities: This includes building temporary offices, storage facilities, and workshops, and c) Mobilization of equipment and personnel: This includes bringing all necessary construction equipment and personnel to the site.

The Construction Phase of the expansion of Taramsa Silos will include the following: a) Construction of the silo expansion: this includes the excavation of the foundation, the construction of the silo foundation and walls, and the installation of the silo roof, and b) Installation of silo equipment: This includes the installation of the silo conveyor system, the silo loading and unloading equipment, and the silo dust collection system. The mobilization and construction phase will take about 16 months.

Regarding the land Ownership and previous use, the land allocated for the expansion of the Taramsa Silos is owned by the Egyptian Holding Company for Silos and Storage (EHCSS), under the jurisdiction of the Ministry of Supply and Internal Trade. The ownership was officially transferred through a Presidential Decree No. 113 of 2022, which designated this state-owned land for silo construction purposes. Prior to the allocation, the land was not utilized for formal or informal purposes. Historical imagery and records have been reviewed to verify the absence of past ownership or land use activities on the site. The review confirmed no evidence of previous formal or informal land use, encroachment, or ownership disputes. The site has been unoccupied and free of agricultural, residential, or commercial activities.

Policy, Legal, and Administrative Framework: The environmental and social management of the Taramsa Silo expansion project adheres to a comprehensive framework regulated by the Egyptian Environmental Affairs Agency (EEAA) and other relevant authorities. This framework includes A) National Regulations, including the following i) Environmental laws and decrees issued by the EEAA, including Law No. 4 of 1994 (amended by Law No. 9 of 2009 and Law No. 105 of 2015) for environmental protection, and ii) Related legislation from line ministries addressing labor, land use, occupational health and safety, waste management, and construction. B) International Standards, including compliance with the World Bank Environmental and Social Framework (ESF), particularly the Environmental and Social Standards (ESSs) relevant to the project, and C) Key Oversight Authorities, including the EEAA oversees compliance with national environmental regulations, while relevant local authorities ensure adherence to sector-specific requirements during project implementation. The project aligns with these national and international regulations to ensure environmental protection, social responsibility, and adherence to best practices throughout its lifecycle.

Baseline summary: The baseline and existing environmental conditions addressed the following issues: a) Physical Environment, b) Biological Environment, and c) Socio-economic aspects.

Physical baseline: Climatically, Qena experiences a hot desert climate, characterized by very hot summers, minimal annual precipitation, and warm winter days with cool nights. The hottest months on average are July and August, while the coolest month is January. Regarding noise, the area is classified as a residential/agriculture zone. Key sources of noise include vehicular movement and the operation of water pumps used for irrigation. The pumps are primarily located near surface water sources. These pumps extract water for irrigation of nearby fields.

Geologically, Qena is located in the central portion of the Nile Valley, occupies a portion of a sub-regional sedimentary basin (Assiut Basin) having a depth exceeding 3000m. This basin is located in the foreland side of the Arabian Nubian Massif, where the dip is regionally in the westward direction.

Qena Governorate depends mainly on the Nile water for irrigation and drinking, Qena Governorate covers a large area of the Nile Valley and extends more than 350 km along the Nile River from Isna to Naga Hammady. The main canals at the governorate are: Asfoun canal which is located on the western side of the Nile (820m from the subproject site), and serves to irrigate approximately 68,879 Feddan, Kalabaya canal, which runs parallel to the eastern bank of the Nile (5km from the subproject site) and serves to irrigate approximately 174,515 Feddans. Groundwater represents the second source of water in the governorate after surface water. The main aquifers are of granular type. Based on their area extent and productivity, these aquifers are classified into four hydrogeological units. The Quaternary aquifer is continuously recharged from vertical percolation of irrigation water (from canals and irrigation return flow). On the other hand, the Plio-Pleistocene aquifer is either recharged from irrigation return flow, runoff, or vertically from deeper aquifers (Nubian Sandstone complex). The Eocene carbonate aquifer system is recharged from local rainfall or from other aquifers in direct contact. Groundwater discharge is generally through groundwater flow to the adjacent aquifers depending on groundwater heads.

The distance of the subproject site from surface water resources is about 2.١km from the Nile River, and less than one Km/around 820m from the nearest surface water canal) which is Asfoun canal). The depth to groundwater in the Quaternary aquifer varies significantly across the region, a) near the Nile riverbanks, the groundwater is shallow, with depths as low as 5 meters due to seepage and recharge from the Nile, and b) in areas farther from the Nile and closer to desert fringes, the groundwater depth can reach up to 30 meters or more. Potential contamination risks may be present during both project phases, particularly during construction phase.

The Silo site in Qena Governorate is situated between two seismic sources, Zones 2 and 8, each with distinct seismic characteristics. Zone 2, located on the west bank of the Nile River between Assuit and Kom Ombo, has experienced seismic activity, including a notable earthquake in Kom Ombo in 2003, likely associated with the Gebel El-Barqa fault. Zone 8 encompasses the

Red Sea region, including the Abo Dabab area and the southeastern Eastern Desert, where fault systems parallel to the Red Sea are spreading to the center, driven by the ongoing tectonic movement between the Arabian and African plates, making Abo Dabab the most seismically active zone in the area. Based on the seismic analysis, the subproject site at Taramsa Silo is classified as being in a low-to-moderate seismic risk zone. While the site is influenced by regional seismic activity from Zones 2 and 8, the distance from these sources and the historical seismic data suggest that the risk of significant seismic impacts is low.

In Upper Egypt, flash floods caused by intense storms are a major hazard, particularly in Qena Governorate, where numerous wadis, especially from the Red Sea Mountains, drain into the Nile. Wadi Qena, the largest wadi in the region, channels floodwaters through Qena city to the Nile. Taramsa Silo site is located on the western side of the Nile, outside the direct pathway of Wadi Qena. The site is situated in a slightly elevated area, reducing the likelihood of direct exposure to flooding. Drainage channels and flood management systems are present in the region to mitigate risks from overflow and runoff.

The physical baseline findings are based on desktop review and results from the site visit conducted on the 22nd of September 2023.

Biological baseline: Biologically, the area surrounding the Taramsa Silo is predominantly composed of reclaimed agricultural land and desert terrain, characterized by low biodiversity.

Flora: A desktop review, consultations with locals, and field surveys conducted during the site visit (September 22, 2023) identified a total of 14 plant species in the general project area and surrounding habitats. Common species include *Phragmites australis* and *Eichhornia crassipes*, typically associated with water bodies, while rarer species like *Arthrocnemum macrostachyum* and *Sarcocornia fruticosa* were noted in saline and marginal habitats. However, the proposed subproject site itself is largely devoid of vegetation. Observations suggest these species may potentially occur in surrounding Nile Valley and agricultural areas but were not directly identified at the subproject site.

Fauna: Mammals: The mammalian fauna is primarily represented by rodents, notably the Field Rat (*Arvicanthis niloticus*) and the Black Rat (*Rattus rattus*) mammals also include the Red Fox (*Vulpes vulpes*) which was observed near the project site during the site visit, particularly in areas bordering agricultural lands. These observations were supplemented by consultations with locals who confirmed the presence of these species in the area.

Fauna: Amphibians and reptiles: species such as *Sclerophrys regularis* and *Naja haje* were identified as part of the regional fauna based on literature and local consultations. While these species were not directly observed at the subproject site during the field survey, they are likely to inhabit areas in proximity to the Nile or agricultural zones.

Fauna: Birds: The project site lies near a migratory bird route for palearctic species, with the surrounding Nile Valley region supporting 66 bird species, including *Egretta ibis* and

Falco tinnunculus. No significant bird activity was observed during the field survey, which could be attributed to the survey timing outside peak migratory periods. However, the site may attract birds during the operational phase due to the presence of grains. The Upper Nile Important Bird Area (IBA) is located less than 2.3 km from the project site, underscoring the ecological sensitivity of the area during migratory seasons.

Aquatic life: The Nile Bank near the project area supports diverse aquatic species, including *Tilapia zillii* and *Oreochromis niloticus* which are prevalent in the region's ecosystems.

Proximity to Sensitive Areas: The project site is not located within or near any designated RAMSAR sites. However, it is in close proximity to several protected areas and sensitive ecological zones. Under Prime Ministerial Decree 1969/1998, all Nile River islands have been designated as Protected Areas. In this context, the nearest protected island is Qus Island, which is located a few kilometres away (2-3km) east of the project site. Moreover, the site lies near the Upper Nile Important Bird Area (IBA), this IBA is a critical stopover for migratory birds along the East African Flyway. The Upper Nile IBA and the bird migratory route highlights the need for robust mitigation measures to ensure minimal disturbance to avian species. Overall, the site is characterized by low biodiversity, however, the Upper Nile IBA is located at a close distance and potential occurrence of bird species in the area is possible and the ESMP addresses related risks on birds.

The findings are based on desktop reviews, consultations with local stakeholders, and field surveys conducted by the environmental consultant team conducted on 22nd of September 2023. The desktop review utilized references such as Goodman and Meininger (1989), Zahran (1992), and the IUCN Red List (2023). Field surveys included visual observations, habitat assessments, and stakeholder interviews. Observations made during the field survey were cross validated with local knowledge to confirm species presence and activity patterns.

Socio-economic baseline: Regarding the socio-economics aspects, Qena Governorate, where Taramsa is located, covers an area of 10.80 thousand km² and has a population of approximately 3.5 million as of 2021. The urban population accounts for 18.5% of the total, with a natural population increase of 23.0 per thousand. Taramsa village, where the silo is situated, is one of the 17 subsidiary villages of Qena City, the governorate's capital. The majority of Qena's population has access to electricity, with 65.17% of energy consumed for industrial purposes. Approximately 60% of water is sourced from the Nile, with the remainder from groundwater. Qena has nine sewage treatment plants, serving nearly 749,000 households. The labor force in Qena Governorate is around 748,100 people, with an unemployment rate of 4.8%, lower than the national average. However, female unemployment is significantly higher at 21.9%.

Qena is an agricultural hub, known for producing sugar cane, tomatoes, bananas, sesame, and hibiscus. The governorate has 230 industrial facilities, including sugar factories and the Aluminium Complex. Tourism is also significant, with attractions like the Dandara Temple and Islamic and Coptic sites. Qena has a robust education system, with a lower illiteracy rate

compared to the national average. Health services are widespread but the ratio of citizens to physicians is higher than the national average, indicating a need for more healthcare resources.

Water supply in Qena is primarily from the Nile and groundwater. The governorate has extensive electricity coverage and a well-developed road network. Communication infrastructure includes 185 post offices and 69 telephone exchanges. Qena's development plan for 2022/23 includes 277 projects with a total investment of EGP 4.7 billion, focusing on local development, transportation, higher education, housing, and pre-university education.

Qena Governorate is home to several significant archaeological and cultural sites, including Deir El-Ballas, the Dendera Temple Complex, and the historic city of Qus, reflecting the region's rich historical and cultural heritage. Women in Qena, particularly in rural areas, play a significant role in agricultural activities, including planting, harvesting, and grain storage management. However, they face challenges such as unpaid labor, limited land ownership rights, and low participation in formal decision-making processes.

Regarding the land use and the surrounding area, the Taramsa Silo is located in a reclaimed desert area near the Qena-Luxor Road, strategically positioned to support agricultural activities. The village of Taramsa lies approximately 850m northwest of the silo site.

The immediate surroundings of the subproject site are as follows:

- North: The Qena-Luxor Road, a critical transportation route, lies approximately 60 meters north of the silo site. Beyond the road, there is an empty barren area followed by small residential areas and agriculture lands. At the northeast of the site after the main Qena Luxor Road, some reclaimed agriculture lands are present.
- South: Desert terrain extends beyond the silo site, with no significant structures or agricultural activity within 500 meters.
- East: There is a residential area at about 60 m away east from the existing silo and bordering the expansion area, this residential area will not be resettled but they live very close to the expansion site and stringent measures are present to ensure they are not negatively impacted.
- West: The area to the west consists of reclaimed agricultural fields, the closest of which is approximately 400 meters from the silo site.

The farmers utilizing the silo primarily consist of small- and medium-scale farmers from surrounding villages in Qena Governorate. The grains are transported to the silo using trucks and tractor-driven carts, depending on the scale of production and distance. Women play significant roles in the agricultural value chain, particularly in grain cleaning, sorting, and storage preparation, and occasionally assist in transporting smaller quantities of grain to the silo. The majority of farmland in the region is privately owned, while medium-scale farmers operate larger plots, occasionally employing laborers. This strategic location of the

silo near agricultural lands and transportation routes ensures efficient grain delivery and supports the livelihoods of local farmers and workers, including women actively participating in the agricultural sector.

Socioeconomic conditions were assessed through a combination of a desk-based study, site visits (the site visit was conducted on 22nd of September 2023), and consultations with relevant stakeholders. Based on a combination of both primary data collected from the field and secondary resources reviewed, including national statistical data, this section highlights some basic information about the demographic characteristics and human development profile in Qena.

Summary of risks and impacts identified and related mitigation measures: Identification and analysis of risks and impacts was carried out to identify the potential risks and impacts on the surrounding environment. The main objective was to examine, analyze and assess the project activities' risks and impacts on the baseline conditions. Analysis of impacts included the following a) impacts on air quality, b) impacts on soil surface water and groundwater quality, c) impacts of noise, d) impacts on terrestrial biodiversity, e) waste management, f) impacts on socioeconomic aspects, g) Architecture and Heritage, and h) impacts on occupational health and safety (OHS) All risks and impacts were addressed during both construction and operation phases. Mitigation measures were identified to ensure that any potentially harmful impacts are minimized and reduced to minor levels.

Risks and Impacts during Construction Phase

1. **Environmental Risks**
    - **Air Quality Impacts**: Temporary dust emissions from excavation, and construction activities, as well as exhaust emissions from equipment.
    - **Noise**: Increased noise from heavy machinery and construction activities, affecting nearby residents and workers.
    - **Soil and Water Contamination**: Risks of fuel and oil spills, improper disposal of hazardous waste, and runoff from construction sites impacting nearby agricultural lands.
    - **Waste Management**: Generation of solid and hazardous waste, including construction debris, oil, lubricants, and chemicals.
    - **Disturbance to Local Biodiversity**: Construction activities may temporarily affect bird species and wildlife in the area and may increase risk of bird collision during migratory seasons.
2. **Social Risks**
    - **Disturbance to Local Communities**: Increased noise, dust, and traffic congestion may temporarily impact residents near the site.

- **Disruption of Existing Silo Operations**: The construction phase may interfere with grain supply logistics and silo operations.
- **Accessibility Issues**: Construction activities may temporarily disrupt access to nearby roads, farms, and transportation routes.
- **Child Labor Risks**: Potential employment of minors in construction activities, requiring strict labor law enforcement.
- **Social Conflicts and SEA/SH Risks**: Presence of construction workers close to the local communities may create risks of social conflicts with local communities, including risks of Sexual Exploitation, Abuse, and Harassment (SEA/SH).
- **Communities' Discontent/Dissatisfaction: Lack** of transparency and consultation leading to unresolved complaints.
- **Risks to Labor from Inappropriate Working Conditions**: Unfair treatment, unsafe working conditions, and lack of grievance mechanisms.
- **Community Health and Safety (Traffic Risks):** Traffic accidents and congestion from construction vehicles.

3. **Occupational Health and Safety (OHS) Risks**

- **Worker Safety Risks**: Increased risk of injuries from working with heavy machinery, excavation work and falling in excavations, falling from heights, exposure to hazardous materials, and welding activities.
- **Respiratory Issues**: Workers exposed to dust and air emissions may face respiratory hazards.
- **Traffic-Related Risks**: Accidents due to movement of construction vehicles and transportation of materials.
- **Confined Space Hazards**: Working in enclosed areas such as silo structures and deep excavations may pose suffocation and entrapment risks

Risks and Impacts during Operation Phase

1. **Environmental Risks**

- **Air Quality Concerns**: Dust emissions from grain handling and vehicular movement.
- **Pesticide Use Risks**: Improper handling and disposal of pesticides used for fumigation may harm non-target species and human health.
- **Biodiversity risks:** Impact on wildlife from emissions and pesticide use and from grain waste management issues from the accumulation of grain

waste which may attract birds and rodents, impacting local biodiversity. Bird collision risks may increase during migratory seasons.

- **Potential Water and Soil Contamination**: Improper disposal of waste materials (solid, liquid and or hazardous wastes) may contaminate surrounding lands including soil and water resources.
- **Ambient Noise risks:** Noise generation from operations and machinery.

2. **Social Risks**
    - **Traffic Safety Concerns**: Increased truck movements for grain transport may pose risks to local residents.
    - **Access Challenges for Vulnerable Groups**: Small farmers and other vulnerable groups may face challenges in accessing silo services.
    - **Risks to Labor:** Unfair treatment and unsafe working conditions for silo workers and seasonal workers.
    - **Risks on Children:** Presence of children in grain handling areas and risk of child labor.
    - **Risks of SEA/SH:** Potential SEA/SH among staff and visitors.
3. **Occupational Health and Safety (OHS) Risks**
    - **Health Hazards from Pesticides**: Exposure to fumigants may pose respiratory risks to workers.
    - **Respiratory Issues from Grain Dust**: Workers may develop lung conditions due to prolonged exposure to airborne dust.
    - **Fire and Explosion Risks**: Dust accumulation in silo storage combined with potential accidental ignition, can lead to significant fire hazards and explosion risks.
    - **Confined Space Risks**: Maintenance and cleaning operations inside silos pose safety concerns.
    - **Grain engulfment**
    - **Other physical injuries**

Mitigation Measures during Construction Phase

1. **Environmental Measures**
    - Implement dust suppression techniques, such as water spraying, to reduce airborne dust.

- Maintain machinery and vehicles in good condition to minimize exhaust emissions.
- Install spill containment systems and ensure proper disposal of hazardous materials.
- Implement waste segregation and disposal plans for construction and hazardous waste.
- Develop a biodiversity management plan to minimize impacts on bird species and local wildlife.

2. **Social Measures**

- Implement a traffic management plan to control vehicle movements and reduce congestion.
- Develop a community engagement plan to inform residents about construction schedules and mitigation measures.
- Implement strict child labor policies to prevent the employment of minors. Maintain attendance sheets, verify worker IDs, and regular inspections.
- Enforce a grievance mechanism to address community complaints, including SEA/SH-related concerns and train workers on code of conduct and SEA/SH issues.
- Ensure transparent communication with local farmers and silo users to minimize disruptions to existing operations.
- Improvement of Working Conditions: Share information on labor rights, establish grievance mechanisms, and inclusive hiring practices.

3. **Occupational Health and Safety (OHS) Measures**

- Develop a site-specific OHS manual that includes risk assessments and emergency response plans.
- Provide Personal Protective Equipment (PPE), including helmets, masks, gloves, and safety boots.
- Conduct safety training sessions for workers on handling hazardous materials, emergency evacuation, and safe work practices.
- Implement fall protection measures for workers operating at heights or in confined spaces.
- Maintain onsite first-aid facilities and ensure emergency response teams are available.

- Accessibility: Ensure temporary access facilities for people with disabilities.

Mitigation Measures During Operation Phase

1. **Environmental Measures**
    - Implement grain dust control measures, such as enclosed handling systems and dust extractors.
    - Ensure safe pesticide handling and disposal procedures to minimize risks to human health and biodiversity. Emission Control: Regular maintenance of vehicles, pressure tests for fumigation, and install gas sensors.
    - Establish proper grain waste management systems to prevent accumulation and associated impacts.
    - Noise Control: Conduct regular noise measurements, restrict truck movements, and maintain equipment.
    - Biodiversity Protection: Follow pest management plans.
2. **Social Measures**
    - Develop a road safety and traffic management plan to reduce risks for local communities.
    - Implement measures to ensure equitable access for small farmers and vulnerable groups. Develop accessible grievance mechanisms, conduct regular stakeholder consultations, and provide continuous project information.
    - Enforce fire prevention protocols to mitigate explosion risks in silo storage areas.
    - Improvement of Working Conditions: Share information on labor rights, establish grievance mechanisms, and ensure proper OHS for seasonal workers.
    - Child Labor Prevention: Maintain attendance sheets, verify worker IDs, and regular inspections.
    - SEA/SH Prevention: Implement SEA/SH plans, train workers, and establish grievance mechanisms.
3. **Occupational Health and Safety (OHS) Measures**
    - Provide PPE and safety training to workers handling pesticides and grain dust.
    - Install ventilation and dust suppression systems to minimize respiratory risks.
    - Conduct regular emergency response training for workers.

- Ensure safe procedures for confined space entry, including monitoring air quality and using proper safety harnesses.

Unplanned Risks and Emergency Response Measures

- **Fire and Explosion Risks**: Implement emergency response plans, fire suppression systems, and training programs.
- **Spills and Chemical Leaks**: Establish spill containment and cleanup protocols.
- **Workplace Accidents**: Maintain emergency medical facilities and first-aid stations.

Currently EHCSS has a technical consultant on board who supports the preparation of bidding documents. The plan is that the technical consultant will constitute the supervision work related to the construction phase. The technical consultant will contract with a consulting firm to bring Environmental, social, and OHS specialists during the construction phase, and the technical consultant will supervise their work. The technical consultant and the consulting firm work will be finished at the end of the construction work.

Regarding the operation phase, EHCSS will contract with a consulting firm to bring in environmental, social, and OHS experts (roles mentioned below) who will take the responsibility of the ESMP implementation and supervision during the operation phase, until they (EHCSS) build their own team which will consist of (environmental, social, and OHS specialists) as permeant staff in the Taramsa silo.

The construction contractor should report monthly on environment and social and OHS aspects to supervision consultancy firm and the supervision consultancy firm should verify the information and consolidate the report and send it to EHCSS. EHCSS should report quarterly to WB.

Summary of stakeholders' engagement: Regarding the stakeholder consultation and public participation, the consultant provided comprehensive information about the current project, including its objectives, components, impacts, potential risks and impacts, and mitigation measures and were open to receiving feedback and concerns and suggestions. The funding source was also discussed with key stakeholders and interested parties.

The consultant shared the environmental and social mitigation measures and monitoring measures for the proposed project and welcomed suggestions from the different stakeholders and incorporated them in the ESMP. The consultations were conducted in a manner that was meaningful, informed, and inclusive, in accordance with ESS10. The consultations were open to all participants, and invitations were disseminated widely to all affected stakeholders.

Public consultations were conducted with the local community through site-specific consultations (focus group discussions) conducted on 22nd of September 2023. Several focus group

discussions were conducted with the relevant groups, including consultations with farmers, grain traders, women, and vulnerable groups in the society. The results of the consultations helped in identifying challenges faced by silo users and their feedback was Incorporated into project planning and mitigation measures.

One key issue raised was the long waiting time silo users experience when submitting their grains, as the existing silo cells are often at full capacity. By increasing the number of cells, the storage capacity will expand and in turn this will reduce the waiting time to deliver their grains. While there are multiple concerns raised by stakeholders during consultations, including logistical issues and operational efficiency, the primary concern expressed by the majority of stakeholders, particularly farmers and traders, was the need for increased storage capacity to minimize transportation costs and logistical challenges. Additionally, vulnerable groups, including women and elderly farmers, raised concerns related to accessibility and operational challenges at the silo.

The specific concerns identified during consultations and their mitigation measures are as follows:

1) Accessibility for Vulnerable Groups:

Some farmers, particularly elderly individuals and women reported difficulties in accessing silo services due to limited assistance during the grain delivery process.

Mitigation Measures: a) establish on-site teams specifically trained to assist vulnerable groups during grain delivery, b) incorporate ramps to facilitate easy access for individuals with mobility challenges, c) implement a scheduling system during peak periods hours to reduce congestion and ensure that vulnerable groups receive timely assistance and d) include a fast-tracking lane for elderly and small farmers and separate lane for women, e) include parking space for special needs and elderly f) engage regularly with small farmers, women and elderly and inform them with the above mentioned services tailored to their needs.

2) Transportation Challenges:

Farmers and traders face logistical difficulties due to a lack of adequate transportation support, which increases costs and delays grain deliveries.

Mitigation Measures: a) the Silo Manager will collaborate with local transport providers to secure reliable, cost-effective vehicle services for grain delivery, b) encourage the formation of cooperatives among local farmers to share transportation resources, reducing individual costs and delays, and c) implement a robust traffic management plan to facilitate efficient loading and unloading operations, minimizing delays.

3) Technical and Physical Constraints:

Existing silo facilities, including loading and unloading equipment, are insufficient to manage peak harvest demands efficiently.

Mitigation Measures: a) the increase in the number of storage cells will expand the overall capacity and reduce congestion, b) the installation of modern, automated loading and unloading systems will accelerate grain handling processes, and c) enhance regular maintenance and inspection schedules to ensure that all equipment is functioning optimally, especially during peak periods and (d) implement a scheduling system during peak periods hours to reduce congestion (as mentioned under concern 1 accessibility to vulnerable groups, mitigation measure c above).

It is worth mentioning that the existing administrative buildings include ramps for people with disabilities. EHCSS will make sure ramps are also present in the public restroom area and any area needed. EHCSS will also upgrade its existing restrooms to accommodate people with disabilities for both genders. All the groups consulted mentioned that the project will positively impact them and their community by increasing the sense of security. They believe the project will alleviate the burden of storing wheat and reduce the waiting time for delivering wheat to the silo. The expansion will ensure that wheat needs are met and will contribute to greater stability. Moreover, a kiosk will be established at the silo to provide seeds and fertilizers directly to farmers. This initiative aims to address the lack of availability of seeds and fertilizers in the market and stabilize fertilizer prices and prevent farmers from being exploited. EHCSS confirmed that the necessary permissions and licenses for the kiosk have already been secured.

Grievance Mechanism Summary:
Existing grievance mechanism (GM):

Unified GM channels:

Any citizen may submit feedback and complaint through the following multiple channels under the unified electronic complaints portal:

- Egypt's Portal website, https://www.shakwa.eg/GCP/Default.aspx,
- Hotline 16528
- At "Your Service" app on Google Play.
- WhatsApp numbers: 01555516528 and 01555525444 to receive messages, complaints and suggestions.
- Citizen service departments and offices in all government agencies and authorities.

Localized communication channels (EHCSS):

At EHCSS level, the complaints are usually received from farmers depositing grains or grain buyers in the silos. The main complaints are about the quality of the seeds that are being deposited and tested immediately on site. In case there are any complaints from farmers and contractor, the complainant can raise their complaints to the Taramsa silo manager office or through his phone. If it is not resolved, it escalates to the customer services office at EHCSS. The silo manager documents and sends the complaints to EHCSS or the farmer/ contractor can reach the customer service through the EHCSS

customer service number visible at silo level. The documentation of complaints raised at silo level exists and it will be continuously improved during the project implementation.

- Channels /current contacts are: -
    1. Taramsa Silo Manager: 01009374798.
    2. Customer service managed by the EHCSS company: 01279671142/01279671143.
    3. The company's official **website: www.ehcss.com**
    4. The unified government complaints system in the Council of Ministers.
    5. Grievances Committee at the company's management. (For company employees only).
- Suggested future communication channels are: -
    1. Create a group on WhatsApp to receive complaints.

Workplace grievance summary:

A well-communicated and easily accessible grievance mechanism will be provided for all direct and contracted project workers, as well as community workers to raise workplace concerns related to the recruitment process and/or workplace conditions. Such workers will be informed of the grievance mechanism at the time of recruitment and the measures put in place to protect them against reprisal for its use. The PMU is responsible for managing direct workers' grievances, while the contractor for contracted workers.

The mechanism will include multiple communication channels dedicated for workplace complaints only, including but not limited to an email address/website link; phone number; and a physical address for handing the complaints and grievances in person. Workers will have the freedom to pick the one they are comfortable using.

Current and proposed SEA/SH complaints mechanism channels:

It is suggested to include and disseminate the contacts of National Council for Women (NCW) (below) to ensure safe referral to survivors along with offering the needed services. Implementing partners should be trained on topics including the survivor centered principles and should establish coordination with NCW.

- Women's Complaints Office at the National Council for Women
- Hotline: 15115
- Email: complain.office.2001@gmail.com
- Fax: 68-23490066 (02) WhatsApp: 01007525600
- Facebook: https://www.facebook.com/ncwegyptpage

The ESMP will be publicly disclosed on EHCSS website and banners on the site on project information and updates will be also available on site in Arabic.

1 INTRODUCTION

1.1. Overview

Egypt is among the countries most vulnerable to the economic impacts of the war in Ukraine globally (WTO, 2022). The suspension of grain exports from the Black Sea region has delivered a major supply and food import bill shock, leading to drastic reductions in wheat reserves. Egypt imports approximately 12 million metric tons of wheat annually, which accounts for nearly 62 percent of total wheat use in the country. Up to 66 percent and 25 percent of these imports are from the Russian Federation and from Ukraine respectively. Wheat prices averaged US$ 284 per metric ton during the first quarter of 2021 and reached US$ 486 per metric ton in March 2024. In December 2021, the Government of Egypt indicated that the country had stocks of around 5.7 months of wheat consumption in silos. By mid-April 2022, strategic wheat reserves were down to 2.6 months of domestic consumption, reflecting difficulties in securing imports from global markets since March 2022. Egypt suspended its tendering from international markets in March 2022 following two unsuccessful tenders due to high prices and low response.

Domestic wheat purchases did not compensate for the significant decline in imports from the Russian Federation and Ukraine. Egypt had projected to increase domestic wheat purchases from an annual average of 4.5 million metric tons to up to 6 million metric tons during the harvest of April to June 2022 by offering higher prices to farmers, but this increase did not, however, compensate for the significant decline in imports from the Russian Federation and Ukraine. Furthermore, the production of bread required locally produced wheat to be mixed with matching quantities of imported wheat to address quality issues. Continued imports were therefore needed for the rest of the year in view of low stock levels.

To minimize Egypt’s dependency on wheat imports in the medium term, and in line with Egypt's Food Security Strategy, embedded in Egypt's 2030 Vision, several priority actions will contribute directly to sustainably increasing the efficiency of the wheat value chain in country. These include are: (i) reduction of losses, currently reaching up to 20 percent of total grain storage through improved silo infrastructure to facilitate market access for local producers and reduce post-harvest losses; (ii) promoting climate-resilient agri-food value chains and ensuring that the agri-food sector further contributes to job creation; (iii) continued investment in early warning systems and mitigation measures; and (iv) continued strengthening of social protection programs.

The proposed operation supports Egypt by mobilizing immediate short-term relief to address supply and price shocks while simultaneously bolstering Egypt’s longer term food security stategy and improved nutrition strategy for the poor and vulnerable. This is done in close

coordination with a wide range of other partners, providing both financial support, investments, and technical assistance. Bank support would be part of a coordinated donor response to address financing needs in the range of US$1.6 billion based on the information available from partners, covering grain import needs for the year 2022, support to improved storage and support for more efficient and resilient domestic production.

1.2. Project Components

The World Bank has funded Egypt with a $500 million to help the country secure its wheat needs in emergencies. The funding is part of the Emergency Food Security and Resilience Support Project (P178926), which was established to help Egypt mitigate the impact of food price shocks and improve its food security. This project has the following three components:

- **Component 1:** Emergency Response Measures.
- **Component 2:** Strengthening Preparedness and Response to Shocks.
  - ✓ Sub-Component 2.1. Improving the resilience of the wheat supply chain and reducing loss and waste.
  - ✓ Sub-Component 2.2. Improving farm-level resilience and enabling sustainable domestic cereal production
- **Component 3:** Project Management and Knowledge Management

The current activity focuses on sub-component 2.1 which targets improving the resilience of the wheat supply chain and reducing loss and waste.

Sub-Component 2.1. Improving the resilience of the wheat supply chain and reducing loss and waste

This sub-component will finance the upgrading of Egypt's strategic wheat storage capacity to strengthen preparedness for and resilience to future market shocks and climate risks. The sub-component will contribute to food security by reducing loss and waste in the wheat supply chain, and by improving farmers' access to domestic grain markets. The sub-component will provide financing to the Egyptian Holding Company for Silos and Storage (EHCSS) to expand the network of modern, energy efficient silos[1] integrated with rail and river transportation system and strategically located in areas with substantial wheat production. The silos will be specially designed to be climate-resilient to maintain the quality of the grain.

The sub-component will be implemented under the auspices of the National Project of Silos, under which the government has set targets for establishing additional modern grain storage capacity of 1.5 million metric tons. The National Project of Silos envisions the establishment and expansion of 23 storage sites, according to priorities set by EHCSS, with an average storage capacity of 30,000 to 100,000 metric tons each. Ten of these sites are considered the priority. The component would finance the expansion or construction of up to 10 priority silos serving Qena, Assiut, Aswan, Al Wadi Al Jadid, Minya and Giza governorates. This would include the

[1] Use of solar energy and other renewable energy sources will be included in the design of silos.

construction of three new silos with a total capacity of 240,000 metric tons, and the expansion of seven silos with an additional capacity of 360,000 metric tons, thus adding a total of up to 600,000 metric tons of additional strategic storage capacity.

This modern grain collection and storage infrastructure would help ensure safe, wasteless and energy efficient storage of grain. Climate change could lead to an increase in insect pests, change in grain drying conditions, surge in fungal diseases in storage facilities due to variability of temperature. Investment in modern storage facilities with state-of-the-art temperature and disease control functions would reduce or eliminate potential impacts of climate change on grain storage and reduce losses and therefore GHG emissions. Integrated with rail and river transportation, the storage infrastructure would ensure more efficient procurement of wheat and other strategic grains domestically, thus improving farmers' access to markets. It will also increase the overall resilience of Egypt to withstand any future supply shocks.

The project will finance the design of silos, civil works, and equipment, including imported equipment and technology components required to assemble field-silos. Government counterpart co-financing is expected to finance local components and local civil works for the construction of silos and the project manager (supervisor) contract. The estimated counterpart co-financing will be around 50 percent. Implementation, including contracting for the design, construction, and supervision of activities, will be managed by EHCSS, which is mandated by its establishment decree to serve as the agency responsible for the management of strategic state-owned grain silos. Currently, EHCSS uses single responsibility turnkey contracts for design, supply, and installation of silos with experienced specialized firms.

The sub-component will increase the strategic wheat storage capacity by up to 600,000 metric tons. It will contribute to the reduction of the estimated current level of average storage loss in project silos from approximately 12 percent to 8 percent. The loss in all new facilities is expected to be even lower at around 1-2 percent. Newly built and/or expanded storage facilities will also be available for domestically procured wheat, thereby enabling farmers' access to markets, especially in nearby areas. The strategic location of storage facilities would ensure the integrity of the wheat supply chain, efficient access to transportation routes and it would also likely mitigate climate risks associated with wheat storage in remote locations.

The activities under this subcomponent include the expansion of seven existing silos and the construction of three new silos complexes. For each new silo complex, a site specific Environmental and Social Impact Assessment (ESIA) will be prepared, and for each expansion silo, a site specific Environmental and Social Management Plan (ESMP) will be prepared. The current Environmental and Social Management Plan (ESMP) focuses on the expansion of the existing Taramsa silo subproject. The subproject will not include rail or river transportation. Grain transportation to and from Taramsa silos rely on trucks.

1.3. Location of Taramsa Silo Complex

Taramsa Silo Complex is located near Al Taramsa village in Qena governorate on the western side of the Nile Valley. Taramsa Silo Complex covers an area of 20,000 m^2 and consists of 12 cells with a total capacity of 60,000 tons. It is equipped with the latest storage technology which includes inventory management and control system, steaming system and stock temperature control, firefighting system, and wireless system. Figure (1.1) shows the location of Tarama silo complex in Qena governorate, and table (1.1) shows the coordinates of the location.

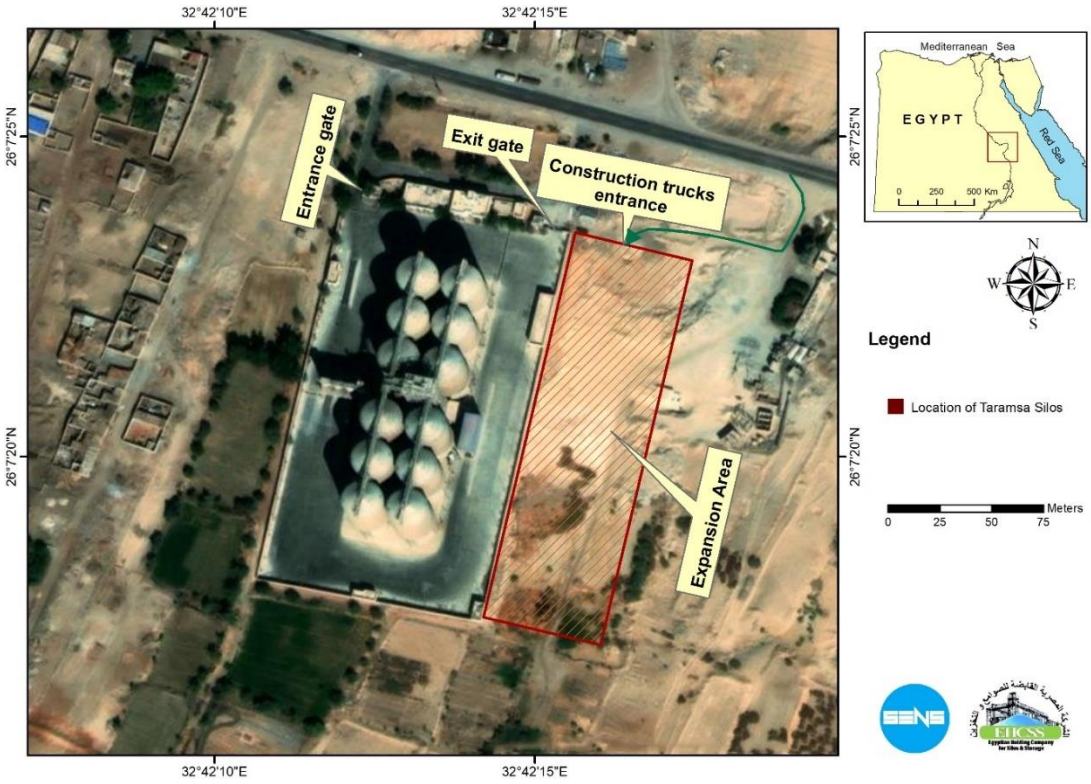

Figure (1.1): Map showing the location of Taramsa Silo Complex in Qena. The green line shows the access road to the construction trucks entrance.

Table (1.1): Coordinates of Taramsa Silo Complex.

Point ID	N	E
A	26°07'23.44"	32°42'15.53"
B	26°07'17.39"	32°42'14.13"
C	26°07'18.07"	32°42'10.6"
D	26°07'24.05"	32°42'12.08"

1.4. Objectives

The main objective of this ESMP is to provide a tool that will ensure an environmentally friendly operation of the proposed expansion silos for the Taramsa silo complexes. This ESMP implements appropriate environmental controls and monitoring procedures during all phases of the project. Site-specific environmental and social management protocols will be established to provide practical mechanisms to manage the impact of all activities and to ensure environmental responsibilities are implemented and documented. These are based upon international best practices, designed to effectively address local practices, EEAA requirements and environmental and social conditions, as well as the requirements of the funding organization (ESSs of the World Bank). The specific objectives of this ESMP are to:

- Assess the impacts, and provide measure to avoid, minimize and mitigate the impacts.
- Comply with the Egyptian national environmental and social legal requirements.
- Comply with the World Bank environmental and social policies, standards, and guidelines.
- Identify the practical technical and economically feasible measures needed to prevent, minimize, mitigate the adverse risks and impacts, and offset residual impacts.
- Identify potential opportunities to enhance the environmental and social benefits and sustainability throughout the project life.

2 PROJECT DESCRIPTION

2.1. Project Description

2.2.1 Current Silos Operations

This operation is for the current operation of the Silo, and it will be the same operation after the expansion of Taramsa Silo, there is no difference in operation before and after the expansion.

Receiving the Wheat:

- The car loaded with wheat enters the site (There is on site traffic management to arrange the loaded trucks entering the site, and there are different pathway and different waiting line for small scale farmers).
- A sample of the loaded wheat is taken by a neutral committee, and its degree of cleanliness and moisture content are determined using laboratory equipment.
- Accepted vehicles loaded with wheat are weighed on a truck scale and the gross weight of the vehicle is recorded.
- The car is unloaded at the wheat receiving station.
- The empty car is weighed on a truck scale, the empty weight of the car is recorded, and the quantity received is recorded.
- The quantity of wheat received in the silo is recorded in the designated records and the financial dues are paid to the supplier.
- The wheat is stored in the main storage cells.

Operation and Maintenance

- Operation and maintenance of equipment is carried out in accordance with maintenance programs and operating instructions issued by the relevant sectors on a periodic basis.
- Fumigation and pest control will be provided in Appendix I (Pest Management Plan PMP)

Wheat Dispensing Process:

- The stored wheat is withdrawn from the storage cells and placed in one of the drainage cells.
- The empty car enters the site.
- The empty car is weighed on a truck scale and the empty weight of the car is recorded.

- The vehicle loaded with wheat is weighed on a truck scale, the gross weight of the vehicle is recorded, and the quantity of wheat disbursed is recorded.
- The quantity of wheat dispensed from the silo is determined and recorded in the designated records.

2.2.2 Description of the implementation of the Taramsa Silo Expansion Project

A) The Current Situation

- The existing Silo was constructed and started working on 09/10/2012. EEAA approval No. 2318 was obtained and dated 03/07/2018.
- The main road in front of the existing Silo complex is Qena – Luxor Road. It is a major highway connecting Sohag and Qena governorates in Upper Egypt. It is paved road with two lanes in each direction (figure 1.1. which shows the location of the Silo complex; there is one gate for entrance the existing Silo, and one gate for exit, it also shows the access roads to and from the Silo complex. A diagram is provided in the next section, and site photos were provided in appendix V).
- The area in front of silos includes access roads for grain trucks entering and exiting the silos and parking areas for grain trucks.
- Administrative offices related to silo operations.
- There is a system in the silos that collects dust, and emissions produced during the loading and uploading of grains to and from the silos.
- The water source for the existing facilities in the current Silo is the public water network, the average monthly consumption of water is from 70 to 140 $m^{3.}$
- Wastewater is collected in a specific tank with a capacity of 200 cubic meters, and a sewage trench truck drains the tank (on average 7 times a year), which is then disposed into the public sewage network.
- 12 main storage cells with a conical concrete bottom with the following specifications: -
    - ✓ Storage capacity (5) thousand tons.
    - ✓ Diameter 18.1 metres.
    - ✓ Height 26.8 metres.
- (4) lifters for handling wheat and transporting it in a vertical direction.
- A number of chain belts for handling wheat and transporting it in a horizontal direction.
- Pit hole Receive.
- Rotating magnet.
- Truck scale.
- Machinery tower.

- Dust extraction system consisting of (3) filters.
- Reciprocating sieve.
- Electronic scales.
- Fixed magnet.
- Auxiliary systems (fire extinguishing - fire alarm - aircraft warning - wireless and communications)
- Administrative and service buildings.

B) Expansion Project:

- Implementation of (6) main storage cells with a conical concrete bottom, including the following (details are provided in Figure 2.1): -
  - ✓ Excavation works (21m cell diameter and 5 m deep excavation depth for each cell).
  - ✓ Concrete works in accordance with the nature of the soil contained in the soil investigations report and the site's calculation notes.
  - ✓ The cell sheets are imported and supplied on site (cell sheets consists of sheets, stiffeners, roof beams, roof sheets, bolts, nuts, and washers), assembled in different thicknesses, and installed on the concrete base (The cell sheets are parts of the Silos that built outside the site for Silos expansion, and then imported and collected in the site to build the Silos).
  - ✓ The width cell is 21 meters.
- The List of equipment that will be used during the construction work of the Silos expansion include the following: (Loaders, Excavators, Cranes, Welding machines. Concrete mixing trucks, Concrete pumping trucks, and manual equipment). The equipment that will be used for demolishing includes the following: Excavator for demolishing, Bulldozer for collecting and loading rubble into a truck, truck to move the rubble to landfills.
- The list of chemicals includes a) Phostoxin for fumigation during grain storage, b) Cement for structural works during the construction phase, c) Bitumen applied for waterproofing and sealing purposes during construction, d) Paints for coating and protecting surfaces during construction and maintenance, and e) Oil and Lubricants essential for machinery and equipment maintenance during construction and operation phases.
- Importing track belt parts and components, supplying them on site, assembling and installing them.
- The Access Road for the expansion will be from the northern side of the Silo (check Figure 1.1).

- The access road that will be used during the construction is planned so as not to disturb existing traffic. This road has been located to avoid disturbing existing silo traffic. Local non-silo traffic uses the main paved roads in the surrounding area.
- Supplying walkers and belt supports and installing them on site.
- Implementation of regular concrete slabs in the general site, as well as reinforced concrete slabs in the trailer path. Figure (2.1) shows the expansion project of Taramsa Silos.
- New electrical rooms will be built, ensuring a smooth transition of the power supply from the old rooms to the new ones without disruptions. The new rooms will be connected to the power network while maintaining temporary links to the old rooms. Once the new system is fully operational, the power supply will be efficiently switched over, allowing the removal of the old rooms with minimal downtime, limiting any interruption to silo operations to just one day.
- The control room will remain in the same place, the control panel will be expanded inside the room only. It is difficult to remove the computers from the control room because they are two devices, one of them controls the silo equipment via SCADA (the same function as the control panel), and the second device measures the grain temperatures inside the cells and based on this measurement the ventilation fans for the cells are operated, so the two devices must be present inside the control room for the operator to use them.

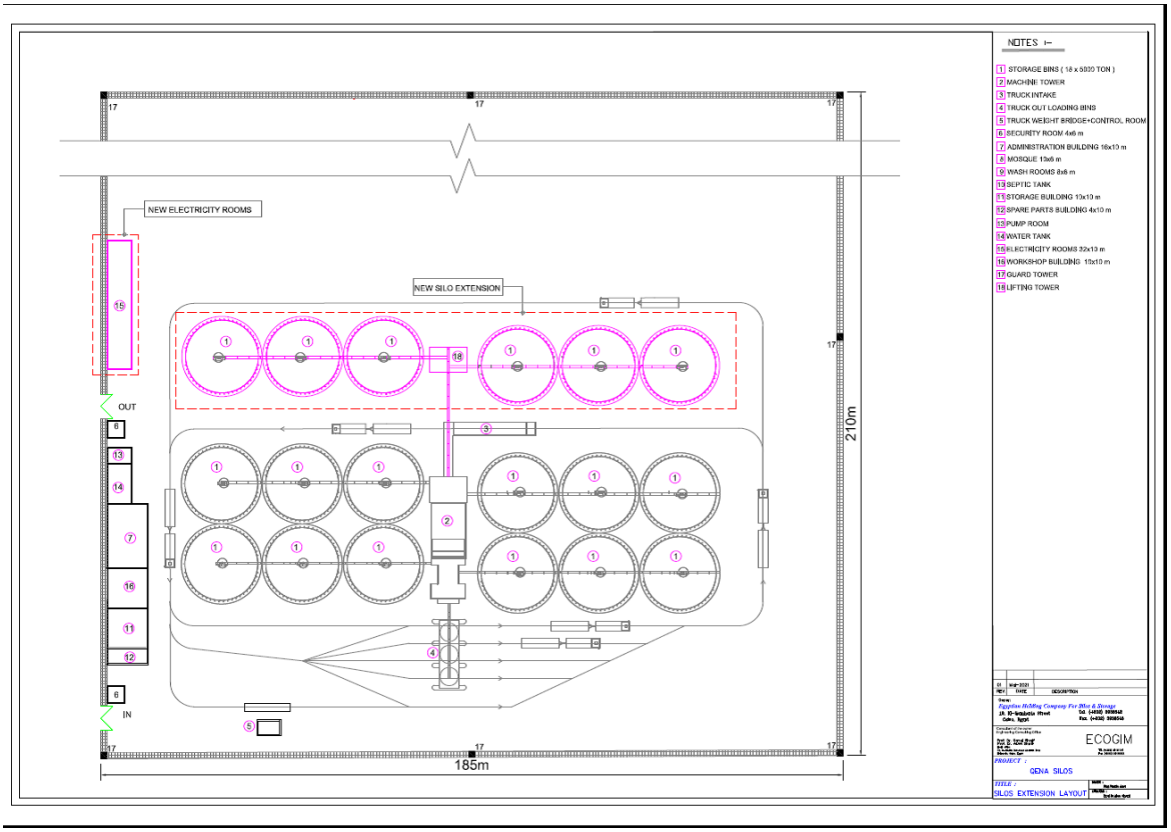

Figure (2.1): showing the expansion project of Taramsa Silos.

2.2. Construction Phase

- The timeframe/timetable is provided in appendix (V.1)
- The list of equipment was provided in the previous section.
- The required resources and quantities including raw materials, water and electricity will be assigned by the contractor.
- The raw materials needed include the following: (Steel 404 tons, Cement 832 tons
- Gravel 1900 m^3, Sand 950 m^3, and Water 356 m^3)
- The water source for the existing silo is the public water network and will be used during construction work
- The raw materials will be obtained by primary suppliers, and it will be transported to the site by the contractor using trucks through the supplier, and it will be covered. The contractor will ensure that primary suppliers do not use child labor or forced labor and have OHS procedures in place.

- The number of manpower/workers and their type during the construction phase include the following:
  - ✓ Contract workers are used through (3) manufacturing contractors throughout the year during the project implementation period, as follows: -
  - ✓ 15 workers (carpenters - blacksmith) for civil works since the beginning of the project implementation.
  - ✓ 10 workers for public works since the beginning of the project implementation.
  - ✓ 60 electromechanical workers during electromechanical installations for a period of five months at the end of the project implementation period.
- The contractor will provide temporary offices (caravans) in the site, and the accommodation for the workers will be in rented apartments in the city of Qena which meet the standard criteria and in line with the IFC and the EBRD, (2009).

Accommodation standards that must be followed for project workers (IFC/EBRD, 2009):

It is generally not desirable for employers to provide housing for their workers directly and employers should use alternatives where possible. If there are no alternatives, specific attention should be paid to rental arrangements, workers' rights and housing standards. In addition, the possibility of worker-occupants acquiring, for a fair price, ownership of housing provided by the employer should also be examined. Renting arrangements should be fair. Adequate and decent housing should not cost the worker more than a reasonable proportion of their income and should never include a speculative profit. The employer should be entitled to repossess the accommodation within a reasonable time in the event of termination of the worker's contract of employment and the worker should be entitled to a reasonable period of continued occupancy and/or fair compensation when he ceases to exercise his employment. During the time workers spend in the workers' accommodation they should enjoy their fundamental human rights and freedom of association in particular. Workers' accommodation arrangements should not restrict workers' rights and freedoms.

- Housing standards should include special attention to the following:
  - minimum space allocated per person or per family (floor area; cubic volume; or size and number of rooms)
  - supply of safe water in the workers' dwelling in such quantities as to provide for all personal and household uses
  - adequate sewage and garbage disposal systems
  - appropriate protection against heat, cold, damp, noise, fire, and disease-carrying animals, and, in particular, insects
  - adequate sanitary and washing facilities, ventilation, cooking and storage facilities and natural and artificial lighting

- a minimum degree of privacy both between individual persons within the household and for the members of the household against undue disturbance by external factors
- the suitable separation of rooms devoted to living purposes from quarters for animals.

- Where accommodations are provided for single workers or workers separated from their families, additional housing standards should be considered:
  - a separate bed for each worker
  - separate gender accommodation
  - adequate sanitary conveniences
  - common dining rooms, canteens, rest and recreation rooms and health facilities, where not otherwise available in the community.

- The following guidelines shall be used for stand-alone dormitories:
  - If the dormitory does not provide a separate space for cupboards/locker rooms, the minimum room space shall be 4 square metres per person (assuming a height of 2.4m).
  - If the dormitory provides a separate space for cupboards/locker rooms, the minimum room space shall be 3 square metres per person (assuming a height of 2.4m).
  - The room shall be adequately ventilated and lit.
  - Adequate number of toilets and sanitary fittings shall be provided (1 toilet, 1 hand wash basin, 1 urinal and 1 bathroom with bench per 15 male workers).

- Most of workers will come from Qena, and they will not need accommodation, others (minor) will come from outside Qena, and they will need accommodation (in rented apartments as mentioned). The percentage of workers coming from outside of Qena is less than 5%. As mentioned in the previous point the number of workers coming from outside of Qena is very limited, therefore there will be available spaces in the accommodation for them. One to two persons per room of 16m^2 surface area.
- The construction workers will use the existing restrooms that already exist in the current Silo.
- The temporary offices/caravans during the construction work can also include temporary toilets the workers could use to minimize interactions with silo users and to avoid disturbing silo operations. The toilets can drain in the existing septic tank.
- The water source for the existing facilities in the current Silo is the public water network and will be used during construction work
- The recruitment process of workers will be assigned by the contractor according to the Egyptian law which regulate these issues.
- Description of access roads was provided in the previous section.

A) Mobilization Phase

The mobilization phase involves the following activities:

- *Site preparation:* This includes clearing the site of vegetation and debris (if there are any vegetation in the site), levelling or flattening the ground.
- *Establishment of construction facilities:* This includes building temporary offices, storage facilities, and workshops. The description of the temporary offices and accommodations was provided in the previous section.
- The construction workers will use the facilities (including restrooms) which already exist in the current Silo.
- *Mobilization of equipment and personnel*: This includes bringing all necessary construction equipment and personnel to the site.

B) Construction Phase

The construction phase of Taramsa Silos will include the following:

- *Construction of the silo expansion*: This includes the excavation of the foundation, the construction of the silo foundation and walls, and the installation of the silo roof. The excavated zone will be a circle with 21m diameter, and the depth will be 5m, and the height of the Silo will be 35m.
- Demolition activities for the electricity room.
- *Installation of silo equipment:* This includes the installation of the silo conveyor system, the silo loading and unloading equipment, and the silo dust collection system.
- There will be no need for the construction of any additional facilities.
- Welding work will be used for gathering the Silos cell sheets which imported to the site with metal skeleton in the construction site.
- Emergency generator will be used during the construction phase (by the contractor), and during operation phase (by EHCSS). During the operation phase, the generator will start during power cuts from the public electricity network as back up.
- Regarding the maintenance, it is acknowledged that all project phases, including the construction phase, will involve maintenance activities. These activities can have significant environmental impacts due to the generation of hazardous wastes, such as used oils, and industrial solvents. The ESMP includes mitigation measures for generation of hazardous wastes in all phases.
- Regarding the land Ownership and previous use, the land allocated for the expansion of the Taramsa Silos is owned by the Egyptian Holding Company for Silos and Storage (EHCSS), under the jurisdiction of the Ministry of Supply and Internal Trade. The ownership was officially transferred through a Presidential Decree No. 113 of 2022, which designated this state-owned land for silo

construction purposes. Prior to the allocation, the land was not utilized for formal or informal purposes. Historical imagery and records have been reviewed to verify the absence of past ownership or land use activities on the site. The review confirmed no evidence of previous formal or informal land use, encroachment, or ownership disputes. The site has been unoccupied and free of agricultural, residential, or commercial activities. The decree to allocate the land near the Taramsa Silo (for the expansion) can be found in appendix (V) figures (V7, and V8).

- The existing transformer has a capacity of 150% of the current site loads. The contractor will calculate the loads for the additional equipment. If the transformer capacity is exceeded, a new one will be supplied in the new electrical rooms, and the electricity distribution company will connect a new feed to the new transformer.

C) Construction demobilization Phase

The demobilization phase involves the following activities:

- *Removal of construction facilities:* this includes the removal of all temporary offices, storage facilities, and workshops. The removed construction offices will be collected by the contractor to be transferred to other work sites.
- *Site cleanup*: this includes the removal of all construction debris and the restoration of the site to its original condition; any collected solid waste will be disposed in specific sites for solid waste collection in coordination with the governorate of Qena as mentioned in previous sections.

Regarding the start-up period, a dry test will be scheduled in which the contractor will test the equipment without load, meaning that it has no grains inside it, but he check if it is working or not, and then there will be equipment flushing, in which they apply a small amount of grains to clean the paths from the remaining components, and then the next stage will be full capacity tests in which they check that all the equipment meets the contractual capacity. The last step will be the commissioning tests, which the contractor will conduct in the presence of the owner to hand over the equipment. The start-up period takes from one month to two months or maybe longer if the contractor faced any technical problems in the equipment during the start-up.

2.3. Operation Phase

The operation phase involves the following activities:

A) Receiving the Wheat

- The car loaded with wheat enters the site.
- A sample of the loaded wheat is taken by a neutral committee, and its degree of cleanliness and moisture content are determined using laboratory equipment.

- Accepted vehicles loaded with wheat are weighed on a truck scale and the gross weight of the vehicle is recorded.
- The car is unloaded at the wheat receiving station.
- The empty car is weighed on a truck scale, the empty weight of the car is recorded, and the quantity received is recorded.
- The quantity of wheat received in the silo is recorded in the designated records and the financial dues are paid to the supplier.
- The wheat is stored in the main storage cells.

B) Operation and Maintenance

- Operation and maintenance of equipment is carried out in accordance with maintenance programs and operating instructions issued by the relevant sectors on a periodic basis.
- ***Silo operation*:** This includes the loading, unloading, and storage of grain in the silo.
- The process of handling grains in a silo involves three main stages: loading, storage, and unloading: a) Loading begins with receiving the grains, followed by transporting them to the silo using conveyors, b) During storage, regular aeration and inspections ensure the grains remain in good condition, c) For unloading, grains are discharged using gravity or mechanical systems, controlled to maintain a consistent flow, and then conveyed to transportation vehicles.
- During the operation of the Taramsa Silo sub-project, pesticides which will be used for fumigation such as Phostoxin tablets, will be delivered to and stored on site. Although pesticides can be beneficial, they also be hazardous if used mishandled or improperly stored. Therefore, they will be managed according to guidelines established in coordination with the governorate to ensure no harm to the Environment.
- Pesticides will be brought to the site transported from the main warehouse of EHCSS, and are consumed before their expiration date, and have no waste because they are tablets that evaporate into a gas that leaves no remains. Its containers remain tight so that no gas leakage from them. Phostoxin tablets will be used in the Silo (3 to 4 tablets per ton).
- Phostoxin, a gaseous insecticide composed of aluminium phosphide and ammonium carbamate with paraffin as a carrier. It is used in fumigating wheat, barley, and sorghum grains. It is effective against insect pests such as grain beetles, grain borers, and flour moths. The tablets release phosphine gas when exposed to atmospheric moisture, which permeates the grain mass and eradicates insects at all life stages. During silo filling, tablets are introduced through feeding tube openings, preferably with an automatic distribution device.

- The Phostoxin tablets are consumed before expiration, leaving no waste as they evaporate completely. Their containers are designed to prevent gas leakage, and continuous monitoring is in place to ensure this safety measure is in place. Phosphine gas, once released, degrades into harmless byproducts over time, reducing environmental impact. Fumigation is both a preventive and curative measure, eliminating any existing insects or larvae within the grain. There is a sieving unit that removes any remains (i.e. dead insects/pests) based on the size of the grains and separates the grains from the dead pests during the fumigation process.
- ***Fumigation:*** Nearly one-third of the total grain harvested worldwide is lost before consumption or sale. Reducing the amount of grain lost after harvest and before use is an important strategy to achieve global food and nutrition security. Chemical pesticides and fumigants are used to protect stored grain. Fumigating in unsealed silos has been cited as a main cause for fumigation failure and the emergence of insect resistance. A sealed structure keeps the fumigant within the grain mass long enough and at sufficient concentrations to achieve a complete kill of all insects at all life stages.
- Precautions are implemented to protect workers from inhaling phosphine gas. These include the use of phosphine and other fumigant gas detectors to ensure safe concentration levels. These detectors provide continuous monitoring to maintain safe working conditions. In the event of maintenance within the silos, the phosphine atmosphere is replaced with breathable air to ensure worker safety. Additionally, more details regarding the pesticides, more safety requirements for handling Phostoxin, and PPE required for working with Phostoxin are provided in Appendix (I) Pest Management Plan (PMP).
- ***Silo maintenance*****:** This includes the regular inspection and repair of the silo and its equipment.
- Regarding maintenance, as the Taramsa Silos is an existing operation undergoing capacity expansion, there are already established procedures and experience in managing maintenance wastes. These procedures ensure the safe handling, storage, and disposal of hazardous materials in compliance with environmental regulations. This is ensured by the presence of an operation and maintenance department composed of mechanical and electrical technicians and engineers who are familiar with managing maintenance wastes (see appendix V2 for operation team structure). Additionally, all chemicals or hazardous materials that will be used during the construction phase or operation phase will be collected by registered vendors.

C) Wheat Dispensing Process

- The stored wheat is withdrawn from the storage cells and placed in one of the drainage cells.
- The empty car enters the site.

- The empty car is weighed on a truck scale and the empty weight of the car is recorded.
- The vehicle loaded with wheat is weighed on a truck scale, the gross weight of the vehicle is recorded, and the quantity of wheat disbursed is recorded.
- The quantity of wheat dispensed from the silo is determined and recorded in the designated records.

- The number of manpower/workers and their type (during operational phase) is provided in appendix (V.2). The number of working hours/day and holidays will be assigned according to the Egyptian law which regulate these issues and conform to WB ESS2 on Labor and Working Conditions (and any associated international requirements, for example ILO requirements).
- The number of workers during the operation phase will remain the same after the expansion.

2.4. End of life site closure and site rehabilitation

Decommissioning refers to the administrative and technical actions taken to remove some or all of the regulatory controls from an authorized facility so that a site can be reused. This process involves:

- Planning
- Physical and radiological characterisation
- Facility and site contamination
- Dismantling
- Materials management

Planning and implementing decommissioning activities are part of a complex and multi-disciplinary process that requires timely and effective management. EHCSS will develop a site decommissioning plan with enough time prior to scheduled decommissioning to allow adequate detailed planning. There may be various environmental, social and OHS risks associated with the decommissioning process, including collection and proper management of hazardous and non-hazardous wastes on the site (including any structural or equipment wastes associated with plant operations); worker safety; worker recruitment; presence of heavy equipment (including trucks) that generate air emissions, noise and vibrations; exacerbation of local traffic.

End of life use of the site will determine the level of activity required during this phase. Stakeholder consultation must be implemented with respect to the proposed site closure plan.

Generally, the service life of a steel grain silo is 25 years while of a concrete silo is 50 years. When the service life of steel grain silo is reached, the original silo body could be replaced with a new one and continue to use it. In addition to inspection and maintenance of the equipment and devices used, and renewal of what is necessary of it to ensure that the

silo continues to operate with high efficiency. Regarding to the facilities at the Silos sites, it will be renovated to be used for longer time. In the case of closure, the site closure plan will be developed during operation before closure.

2.5. Expected emissions and waste during the expansion subproject phases

A) Mobilization and Construction Phase emissions:

Air emissions: Dust from excavation, transportation, and materials handling.
Vehicle emissions: Exhaust fumes from construction vehicles and equipment.

Noise pollution: Noise from construction activities and machineries can disrupt surrounding communities.

Solid waste: Construction debris, packaging materials, and leftover building materials.
Excavation will be carried out at the beginning of the construction phase of the Silo expansion. Excavated materials will be removed and deposited offsite. The estimated volumes will be determined by the contractor during the excavation process, according to the following equation:

If the diameter of one cell is 21m and the depth is 5m we can calculate the volume of excavations for each cell.

V= surface area x height.

Surface area= π r^2= πx 10.5^2=346.36m^2

V= 346.36 m^2(surface area) x 5 m (depth)=1731.8 m^3 = 611 ton of excavation per cell.

6 cells x 1731.8m^3= 10,390.8 m^3 = 3669.75 ton (total excavated material).

- The location of the disposal sites/landfills will be decided as per the guidance from the governorate of Qena and in coordination with the relevant authority and based on the principle minimizing environmental impacts and will take into consideration the volume of excavation and distance of disposal area/landfill from the project site. Solid waste management must be managed in compliance with World Bank and other applicable international standards, as well as Egyptian legal and regulatory requirements.

Hazardous wastes: Construction chemicals such as cement, lubrication oil fuel etc. Chemicals or hazardous materials that will be used during the construction phase will be used for maintenance which will be performed periodically on construction vehicles, but it should be done off-site at service centers. If it has to be done on-site, there will be procedures that must be followed to not pollute the surrounding environment that suit with environmental standards such as maintaining operational records and performing regular lubrication on concrete base in order to not pollute the soil. Fuels will be stored at the site in secondary containment on insulated ground (concrete base) but there are some regulations for storage as Fuel is highly hazardous and combustible, so it is important to store and handle it carefully to avoid damage to the surrounding environment. The

contractor will follow the relevant legislation to ensure safe storage of fuels and will handle and store and dispose of the chemicals according to its safety data sheet (SDS).

All chemicals or hazardous materials that will be used during the construction phase or operation phase will be collected by registered vendors and disposed in the locations assigned by the governorate for disposing chemicals or hazardous materials. The names of the registered vendors include the following (Nahdet Misr for Modern Environmental Services, Egyptian Company for Environmental Services, and Al Arabiya Center for the Safe Disposal of Hazardous and Non-Hazardous Waste).

B) Operational Phase Emissions:

Air emissions: Minimal dust emissions are expected during operation. However, grain loading/unloading activities might generate dust. Regarding air emissions, there is a system in the silos that collects dust, and emissions produced during the loading and uploading of grains to and from the silos. Dust measurement is the process of determining the concentration of dust particles in the air within a silo. This can be done using various techniques, such as optical dust sensors, particle counters, and gravimetric methods. These methods can provide accurate and reliable measurements of dust concentration, which can be used to monitor the health of the silo and identify potential issues before they become serious problems.

Solid waste: during the operation phase, solid waste will be generated including domestic waste such as food and general waste, and office waste including paper, cardboard, and printer cartridges/ribbons. All effluent and other waste generated during the operation shall be properly managed and disposed of without adverse effects on people's health and the environment. Solid waste will be collected and disposed of in specific sites for solid waste collection as per the guidance from the governorate of Qena and based on the principle minimizing environmental impacts such as proximity to communities, and distance from the project site.

Domestic sewage from silos workers. Wastewater is collected in a specific tank with a capacity of 200 cubic meters, and a sewage trench truck drains the tank (on average 7 times a year), which is then disposed into the public sewage network. This Silo's expansion will not lead to an increase in wastewater discharge. There will be no negative impacts on this operation because there will be no increase in wastewater production after the expansion of Silo, and consequently there will be no problems for the local sewage treatment regarding the current treatment capacity. Wastewater that will be generated by the sub-project is due to such activities as facilities cleaning as well as domestic activities. The amount of wastewater will remain the same after project implementation. No direct discharge shall be made into the environment.

The use of water will not increase in expanded silos operations since they do not require water in storage process.

Hazardous wastes such as rodenticides and pesticides will be used for fumigation (Phostoxin tablets:3 to 4 tablets per ton.) during the operation of the Taramsa Silo sub-project. Although

pesticides can be useful, they also can be dangerous if used carelessly or are not stored properly. Pesticides will be stored, used, and disposed of in a proper way according to their SDSs (in coordination with the governorate) that do not cause any harm to the Environment. Rodenticides and dead rodents from the use of rodenticides should be removed straightaway and treated as hazardous waste to avoid secondary poisoning from non-targeted species. A pest management plan is present in annex I for pesticides and rodenticides management. Related precautions will be considered during the storing of Rodenticides with Phostoxin. Rodenticides will be selected to be non-acidic and not water based.

During the operation of the Taramsa Silo sub-project, pesticides which will be used for fumigation will be delivered to and stored at the site. They will be stored, used, and, as necessary, disposed of in a proper way (in coordination with the governorate) that do not cause any harm to the Environment.

Pesticides will be brought to the site transported from the main warehouse of EHCSS, and are consumed before their expiration date, and have no waste because they are tablets that evaporate into a gas that leaves no remains. Its containers remain tight so that no gas leakage from them. Phostoxin tablets will be used in the Silo (3 to 4 tablets per ton).

Phostoxin is a gaseous insecticide consisting of Aluminum phosphide and ammonium carbamate in addition to paraffin as a carrier substance. It is used in fumigating wheat, barley, and sorghum grains, warehouses, grain silos, ships, and railway cars to protect them from insect pests such as (grain beetle, grain borers, grain and flour moths, mites, and wax worms). In the case of filling silos with grains, the tablets are received through the openings of the feeding tubes during filling, preferably an automatic distribution device.

All chemicals or hazardous materials that will be used during the construction phase or operation phase will be collected by registered vendors and disposed in the locations assigned by the governorate for disposing chemicals or hazardous materials. The names of the registered vendors include the following (Nahdet Misr for Modern Environmental Services, Egyptian Company for Environmental Services, and Al Arabiya Center for the Safe Disposal of Hazardous and Non-Hazardous Waste).

3 POLICY, LEGAL AND ADMINSTRATIVE FRAMEWORK

3.1. Regulatory and Policy Framework at the National Level

3.1.1 Egyptian Environmental Institutional Framework

Egyptian Environmental Affairs Agency (EEAA)

The EEAA is an authorized state body regulating environmental management issues. The Egyptian laws identify three main roles of EEAA:

- A regulatory and coordinating role in most activities, as well as an executive role restricted to the management of natural protectorates and pilot projects.
- The responsibility of formulating the environmental management (EM) policy framework, setting the required action plans to protect the environment and follow their execution in coordination with Competent Administrative Authorities (CAAs).
- The responsibility of EEAA in reviewing and approving the ESIA studies for new projects/expansions undertaken as well as monitoring the implementation of the ESMP.

Competent Administrative Authorities (CAAs)

The Competent Administrative Authorities (CAAs) are the entities responsible for issuing licenses for project construction and operation. The CAA for this project is Egyptian Holding Company for Silos and Storage (EHCSS). The Egyptian Holding Company for Silos & Storage was constructed by a decision of the Prime Minister No. 1682 of 2002 in accordance with the provisions of the public business sector companions' No.203 of 1991. There is a representative of the PMU for Environmental and Social Affairs at EHCSS, they depend on outsourcing, in which they assign consulting offices the required projects and they follow up the implementation of the required tasks.

3.1.2 Egyptian Environmental and Social Regulatory Context

This section lists those legislations that are directly related to environmental and social compliance that must be adhered to by all parties involved in the Project throughout the planning and construction, operation, and decommissioning phase. These legislations include: (i) those issued by EEAA (laws, regulations, and instruction), and (ii) the relevant national legislations issued by other line ministries (laws, regulations, instructions, standards).

The table below lists the key relevant legislation and regulator/entity relevant to each of the environmental and social parameters being studied and assessed within this ESMP.

Throughout the following Chapters, reference to the requirements set out within those legislations is provided under each relevant parameter.

Table (3.1): Legislation and guidelines governing E&S compliance for the project during all phases.

Legislation	Relevant Article and Requirements
Land Use	
Law No. 116 of 1983 Amending some provisions of the Agriculture Law promulgated by Law No. 53 of 1966	*Article 150* • It is prohibited to hollow out agricultural land or to transport soil for use in purposes other than agriculture. • In this case, the means of transportation, machinery, and equipment used in transporting the dust resulting from dredging shall be seized by the administrative route, and these seizures shall be deposited in the place specified by the competent administrative authority. • In applying the provisions of this law, razing it is considered the removal of any part of the surface layer of agricultural land. It is permissible to razing agricultural land and transferring soil from it for the purposes of improving it agriculturally or preserving its fertility. This shall be determined by the Minister of Agriculture by a decision from him in accordance with agricultural custom.
	Article 152 • It is prohibited to construct any buildings or facilities on agricultural land, or to take any measures in the matter of dividing the lands to erect buildings on them. • It is considered as agricultural land, the arable land within the agricultural area. Excluded from this prohibition are: A. The land located within the scope of the approved cities until 1/12/1981, with no consideration of any modifications to the space as of this date except by a decision of the Council of Ministers. B. The lands included in the urban area of the villages, which shall be determined by a decision of the Minister of Agriculture in agreement with the Minister of Construction. C. The lands on which the government establishes projects of public benefit, subject to the approval of the Minister of Agriculture. D. Lands on which projects serving agricultural or animal production are established, which are determined by a decision of the Minister of Agriculture. E. The lands located in the control of the villages on which the owner establishes his own residence or a building that serves his land, within the limits to be issued by a decision of the Minister of Agriculture.
Unified Building Law No. 119 of year 2008	*Article 39* Apply and receive the construction permit before the start of the implementation. Ensure that all designs abide by the building codes of Egypt
Management of solid waste and hazardous waste generated from the facility	

Table (3.1): Legislation and guidelines governing E&S compliance for the project during all phases.

Law 4/1994 amended by Law 9/2009 and ER 1095/2011 amended by Decree 710/2012)	*Articles 28, 29, 33, 37, 39* • Identification: Using the HW lists issued by the competent authority. • Minimization: strive to reduce quantitatively and qualitatively the generation of the HW. • Segregation: HW is to be separated from other types of non-hazardous waste. In addition, the different types of HW must not be mixed. • On site Storage: HW is to be stored in a designated area, and containers must be made of suitable materials and be properly sealed to avoid any leakages or spills into the surroundings. • Off-site transportation: HW is to be submitted to authorized HW contractors. • Obtaining a license from the competent authority to handle Hazardous waste
	Article 39 and Article 41 of the Executive Regulations • Article 39: The establishment should maintain the cleanliness of garbage bins and vehicles. Garbage collection bins shall be tightly covered, and waste shall be transported at suitable intervals. • Article 41: The establishment shall undertake necessary precautions to secure the safe storage and transportation of waste. These precautions include the following: – Construction waste storage is to be carried out at site such that it does not obstruct movement of vehicles and personnel. – waste subject to emission should be covered to avoid air pollution. – waste is to be submitted to authorized waste contractors
Environmental register	
Law 4/1994 and its modifications in 2009	*Article 22 and Article 23* • Article 22: The official responsible for managing the establishment, according to provisions of this law, shall keep a written record of the impact of his establishment on the environment (Environmental Record). The Executive Regulation shall include a template of the required record and timetable to be kept by the establishments and the data to be entered therein. The EEAA shall follow up these records to ensure their genuineness, take necessary samples and conduct appropriate tests to determine the impact of the establishment activities on the environment and the extent of its compliance with environmental protection standards or the pollutants loads. • If it is transpired that the establishment is not keeping an environmental record, not updating data regularly or is not genuine, or that the establishment is not complying with the standards or loads or violating any provision of this Article, the EEAA shall notify the competent administrative authority to demand the establishment's proprietor to rectify such violation promptly. If he fails to comply within 60 days from the date of his tasking, The Egyptian Environmental Affairs Agency EEAA shall be entitled after notifying the competent administrative authority to taking any of the following measures:

Table (3.1): Legislation and guidelines governing E&S compliance for the project during all phases.

	– Granting the establishment fixed additional grace period to rectify violations; otherwise, the EEAA shall have the right to proceed with rectification at the expense of the violating establishment. – Halting the violating activity, till the removal of violation traces, without detriment to its workers' wages. In case of grave environmental hazard, the sources of the hazard should be stopped by all necessary means and measures. • Article 23: Expansions and renovations of existing establishments shall be subject to the same provisions set forth in Articles 19, 20, 21 and 22 of this Law.
	Article 17 • The agency shall, in collaboration with the Ministry of Finance, establish a system of incentives that the Agency and the competent administrative departments can present to other agencies, establishments, individuals and others for their environmental protection activities or projects.
Regulates air and noise emissions	
Law 4/1994 and its modifications in 2009	*Article 42 and Article 43* • Article 42: All entities and individuals shall be committed, when carrying out production, service, or other activities, particularly operating machinery and equipment or using sirens and loudspeakers, to keeping the volume below the sound level permissible. • Licensing authorities shall ensure that the total amount of noise produced by fixed and mobile sources in one area shall be within the permissible levels and that the establishment selects the appropriate machinery and equipment. • The Executive Regulation of this law shall define the permissible levels of noise and periods of exposure thereto. • Article 43: The owner of an establishment is held to take all precautions and procedures necessary to prevent the leakage or emission of air pollutants inside the work premises except within the permissible limits as defined by the executive regulations of this Law, whether they result from the nature of the establishment activities or from malfunctioning equipment. He has to provide the necessary protective measures for workers in accordance with the conditions of occupational safety and health, including choosing the appropriate machinery, equipment, material and fuel, taking into account the period of exposure to these pollutants. He must also ensure adequate ventilation and install chimneys and other air purification devices.
Control of the wastewater discharge	
Ministerial Decree 44/2000, Decree of Law 93/1962 (industrial wastewater disposal)	*Article 14* • The law prohibits the disposal of domestic, industrial, and commercial wastewater, treated or untreated, in public drainage system without obtaining a prior approval. • Article 14 of the executive regulations set the parameters required regarding the quality of the wastewater discharged to the public sewage network.

Table (3.1): Legislation and guidelines governing E&S compliance for the project during all phases.

	• The owner of the project should abide by the limits stated in article 14 of the Executive regulations of Law 93/1962.
Biodiversity	
Law 4 of 1994	*Article 28, as amended by Law 9 of 2009. Annex 4 of the Executive Regulations of law 4/1994, amended by Prime Minister Decree 1095 of 2011* • Defines fauna and flora which are forbidden to be hunted or disturbed. • Ensure that no species are being disturbed and implement all mitigation measures needed to reduce the impact on any fauna and flora in the vicinity of the project.
Archaeology and cultural heritage	
Law 117/1983	*Article 20* • States that license of construction in archaeological sites or land is not permitted. It is prohibited to make any installation or landfill or digging channels, construct roads, agricultural land or for public benefits in the archaeological sites or land within its approved border lines. • The Article additionally, states that a buffer zone around the monument or the site is defined as three kilometres in the uninhabited areas, or any distance determined by the Supreme Council of Antiquities (SCA) to achieve environmental protection of the other parts of the monument in the surroundings (article 20-Ch.1).
Occupational health and safety	
Law 4/1994	*Articles 43 – 45 of Law 4/1994 address air quality, noise, heat stress, and the provision of protective measures to workers.* • The owner of the project should abide by the limits stated in Annex 7 of the Executive regulations. • In case the limits are exceeded, special protective equipment should be made available (earmuffs, masks…) • In case the limits are exceeded, the workers should have rests as specified by the limits (especially for noise and vibration from electric jack hammers or any other ramming equipment) • Conduct regular medical check-ups for workers that are facing noise, vibration or heat stress exceeding the limits
	Articles 80-87 • Regulates working hours and rest times for workers. • The working hours shall include a period of one or more meals and rest not less than one hour in total and the period shall not exceed five consecutive hours. The competent minister may, by a decision, determine the cases or works which are imperative for technical reasons or operating conditions. • Work hours and rest periods should be organized so that the period between the beginning and the end of working hours does not exceed ten hours per day.

Table (3.1): Legislation and guidelines governing E&S compliance for the project during all phases.

	• Work shall be organized at the facility so that each worker shall receive a weekly rest of not less than 24 hours after six working days at most. In all cases, weekly rest shall be paid.
Law 12/2003 on Labour and Workforce Safety and Book V on Occupational Safety and Health (OSH) and assurance of the adequacy of the working environment	*Minister of Labour Decree 48/1967, Minister of Labour Decree 55/1983. Minister of Industry Decree 91/1985, Minister of Labour Decree 116/1991.* • The owner of the project is bound with the provision of protective equipment to workers and firefighting/emergency response plans. Moreover, the following laws and decrees should be considered "decree of the minister of labour and manpower number 211/2003". • The contractors should have appropriate number of first aid kits in relation to the size of the site and the number of workers on site
	Ensuring Labour Environment Security • Article 208: The establishment and its branches shall provide the means of vocational safety and health and ensuring labour environment security in places of work by which to, ensure protection from physical, risks resulting in particular from the following: (A) Severity and intensity of heat and chilliness. (B) Noise and vibrations. (C) Lighting. (D) Harmful and dangerous radiation. (E) Atmospheric pressure changes. (F) Static and dynamic elasticity; and (G) Explosion risks.
	Article 211 and article 34 of the Decree of the Minister of Labour and Manpower no. 211/2003 The establishment and its branches shall provide means of protection from chemical dangers resulting from dealing with solid, liquid, and gaseous chemical substances, subject to the following: – The highest concentration permissible in the chemical materials and the cancer-causing materials to which the workers are exposed shall not be exceeded. – The dangerous chemical materials stock shall not exceed the threshold quantities for each of them. – Providing the necessary precautions for protection of the establishment and workers on transporting, storing, handling, and using the dangerous chemical materials and disposing of their wastes. – Keeping a register for limiting the dangerous chemical materials being handled, comprising all data concerning each material, and a register for recording the status of work environment and exposure of the workers to the danger of chemicals. – Placing labels for recognizing all chemical materials handled at work, and indicating their scientific and trade name, their chemical composition, their degree of dangerousness, the safety precautions, and

Table (3.1): Legislation and guidelines governing E&S compliance for the project during all phases.

	the relevant emergency procedures. The establishment shall obtain the data mentioned in these materials from the suppliers upon supplying them. – Training the work in dealing with the dangerous chemical materials and the cancer-causing substances and enlightening and acquainting them with their dangers and with the methods of safety and protection from these dangers.
	• Article 31: The provisions of the present part shall apply to the contract by virtue of which a worker undertakes to work with and under the management or supervision of an employer in return for a wage. • Article 32: The employer shall draw up a labour contract in Arabic writing, in three copies, of which one copy shall be kept by the employer, one copy to be delivered to the worker, and the third copy shall be deposited with the concerned social insurance office. The contract shall in particular comprise the following data: – Name of the employer and the address of the place of work. – The worker's name, qualifications, and profession or craft, his social insurance – number and home address, and all that is necessary for his identification. – Nature and kind of work subject of the contract. – The wage agreed upon, and the method and time of its payment, as well as the rest of benefits in cash and in kind as agreed upon. If no written contract exists, the worker may alone establish his rights by all methods of evidence. The employer shall deliver to the worker a receipt for the papers and certificates he has deposited with the employer. • Article 33: The period of probation shall be determined in the Labour court and the worker shall not be appointed under probation for a period exceeding three months; nor shall he be appointed under probation for more than with the same employer.
	Wages: • Article 34: A national council for wages shall be established under the chairmanship of the Minister of Planning, to be concerned with setting the minimum wages at the national level, subject to the cost of living, and by providing the methods and measures guaranteeing the realization of balance between wages and prices. The council shall also be concerned with setting the minimum periodical annual increments such that they shall not be less than (7%) of the basic salary on the ground of which the social insurance contributions are reckoned. In case the establishment is exposed to economic conditions with which it becomes impossible to pay the said periodical increment, the matter shall then be submitted to the national council for wages, to decide whatever it

Table (3.1): Legislation and guidelines governing E&S compliance for the project during all phases.

	deems suitable with its conditions, within thirty days from the date of submitting the matter to it. The prime minister shall issue - within sixty days from the effective date of the present Law - a decree forming that council and comprising the following categories in its membership: 1-Members on the strength of their positions or experiences. 2- Members representing the employers' organizations, to be elected by these organizations; and 3-Members representing the General Federation of Egyptian Trade Unions, to be elected by the Federation. It shall be observed that the number of the first category's members shall be equal to the number of the second and third categories' members together, and the number of members of each of the second and third categories shall be equal. The decree forming the council shall determine its other power: the system of work in it. • Article 35: Discrimination in wages because of the sex, origin, language, religion, or creed shall be prohibited. • Article 36: The wage shall be determined according to the individual contract, the collective labour agreement, or the statute of establishment. If the wage is not determined in any of these methods' worker shall be entitled 'to a wage of equivalent position if any; other the wage shall be estimated according to the trade usage in the quarter where the work is performed. If no trade usage exists, the committee prescribed in article (71) of the present Law shall estimate the Wage according to the exigencies of justice. This shall all be subject to provisions of articles (34) and (35) of the present law. • Article 37: If agreement is reached on determining the wage per production or commission, the wage to be obtained by the worker shall not be less the minimum wages. • Article 38: The wages and other amounts due to the worker shall be paid in legally current money, on one of the working days and at the place oft" subject to the following provisions: (A) Workers appointed with a monthly pay: their wages shall be paid least once per month. (B) If the wage is per production, and the work requires working for a period exceeding two weeks, the worker shall obtain each week a pay on account commensurate with the work he has performed, and the balance of the wage shall be paid to him during the week following delivery of the work he has been charged with. (C) In other than the cases defined in the two previous items, the workers shall receive their wages once at most every week, unless otherwise agreed upon. (D) If the Labour relation ends, the employer shall pay to the worker his wage and all amounts due to him forthwith, unless the worker has quit work of his own accord, in which case the employer shall pay the worker's wage

Table (3.1): Legislation and guidelines governing E&S compliance for the project during all phases.

	and all his dues within a period not exceeding seven days from the date the worker claims these dues. • Article: 39 • Computing the average daily wage of the workers per production or the workers receiving fixed wages plus a commission, or a percentage shall be on the basis of the average pay the worker has received for the actual days of work in the last year or for the period he has worked if less than that, divided by the number of the actual days of work for the same period. • Article 40: The employer shall be prohibited to transfer a monthly paid worker to the category of day labourers or the workers appointed with a weekly wage, or paid per hour or per production, except with the written approval of the worker on transferring him. The worker shall in this case have all the rights he acquired during the period he spent with monthly pay. • Article 41: If the worker attends at his place of work, at the time determined for work and is ready to exercise his work but is prevented to start his work for reasons due to the employer, he shall be considered as having actually fulfilled his work and accordingly deserves his wage in full. However, if he attends and is barred from exercising his work by imperative reasons beyond the will of the employer, he shall be entitled to half his wage. • Article 42: The employer shall not oblige the worker to buy foods, goods, or services from specific stores, or buy goods produced or services provided by the employer. • Article 43: The employer shall not deduct more than, (10%) from: the worker's wage for payment of the money he has loaned to him during 'the validity of the contract; nor shall' he charge the worker any interest on these loans. This provision shall apply to the prepaid wages. • Article 45: The employer's obligation for the wage shall not be discharged except after the worker signs for receiving the wage, in the register provided for the purpose, or in the payrolls, providing the data of these documents shall comprise the items of the wage. Subject to the provision of the previous article, the employer shall deliver to his juvenile workers their wages, compensations, or other entitlements legally due to them. Such delivery shall discharge the employer's obligation.
Socioeconomics	
Law 94/2003 Protection of Community/Human Rights law	• The Law on Establishing the National Council for Human Rights (NCHR) aims to ensure respect, set values, raise awareness, and grant observance of human rights. • At the forefront of these rights and freedoms are the right to life and security of individuals, freedom of belief and expression, the right to private property, the right to resort to courts of law, and the right to fair investigation and trial when charged with an offence.
EEAA EIA guidelines	• Paragraph 7 Requirement and Scope of the Public Disclosure

Table (3.1): Legislation and guidelines governing E&S compliance for the project during all phases.

	• Disclosure of relevant material is an important process and should be undertaken in a timely manner for all Category C projects. This process permits meaningful consultations between the project proponent and project-affected groups and local NGOs are required to take place. Before the public consultation on the draft EIA, the draft technical summary in Arabic should be disclosed to all concerned parties.
Interior Minister's Decision No.2777 General Provision on Road Traffic	• Article 2: All road users shall consider the utmost care and remain vigilant and cautious so as not to harm or endanger others to more than the inevitable extent that may be posed by the circumstances. • Article 3: It is not allowed to leave or throw garbage including dust, stones, and construction materials… etc., impeding movement on roads or causing harm to users thereof. Actions that cause roads to be filthy shall be prohibited. It is not allowed to place or leave anything on the road if it would endanger or obstruct traffic. The responsible for such action shall clear the road immediately. Accordingly, the required caution and warning signs shall be displayed along with red lights, if necessary, until the road is cleared. It is -by no means- allowed to misuse pavements, roads, or any part thereof, obstructing traffic or pedestrians. Public, private, and other companies, authorities, and institutions, in addition to contractors and others shall get a permit from the competent traffic unit before starting any constructions, drilling, or gravelling operations. Moreover, in the morning, they shall display warning boards and red signs, while at night they shall use red lighted lanterns showing the location of the operation, provided that it is visible from a distance of at least 100 meters away from that location. The Competent traffic unit, before granting the permit, shall ensure that all necessary preventive measures shall be taken. • Article 4: Each vehicle driver, prior to its movement, shall examine the vehicle and all devices thereof, ensuring its good condition, and roadworthiness with no risks posed either to others or to the vehicle itself. The driver shall ensure that the vehicle meets all provisions stipulated by law and regulations. The driver also shall ensure that the vehicle's passengers and cargo meet these provisions. While driving, the driver shall ensure that the driver and the person there beside are using safety belts. Motorcyclists should put on a safety helmet while driving. Using mobile phones in hands shall be prohibited. • Article 5: A vehicle's driver shall ensure the vehicle is free of anything -that may obscure the vision- including the vehicle condition, passengers, cargo, posters, hangings, or anything else. Children under four years are not allowed to sit in the front seats. All vehicle's lights shall always be there and operatable.
	Speed

Table (3.1): Legislation and guidelines governing E&S compliance for the project during all phases.

	• Article 48: A drivers shall not drive beyond the speed at which he can control the vehicle as appropriate to the traffic conditions, the vision, the weather, the driver's condition and his personal capabilities, the vehicle and cargo conditions, and any other surrounding conditions. Consequently, the speed shall not exceed the limit at which the driver can stop the vehicle within the visible part of the road. On narrow roads, where the speed may pose a risk to the opposite traffic, the driver shall slow down so he can stop within the middle of the visible part of the road. In case the vision is not totally clear, the driver has to stop. • Article 49: Vehicles may not slow down impeding the traffic with no justification. • Article 50: Subject to this rule, as appropriate to road conditions, the vehicle maximum speed shall be as follows: In cities: – Trailers and semi-trailers: 40 km/h – The rest of vehicles: 60km/h In residential, tourism and industrial zones – All types of vehicles: 40 km/h Highways or main roads affiliated to the General Authority for Road and Bridges, connecting governorates, and – Trucks and semi-trailers: 60km/h – Cargo vehicles: 70km/h – Passengers' vehicles: 90 km/h – The rest of vehicles: 90km/h • Article 51: The minimum speed of rapid transit vehicles shall be 15 km/h inside cities, and 30 km/h outside cities. Agricultural tractors are allowed to be driven at a minimum speed of 10 km/h on condition that they are driven on the far right of vehicle road. • Article 52: Each vehicle driver shall decelerate the speed of his vehicle while passing by built-up areas, turns, curves, slopes, and crossroads, while approaching pedestrian crossings, while driving in the vicinity of animals or overtaking them. • Article 53: In case any vehicle driver will decelerate or will drive at much lower speed, he shall previously ensure that this would not risk the following vehicles unless he does the same at a sudden risk. He shall express such desire clearly and early enough by using turn signals, hand signals, and brakes backlights.
Executive regulations of Traffic Law No. 66 of 1973	**Licenses to operate express transport Vehicles** • Article 216: An application to obtain a vehicle operating license shall be submitted on the form prepared for that purpose and accompanying this decision to the competent traffic department. The license application shall be accompanied by evidence of the identity of the owner, his place of residence, his capacity, and ownership of the vehicle for which the license

Table (3.1): Legislation and guidelines governing E&S compliance for the project during all phases.

	is requested, as well as all other documents that may be required by laws or regulations. It is permissible to Licensing units that operate on a computer system must suffice with the form issued by the computer in accordance with the programs prepared for that purpose. **Driving licenses in general** • Article 254: The application to obtain the driving licenses referred to in Article (34) of the law shall be submitted to the relevant traffic department on the approved form accompanied by the following: 1- Four photographs of the applicant. 2- Evidence of his identity, place of residence and age. 3- For those applying for the licenses referred to in clauses (2, 3, 4, 6, 8) From Article (34) of the law, it is required in addition: (a) Submitting a criminal status report. For employees of the government, one of the local administration units, or the public sector and its branches, an official certificate from the service file stating that they are free of criminal record may suffice. (b) Evidence of his membership in one of the trade unions or one of its branches. (c) If the license applicant is an employee of the government, one of the local administration units, the public sector, or one of its branches, he is required to submit the approval of the entity in which he works to obtain the license, as well as to renew it.
Law 24/2018 on the amendment of some provisions of Law No. 10 of 1990 on the land acquisition	• Replace the provisions of Articles 2 (fourth paragraph), 3, 5 (second paragraph), 6 (second paragraph), 7 (first paragraph), 13, 15 (first paragraph) of Law No. 10 of 1990 regarding land acquisition for the public benefit. • The public benefit report shall be attached to the decision of the President of the Republic or his authorized representative, accompanied by – A note stating the project to be executed. – A drawing of the overall planning of the project and the real estate necessary for it. • The compensation is estimated according to the prevailing prices at the time of the expropriation decision, and an additional (20%) twenty percent of the value of the estimate included in the compensation. Existing expropriation procedures. • The decision for public benefit shall be published with a copy of the memo referred to in Article (2) of this law in the Official Gazette. In addition, affixed in the place prepared for advertisements at the headquarters of the local administration units, in the mayor or police headquarters, and in the primary court located in the property department, and on the front of the property subject to expropriation in a visible manner.
Law 1/2015 on the amendment of some provisions	• The first section of article 7 of the law states that: After depositing the compensation, the entity in acquisition charge shall prepare lists with the real estate subject to acquisition, areas, locations, names of owners and property holders, their addresses, and the value of compensations stipulated.

Table (3.1): Legislation and guidelines governing E&S compliance for the project during all phases.

of Law No. 10 of 1990 on the land acquisition	These lists and respective maps showing the location of all properties shall be sited in the head office of the entity in charge. • Article 8 after amendment stated that: "The concerned owners and holders of rights have the right to object to the information contained in such lists within 15 days from the date of posting and publishing the lists and information of the expropriated properties.
Law No. 12 of the Year 2003 Promulgating Labour Law	**Child labor:** • Article 98: In applying the provisions of the present Law, an infant/juvenile shall mean any person reaching. • fourteen years of age, or past the age of elementary education and not reaching eighteen complete years of age. • An employer appointing an infant/juvenile under sixteen years of age shall grant him a card proving that he works for him. A picture of the infant/juvenile shall be stuck on the card and approved by the concerned manpower office. • Article 99: Employing female and male infants/juveniles not reaching the age of complete elementary education or fourteen years of age, whichever is older, shall be prohibited. However, they may be trained once they reach twelve years of age. • Article 100: The concerned minister shall issue a decree determining the system of employing infants/juveniles, the conditions, terms and cases for their employment, and the jobs, occupations, and industries in which it is prohibited to appoint them, according to the different stages of age (The concerned minister is the one who issue a decree determining the system of employing infants/juveniles not in the laws). • Article 101: An infant/juvenile shall not be made to work for more than six hours a day, during which one or more break periods totaling not less than one hour shall be granted for meals and rest. Such • period(s) shall be specified in a way by which the infant/juvenile shall not be made to work for more than four unbroken hours. An infant/juvenile shall not be made to work overtime hours or be. • required to come to work on the weekly days of rest and the official holidays. In all cases, an infant/juvenile shall not be made to work between 7 p.m. and 7 a.m. • Article 102: An employer appointing one or more infants/juveniles shall: – Hang on a prominent place at the location of work a copy comprising the provisions prescribed in the present chapter. – Draw up a statement indicating the working hours, and the break periods duly approved by the concerned administrative authority. – Provide the concerned administrative authority with the names of infants/juveniles working with him, the tasks assigned to them, and the names of the persons charged with controlling their work. • Article 103: The provisions of the present chapter shall not apply to infants/juveniles working in sheer agricultural labor.

Table (3.1): Legislation and guidelines governing E&S compliance for the project during all phases.

Pest Management	
Law no. 53 of 1966, Chapter VI (Planting protection)	*Article 73* The Minister of Agriculture shall specify, by a decision issued by him, harmful pests and plants, methods of protection against them, means of controlling them, and measures to be taken for this purpose, particularly in the following matters: • Determining areas considered to be contaminated with a particular pest, adjusting their borders, and regulating the transfer or passage of plants and other objects capable of transmitting the pest from a contaminated area to another healthy or infected area. • Establishing a system for pest control, including a statement of the chemicals and tools used in the control, and an indication of the treatment and control work carried out by the competent administrative authority at the expense of the plant owner. • Setting the conditions and procedures for plant treatment and pest control by the employees of the competent administrative authority or whomever is entrusted with this from among the individuals, bodies, cooperative societies, companies, or institutions.
	Article 74 • If the infection is a source of danger threatening the plants due to the impossibility of treating the disease or the emergence of a new pest for which no successful treatment is known, the Minister of Agriculture may order the taking of any measure to ensure the prevention of the spread of the disease or pest, including uprooting and destroying infected plants by the workers of the competent administrative authority and at its expense. In this case, the Ministry shall pay compensation to the owner of the plants according to their value. • The Minister of Agriculture shall issue a decision regarding the measures to be taken in estimating this compensation and how to settle the dispute arising from this estimation.
	Article 80 The Minister of Agriculture issues, based on the committee's proposal, the decisions that implement the provisions of this chapter, in particular the decisions related to the following issues: • Types of agricultural pesticides that may be imported and traded, specifying their specifications and import and trading conditions. • Conditions and procedures for licensing the import and trade of pesticides. • Banning the transfer of some types of pesticides from one place to another.

3.1.3 International Legislations

Egypt has signed and ratified several international conventions committing the country to the conservation of environmental resources and protection of workers' health & safety and labor rights. The following lists the key conventions ratified by Egypt:

Biodiversity and Natural Resources:

- In 1951: International Plant Protection Convention
- In 1972: Convention Concerning the Protection of the World Cultural and Natural Heritage
- In 1973: Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES)
- In 1979: Convention on the Conservation of Migratory Species of Wild Animals
- In 1992: Convention on Biological Diversity (CBD)
- In 1995: Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean
- In 2003: African Convention on the Conservation of Nature and Natural Resources

Hazardous Materials and Chemicals:

- In 1974: Convention Concerning Prevention and Control of Occupational Hazards Caused by Carcinogenic Substances and Agents
- In 1989: Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal
- In 1995: Amendment to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal

Atmosphere, Air Pollution and Climate Change:

- In 1985: Vienna Convention for the Protection of the Ozone Layer
- In 1987: Montreal Protocol on Substances that Deplete the Ozone Layer
- In 1992: United Nations Framework Convention on Climate Change
- In 1992: (Copenhagen) Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer
- In 1997: Convention Concerning the Protection of Workers Against Occupational Hazards in the Working Environment due to Air Pollution, Noise and Vibration
- In 2015: Occupational Safety and Health Convention.

Health and Worker Safety:

- In 1936: International Labour Organization Core Labour Standards
- In 1977: Convention Concerning the Protection of Workers Against Occupational Hazards in the Working Environment due to Air Pollution, Noise and Vibration
- In 1979: Occupational Safety and Health Convention.

WBG Environmental and Social Standards (ESSs):

The World Bank's Environmental and Social Framework includes the Environmental and Social Standards (ESSs). Projects supported by the Bank through Investment Project Financing are required to meet the following Environmental and Social Standards, the following are applicable to the current subproject:

- Environmental and Social Standard 1: Assessment and Management of Environmental and Social Risks and Impacts.
- Environmental and Social Standard 2: Labor and Working Conditions.
- Environmental and Social Standard 3: Resource Efficiency and Pollution Prevention and Management.
- Environmental and Social Standard 4: Community Health and Safety.
- Environmental and Social Standard 10: Stakeholder Engagement and Information Disclosure.

WBG and International guidelines:

The following WBG environment, social, and health and safety guidelines and relevant international protocols will be used to guide the ESMP including but not limited to the following:

- Good Practice Notes for Addressing Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) in Investment Project Financing involving Major Civil Works.
- World Bank Group (WBG) Environmental, Health and Safety General Guidelines ("WBG EHS General Guidelines"), December 10, 2007
- World bank Group (WBG) Environmental, Health and Safety Guidelines for Annual Crop Production, March 30, 2016.

- Good International Industry Practices (GIIP) for management of pesticides (e.g. "International Code of Conduct on Pesticide Management" by FAO and WHO, issued 2014)
- IFC/EBRD (2009). Worker's accommodation: processes and standards. Public guidance notes by IFC and EBRD. Retrieved from https://www.ifc.org/content/dam/ifc/doc/mgrt/workers-accomodation.pdf

World Bank Limits:

Table: World Bank Group EHS guidelines Air Quality Values

	Reference Period	Recommended maximum ground level concentration values (µg/m^3)
NO_2	1 hour	200
	Annual average	40
SO_2	10 minutes	500

	24 hours	20
Total Suspended Particulate	24 hour average	--
	Annual average	--
PM10	24 hour average	50
	Annual average	20
PM 2.5	24 hour average	25
	Annual average	10

Table: Noise Level Guidelines

Receptor	**One Hour LAeq (dBA)**	
	Daytime 07:00 - 22:00	**Nighttime 22:00 - 07:00**
Residential; institutional; educational	55	45

Gap Analysis between WB (ESSs) and National laws:

The Gaps between World Bank Environmental and Social Standards (ESSs) and National laws represented in:

1. Discrepancies in air quality, water quality and noise limits between the national laws and WB standards.
2. Not addressing all social risks and impacts in notional laws, including: (i) temporary labor influx, and (ii) risk of sexual Exploitation, Abuse and Sexual Harassment (SEA/SH).
3. The lack of a specific role for the official in charge of social aspects in national laws.
4. Not addressing all social risks and impacts in national laws, including: (i) Infrastructure and equipment design and safety, and (ii) safety of services.
5. The Egyptian legislation does not address encroachers and informal settlers. The WB identifies a cut-off date to prevent people influx to the project area. The Egyptian laws does not set a cut-off date per say, particularly if the impacts are related to agricultural lands that might experience changes in crops and tenancy. However, there are specific

timelines for the census survey, receiving complaints that could cover the same objective of the cut-off date.

- Monitoring and Evaluation: Monitoring or evaluation measures are not stipulated in Egyptian regulation.
- Valuation of compensation: Egyptian regulations use prevailing price in the affected areas to calculate and compensate project affected people for their expropriated property. The prevailing price is assessed by a specialized committee created by the government. For crops, they are valuated according to the price lists developed by the agriculture directorate. The amendment of the year 2018 entailed increase for the value of the compensation to include additional 20% above the prevailing market price for the interest of the affected persons (landowners), and Law 187/2020 which most importantly include committing the project proponent to deposit the value of the compensation in no more than 3 months from the public interest decree issuance date.

6. Previous Egyptian experiences show that the full replacement value (providing assistance is not covered) principle as stated by ESS5 has not been realized by the affected group.
    - Income restoration (livelihoods): Egyptian law does not discuss compensation for loss of income, only land and assets.
7. Although the Environmental Law requires conducting consultations to present the draft EIA results, there are no regulations on committing the project owner to conducting stakeholder engagement activities as an ongoing process nor on disclosing information regarding the environmental and social risks and impacts of the project to project-affected parties as well as to community members, throughout the project life cycle.
8. There are no regulations on committing the project owner in establishing a grievance mechanism.

Gap Analysis for Key Egyptian and WB Environmental Quality Limits

Air Quality, in case of any discrepancy between the requirements of Egyptian legislations and the requirements of the WBG, the requirements of the WBG will be applied. However, the Egyptian limits will be applied for the following cases:

- Carbon monoxide limits.
- Sulfur dioxide limits for 1 hour, and 1 year.
- Nitrogen oxide limits for 24 hours.
- Total suspended particulates limits.
- Ozone limits for 1 hour.

Comparison of ambient air limits

Parameter	Period	IFC Standards (µg/m3)	National Requirement (Residential; Institutional; Educational) (µg/m3)
Please Sulphur dioxide (SO2)	10 minutes	500	-
	1 hour	-	300
	24 hours	20	125
	1 year	-	50
Carbon Monoxide (CO)	1 hour	-	30 mg/m3
	8 hours	-	10 mg/m3
Nitrogen Dioxide (NO2)	1 hour	200	200
	24 hours	-	150
	1 year	40	40
Total Suspended particles (TSP)	24 hours	-	230
	1 year	-	125
Particulate Matter (PM10)	24 hours	50	70
	1 year	20	50
Particulate Matter (PM2.5)	24 hours	25	50
	1 year	10	15
Suspended Particles (measured as black smoke)			
	24 hours	-	100

Comparison of point source limits such as generators

Parameter	IFC Standards mg/m3		National Requirement (Residential; Institutional; Educational) mg/m3	
	Natural Gas	Diesel	Natural Gas	Diesel
Carbon monoxide CO	NA	NA	100	250
Sulphur dioxide SO2	NA	2000	100	1000
Nitrogen Oxide NOx	200 (spark ignition)	460	400	400
	400 dual fuel			
	1600 pressure ignition			
Total Particulates	NA	100	50	50

Water Quality, in case of any discrepancy between the requirements of Egyptian legislations and the requirements of the WB/IFC, the requirements of the WB/IFC will be applied, as it is more conservative.

Ambient Noise, for ambient noise levels, it can be noticed that Egyptian legislations are more precise about the noise levels, as the ambient noise levels are divided according to various area types. Correspondingly, the WB standards only mention the limits for residential and industrial areas. However, for both area types mentioned in the WB standards, the national and WB limits are the same. WBG has more stringent regulations regarding the noise levels, while the Egyptian has more classifications. For a conservative approach, the WBG regulations will be followed.

Gap analysis between ESSs and national laws.

Comparison of ambient noise limits

Noise area	IFC limit One Hour LAeq (dBA)		National limit One Hour LAeq (dBA)	
	Day (7 am - 10 pm)	Night (10 pm - 7 am)	Day (7 am - 10 pm)	Night (10 pm - 7 am)
Residential; Institutional; Educational	55	45	50	40

EHCSS and Contractor's Environmental Policy

An environmental and social policy, as defined by the ESSs of the World Bank and ISO 14001, is a document that sets out an organization's commitment to environmental and social responsibility. It provides a framework for action and for the setting of environmental and social objectives and targets. It will be communicated to all employees and subcontractors through site inductions, toolbox talks and will be displayed on various notice boards throughout the construction sites. It should also be available to the public.

The Environmental and Social Management Policy was established to demonstrate the EHCSS Company’s commitment to improving environmental and social performance. It aims to communicate EHCSS Company’s mission, vision, and beliefs towards the environment to its employees and provides a framework for guiding the company’s ongoing environmental and social improvement efforts.

To achieve high environmental and social standards (ESSs of World the Bank), satisfying legal requirements and limiting the environmental and social impact of operation activities during the implementation of the Emergency Food Security and Resilience Support Project components, special emphasis will be directed towards sustainability in all phases of the project including design, construction and operations and sub-contracts.

4 BASELINE / EXISTING ENVIRONMENTAL CONDITIONS

The existing environmental conditions will address the following issues in particular: a) Physical Environment, b) Biological Environment, and c) Socio-economic aspects.

The project influence area spreads over four levels. The four levels of the subproject influence area are (a) immediate area of impacts, (b) direct project influence, where project is key impact factor, (c) area where direct project impact is less intensive, and (d) induced, or indirect impacts.

4.1. Physical Environment

4.1.1 Weather and Climate

Qena has a hot desert climate, with very hot summers and very little precipitation. Winters are warm during the daytime but become cool at night. The hottest months on average are July and August, while the coolest month is January. Luxor, Minya, Qena and Assuit have the widest range of temperatures between day and night of any city in Egypt, with almost 16 °C difference (Waste Management Regulatory Authority, December 2017).

4.1.2 Air Quality

The national network for monitoring air quality currently operates 87 air quality monitoring stations, with 15 stations located in Upper Egypt.,. While some data from Assiut Governorate is mentioned in the cited reports, it is not directly reflective of the conditions in Taramsa, Qena Governorate. To address the absence of localized data, air quality measurements were conducted around the proposed Taramsa Silo site as part of the baseline assessment for this report (Table 4.1). The measurements were performed during the site visit, and included parameters such as PM10, PM2.5, Sulfur Dioxide (SO_2), and Carbon Monoxide (CO), adhering to both national and World Bank Group guidelines.

Table (4.1): Measurements of the average air quality around the subproject areas.

	Point 1	Point 2	Point 3	Point 4	Point 5	Point 6
SO_2 ppm (max. 1 h)	0.006	0.007	0.005	0.008	0.004	0.007
CO ppm (max. 1 h)	0.4	0.6	0.5	0.7	0.5	0.6
PM_{10} ($\mu g/m^3$)	35	30	32	34	37	33
$PM_{2.5}$ ($\mu g/m^3$)	10	12	15	14	13	16

The methods and equipment used for air quality assessment are as follows:

- Thoracic Particulate (PM_{10}): PM_{10} and $PM_{2.5}$ High Volume Sampler –GMW – USA. EPA
- method, Appendix J Reference method FR
- Sulphur Dioxide (SO_2): Sulphur Dioxide (SO_2) Analyzer, Model ML8850-Monitor
- lab. Inc. USA. EPA method EQSA-0779-039.
- Carbon Monoxide (CO): Carbon Monoxide (CO) Analyzer, Model ML8850-
- Monitor lab. Inc USA. EPA Reference method RFCA – 0388-60.

4.1.3 Noise Level

The noise is usually measured by the Noise Pressure Levels (NPL), based on the noise levels that are expected from movement, surrounding areas and activities. The area is characterized as a residential area or surrounded by agriculture land. It was noted that the main sources of noise are the movement of cars and operation of water pumps. According to the available baseline noise surveys (Table 4.2), all the results are within the maximum allowable daytime noise limits set for this area with no exceedances recorded even within subproject sites and surrounding areas.

Table (4.2): Measurements of the average noise levels around the project areas.

	Points						**The permissible limit for sound intensity decibels (A) (Egyptian law) (Residential; institutional; educational)**			**Noise Level Guidelines (One Hour LAeq (dBA)) (World Bank)**	
10 minutes average Leq (dBA)	Point 1	Point 2	Point 3	Point 4	Point 5	Point 6	Daytime from 7 am to 6 pm	Evening from 6 pm to 10 pm	Night from 10 pm to 7 am	Daytime 07:00 – 22:00	Nighttime 22:00 - 07:00
	51.7	53.4	52.3	50.8	53.7	54.3	50 - 60	45-55	40-50	55	45

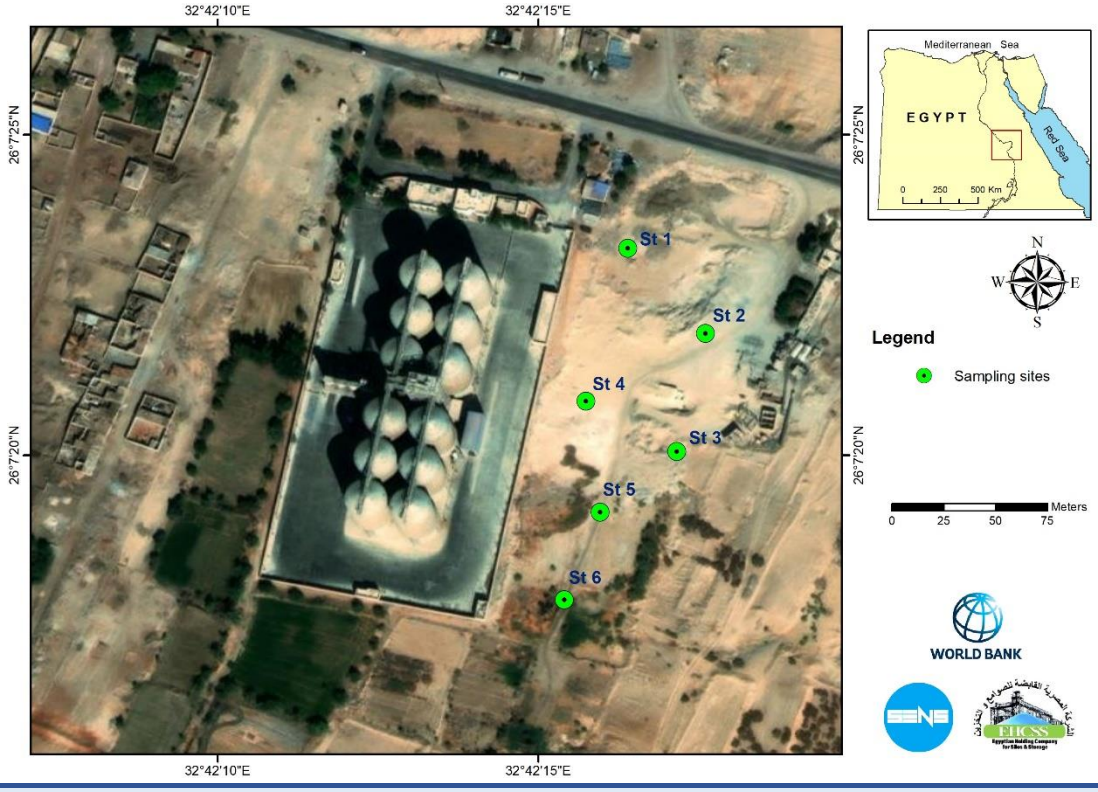

Figure (4.1): Map showing the locations of the six noise measurements.

4.1.4 Geology

The Qena area, located in the central portion of the Nile Valley, occupies a portion of a sub-regional sedimentary basin (Assiut Basin) having a depth exceeding 3000m (Figure 4.2). The stratigraphy of the surface and the near surface sedimentary succession as outlined by (Said, 1962) is as follows from top to base:

- Holocene: silty clay (Neonile and young wadi deposits).
- 2- Late Pleistocene: graded sand and gravel (Prenile deposits).
- 3- Plio-Pleistocene: clay sand and conglomerate (Protonile deposits).
- 4- Pliocene: clay (Paleonile deposits) and,
- 5- Eocene: limestone (shallow marine deposits).

Geomorphologically, the area is subdivided into four geomorphic units (Said, 1962). These are the young alluvial plains (the cultivated lands), the old alluvial plains (the Nile terraces which are a high level of the cultivated lands), the watershed area (the southern calcareous plateau) and water collectors' areas (alluvial fans and hydrographic basins).

Structurally, several authors believe that the Qena Bend originated by the rejuvenation of the Precambrian NE–SW oriented fault system superimposed on NW–SE and N–S trends. Moreover, fieldworks by Akawy and Kamal El Din (2006) concluded that after the Early Eocene,

the region of the Nile Valley and Qena Bend was affected by dextral NW–SE faults, which was later modified by a dextral movement along N–S faults. These two fault directions were later modified by a dextral shear running NE–SW. All these fault trends changed to normal faults prior to the Pliocene or even earlier. All previous studies relied on surface evidence derived from geological fieldworks and remote sensing mapping to explain the origin of the Qena Bend.

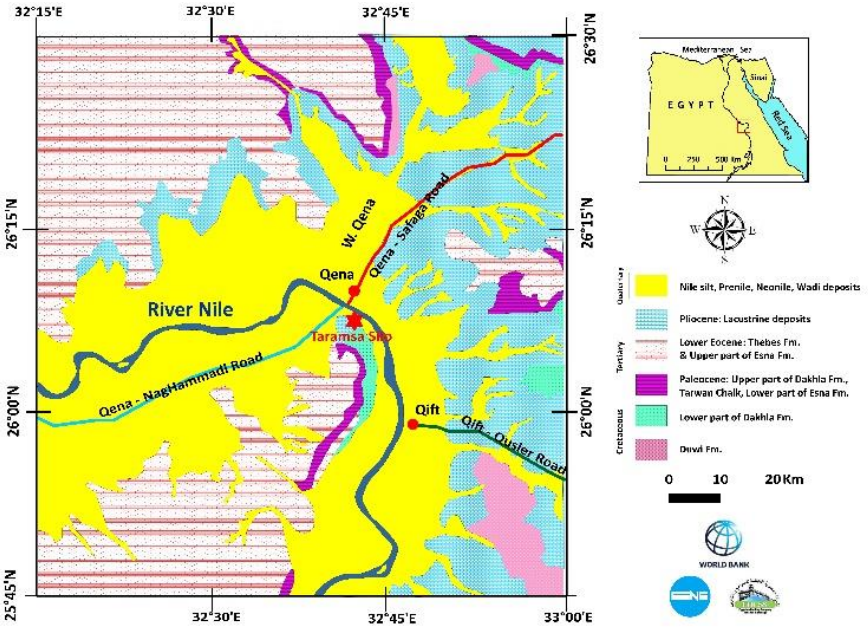

Figure (4.2): Geological map of the study area (modified after Egyptian geological survey map 1978).

4.1.5 Hydrology

Qena Governorate depends mainly on the Nile water for irrigation and drinking, Qena Governorate covers a large area of the Nile Valley and extends more than 350 km along the Nile River from Isna to Naga Hammady. The main canals at the governorate are: Asfoun canal which located on the western side of the Nile (820m from the subproject site), and serves to irrigate approximately 68,879 Feddan, Kalabaya canal, which runs parallel to the eastern bank of the Nile (5km from the subproject site) and serves to irrigate approximately 174,515 Feddans. The distance of the subproject site is about 2.١km from the Nile River,

Groundwater represents the second source of water in the governorate after surface water. In the discussion of the hydrogeology of Qena, the main aquifers are of granular type. Based on their area extent and productivity, these aquifers are classified into four hydrogeological units represented and discussed in (Table 4.3). The Quaternary aquifer is continuously recharged from vertical percolation of irrigation water (from canals and irrigation return flow). On the other hand, the Plio-Pleistocene aquifer is either recharged from irrigation return flow, runoff, or vertically

from deeper aquifers (Nubian Sandstone complex). The Eocene carbonate aquifer system is recharged from local rainfall or from other aquifers in direct contact. Groundwater discharge is generally through groundwater flow to the adjacent aquifers depending on groundwater heads.

Table (4.3): Characteristics of the hydrogeological units.

Units	Description	Saturated thickness (m)	Depth to groundwater level (m)
Unit (1)	Highly productive unit, consisting of Quaternary graded sand and gravel with clay lenses.	10-140	<5
Unit (2)	Moderately productive unit consisting of graded sand and gravel with clay lenses,	20-200	5-10
Unit (3)	Low productive units consisting of Plio-Pleistocene sand and gravel and clay,	20-80	5-15
Unit (4)	Low to moderately productive unit consisting of: - Eocene Limestone with paleokarst feature; - Upper Cretaceous shale, Paleocene shale; and Pliocene clay (non-aquifer); - Upper Cretaceous Paleozoic Nubian Sandstone complex		Unexplored

The groundwater system in the study area belongs to the regional Quaternary aquifer that extends along the Nile Valley. This aquifer can be categorized into two hydrogeologic units with distinct hydraulic properties. The two units are the Holocene aquitard (***An aquitard, or confining unit, is a low-permeability unit that can store groundwater and transmit it slowly from one aquifer to another.***) which is composed of clay, silty-clay and clay-silt deposits and graded sand and gravel intercalated with clayey lenses (Figure 4.3). The Holocene aquitard includes the phreatic groundwater that constitutes the base of the cultivated lands with thickness varies from 12.5 m to 26 m in the western bank of the River Nile (Kamel, 2004). This unit receives surface water seepage from irrigation activities. The horizontal and vertical permeability ranges from 0.40 to 1.00 m/day while the vertical hydraulic conductivity is low and increases with depth (Abd El-Moneim, 1988).

The Quaternary aquifer in the Nile Valley is extensive and highly productive and distinguished into semi-confined conditions under the cultivated areas and unconfined conditions under the new reclaimed areas at the desert fringes on both sides of the Nile Valley. The aquifer thickness decreases from 300 m at the northern boundary to a few meters in the southwestern boundary of the study area (Sayed, 2004). The hydraulic conductivity of this aquifer ranges from 60 to 100 m/day and transmissivity ranges from

2000 to 6000 m^2 /day (Attia 1985; Abd El-Bassier, 1997). The main component of recharging of the aquifer is the seepage from irrigation canals, subsurface drainage from the irrigated lands and upward leakage from the deep aquifers through fault planes.

The depth of groundwater in the Quaternary aquifer as measured from some available wells varies from a few meters to about 30 m below ground level. The groundwater in the study area is extracted through public and private wells as well as hand pumps to be used for irrigation and domestic purposes. Some wells have been drilled within the campus of South Valley University to be used for gardening purposes. The groundwater flow in the aquifer decreases gradually towards the Nile. The River Nile is acting as a discharging line for the Quaternary aquifer as the groundwater levels are higher than those of the River Nile except at the upstream of the barrages (Barber and Carr 1981, Abdel Moneim 1988, Ahmed, 2007). Figure (4.3) shows the depth of the highly productive Quaternary aquifer near the Nile riverbanks is approximately 5 meters due to seepage and recharge from the Nile. In areas farther from the Nile and closer to desert fringes, the groundwater depth can reach up to 30 meters or more.

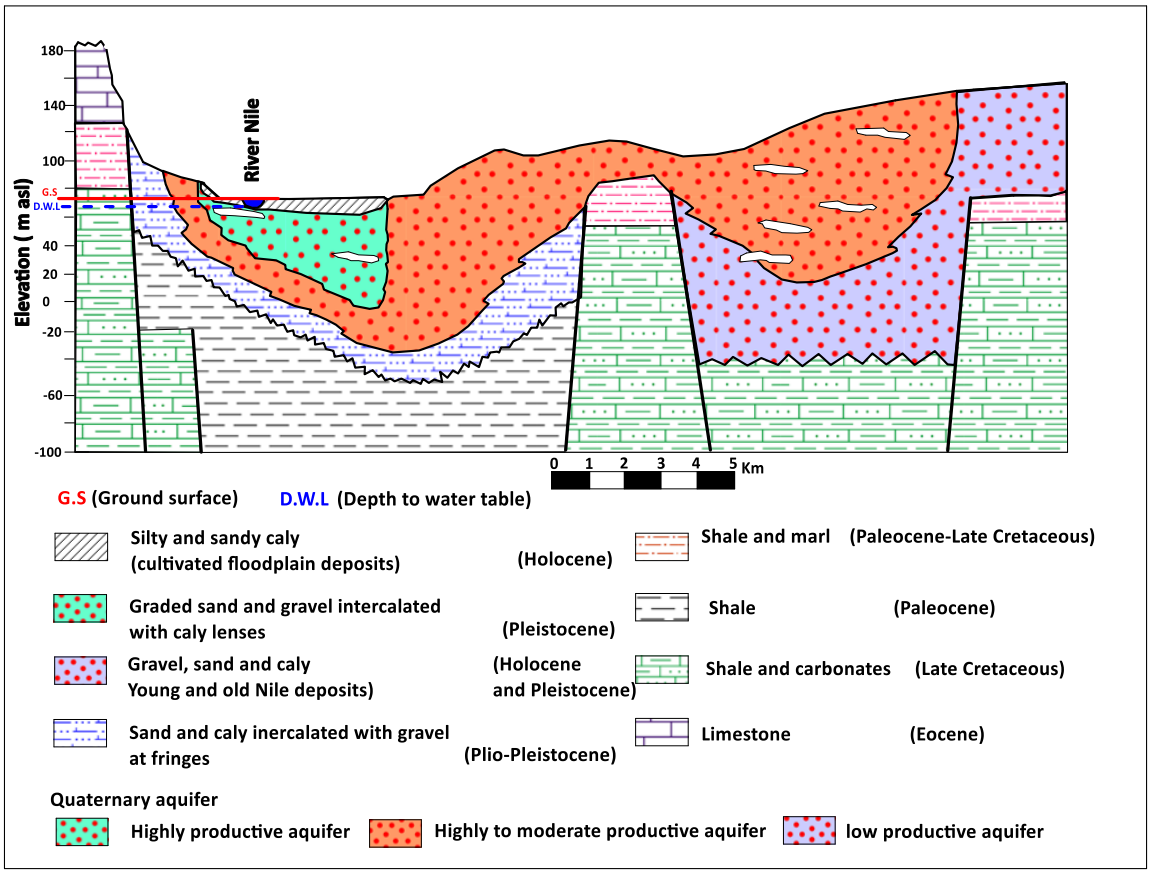

Figure (4.3): Hydrogeologic section of the study area (RIGW 1994).

4.1.6 Seismicity of the Qena area

According to the spatial distribution of earthquakes that were located around Qena Governorate as shown in Figure (4.4), several areas having different seismicity levels have been represented around. The Silo site lies between two seismic sources (Z2 and Z8). The main characteristics of the individual seismic sources are described as follows.

Zone - 2: This source is located on the West bank of the river Nile in the area between Assuit to the North and Kom Ombo to the South. Several events were recorded in the West Kom Ombo area, where on March 22, 2003, an earthquake (Md 4.0) occurred. This activity in Kom Ombo may be related to the Gebel El-Barqa fault that is one of western desert fault system (Fat-Helbary and Mohamed, 2004).

Zone - 8: This source represents the Red Sea zone, Abo Dabab zone, North Abo Dabab and the south-eastern corner of the Eastern Desert (Allaqi zone). The fault systems in this area parallel to the fault systems in the Red Sea where the Arabian plate is continuing to rotate away from the African plate along the Red Sea spreading center (Cochran, 1983). Abo Dabab zone is the most active zone in the Red Sea area.

Based on the seismic analysis, the subproject site at Taramsa Silo is classified as being in a low-to-moderate seismic risk zone. While the site is influenced by regional seismic activity from Zones 2 and 8, the distance from these sources and the historical seismic data suggest that the risk of significant seismic impacts is low.

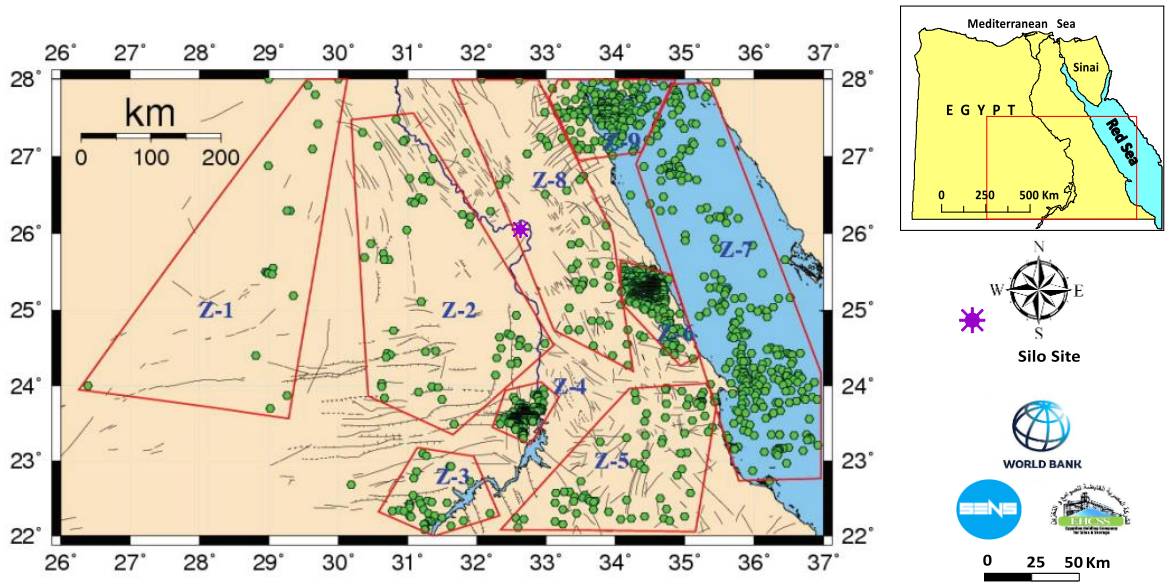

Figure (4.4): Earthquake epicentral distribution in and around the study area during the period 1900 to 2006 (Fat-Helbary and Mohamed, 2004).

4.1.7 Flash floods of Qena Governorate

In Upper Egypt, flash floods may occur due to short duration heavy storms that produce large volumes of surface runoff with a high peak discharge value concentrated in a short time. These flood events are considered a significant natural hazard particularly in the Red Sea area. Many studies have been made to determine possible measures to avoid hazards caused by flash floods and mechanisms have been developed to harvest floodwaters.

Qena governorate is one of Upper Egypt's governorates that are prone to the destructive impacts of flash floods. Qena is prone to flash floods from several Wadis. There are approximately 266 wadis draining to the Nile Valley in Qena Governorate and these may be divided into two main groups, the eastern group, originating in the Red Sea Mountains and the western group originating from the western desert. The eastern wadis are the most significant with 157 wadis and a total catchment area of about 30,000 km^2 with elevations of up to 1000 m above sea level. The most significant single wadi is Wadi Qena, one of the largest wadis in Egypt with a catchment area more than 16,300 km^2. The wadi drains from the Red Sea Mountains in the east southwards until it meets the Nile, draining through Qena city itself.

Taramsa Silo site is located on the western side of the Nile, outside the direct pathway of Wadi Qena. The site is situated in a slightly elevated area, reducing the likelihood of direct exposure to flooding. According to the following map (Figure 4.5), the subproject falls in a low to moderate risk zone. Drainage channels and flood management systems are present in the region to mitigate risks from overflow and runoff.

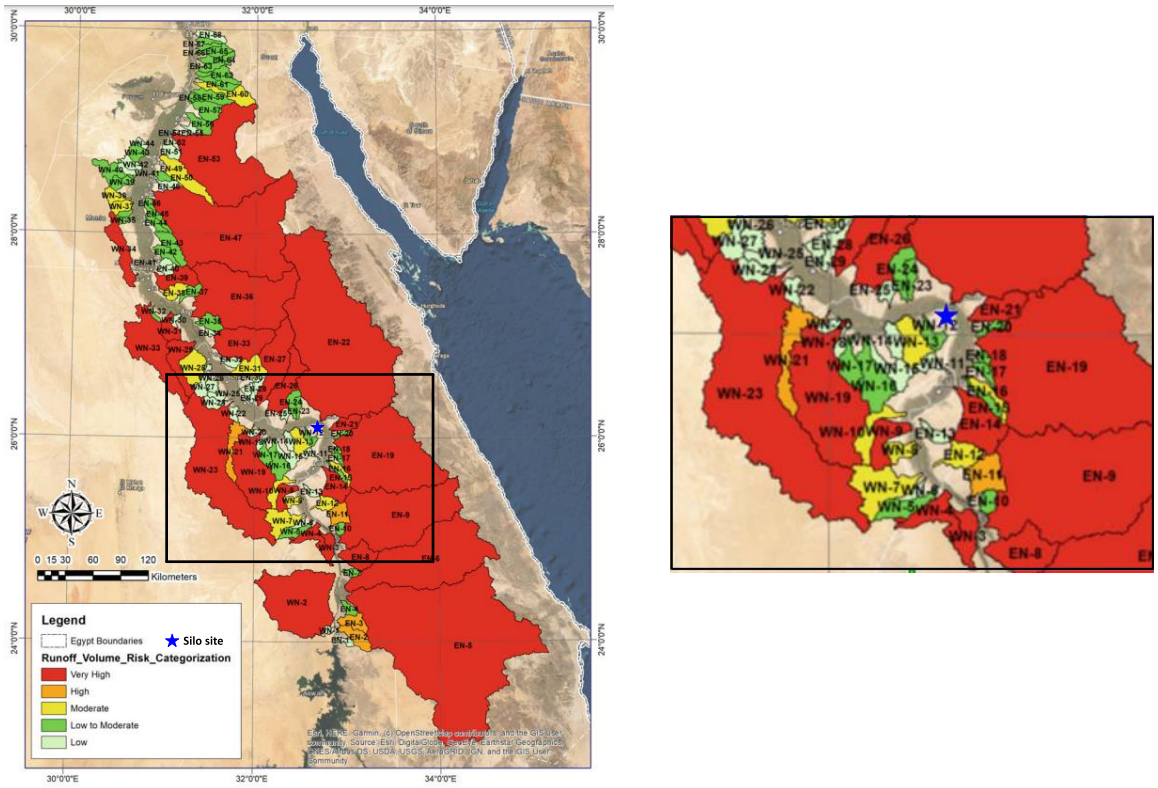

Figure (4.5): Map shows runoff volume risk categorization.

4.1.8 Wind Speed and Direction

According to Meteoblue (2024), the most prevailing wind direction in Qena is from the North North West, and North West. The predominant average yearly wind speed is >14.4km/h followed by >12km/h.

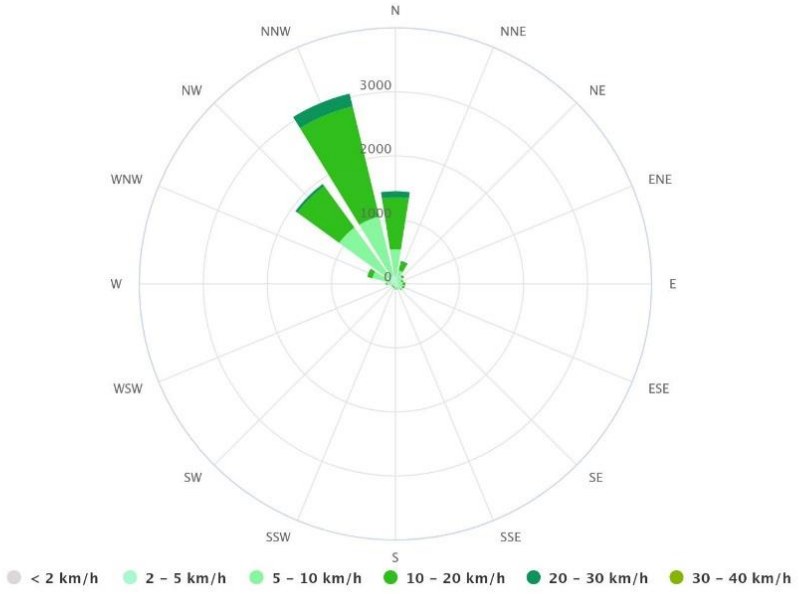

Figure (4.6): Map shows Windrose for Qena.

4.2. Biological Environment

4.2.1 Biological Description of Project Site and Surrounding Area

A desktop review was carried out to obtain some background on the biodiversity of the subproject site and surrounding area. A site visit was then conducted for ground truthing which encompassed an audit on the natural habitat and species in and around the site. The subproject site was visited on the 22nd of September 2023.

Habitats: The area surrounding the Taramsa Silo is predominantly composed of reclaimed agriculture lands and desert terrain, characterized by low biodiversity.

Flora: A desktop review, consultations with locals, and field surveys conducted during the site visit (September 22, 2023) identified a total of 14 plant species were recorded in the general project area and surrounding habitats. (EEAA, 2005). Common species include *Phragmites australis, Eichhornia crassipes, Ceratophyllum demersum, Azolla filiculoides* and *Echinochloa stagnina.* while rare species like*Arthrocnemum macrostachyum, Sarcocornia fruticosa, Lemna perpusilla, Potamogeton crispus* and *Salsola kali* were note in saline and marginal habitats Many other species were found in the Nile Bank and are considered as noteworthy species because they have economic uses. These species are: *Eruca sativa Mill., Raphanus raphanistrum L., Trifolium alexandrinum L., Malva parviflora L., Sida alba L., Mentha longifolia (L.), Sonchus oleraceus L., Allium roseum L.* However, the proposed subproject site itself is largely devoid of vegetation. Observations suggest these species may potentially occur in surrounding Nile Valley and agricultural areas but were not directly identified at the subproject site.

Fauna:

Mammals: Rodents form the largest mammalian group in the area, being represented by many species and the most common species – besides of course the normal cats and dogs- are the Field Rat *Arvicanthis niloticus* and the Black Rat *Rattus rattus*, which are nocturnal and feed on vegetables and seeds. Burrows are shallow and usually under shrubs. The Red Fox *Vulpes vulpes* were recorded in areas around the Nile Bank. Individuals and their tracks were seen throughout the area, where it seems to inhabit date and fruit groves, cultivated areas and suburban gardens, commonly seen during daylight hours. It feeds on birds, rodents, and insects. This fox belongs to the subspecies *aegyptiaca* which is widespread around drains of Nile Delta and Valley. These observations were supplemented by consultations with locals who confirmed the presence of these species in the area.

Amphibians and Reptiles: Four species of amphibians and 34 species of reptiles are known from the Nile Valley. Characteristic amphibians include *Sclerophrys regularis*, Common reptiles include *Hemidactylus turcicus, Chalcides ocelltus, Coluber florulentus, Natrix tessellata, psammophis sibilans, Telescopus dhara, and Naja haje. Mabuya quinquetaeniata, Chameleo africanuus, Varanus niloticus, leptotyphlops cairi, Psammophis sibilans, Matrix tessellata, Dasypeltis scabra, Trionyx triunguis,* and *Ptychadena masareniensis,* are restricted to this habitat in Egypt. The subproject at Taramsa Silo is not expected to directly impact the Nile River or its water quality, as the silo construction and operation activities are located inland, away from the immediate vicinity of the Nile.

Birds: The project site lies near migratory bird route for palearctic species, with the surrounding Nile Valley region supporting 66 bird species (Goodman *et al*., 1989). At least 14 of these are not known to breed outside that habitat. Characteristic species include *Egretta ibis, Elanus caeruleus, Milvus migrans, Falco tinnunculus*[2]*, Gallinula chloropus, Hoplopterus spinosus, Rostratula benghalensis, Streptopelia senegalensis, Centropus senegalensis, Tyto alba, Merops orientalis, Galerida cristata, Hirundo rustica, Motacilla flava, Prina gracilis, Corvus cowrie, Passer domesticus*, and others. The Nile Valley with its abundance of water and food available for birds, provide an important, relatively, easy, and safe route for trans-Saharan, palearctic migration. Huge numbers of individuals of many species utilize this route during both spring and autumn migrations. The region also provides wintering habitats for large populations of many palearctic migratory species (Goodman *et al*., 1989). No significant bird activity was observed during the field survey, which could be attributed to the survey timing outside peak migratory periods. However, the site may attract birds during the operational phase due to the presence of grains. The Upper Nile Important Bird Area (IBA) is located less than 2.3 km from the project site, underscoring the ecological sensitivity of the area during migratory seasons.

Aquatic Life: The Nile Bank near the project area supports diverse aquatic species, including *Tilapia zillii* and *Oreochromis niloticus* which are prevalent in the region's ecosystems. The project is not expected to impact the Nile riverbank due to its distance away from it.

[2] Most falcon species and birds of prey are covered under the ITES Appendix II, and CMS Appendix II,

Proximity to Sensitive Areas The project site is not located within or near any designated RAMSAR sites. However, it is in close proximity to several protected areas and sensitive ecological zones. Under Prime Ministerial Decree 1969/1998, all Nile River islands have been designated as Protected Areas. In this context, the nearest protected island is Qus Island, which is located a few kilometres away (2-3km) east of the project site. Moreover, the site lies near the Upper Nile Important Bird Area (IBA), this IBA is a critical stopover for migratory birds along the East African Flyway. The Upper Nile IBA and the bird migratory route highlights the need for robust mitigation measures to ensure minimal disturbance to avian species. Overall, the site is characterized by low biodiversity, however, the Upper Nile IBA is located at a close distance and potential occurrence of bird species in the area is possible.

The Saluga and Ghazal Protected Area is located approximately 160 km south of the project site, and the Wadi El-Rayan Protected Area is about 250 km northwest of the site. There are no RAMSAR areas near the subproject site.

Upper Nile IBA[3]:

The subproject is located near an Important Bird Area (IBA); Upper Nile (less than 2.3km). This segment of the Nile River has the highest concentrations of wintering waterbirds in Egypt. According to Bird Life International, "the islands are particularly attractive to resting waterbirds. *Aythya nyroca* (classified as Near Threatened globally)[4] winters in internationally important numbers. *Netta rufina* winters regularly in small numbers, while *Marmaronetta angustirostris* (classified as Near Threatened globally)[5] is an irregular and rare winter visitor, last recorded from the area in 1983. This section of the Nile valley is likely to be of importance for staging waterbirds and other migrants, such as *Ciconia ciconia*, during the migration seasons".

Conclusion: The subproject site is located in the western Desert, west of the Nile Valley, the subproject area is surrounded by agricultural lands and desert areas with little biodiversity. However, The African Softshell turtle (*Trionyx triunguis*) is classified as Vulnerable globally, yet it is a water species present in the Nile and confined in water habitats. Threats to this species include habitat destruction and collection6. Since the Nile is located 2 km from the Nile this species is not expected to be threatened by the subproject works. Due to the proximity of the project site to the IBA, the project site may attract birds including migratory birds during operational phase due to the presence of grains (potentially spilled) and the nature of the project. Therefore, the ESMP will take this risk into consideration.

[3] BirdLife International (2024) Important Bird Area factsheet: Upper Nile (Egypt). Downloaded from https://datazone.birdlife.org/site/factsheet/upper-nile-iba-egypt on 17/09/2024. The pest management plan will ensure these birds are not affected by secondary poisoning from rodenticides.
[4] Classified as Near Threatened by the IUCN. Hunting is one of the threats. Source: Aythya nyroca (Ferruginous Duck) (iucnredlist.org)
[5] Classified as Near Threatened by the IUCN. Hunting and pollution are amongst the threats faced by this species. Source: Marmaronetta angustirostris (Marbled Teal) (iucnredlist.org)
[6] IUCN 2024. The IUCN Red List of Threatened Species. Trionyx triunguis (African Softshell Turtle) retirved from (iucnredlist.org). https://www.iucnredlist.org/species/62256/96894956#threats

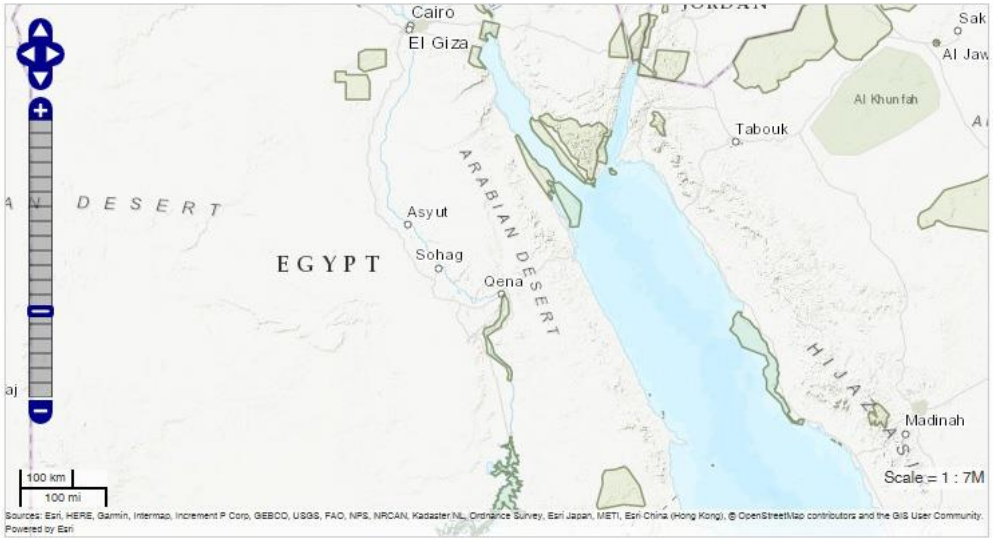

Figure (4.7): Map showing the IBAs in Egypt, including the upper Nile IBA near the subproject sits (near Qena).

4.3. Socio-Economic Aspects

Socioeconomic conditions were assessed through a combination of a desk-based study, site visits (the site visit was conducted on 22nd of September 2023), and consultations with relevant stakeholders. Based on a combination of both primary data collected from the field and secondary resources reviewed, including national statistical data, this section highlights some basic information about the demographic characteristics and human development profile in Qena.

4.3.1 Basic Demographic Characteristics

Qena Governorate, located in Upper Egypt, covers an area of 10.80 thousand km^2, and is divided into nine administrative centers: Abu Chit, Farshout, Naga Hammadi, Dashna, Waqf, Qena, Qift, Qus, and Naqada. It is known for its industrial-agricultural activities, particularly the cultivation of sugarcane, bananas, and tomatoes. These crops play a significant role in the governorate's economy.

Taramsa Village Overview:

Taramsa village, where the silo is located, is a subsidiary village of Qena City, the capital of the governorate. Taramsa is situated approximately 1.2 km west of the Qena-Luxor Road and is primarily rural in nature, characterized by: a) The population of Taramsa village is approximately 5,000 residents. This estimate is based on local administrative records and field surveys conducted during the Environmental and Social Management Plan (ESMP) preparation, primarily engaged in agricultural activities, b) Regarding the land use, Taramsa features a mix of agricultural lands, residential areas, and desert terrain. Agricultural lands, mainly used for

growing wheat, sugarcane, and vegetables, are predominant, surrounding the silo on the north, south, and west sides, and c) Regarding the key infrastructure, the village has basic infrastructure, including primary schools, small markets, and access to healthcare services at the Qena City Hospital, located approximately 11.4 km away. Figure (4.8) shows the location of Taramsa village and the surrounding area of the subproject site.

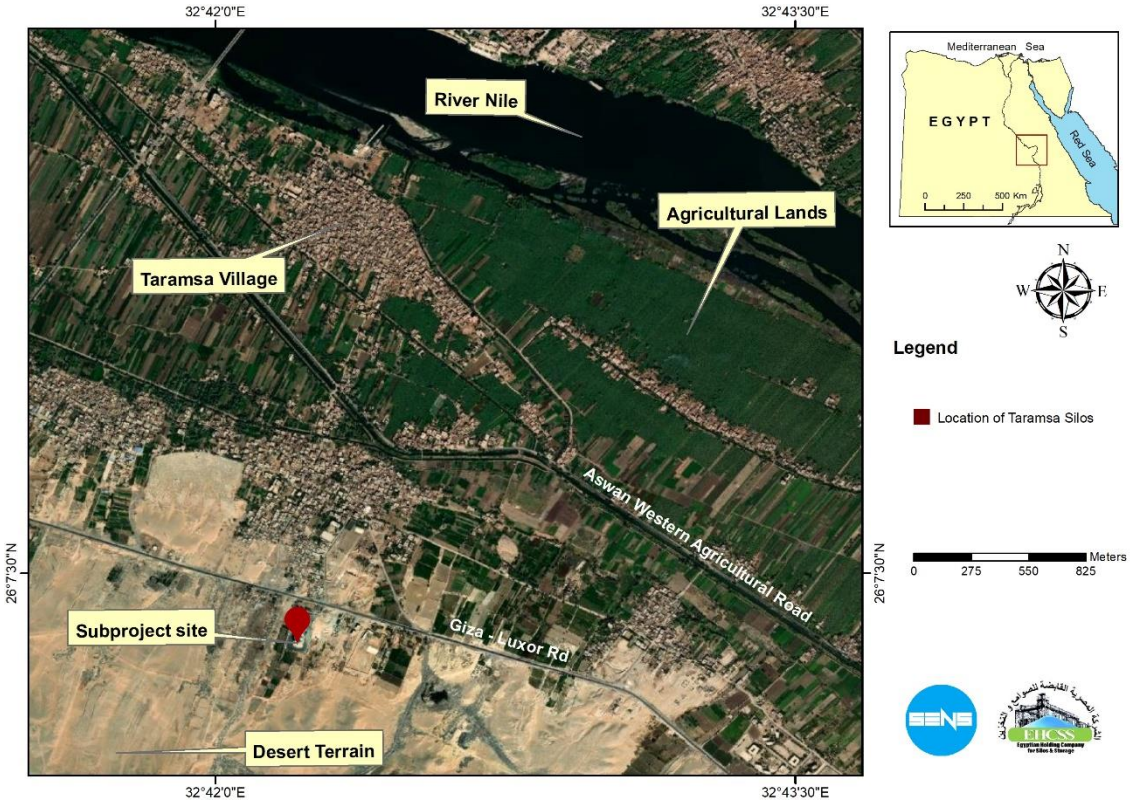

Figure (4.8): Map showing the location of Taramsa Silo and the surrounding area including the Taramsa village, River Nile, agricultural lands, and desert terrain.

The use of Silo in Grain storage

Grain storage is a critical component in the grain marketing supply chain, ensuring a consistent supply from the harvest season to other seasons and from years of abundance to leaner years. Storage serves various purposes depending on the user. a) small scale farmers; grain storage at the farm level helps ensure food security for the household, facilitates seed preservation, and supports cash flow or barter exchange. Farmers typically store grain inter-seasonally to meet their family's needs. The harvest season, which starts in April and lasts until August, marks the peak period of grain storage for small-scale farmers. b) large scale traders, Traders, operating at a larger scale, use grain storage for limited periods, often days or weeks. Their focus is on buying and selling grain quickly to maximize profits, rather than inter-seasonal storage. Commercial entities, commercial storage is used by millers and co-

operatives to meet urban demand and ensure stock availability for their operations.. Storage at this level is strategic, ensuring business continuity, and d) Government storage, Government involvement in grain storage, managed through specialized departments, or agencies, aims to stabilize supply and demand at the national level. This includes creating reserves for urban populations, enhancing food security, stabilizing prices, and ensuring political stability through economic measures. The farmers utilizing the silo primarily consist of small- and medium-scale farmers from surrounding villages in Qena Governorate. The grains are transported to the silo using trucks and tractor-driven carts, depending on the scale of production and distance. Women play significant roles in the agricultural value chain, particularly in grain cleaning, sorting, and storage preparation, and occasionally assist in transporting smaller quantities of grain to the silo. The majority of farmland in the region is privately owned, while medium-scale farmers operate larger plots, occasionally employing laborers. This strategic location of the silo near agricultural lands and transportation routes ensures efficient grain delivery and supports the livelihoods of local farmers and workers, including women actively participating in the agricultural sector.

Challenges Identified in Current Silo Operations

Through consultations conducted with stakeholders, several challenges in the existing operation of the Taramsa silo were identified:

A) Long Waiting Times: Users, especially small-scale farmers, reported delays during the harvest season due to high demand and limited capacity in the silo's storage cells.

B) Accessibility for Vulnerable Groups: Some farmers, particularly the elderly and women, mentioned difficulties in accessing silo services due to limited assistance during the supply process. This impacts their ability to efficiently deliver grain.

C) Transportation Challenges: Farmers and traders face logistical difficulties, including a lack of adequate transportation support for grain delivery to the silo.

D) Technical and Physical Constraints: Existing facilities at the silo, including loading and unloading equipment, were reported to be insufficient to handle peak harvest demands efficiently.

The ESMP will address those challenges.

Population Profile: The total population of Qena governorate is about 3.5 million inhabitants in 2021(Egypt Description by Information, 2021). The percentage of urban population at the governorate is 18.5 % while the population increase is about 23.0 per thousand inhabitants (the difference between the number of births, and the number of deaths over a period of time).

Age and Gender Distribution: The age distribution of the population in Qena Governorate shows that almost 38.0% are less than 15 years old, while those between 15 to 45 years old represent about 29.19%. The population pyramids show that the majority of Qena Governorate is growing young as the majority are less than 25 years old. In Qena City, 35.59% are less than 15 years old, while adults aged 15 to 45 represent 31.24%. Approximately 66% of the population are

married. The sex structure of Qena Governorate is quite keenly balanced with approximately 48.7% of the population being female. There are small variations between Markazes and between urban and rural areas.

4.3.2 Living Conditions

Household Size and Density: Housing conditions are key indicators of socio-economic development. Poor and vulnerable communities and households often lack access to utility services. A summary of people's access to the key utility services is given below.

Access to Electricity: According to Egypt Description by Information for Qena governorate, 65.17% of the energy consumed is used for industrial purposes and the rest for lighting and other household uses.

Access to water and sanitation network: In Qena approximately 60% of water supplies are derived from the river Nile and approximately 40% from groundwater sources. Generally, people's access to water may be through treated, piped water (either in their home, in their building or outside their building), from a hand pump or from "other" sources i.e., from a well, directly from the Nile or from irrigation canals etc. Qena ranks 22nd among the governorates of the Republic in the per capita share of the amount of drinking water consumed at a value of 42.93 m^3/capita, and the percentage of total water loss reached 37.00%.

Qena has 9 sewage treatment plants with a design capacity of 206.54 thousand m^3 per day, and its actual capacity 108.59 thousand m^3 / day. The number of households connected to sanitation system is 748.99Thousand households. 100% Of households are connected to sanitation system either it's public network (15.47%) civil network (2.02%) or other (82.51%) in 2017 (Egypt Description by information, Qena Governorate 2021).

4.3.3 Labour Profile

The total labor force (above 15 years) in Qena Governorate is estimated to be 7481 hundred persons among which 7122 hundred persons are employed. The unemployment ratio (the percentage of people in the labour force who are unemployed) is estimated at 4.8%. 4.8% is the unemployment rate, which is lower than the average unemployment rate for the Republic (7.9%), and Qena ranked 24th among the governorates of the Republic with the highest unemployment rate. 21.9% is the female unemployment rate, which is very remarkably high compared to the female unemployment rate of the Republic (21.7%), and it ranked 17th among the highest governorates of the Republic in terms of the female unemployment rate. (Egypt Description by Information, 2021).

4.3.4 Economic Activities and Well Being

Agriculture and livestock: The cultivated area amounted to 269.78 thousand acres, and it is ranked 15th among the governorates of the Republic in the cropped area with a value of 377.29 thousand acres. 1.43 billion Cubic meters of Nile water is used for irrigation. The governorate is famous for producing sugar cane, tomatoes, bananas, sesame, and hibiscus. There are 191 agricultural associations in the governorate, 106 demonstration fields, 332 farms (3.31% of which

are for livestock, compared to 96.69% for poultry), 2 feed factories, in addition to 17 manual slaughterhouses for livestock (there are no automatic or semi-automatic slaughterhouses). The governorate produces 6.97 thousand tons of red meat, 0.18 thousand tons of white meat, and 0.66 thousand tons of fish (Egypt Description by Information, 2021).

Fisheries: Qena's fish stock comes from fresh water, as fish Production in 2020 was around 753 Ton which classified into 315 Ton of Neil Tilapia, 52 Ton of Catfishes, torpedo shaped, 75 Ton of Bargus and 214 Ton of procambarus clarkia (CAPMAS 2020).

Industrial Activity: 230 industrial facilities registered in Qena Governorate, with an investment cost of 10.85 billion pounds, employing 24 thousand workers. There are also 5 industrial zones in the governorate. The governorate hosts three sugar factories and one spinning and weaving factory, in addition to the Aluminum Complex, which is one of the biggest industrial plants in the Middle East.The governorate, also hosts two industrial zones; the first is situated in Kalaheen at Qaft markaz (conglomeration of villages). The second industrial zone is at Yahaw in Nagga Hamady equipped with the needed infrastructure, where investors are welcomed to start up their projects (Egypt Description by Information, 2021).

Tourism: Qena includes Pharaonic monuments such as Denderah Temple, which is situated on the West Bank of the Nile at 5 km from Qena city, which has inscriptions, and writings that dates to Queen Cleopatra's era as well as Greek writings. In addition to that, the governorate has Islamic shrines such as the mosques of Seedy Abdel Reheem el-Qenaé, and the Omari Mosque in Qoos, as well as Coptic monasteries in Naqada (conglomeration of villages).

4.3.5 Social Services Profiles

Education: Education is one of the most important criteria for measuring the progress of people and their ability to advance and improve their standard of living. According to CAPMAS, September 2018 announced that Egypt's illiteracy rate dropped from 39.4% in 1996 to 29.7% in 2006, and then to 25.8% in 2017. Qena Governorate is considered one of the governorates that enjoy proper education levels in the different levels of education.

The illiteracy rate (10 years and over) is 27.40% in Qena Governorate, which is higher than the average illiteracy rate at the republic level of 24.10%. The number of general pre-university education schools in Qena is 1956 schools, benefiting 697.87 thousand students. The class density in Qena is 45.09 students/class, which is lower than the average class density at the republic level (47.16 students/class), and 97.80% of the schools are Public.

There are 108 technical schools in Qena, concentrated in industrial schools 46.30 %, commercial schools 34.26 %, and agricultural schools 15.74%, benefiting 83.90 thousand students. The average classroom capacity in technical education is 42.06 students/classroom. There are 33Special Education schools in Qena, benefiting 1294 students. The average classroom capacity in Special education is 8.57 Student/Classroom. One university in Qena, with 21 colleges benefiting 51.39 thousand students. There are seven institutes in Qena, six of them governmental, and one is private, benefiting 9638 students, and the number of graduates reached 2920 graduates.

Health: Health services spread nationwide, which vary between hospitals of the Ministry of Health, Rural and specialized. The private sector also plays a significant role in this field. 1172 physicians working in Qena, and the number of citizens per physician reached 2.88 thousand citizen/ physician, which is higher than the average of the Republic (1.33), and 3342 nursing staff members, and the number of citizens per nurse reached 1.01 thousand person/Nurse, which is better than the republic's average (0.68). 2007 total number of hospital beds in the governorate, 81.46 % of which belong to government hospitals and the rest belong to the private sector, 1684.24 population per bed in Qena, which is higher than the republic's average (775.54). 1811 public pharmacies in Qena, 14 of which provides night service, and has 1818.33 thousand health insurance beneficiaries, representing 54.43 % of the governorate's population, and 127.44 thousand cases were treated at state expense inside Egypt from Qena, at a cost of 229.80 million pounds. 246 family planning units, 15 mobile family planning clinics, and 125 pediatric intensive care units for children in Qena. In general, all child mortality rates for Qena were higher than the child mortality rates for the Republic except newborn mortality rate.

4.3.6 Infrastructure

According to the data from the Statistical Yearbook (CAPMAS, 2017) Qena, a brief summary on access to basic infrastructure services available in Qena governorate is presented in the following sections:

Water Supply: In Qena approximately 60% of water supplies are derived from the River Nile and approximately 40% from groundwater sources. Generally, people's access to water may be through treated, piped water (either in their home, in their building or outside their building), from a hand pump or from "other" sources i.e., from a well, directly from the Nile or from irrigation canals etc.

Electricity: According to the World bank data 2022, nearly 100% of Egypt's population had access to electricity as of 2022, it is reasonable to conclude that Qena has achieved near-universal electricity access According to Egypt Human Development Report 2021, the percentage of the Egypt's population with access to electricity reached 99.7% In 2016/2017. In Qena specifically, the proportion of the population with access to electricity was recorded at 99.5%.

Roads and Transportation: The length of the paved roads network was 6556 km, as 98.22% of the governorate's roads are paved, compared to 1.78 % of dirt roads (Egypt Description by information, Qena governorate 2021).

Communication: There are 185 post offices and 69 telephone exchanges with a capacity of 890.70 thousand lines. The number of fixed-line subscribers reached 150.09 thousand subscribers, and the percentage of Internet users reached 40.7 % (Egypt Description by information, Qena governorate 2021).

4.3.7 Investment and Development

The Ministry of Planning and Economic Development announced, in a report issued recently, the features of the Citizen's Investment Plan for the Qena Governorate for fiscal year (FY) 2023/22. The disclosure of the report comes within the framework of continuing to announce

the Citizen Investment Plan in all governorates of the Egyptian Republic for the fourth year in a row, to educate citizens about the directions and priorities of the sustainable development plan for FY (2023/22), and its role in achieving "Egypt's Vision 2030".

The number of development projects in the governorate reaches 277 projects and the value of public investments directed to Qena Governorate in the 2022/22-year plan amounts to EGP 4.7 billion. Concerning the sectorial distribution of targeted public investments in Qena Governorate with the 2023/22 plan, the investments worth EGP 1bn are directed to the local development sector, at a rate of 24%, and EGP 860m, or 18%, is allocated to the transportation sector. Investments in the higher education and scientific research sector amounted to EGP 798.8 million or 17%, the housing sector amounted to EGP 754.4 million or 16%, and the pre-university education sector amounted to EGP 258.5 million or 6%. As for the other sectors, investments amounted to EGP 882.3 million or 19%.

4.3.8 Archaeology and Cultural Heritage:

Qena Governorate includes the following:

- Deir El-Ballas, it is an archaeological site in Upper Egypt. It was the location of a royal palace and administration center occupied by rulers of the Seventeenth Dynasty in ancient Egypt's late Second Intermediate Period. The distance from subproject site is 11 km.
- Dendera Temple Complex, located about 2.5 km southeast of Dendera. The earliest extant building in the compound today is the Mammisi raised by Nectanebo II between 360-343 BC. The other temples are mostly Greco-Roman such as Hathor temple, also called Temple of Tentyra, which is the main temple in the complex that dating back to the Ptolemaic period in the 3rd century BC. The distance from subproject site is 6.6 km.

Qus is a city in Qena Governorate. In Graeco-Roman times. The city was an important city in the early part of Egyptian history and became the second most important Islamic city in medieval Egypt. The distance from subproject site: 30 km.

4.3.9 Status of Women:

According to the WB's background note on gender equality and climate change (2024), women in Egypt bear the responsibility for unpaid care including household chores, children raising and family care. Additionally, women have less rights to land than men, low access to financial resources, services and technologies and low participation in their community's formal decision-making processes particularly in rural areas and specifically in the agriculture sector.

Women farmers are responsible for the following activities: sowing seeds, weeding, cultivating, harvesting crops, selling products, and taking care of gardens. Yet, despite their major support in agriculture activities, their important roles in agriculture activities are not recognized due to gender bias. ((SYPE 2010-2014) survey and ILOSTAT 2020).

Over 71 percent of Egyptian women in rural areas are reported to be working in unprotected informal jobs (most of them working without pay in family businesses). Even when

considering only formal employment in agriculture, men are mainly employed as full-time workers (FAO, 2022).

4.3.10 Land Use:

The Taramsa Silo is located in a reclaimed desert area with access via the main Qena - Luxor Road.

The immediate surroundings of the subproject site are as follows:

- North: The Qena-Luxor Road, a critical transportation route, lies approximately 60 meters north of the silo site. Beyond the road, there is an empty barren area followed by small residential areas and agriculture lands. At the northeast of the site after the main Qena Luxor Road, some reclaimed agriculture lands are present.
- South: Desert terrain extends beyond the silo site, with no significant structures or agricultural activity within 500 meters.
- East: There is a residential area at about 60 m away east from the existing silo and bordering the expansion area, this residential area will not be resettled but they live very close to the expansion site and stringent measures are present to ensure they are not negatively impacted.
- West: The area to the west consists of reclaimed agricultural fields, the closest of which is approximately 400 meters from the silo site.

5 IDENTIFICATION AND ANALYSIS OF ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS

5.1. Overview

The impacts on the environment and terrestrial ecosystems could be generally attributed to natural or anthropogenic factors. However, recognizing natural and anthropogenic stressors might be difficult due to the complexity of ecosystems reactions to the variety of disturbances. This section of the report identifies the potential impacts on the environment and on the community, especially terrestrial habitats, and surrounding environments/communities. An environmental and social impact is defined as any change to an existing condition of the environment/social aspects. The main objective is to examine, analyze and assess the planned project activities' impacts on the baseline conditions.

This chapter concerns both 'planned' activities (those activities concerning normal, or anticipated activities during all sub-project phases), and 'unplanned' activities, that is, those activities that are unexpected. Unplanned activities at grain silos include fire and explosion, often due to poor control of grain dust and conditions that result in ignition of dust.

Various potential positive and negative impacts are described below.

Positive impacts:

- Benefits (that is, positive impacts) are likely to have a positive impact locally through hiring. Worker camps will not be required, accommodation in the form of rented apartments will be provided to a few outsourced workers, and no sub-project-related influx is anticipated (these may have negative impacts on local communities). At the regional level (that is, a second zone of impact), the sub-project may have benefits in terms of additional revenue (Providing new job opportunities for young people in construction areas). Farmers in the region will be also benefitted from storing wheat at the grain silos, and another from local stakeholders who will be able to withdraw wheat from the silos.
- Providing highly advanced storage capacity within the country.
- Eliminating the percentage of wheat losses resulting from poor storage, which reaches about 10%.
- Aiding the country in maintaining a secure strategic balance of wheat.
- Tightening the process of maintaining and controlling the stock, which leads to an economy in the use of pest control methods with pesticides and maintaining the quality of the grain as a result of the high quality of storage.

- Reducing the average purchasing price of wheat throughout the year as a result of entering the global purchasing market at appropriate times.
- Creating new areas of attraction and agricultural expansion in order to encourage farmers to grow wheat and grains next to the sites where silos are being established.

Negative Impacts:

Possible impacts arising from the construction and operation works are categorized into reversible and irreversible impacts. The impacts identified are also described according to their location, extent, and characteristics. Reversible and irreversible impacts are further categorized by intensity of impacts (negligible, minor, moderate, and major) for identifying best possible remedial (mitigation measures) action to be taken. This ESMP identifies and quantifies the significance of adverse impacts on the environment from the proposed Taramsa Silos Complex sub-project. Impacts on the environment were assessed in terms of their significance according to the following categories:

- Insignificant – the impact is too small to be of any significance, (category I).
- Minor – the impact is undesirable but accepted, (category II).
- Moderate – the impact give rise to some concern but is likely to be tolerable in short-term (e.g., construction phase) or will require a decision to its acceptability, (category III).
- Major – the impact is large scale giving rise to great concern; it should be considered unacceptable and requires significant change, (category IV).

5.1.1 Impact Assessment Methodology:

A. Identification of area of influence

Physical:

- Surface water resources: The Taramsa Silo is located approximately 2.5 km from the Nile River and less than 1 km from a nearby water canal. Due to this proximity, the project may have potential impacts on surface water resources, particularly during construction and operational phases. However, mitigation measures will be implemented to minimize any potential contamination or disruption to these water bodies.
- Groundwater Resources: The depth to groundwater in the Quaternary aquifer varies significantly across the region, a) near the Nile riverbanks, the groundwater is shallow, with depths as low as 5 meters due to seepage and recharge from the Nile, and b) in areas farther from the Nile and closer to desert fringes, the groundwater depth can reach up to 30 meters or more, as shown by local hydrogeological studies and supporting evidence (e.g., wells in the South Valley University campus and the site's proximity to irrigation activities). Strict controls must be implemented to prevent contamination from fuel spills, oil leaks, or improper handling of construction materials.
- Air, Noise and Vibration receptors: The Taramsa Silo is surrounded by reclaimed agricultural lands and desert terrain. The closest community,

Taramsa village, is less than 1 km away. There is a residential building bordering the construction site to the north-east .Air emissions, noise, and vibration generated during construction and operation phases could potentially affect nearby residential areas and agricultural lands. Wind direction in the Taramsa area is predominantly northwest (NW) to southeast (SE). Therefore, air emissions from construction activities are likely to travel southeast where there is minimum agriculture lands and very little residential areas located in this direction.

There are few residential buildings and agricultural lands to the east of the expansion area and to the west and south of the existing silo areas. These residences are primarily homes for farmers and agricultural workers. Agricultural lands bordering the main road on both sides, within a 500-meter area of influence, could be affected by vehicle emissions and noise. Stringent mitigation measures will be implemented to ensure community health and safety is ensured.

- Land Use: The area within a 1 km radius from the Taramsa Silo project site comprises diverse land uses, including a) agricultural lands, b) desert areas, and c) residential areas including the village of Taramsa, located approximately less than 1 km to the northwest. The land use in this area will be carefully considered, and impacts will be minimized through proper planning and implementation of construction activities.
- **Biological:** The Taramsa Silo is not located near any RAMSAR sites, or other protected areas. However, it is in proximity to an Important Bird Area (IBA) called Upper Nile, situated approximately 2.3 km from the project site. This IBA serves as a critical migratory route for Palearctic bird species, particularly during spring and autumn migration seasons. The presence of migratory birds near the project site poses a risk of collision, particularly during operational phases when silos may attract birds due to grain spills. Although the site is characterized by low biodiversity, , efforts will be made to ensure that construction and operation activities do not disturb the local flora and fauna.
- **Social:** The primary area of influence includes Taramsa village and other surrounding communities that rely on the silo for grain storage. The project will have both positive and negative social impacts. Positive impacts include increased employment opportunities and enhanced grain storage capacity. However, potential negative impacts such as noise, dust, and traffic disruptions during construction must be mitigated.
- Transportation and Infrastructure: The main roads in the vicinity, including the Qena-Luxor Road, will experience increased traffic due to the transportation of construction materials and equipment.

Additionally, internal roads that will be used to transport grains from farms to the silos and possibly used during construction phase may experience increased traffic. This could lead to increased noise, vibration, and potential safety risks. Mitigation measures, such as a traffic management plan, will be implemented to minimize these impacts. Social area of influence also includes the farmers who will benefit from storing wheat at the grain silos, and another from local stakeholders who will be able to withdraw wheat from the silos.

- **Health and Safety:** The construction and operation of the silo expansion pose risks to both workers and local communities, including exposure to dust, noise, and potential accidents. Strict adherence to Occupational Health and Safety (OHS) standards will be enforced to ensure the safety of all individuals involved in or affected by the project.
- **Conclusion:** The area of influence for the Taramsa Silo expansion project encompasses the immediate vicinity, including surface and groundwater resources, nearby agricultural lands, the village of Taramsa, and key transportation routes. Potential environmental and social impacts have been identified, and appropriate mitigation measures will be implemented to minimize these impacts during both the construction and operation phases of the project.

B. Impact significance for planned activities

Impacts significance levels are assessed based on the magnitude (scale, duration and severity of impacts and likelihood of occurrence (for unplanned events)) and the sensitivity of the receptor (presence of receptors/importance of receptor etc.). Accordingly, the negative risks and impacts are assessed based on the following characteristics:

- Duration of the impact (temporal).
- Size of the impact (spatial).
- Severity.
- Sensitivity of receptors.
- The magnitude of the impact is the result of the above criteria.
- The significance of the impact = (the magnitude of an impact) + (the importance of the receptor).

➢ **<u>Planned risks and impacts</u>**

For planned risks and impacts, the first step is to determine (i) the duration of the impact, (ii) the spatial range of the impact and (iii) the severity of the impact, and (iv) receptor sensitivity. A scoring system was adopted to determine the scale of the three criteria above, with 5 being the highest level and 1 being the lowest for each of the three criteria.

Step1: Temporal scale (duration):

Duration category	Description	Score
Short term	Impacts will last for short duration (<5 years)	1
Medium-term	Impacts will last for medium duration (5-15 years)	2
Prolonged-term	Impacts will last for more than a generation lifetime (15-30 years)	3
Long-term	Impacts will last for a long term (30-45 years)	4
Permanent / irreversible	Impacts may last more than 45 years or longer.	5

Step 2: Spatial scale:

Spatial category	Description	Score
Localized	Within the project area and immediate surrounding	1
Study zone/ District/Markaz Level	Within Markaz Abanoub	2
Regional	Governorate level	3
National	Country Level	4
Global	Worldwide	5

Step 3: Severity scale:

Severity level	Description	Score
Insignificant/no effect	Receptors are not affected.	1
Slightly severe	Receptors may be slightly affected however mitigation measures are considered in design stage or cheap to implement and/or fast to implement.	2
Moderately severe	Impacts are reversible and could be mitigated.	3

Severe	Impacts could be mitigated with expensive and time-consuming measures.	4
Highly severe	Impacts are permanently irreversible and cannot be mitigated.	5

Step 4: Magnitude scale

The next step is determining the magnitude scale which is the result of the temporal, spatial and severity scales (above). The results of the scores above will provide the magnitude scale as follows

- A total score above 12 and equals to 15, Very Large scale
- A total score above 9 and equals to 12, Large scale
- A total score above 6 and equals 9, Moderate scale
  A total score above 3 and equals to 6; Small scale A total score above 1 and equals to 3; Negligible

Step 5: Receptor importance/sensitivity scale

Receptor sensitivity is based on the degree to which a receptor is resilient to change, and the value attributed to the receptor by stakeholders or applicable regulations/policies. Receptors usually fit into one of the following three categories:

- Physical (non-living environmental components, including air quality and noise, water resources, sediments and geology).
- Ecological (for example fauna); and Human.

Step 6: Significance scale

The significance of impact is evaluated based on the results of the magnitude scale and the importance of the sensitive receptor/vulnerability of the receptor.

Magnitude	**Importance of receptor/sensitivity of receptor**		
	Low	Moderate/Medium	High
Negligible	insignificant	insignificant	insignificant
Small	insignificant	Minor	Moderate
Moderate	Minor	Moderate	Major
Large or Very Large	Moderate	Major	Major

- **Unplanned activities risks and impacts**

The grain handling industry is a high hazard industry where workers can be exposed to numerous serious and life-threatening hazards including:

- fires and explosions from grain dust accumulation
- suffocation from engulfment and entrapment in grain bins
- falls from heights
- crushing injuries and amputations from grain handling equipment
- hazardous atmospheres inside storage structures

Only the first category relates to unplanned (or accidental) activities or events during sub-project operations. The others are OHS issues for plant workers that are addressed in Section planned risks during construction and operation phases. This section addresses the potential environmental impacts of accidents. This should not be confused with a discussion of plant safety. Occupational exposure to materials released in accidents, and the potential for personal injury to occur, are only considered environmental issues to the extent that they affect socio-economic stability. Consequently, the potential environmental impacts of a serious accident may seem disproportionately small.

Unplanned activities related to grain silo construction, operations and decommissioning, typically include the following:

- Fire or explosion related to fuel leaks (e.g. from diesel storage tanks) during the construction, operation and decommissioning phases. During these phases, temporary power generation may require diesel fuel storage for the generators.
- Pesticide leaks.
- Fire or explosion related to grain dust.

Five steps have been undertaken towards evaluation of the risks of unplanned events:

1. Identify risks: This included the analysis of potential risks and opportunities. Although risk identification is continuous throughout the life of the sub-project, risks should be managed as soon as possible.
2. Determine probability: This ensured focus on mitigation of the risks most likely to affect this sub-project.
3. Determine the impact: This process is similar to the evaluation undertaken with respect to planned sub-project activities.

4. Identify mitigation measures: This part of the process consists of risk response planning. As for evaluation of planned activities, measures will be identified to reduce or eliminate the identified risks. Risks can be addressed via mitigation strategies, preventive plans and contingency plans.
5. Monitor and review the risk: Risk management is a continuous process because conditions change. The ESMP includes procedures for review, monitoring, and tracking of identified risks periodically throughout this sub-project. Uncertainty plays a major factor in risk management.

Technologies for Identifying and Monitoring Risks

To ensure the safety and efficiency of silo operations in Taramsa, various technologies will be used for identifying and monitoring risks, including the following:

- **Temperature Sensors:**
  - Monitoring the temperature within grain cells to detect hotspots that could indicate potential spoilage or combustion.
  - Sensors are placed at multiple points within the silo to provide comprehensive temperature data.
  - Early detection of temperature anomalies can prevent spoilage and reduce the risk of grain dust explosions.

- **Hazard Monitoring Equipment:**
  - **Dust Monitoring:**
  - Equipment such as dust sensors and explosion-proof sensors are used to monitor dust levels and prevent hazardous accumulations.
  - **Gas Detection:**
  - Phosphine and other fumigant gas detectors ensure that concentrations remain within safe limits.
  - **Moisture Sensors:**
  - Moisture content sensors help maintain optimal storage conditions and prevent mold growth and spoilage.

- **Software for Monitoring Silo Systems:**
  - **Integrated Monitoring Systems:**
  - Software systems that integrate data from various sensors (temperature, moisture, dust) to provide real-time monitoring and alerts.

- **Emergency Response and Risk Management:**

- **Automated Emergency Shutdown Systems:**

  Systems that automatically shut down operations if hazardous conditions are detected.

For the purposes of this impact assessment, potential impacts that are dependent on the occurrence of an action that has a finite probability, but might not occur at all, are referred to as "event-related impacts." An example of event-related impacts that may occur as a result of this Project could be associated, for example, with an accidental, uncontrolled release of hydrocarbons that might occur under non-routine operating conditions. Because event-related impacts may not occur at all, assessment of potential impacts that are event-related may take into consideration the **likelihood** of occurrence.

Likelihood can be derived from historical information, modelling, industry data, stakeholder input, and professional judgment. In addition, likelihood takes into account anticipated or planned mitigation measures, engineering controls, and procedures in place to prevent or reduce the potential consequences of the identified event. To assign likelihood to an event-related impact, six possible levels of likelihood are defined and ranked. The six levels are defined as shown in the table below.

Table: Likelihood of event-related impact.

Impact	Definition
Rare	The impact is rare or unheard of
Remote	The impact has occurred once or twice in the industry
Unlikely	The impact has occurred in the industry in the past but is not likely to occur on this project during the lifecycle of the facility (e.g. construction, operation, decommissioning).
Seldom	The impact could occur on this project during the lifecycle of the facility but only under exceptional conditions.
Occasional	The impact may occur on this project during the lifecycle of the facility.
Likely	The impact can reasonably be expected to occur on this project during the lifecycle of the facility.

The various levels of risk in relation to the Taramsa silo sub-project have been defined as follows:

Level of risk	Definition
Catastrophic	Death and/or catastrophic effect on environment that may take longer than a year to restore and cost more than $1,000,000. Regulator notification mandatory.
Major	Life threatening injury or multiple injuries requiring admission to hospital and/or significant effect on environment that may take up to a year to restore and cost up to $1,000,000. Regulator notification mandatory.
Moderate	Injury requiring admission to hospital and/or effect on environment that may take 1-2 months to restore and cost up to $20,000. Regulator notification mandatory.
Minor	Minor illness or injury requiring medical treatment (e.g. first aid) and/or minor effect on environment that can be cleaned up. Any potential damage remediation likely to cost less than $5,000. Regulator notification unlikely to be required.
Negligible	Illness or injury that doesn't require medical attention. No adverse effect on environment and regulator notification not required.

A single risk usually can result in a range of consequences, generally with less severe consequences being more common. To obtain one rating one must generally consider the scenario that gives the highest number (that is, the worst case).

The significant scale for unplanned events is presented in the following table. It is based on the estimated risk and estimated probability of occurrence.

Level of Risk	**Probability of Occurrence**					
	Likely	Occasional	Seldom	Unlikely	Remote	Rare
Negligible	Insignificant	Insignificant	Insignificant	Insignificant	Insignificant	Insignificant
Minor	Minor	Minor	Minor	Insignificant	Insignificant	Insignificant
Moderate	Moderate	Moderate	Moderate	Minor	Minor	Minor
Major	Major	Major	Moderate	Moderate	Moderate	Minor
Catastrophic	Major	Major	Major	Major	Moderate	Moderate

Example: Consequences of fire at grain silos

Note: Assume worst case scenario

There have been many cases of explosions and fires in grain silos and associated ducts and buildings. If the air inside becomes laden with finely granulated particles, such as grain dust, a spark can trigger an explosion powerful enough to blow a silo and adjacent

buildings apart, usually setting the adjacent grain and building on fire. Sparks are often caused by (metal) rubbing against metal ducts; or due to static electricity produced by dust moving along the ducts when extra dry. Overheating and mechanical failure of unloading or loading belts and other mechanical equipment and electrical failure can also cause fire outbreaks.

Possible impacts include severe to fatal impacts on workers and impacts of combustion gases (smoke) on surrounding communities. As the area bordering the southern and western site fence line of the Taramsa grain silo facility is largely agricultural, little impact with regard to explosions or fires is expected, as silo fires are normally contained within the site (based on past records of silo explosions/fires). Grain silo explosions can cause broken windows and other impacts on buildings 500m or more if there would be an explosion, but little impact is expected in the agricultural areas in the surrounding area of the silo site.

The incidence of grain silo explosions in the U.S. alone were 8.14E-03 per million tons of wheat. The time of return of explosions was 122.9 per million tons. This will be construed as occasional recurrence. The worst-case impacts are rated as Major. This gives a significance of **Major**. Mitigation measures will therefore be necessary to reduce the possible impact.

5.2. Analysis of Environmental and Social Risks and Impacts for Planned Activities

Table (5.2a): Construction phase risks and Impacts.

Factors	Impacts / Risks	Description	Impact Summary	Magnitude Level				Receptor Sensitivity	Impact Significance Level	Impact significance after mitigation measures implementation (table 6.1)
				Temporal scale	Spatial scale	Severity	Total			
Environmental	Risks on Ambient air due to airborne Dust	• Airborne dust can be generated from construction activities such as excavation and concrete mixing. This dust can pollute the air and can also pose a health hazard to workers and nearby residents.	• Construction phase will result in slight, localized, short term (16 months) dust emissions from construction activities. Therefore, the magnitude of the impact is deemed **small** the emissions will be limited mainly affecting the work environment and the surrounding agriculture lands and road and building. The vulnerability of the receptor (Taramsa village) is **high.** Therefore, the significance of the impact is **Moderate.**	1 Short term	1 Localized	2 Slight	4 Small	**High**	**Moderate**	Minor
	Engine Exhaust Gases and other sources of air	• Exhaust fumes and gaseous emissions such as NOx, Sox and Particulate matter (PM2) and (PM10)	• As above, Construction activities will result in slight, localized, short term (16 months), air quality emissions from fuel combustion/burning from construction equipment, machineries and transport	1 Short term	1 Localized	2 Slight	4 small	**High**	**Moderate**	Minor

Factors	Impacts / Risks	Description	Impact Summary	Magnitude Level				Receptor Sensitivity	Impact Significance Level	Impact significance after mitigation measures implementation (table 6.1)
				Temporal scale	Spatial scale	Severity	Total			
	emissions	from internal combustion engines/ generators/ vehicles and machineries used present another risk to air quality on and close to construction sites.	vehicles. The vehicle exhaust together with dust generated constitutes major pollutants which can affect air quality. The most relevant pollutant considered is particulate matter because of its potentially significant increase during the construction phase. Air pollution will have health implications on the workers, visitors and the neighboring community as it causes respiratory diseases and is a visual irritant (see area of influence). Therefore, the magnitude of the impact is deemed **small.** The emissions will be limited mainly affecting the work environment. The vulnerability of the receptor (Taramsa village) is **high**. Therefore, the significance of the impact is **Moderate.**							
	Risks on Soil and Water	• The project may impact soil quality	• Construction activities resulting in soil and groundwater pollution is of	1	1	2 Slight	4 Small	**High**	**Moderate**	Minor

Factors	Impacts / Risks	Description	Impact Summary	Magnitude Level				Receptor Sensitivity	Impact Significance Level	Impact significance after mitigation measures implementation (table 6.1)
				Temporal scale	Spatial scale	Severity	Total			
	resources contamination	and groundwater quality from; • Accidental oil and fuel spills from machineries and vehicles used. • Runoff risks from pesticides used which could pollute nearby lands/soils	low probability, as these events are accidental. Spills may result from domestic sewage, accidental oil and fuel spills from machineries and vehicles and diesel generator and spills from stored chemicals and materials and wastes. • The impacts are slight, localized and short term with an overall magnitude level of **negligible-small** because spills on the soil can be easily contained and cleaned**.** The soil and groundwater vulnerability are considered **high** (groundwater is located between 5 to 30m depth). The significance of the impact is therefore assessed to be Moderate.	Short term	Localized					
	Risks on Ambient Noise	• The following equipment used excavation and grading of the site may	• Construction phase will result in localized, short term noise emission from machineries and vehicles used. Therefore, the magnitude of the impact is	1 Short term	1 Localized	2 Slight	4 Small	**high**	**Moderate**	Minor

Factors	Impacts / Risks	Description	Impact Summary	Magnitude Level				Receptor Sensitivity	Impact Significance Level	Impact significance after mitigation measures implementation (table 6.1)
				Temporal scale	Spatial scale	Severity	Total			
		produce high noise emissions: ○ the use of heavy machinery, such as trucks, bulldozers, and excavators. ○ the operation of construction equipment, such as generators and compressors.	deemed **small.** The emissions will be limited mainly affecting the work environment and agriculture lands and buildings close by. The vulnerability of the receptor (Taramsa village) is **high.** Therefore, the significance of the impact is **Moderate.**							
	Biodiversity/ pesticides consumption by non-targeted species	• Impacts on biodiversity may result in the disturbance of wildlife from noise, dust, air, light emissions and waste generation including chemicals. • Non targeted wildlife may	• This impact is slight, localized and short term**.** The magnitude of the impact is **small**. The project is located in a reclaimed agriculture area and desert area and about located less than 2.3 km Moreover, bird collision risks are low since the silo design and existing silo already include aviation obstruction lighting which is used to enhance visibility of airplanes and birds in order to avoid any collision or	1 Short term	1 Localized	2 Slight	4 Small	**High**	**Moderate**	Minor

Factors	Impacts / Risks	Description	Impact Summary	Magnitude Level				Receptor Sensitivity	Impact Significance Level	Impact significance after mitigation measures implementation (table 6.1)
				Temporal scale	Spatial scale	Severity	Total			
		consume rodenticides by accidents or consume the dead rodent if not collected right away and disposed properly and in turn leading to their secondary poisoning. • Bird collision risk	obstacles, and the risk of collision is higher when the buildings are made of glass which is not the case in the silos. The vulnerability of the receptor is **high.** Given the high importance of the receptor, the significance of the impacts is assessed to be **Moderate.**							
	Waste generation (solid, liquid, and hazardous waste) emissions.	**Solid waste** • Increased waste generation from materials, packaging, debris. • Construction waste • Large quantity of excavated	This impact is slight, localized and short term. The emissions will be limited mainly affecting the work environment. With proper management (handling, storage and disposal of wastes), the risks can be easily contained. Therefore, the magnitude of the impact is deemed **small.** The workers will use existing latrines on site with sewage tanks that are emptied regularly at the local sewage network. The	1 Short term	1 Localized	2 Slight	4 Small	**Medium-High**	**Minor-Moderate**	Insignificant/Negligible

Factors	Impacts / Risks	Description	Impact Summary	Magnitude Level				Receptor Sensitivity	Impact Significance Level	Impact significance after mitigation measures implementation (table 6.1)
				Temporal scale	Spatial scale	Severity	Total			
		soil will be generated among other construction waste. **Liquid waste** • Potential wastewater from concrete mixing, equipment washing, sanitation. **Hazardous waste** • Potentially hazardous waste from paints, solvents, oils, pesticides containers and chemicals.	vulnerability of the receptor (Taramsa village) is **medium**. The soil and groundwater vulnerability are considered **high.** The significance of the impact is deemed **Minor-Moderate**.							
Socioeconomic Aspects	Risks to labor from inappropriate working	• Unfair treatment (discrimination, delayed payments, unsafe	• Those risks are of short **term**, **localized** with a **severity level** between **slight-moderate.** The Magnitude is therefore assessed to be **small.** The	1 Short term	1 Localized	2-3 Slight-Moderate	4-5 Small	**High**	**Moderate**	Moderate

Factors	Impacts / Risks	Description	Impact Summary	Magnitude Level				Receptor Sensitivity	Impact Significance Level	Impact significance after mitigation measures implementation (table 6.1)
				Temporal scale	Spatial scale	Severity	Total			
	conditions	working conditions). • Unresolved complaints from the lack of grievance mechanism for workers.	sensitivity of the receptors (construction project workers) is **High.** Therefore, the risk significance is deemed M**oderate**							
	Disturbance to Silo operations and users	• Noise, dust, traffic disruptions. • Restricted access to facilities or services. Construction activities and stock-piling of construction material can potentially block the access routes and roads inside and in the vicinity of the silo sites.	• The disturbance to silo users is slight (different entrance for construction work was identified), localized (silo area) short term (16 months). The magnitude of the impact is thus deemed **small.** The sensitivity of the receptors is **High**. Therefore, the assessment of this impact is deemed **Moderate**.	1 Short term	1 Localized	2 Slight	**4** Small	**High**	**Moderate**	Minor
	Child Labor	• Exploitation of children in	• Those risks are localized and severe in nature. The impact may last for a long	4 Long term	1 Localized	4 Severe	9 moderate	**High**	**Major**	Major

Factors	Impacts / Risks	Description	Impact Summary	Magnitude Level				Receptor Sensitivity	Impact Significance Level	Impact significance after mitigation measures implementation (table 6.1)
				Temporal scale	Spatial scale	Severity	Total			
		construction work. • Hazardous working conditions. • Interference with education. Increased vulnerability to exploitation or abuse.	term (injuries, loss of educational opportunities etc.) The magnitude is therefore assessed to be **moderate.** The sensitivity of the receptors (children under the age of 18) is **High.** Therefore, the risk significance is deemed **Major.**							
	Risks of SEA/SH	• Risk of sexual exploitation and abuse and harassment may increase due to the presence of workers near local communities and lack of awareness on SEA/SH issues	• Those risks are of short term, localized with a slightly severe level because they can be easily mitigated with low cost measures. The magnitude is deemed **small**. The sensitivity of the receptor is **Medium/Moderate.** The overall impact significance is **Minor.**	1 Short term	1 Localized	2 Slight	4-5 Small	**Medium/Moderate**	**Minor**	Minor

Factors	Impacts / Risks	Description	Impact Summary	Magnitude Level				Receptor Sensitivity	Impact Significance Level	Impact significance after mitigation measures implementation (table 6.1)
				Temporal scale	Spatial scale	Severity	Total			
	Community health and safety: Traffic risks and accidents	• Traffic accidents due to the increase in number of trucks during construction phase may pose a risk on other road users. • Traffic congestion due to the increase in transportation trucks for materials, machineries and wastes to and from the site. • Potential risks from air and noise emissions and vibration from high traffic volume during	• The risk is of short term, at district -regional levels and is moderately severe. The magnitude is therefore **Small-Moderate. S**ince the operations of the existing silos will continue and traffic from grain transport vehicles by silo customers will be present, the local community (silo users/clients and other road users) are at risk of road accidents due to the presence of construction trucks. The sensitivity of the receptor is **High** The overall risk significance level is **Major.**	1 Short term	2-3 District-regional	3 Moderately Severe	6-7 Small - Moderate	**High**	**Moderate-Major**	Moderate

Factors	Impacts / Risks	Description	Impact Summary	Magnitude Level				Receptor Sensitivity	Impact Significance Level	Impact significance after mitigation measures implementation (table 6.1)
				Temporal scale	Spatial scale	Severity	Total			
		transportation of materials and machineries and wastes to and from the site.								
	Communities' discontent/dissatisfaction	This risk can be encountered as a result of: • lack of transparency in sharing information including information about the impacts and mitigation measures • Lack of consultation • Risks of increase in unresolved complaints	• Those risks are of long term, localized with a slight severity level. A Stakeholder Engagement Plan was formulated to inform on the project design and community's needs. The Magnitude is therefore assessed to be **Moderate.** The sensitivity of the receptors (construction project workers) is **High.** Therefore, the risk significance is deemed **Major**	4 Long term	2-3 District-regional	2 Slight Severity	8-9 Moderate	**High**	**Major**	Moderate

Factors	Impacts / Risks	Description	Impact Summary	Magnitude Level				Receptor Sensitivity	Impact Significance Level	Impact significance after mitigation measures implementation (table 6.1)
				Temporal scale	Spatial scale	Severity	Total			
	Risks on Cultural Heritage and archeological sites	Impacts on archaeological and historic sites during the construction phase are expected to be negligible since there are no archeological sites nearby and the subproject is located within existing premises.	NA	NA	NA	NA	NA	**NA**	**NA**	NA
OHS Aspects	Occupational Health and Safety (OHS) risks/ Lack of OHS considerations	• The use of hazardous materials and chemicals and waste can pose a risk to workers' health (i.e. cement, paints, oil, bitumen etc.). • Falls from heights are a possible cause of injuries in	• The risks are long-term (Major injuries which may result in long-term health impacts, loss of limb etc.), localized and are severe. The magnitude of the risks is deemed **moderate**. The sensitivity of the receptor is **High** prior mitigation measures**.** Therefore, the risk significance is deemed **Major**	4 Long-term •	1 Localized	4 Severe	9 Moderate	**High**	**Major**	Moderate

Factors	Impacts / Risks	Description	Impact Summary	Magnitude Level				Receptor Sensitivity	Impact Significance Level	Impact significance after mitigation measures implementation (table 6.1)
				Temporal scale	Spatial scale	Severity	Total			
		construction (silo rooftop areas/ use of scaffoldings etc.). • Electrical hazards can cause serious injuries or death. • Machinery can cause crushing injuries or amputations/moving loads. • Dust and fumes can irritate the eyes, nose, and throat, and can also cause respiratory problems. • Noise emissions may disturb workers. • Falling into excavated zones. • Working during bad weather								

Factors	Impacts / Risks	Description	Impact Summary	Magnitude Level				Receptor Sensitivity	Impact Significance Level	Impact significance after mitigation measures implementation (table 6.1)
				Temporal scale	Spatial scale	Severity	Total			
		conditions (dust storm, heat wave, rainy seasons etc.). • Injuries and burns from welding activities. • Accidents while transporting materials and machinery to and from the subproject site. • Accidental loads falling on workers while being lifted by cranes. • Injuries from demolishing equipment and activities • • Physical injuries from physical activities and wrong lifting techniques, wrong posture								

Factors	Impacts / Risks	Description	Impact Summary	Magnitude Level				Receptor Sensitivity	Impact Significance Level	Impact significance after mitigation measures implementation (table 6.1)
				Temporal scale	Spatial scale	Severity	Total			
		while conducting any work. • Slip trip and fall • Injuries and cuts from machineries and hand arm vibration syndrome from machineries used • Working in a confined area (risk of asphyxia while working inside the silos) during construction phase. • Risks of electrocution while installing Silos. • Getting hit by moving load/vehicle/machine								

Table (5.2b): Risks and impacts for unplanned events during Construction phase.

Factors	Impacts/risks	Description	Impact Summary	Probability of occurrence	Level of risk	Impact significance level	Impact significance after mitigation measures implementation (table 6.1)
Catastrophic events/ extreme events (fire and explosion)	Catastrophic events can produce major negative impacts on OHS and public health and safety	• Fire and explosion risks from badly stored fuel/ poorly stored/installed generator and mishandling of chemicals during construction phase and explosion from existing silo operations (unpredicted events) can lead to the death of workers in silos construction area and existing silo users. Potential damage to nearby buildings may occur from the explosion of	• During construction, fire risks and explosion from chemicals (i.e fuel or diesel if any) / and generator used during construction activities may occur. However, contractors usually follow Egyptian regulations for fuel and hazardous chemicals handling and proper safety measures. • Fire and explosion risks from existing silo operations may also occur and may impact OHS of construction workers as well as silo workers and visitors/clients. The existing silos have fire and explosion prevention measures in their designs. As described in the unplanned risk	• Occasionally	• **Major**	• **Major**	• Major

Factors	Impacts/risks	Description	Impact Summary	Probability of occurrence	Level of risk	Impact significance level	Impact significance after mitigation measures implementation (table 6.1)
		existing silo which may cause injuries to communities and individuals in those areas.	assessment section, industry-based data classifies the risk probability of occurrence to be o**ccasionally.** • Impacts from fire and explosion may be irreversible (life threatening/ loss of lives) and therefore the risk level is deemed **Major**. • The impact significance is deemed **Major**.				
Catastrophic events/ extreme events (fire and explosion)	Risk of property loss	Fire and explosion (i.e. generator/fuel) events from construction work can produce major negative impacts on society (i.e. loss of livelihood and property) as follows:	• Fire and explosion events resulting from construction activities due to badly stored fuel and mishandling of chemicals and generator mismanagement can lead to potential loss of stored grain in the existing silos/socio-economic losses. This risk may impact	• Occasionally	**Moderate**	**Moderate**	Minor

Factors	Impacts/risks	Description	Impact Summary	Probability of occurrence	Level of risk	Impact significance level	Impact significance after mitigation measures implementation (table 6.1)
		• Loss of stored grains and loss of storage area • Potential damage to nearby buildings and farmlands.	farmers who are in the process of unloading their grains and before receiving their payment. This risk may also lead to temporary economic losses to other farmers and traders due to silo damages which may temporarily stop the grain buying and selling activities. The impacts are temporary until compensations are provided to unpaid farmers and storage areas are reconstructed/rehabilitated for other farmers and traders to use for selling and buying grains. Risks of damage to surrounding facilities from fire events may also occur. • Fire risks are not expected to reach neighboring areas as fire risks are expected				

Factors	Impacts/risks	Description	Impact Summary	Probability of occurrence	Level of risk	Impact significance level	Impact significance after mitigation measures implementation (table 6.1)
			to be contained within project site boundaries. • Therefore, based on the above, the risk level is **Moderate.** • Moreover, Contractors usually follow Egyptian regulations for fuel and hazardous chemicals handling and proper safety measures. • Furthermore, the existing silos have their own firefighting systems and procedures. Therefore, the probability of this risk to occur is **Occasionally**. • The overall impact significance is therefore deemed **Moderate.**				

Table (5.3a): Operation phase risks and impacts for planned activities.

Factors	Risks and Impacts	Description	Impact Significance	Magnitude level				Receptor sensitivity	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
				Temporal	Spatial	Severity	Total			
Environmental	Airborne Dust	• Airborne dust can be generated from activities such as loading and unloading grain, and from the movement of grain through the Silos. This dust can pollute the air and can also contribute to the formation of smog.	• Those impacts are intermittent but long-term (mainly during loading and unloading seasons), localized and slightly severe. The magnitude is **moderate d**ue to the long-term nature of the project. • The emissions will be limited, mainly affecting the work environment • The sensitivity of the receptor is **high (**the surrounding agriculture lands and road and building and Taramsa village**)**.	4 Long term	1 Localized	2 Slightly Severe	7 Moderate	**High**	**Major**	Insignificant/Minor

Factors	Risks and Impacts	Description	Impact Significance	Magnitude level				Receptor sensitivity	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
				Temporal	Spatial	Severity	Total			
			• The overall assessment is deemed **Major**							
	Gaseous emissions from Engine Exhaust fumigation and other sources	• The major activities at this phase are maintenance procedures and transport of many cars during the daytime. Trucks transporting grains, generators will release exhaust emissions containing carbon monoxide (CO), sulfur dioxide (SO2), oxides of nitrogen (NOX), and particulate matter (PM). • Fumigation emissions from silos and	• Those impacts are long-term localized and slightly severe. The magnitude level is **moderate**. • The emissions will be limited mainly affecting the work environment and immediate vicinity which includes agriculture lands and buildings. • The sensitivity of the receptor is **high (**Taramsa village**).** • The overall assessment is deemed **Major.**	4 Long term	1 Localized	2 Slightly Severe	7 Moderate	**High**	**Major**	Insignificant/Minor

Factors	Risks and Impacts	Description	Impact Significance	Magnitude level				Receptor sensitivity	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
				Temporal	Spatial	Severity	Total			
		airborne drift from pesticides application may also reduce ambient air quality • Odors emanate from fermenting grains. A major contributor to the odor is dimethyl disulfide which has been identified as a key component of the emitted volatile. This is often accompanied by hydrogen sulfide, dimethyl sulfide and dimethyl trisulfide which is								

Factors	Risks and Impacts	Description	Impact Significance	Magnitude level				Receptor sensitivity	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
				Temporal	Spatial	Severity	Total			
		particularly odiferous. These odors can become a nuisance, causing temporary symptoms such as headache and nausea but can be lethal when excessively emitted. • Grain storage structures can develop potentially hazardous atmospheres due to gases produced from fermenting grains. Fermenting or molding grain produces carbon dioxide (CO2), nitric oxide (NO),								

Factors	Risks and Impacts	Description	Impact Significance	Magnitude level				Receptor sensitivity	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
				Temporal	Spatial	Severity	Total			
		and also compounds known to be respiratory irritants such as nitrogen dioxide (NO2) and nitrogen tetroxide (N2O4). However, individual reactions to silo gas depend on the concentration of inhaled gas and length of exposure. While low NO2 concentrations can cause coughing, labored breathing, and nausea, high concentrations can cause fluid filling the lungs.								

Factors	Risks and Impacts	Description	Impact Significance	Magnitude level				Receptor sensitivity	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
				Temporal	Spatial	Severity	Total			
	Impacts on Soil and ground Water quality from trucks and machineries	• Soil contamination and water pollution are accidental and mainly due to: ➢ Mismanagement of chemicals and wrong storage and handling and disposal use of machine lubricants ➢ Fuel spills of trucks transporting grains to and from the Silo Complex in Taramsa. ➢ Inappropriate waste disposal from the offices and inappropriate	• The operation and maintenance phase may result in long-term, localized and slightly severe risks on soil contamination. Leaks from chemicals and trucks and sewage tanks on the soil are of low probability, as these events are accidental. The silo management have a sewage collection tank that is regularly emptied in the public sewage network. Additionally spills on the soil can be easily contained and cleaned. The magnitude of the impact is	4 Long term	1 Localized	2 Slightly Severe	7 Moderate	**High**	**Major**	/Minor

Factors	Risks and Impacts	Description	Impact Significance	Magnitude level				Receptor sensitivity	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
				Temporal	Spatial	Severity	Total			
		sewage disposal which may contaminate the soil. Spills may also result from result from badly stored chemicals and materials and waste. Badly stored and bad disposal off fumigation chemical (Phostoxin) may pose risk of contamination Accidental spills from generator and transformer	deemed **moderate.** • • The soil and groundwater vulnerability are considered **high** (groundwater is located between 5 to 30m depth). The significance of the impacts is therefore assessed as **Major**							

Factors	Risks and Impacts	Description	Impact Significance	Magnitude level				Receptor sensitivity	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
				Temporal	Spatial	Severity	Total			
	Ambient Noise	• The following activities can generate noise pollution: a) the loading and unloading of materials as well as the loading and unloading of grains from the trucks to and from the silos, b) the operation of fans and pumps, conveyer belts, motors and other units, and c) the movement of vehicles and machinery in and around the Silos project site • noise from the generator and transformer.	• Construction phase will result in slight, localized, long-term noise emission from silos operations. Therefore, the magnitude of the impact is deemed **moderate.** The emissions will be limited mainly affecting the work environment. The vulnerability of the receptor (agriculture lands, buildings, and Taramsa village) is **high**. Therefore, the significance of the impact is **Major.**	4 Long term	1 Localized	2 Slightly Severe	7 Moderate	**High**	**Major**	Insignificant/Minor

Factors	Risks and Impacts	Description	Impact Significance	Magnitude level				Receptor sensitivity	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
				Temporal	Spatial	Severity	Total			
	Biodiversity	• The following activities can have a negative impact on biodiversity in the study area: a) the use of pesticides can be consumed by non-targeted species and can lead to their poison/death b) the emission of pollutants from vehicles and machinery can pollute the air and water, which can harm animals if any. • Bird collision risks	• This impact is slight, localized and long-term**.** The magnitude of the impact is **moderate**. The project is located in a reclaimed agricultural area and desert area but at 2.3km away from Upper Nile IBA. Moreover, bird collision risks are low since the silo design and existing silo already include aviation obstruction lighting which is used to enhance visibility of airplanes and birds in order to avoid any collision or obstacles, and	4 Long-term	1 Localized	2 Slightly Severe	7 Moderate	**High**	**Major**	Insignificant/Minor

Factors	Risks and Impacts	Description	Impact Significance	Magnitude level				Receptor sensitivity	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
				Temporal	Spatial	Severity	Total			
			the risk of collision is higher when the buildings are made of glass which is not the case in silos. The vulnerability of the receptor is **high.** Given the high importance of the receptor, the significance of the impacts is assessed to be **Major.**							
	Waste Management	**Solid waste** • Ongoing generation from silo operations, maintenance work, offices. **Liquid waste** • Potential wastewater from grain washing, equipment	• This impact is slight, localized and long-term. The emissions will be limited mainly affecting the work environment. With proper management (handling, storage and disposal of wastes), the	4 Long term	1 Localized	2 Slightly Severe	7 Moderate	**High**	**Major**	Insignificant/Minor

Factors	Risks and Impacts	Description	Impact Significance	Magnitude level				Receptor sensitivity	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
				Temporal	Spatial	Severity	Total			
		cleaning, sanitation (water use is minimal). **Hazardous waste** • Potentially hazardous waste from pesticide use, grain fumigation, maintenance.	risks can be easily contained. Therefore, the magnitude of the impact is deemed **moderate.** The vulnerability of the receptor (agriculture lands and buildings and Taramsa village) is **high**. The soil and groundwater vulnerability are considered **high.** The site is located in a reclaimed agriculture area. The significance of the impact is deemed **Major**.							
	Risks to labor and lack of appropriate work conditions and risks on	• Silo workers and seasonal workers may face unfair treatment (discrimination, delayed	• Those risks are long-term, **localized** with a **severity level** equals to **Severe.** The Magnitude is	4 Long term	1 Localized	4 Severe	9 Moderate	**High**	**Major**	Moderate

Factors	Risks and Impacts	Description	Impact Significance	Magnitude level				Receptor sensitivity	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
				Temporal	Spatial	Severity	Total			
	Seasonal Workers	payments, unsafe working conditions and unresolved complaints from the lack of grievance mechanism. • Workers may face occupational health and safety hazards (e.g., grain dust exposure, machinery accidents) • Seasonal workers, including cleaning workers during operational phase are at risk from working from height and confined areas, utilizing child	therefore assessed to be **Moderate.** The sensitivity of the receptors (construction project workers) is **High.** • The risks are therefore deemed **Major.**							

Factors	Risks and Impacts	Description	Impact Significance	Magnitude level				Receptor sensitivity	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
				Temporal	Spatial	Severity	Total			
		labor and improper PPEs, from the following activities: ➢ There is a contractor that brings seasonal workers to empty seed bags and conducting cleaning activities including silos cleaning. ➢ The cleaning specialists remove the grains from the bottom and sides of the silos. Cleaning is done every beginning of the season								
	Risks on vulnerable populations	• Gender, ethnicity and other social	• This risk is long-term, district level,	4	2 District	3	9 Moderate	**High**	**Major**	Minor-Moderate

Factors	Risks and Impacts	Description	Impact Significance	Magnitude level				Receptor sensitivity	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
				Temporal	Spatial	Severity	Total			
		stratification of beneficiaries may lead to disproportionate distribution of project benefits especially on vulnerable populations (minorities, women, disabled and very poor populations) as follows: • Limited access to silo services by small farmers and vulnerable populations due to elite capture. • Risk of unequal access to food distribution channels and purchasing power which	moderately severe. The magnitude is therefore **moderate**. • The sensitivity of the receptor is **high.** • The impact level is therefore deemed **Major.**	Long term		Moderately Severe				

Factors	Risks and Impacts	Description	Impact Significance	Magnitude level				Receptor sensitivity	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
				Temporal	Spatial	Severity	Total			
		can lower food accessibility to vulnerable population.								
Socio-economic Aspects	Risks on children/child labor/children present in silos during grain transport Risks of child labor by seasonal workers subcontractors	• The presence of children in grain handling or transport and loss of educational opportunities. • Children being Exposed to hazardous substances or working conditions.	• The risk is long-term but intermittent (during grain handling/transfer), localized with a severity level equals to severe (health risks on children loss of educational opportunities). The magnitude is therefore assessed to be **Moderate.** The sensitivity of the receptors (children below the age of 18) is **High.** Therefore, the risk	4 Long term	1 Localized	4 Severe	9 Moderate	**High**	**Major**	Major

Factors	Risks and Impacts	Description	Impact Significance	Magnitude level				Receptor sensitivity	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
				Temporal	Spatial	Severity	Total			
			significance is deemed **Major.**							
	Risks of SEA/SH	• Potential SEA/SH among staff and visitors.	• Those risks are long-term, localized with a severity level of slightly severe because the risks can be easily mitigated with low-cost measures. The magnitude is deemed **Moderate**. The sensitivity of the receptor is **Medium/Moderate.** The overall impact significance is **Moderate.**	4 Long-term	1 Localized	2 Slightly severe	7 Moderate	**Medium/Moderate**	**Moderate**	Minor
	Community health and safety: Traffic risks and accidents	• Risks of increase in traffic and road accidents during high storage seasons.	• The risk is of long-term, at district -regional levels and is moderately severe. The magnitude is therefore **Large.**	4 Long term	2-3 District-Regional	3 Moderately Severe	9-10 Large	**High**	**Major**	Moderate

Factors	Risks and Impacts	Description	Impact Significance	Magnitude level				Receptor sensitivity	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
				Temporal	Spatial	Severity	Total			
			Local community including silo customers are at risk of road accidents. The sensitivity of the receptor is **High** The overall risk significance level is **Major.**							
Occupational Health and Safety (OHS)	Risks from silo operations on workers	• Risks on workers respiratory system: Grain dust pollution while loading and offloading grains may lead to impacts on human health. Long-term exposure to grain dust can cause respiratory problems. • Gaseous exposures from trucks	The OHS risks are long-term, localized and severe. The magnitude is therefore **moderate**. The sensitivity of the receptor is **High.** The overall risks are assessed to **Major**.	4 Long term	1 Localized	4 Severe	9 Moderate	**High**	**Major**	Moderate

Factors	Risks and Impacts	Description	Impact Significance	Magnitude level				Receptor sensitivity	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
				Temporal	Spatial	Severity	Total			
		causing severe respiratory irritation, • Falling from height or accidentally falling in silos while working at height during maintenance • Asphyxia from working in confined areas while conducting maintenance works. • Grain dust is a fire hazard, and a fire at the silos could cause serious injuries or death. • Grain dust explosions can also cause serious injuries or death.								

Factors	Risks and Impacts	Description	Impact Significance	Magnitude level				Receptor sensitivity	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
				Temporal	Spatial	Severity	Total			
		• Risks from grain engulfment • Risks of being entangled in unguarded auger and potential injuries • Risks of burns from hot surfaces • Noise and vibration emissions from silos operations and units, • Unhygienic practices • Handling of toxic substances, chemicals and wastes, such as pesticides and rodenticide especially during application								

Factors	Risks and Impacts	Description	Impact Significance	Magnitude level				Receptor sensitivity	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
				Temporal	Spatial	Severity	Total			
		• Risks of skin and eye burns and irritation from handling, storing and disposing chemicals and empty containers and other types of waste including domestic waste.								

Table (5.3b): Risks and impacts Unplanned events during Operation phase.

Factors	Impacts/risks	Description	Impact Summary	Probability of occurrence	Level of risk	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
Catastrophic events/ extreme events	Catastrophic events can produce major negative impacts on OHS, health and safety of silo users including non-workers and neighboring industries	• Fire and explosion during existing silo operations (unpredicted events) can lead to the death of workers and silo users. • Phostoxin/Aluminum phosphide may ignite spontaneously and may lead to explosion • Risk of leaks of Phostoxin during transportation • Fire risks from transformer. Potential damage to nearby buildings may occur from explosion of existing silo which may cause injuries to communities and individuals in those surrounding areas.	• Fire and explosions from silo operations may occur. Additionally, temporary power generation may require diesel fuel storage, which may lead to fire and explosion. • Possible impacts include severe to fatal impacts on workers and impacts of combustion gases (smoke) on surrounding communities. As the area bordering the southern and western site fence line of the Taramsa silo facility is largely agricultural, little impact with regard to explosions or fires is expected, as silo fires are normally contained within the site (based on past records of silo explosions/fires). Grain silo explosions can cause broken windows and other impacts on buildings 500m or more from the explosion, but little impact is expected in the agricultural areas to the south of the site • The incidence of grain silo explosions in the U.S. alone were 8.14E-03 per million tons of wheat. The time of return of	• Occasionally	• Major	• Major	• Moderate

Factors	Impacts/risks	Description	Impact Summary	Probability of occurrence	Level of risk	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
			explosions was 122.9 per million tons. This will be construed as **occasional recurrence**. The worst-case impacts are rated as **Major** since impacts from fire and explosion may be irreversible (life threatening). • The impact significance is therefore deemed **Major**.				
Catastrophic events/ extreme events (fire and explosion)	Risk of property losses	• Catastrophic events such as explosions and fire events can produce major negative impacts on the livelihood of silo users. • Catastrophic events such as fire and explosions can lead to property damage in neighboring buildings and farmlands.	• Fire and explosion from silo operations can lead to loss of stored grain in the existing silos/socio-economic losses. This risk may lead to temporary economic losses to farmers and traders due to silo damage which may temporarily stop the grain buying and selling activities. This risk may also impact farmers who are in the process of unloading their grains before receiving their payment. The impacts are temporary until compensation is provided to unpaid farmers and storage areas are reconstructed rehabilitated for other farmers and traders to use for selling and buying grains. • Therefore, the risk level is **Moderate.**	• Occasionally	• Moderate	• Moderate	• Minor

Factors	Impacts/risks	Description	Impact Summary	Probability of occurrence	Level of risk	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
			• Risks of damage to surrounding facilities from fire and explosion events is also **Moderate.** • Moreover, the silos have their own heat sensors and firefighting systems and procedures. • The probability of this risk occurring is **occasional**. • The overall impact significance is therefore deemed **Moderate.**				
Catastrophic events/ extreme events	Pesticides leaks	• Pesticides during fumigation activities may leak into the atmosphere and cause health and safety and environment risks.	• The risk of pesticide leaks may occur during fumigation. However, prior to handing over, silos are pressure tested to ensure no gas leaks and to ensure proper sealing. Pressure testing is an ongoing process in silos and is also carried out before fumigation. • The design of the silos takes into consideration pesticides leaks. • This impact may occur if improper management/ maintenance of silos and leak tests are not performed on a regular basis. Since fumigation is carried out almost every month.	• Likely	• Moderate	• Moderate	• Minor

Factors	Impacts/risks	Description	Impact Summary	Probability of occurrence	Level of risk	Impact significance level	Impact significance after mitigation measures implementation (table 6.2)
			The probability of the risk is deemed **Likely**. • Since risks may cause skin and lung injuries to workers and the community nearby, the level of the risk is **Moderate.**				

6 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

6.1. The Environmental and Social Management Plan (ESMP)

The Environmental and Social Management Plan (ESMP) is a plan that outlines how a project will manage its environmental and social impacts. It identifies potential impacts, sets out mitigation measures, and establishes monitoring and reporting procedures. Any project has both positive and negative impacts on the environment. When planning and implementing a project, it is important to consider all the potential impacts, both positive and negative, and to take steps to minimize the negative impacts.

The ESMP will address the environmental and social impacts during the construction and operational phases of the silos project. Due regard must be given to environmental protection during the entire project. To achieve this, several environmental specifications/recommendations are made. These are aimed at ensuring that the contractors maintain adequate control over the project to: a) minimize the extent of impact during construction, and b) ensure appropriate restoration of areas affected by operation, and c) prevent long-term environmental degradation.

6.2 EHCSS Environmental and Social Management System (ESMS)

The EHCSS Environmental and Social Management System (ESMS) has been in place since (2002). The ESMS provides for continual improvement through periodic review and, as necessary, updating of environmental and social (E&S) and OHS targets, deadlines, and measurement of results. The ESMS assigns responsibilities to appropriate departments and personnel. Full support for the ESMS is obtained via formal approval of the ESMS corporate policy, thus sending a clear message to all employees at all levels, that this is a long-term commitment by EHCSS to sound E&S and OHS management.

The development of ESMS Action Plans was based on responding to the following key questions:

- **What –** environmental and social risks you want to address
- **How –** related actions and procedures to be implemented to address the risk
- **Why –** reasons (objectives) for the actions and procedures, and the expected results (targets)
- **When –** timeframe and deadlines
- **Who –** responsible people

The ESMS contains a summary of the key elements required for a robust risk assessment system, specifically environmental, OHS, labor and community risks associated with EHCSS activities.

The ESMS provides for:

- monitoring E&S and OHS performance indicators, as defined in the ESMS, at regular intervals (at least once a year).
- updating the ESMS if there are significant changes to operations.
- updating the ESMS if there are external changes such as new laws or regulations.
- collecting periodic input regarding performance of the system from all levels of workers and managers.
- collecting input from affected communities and other external stakeholders through stakeholder consultation (as detailed in the SEP).
- the use of external consultants and experts for complex projects, as required.
- periodic assessment and prioritization of E&S and OHS risks associated with EHCSS activities according to both their probability and the severity of negative impacts.
- linking monitoring plans to prioritized risks.
- Consideration of risks in the EHCSS supply chain in addition to those in your company, scaled as appropriate to the size and complexity of the business.

Senior EHCSS management recognizes that the team that takes responsibility for the ESMS does not need to be a full-time job for team members, but senior management ensures realignment of reporting duties, allocation of appropriate time and authority to carry out the work involved as necessary. Involved departments include human resources, production, procurement and maintenance. Human resources manage training needs related to the labor aspects: production focuses on the more efficient use of resources and the reduction of waste; procurement manages the qualifications and performance of suppliers and contractors; and maintenance ensures that the equipment runs efficiently, and that spills, leaks and other emergency situations are minimized.

In carrying out its responsibilities, the ESMS Team consults with people from all levels of the company, including supervisors and workers, as they are key frontline identifiers of problems.

Plans /procedures provided in the ESMP's annexes for Emergency Evacuation Plan (EEP), Occupational Health and Safety Plan (OHS) and Traffic Management Plan (TMP)) and Pest Management Plan (PMP) will be revised and developed into full-fledged plans (i) by the contractor during construction phase as part of their C-ESMP and approved by EHCSS PMU or delegated consultants and (ii) by the Silo Design Consultant responsible to bring in needed experts to advise on those plans) during operational phase for operational phase plans and approved by EHCSS.

Traffic Management Plan (Appendix II)

Contractor's Traffic Management Plan (TMP) should include key components to ensure the proper management of traffic and minimize negative impacts on the environment, workers, and the community. The key components of a contractor's TMP can be summarized as follows:

a. Objective of Traffic Management Plan: The TMP should clearly define its objectives, which are based on the guidelines of the Environmental and Social Framework of the World Bank (WB) and determine the responsibilities for the evaluation, management, and follow-up of the environmental and social impacts associated with the project implementation phases

b. Legal and Institutional Framework**: The plan should outline the legal and institutional framework within which the traffic management activities will be conducted. This includes compliance with national regulations as well as the requirements of the World Bank's Environmental and Social Framework (ESS 4)

c. Site and Surroundings Diagnostics and Characteristics**: The TMP should include an assessment of the site and its surroundings, including the existing traffic conditions, road configurations, access points, and any potential environmental and social impacts related to traffic management

d. Possible Environmental and Social Impacts: The plan should identify potential environmental and social impacts associated with traffic management during the construction and operational phases of the project

e. Evaluation of Environmental and Social Impacts: The TMP should include an evaluation of the identified environmental and social impacts, along with measures to avoid, reduce, and minimize these impacts

f. Measurements for Traffic Management: Specific measures for traffic management during the construction and operational phases of the project should be detailed in the plan

g. Implementation Plan: The TMP should outline a comprehensive implementation plan, including the roles and responsibilities of the involved parties, coordination with local authorities, and the use of appropriate traffic management measures

h. Budget and Costs: The plan should include a budget for implementing the traffic management measures, including the costs associated with infrastructure, equipment, and personnel

i. Stakeholders Consultation Plan: A plan for engaging and consulting with relevant stakeholders, including local communities, authorities, and other affected parties, should be part of the TMP

j. Grievance Redressal Mechanism: The plan should incorporate a mechanism for addressing grievances related to traffic management, allowing affected parties to raise concerns and seek resolution

k. Follow-up and Evaluation: The TMP should include provisions for ongoing follow-up and evaluation of the effectiveness of the traffic management measures, with opportunities for adjustments and improvements as needed

l. Adaptive Management Arrangements: The plan should incorporate adaptive management arrangements to respond to changing conditions and new information, ensuring that the traffic management measures remain effective throughout the project lifecycle.

Regarding **emergency situations** (unplanned activities), the following steps help to anticipate the possible scenarios and prepare accordingly:

- Identification of the areas where accidents and emergency situations may occur, and communities and individuals that may be impacted. This has been accomplished through process analysis, physical mapping and consultations with workers, experts and the community.

- Development of response procedures for each identified emergency situation that clearly explains what actions need to be taken. These need to be detailed clearly for everyone in your company to understand what he or she needs to do.

- Provision of necessary equipment and resources to effectively implement the response plans. A stockpile of fire extinguishers is not effective unless people can effectively find and use them when needed.

- Assignment of responsibilities so that each activity has people responsible for carrying it out, and designation of persons responsible for routine analysis of how well the system is working and update the risk assessment and plans.

- Assurance that everyone in your company (and the affected community) understands the importance of the emergency preparedness and response system and is encouraged to help monitor and improve its effectiveness.

- Provision of periodic training so that everyone in your company has an overview of the system, and knows the response plans, and ensures that concerned persons can need exercise individual judgment and adapt to quickly changing situations.

- Collaboration with government agencies and community groups to identify areas of common concern to allow effective response to internal and external situations.

- Periodic checks and drills to test how well the system is working.

The **Emergency Evacuation Plan (EEP)** specific to the Taramsa sub-project is attached in Appendix VI. As required by the EHCSS ESMS, it includes:

- identification of potential emergencies based on hazard assessment.
- procedures to respond to the identified emergency situations.
- procedures to shut down equipment.
- procedures for rescue and evacuation.
- list and location of alarms and schedule of maintenance.
- list and location of emergency response equipment (firefighting, spill response, first aid kits, personal protection equipment for emergency response teams).
- protocols for the use of emergency equipment and facilities.
- schedule for periodic inspection, testing and maintenance of emergency equipment.
- clear identification of evacuation routes and meeting points.
- schedule of trainings and drills, including with local
- emergency response services (fire fighters).
- procedures for emergency drills.
- emergency contacts and communication protocols, including with communities when necessary, and procedures for interaction with the government authorities.
- procedures for periodic review and update of emergency response plans.

Occupational Health and Safety (OHS) hazards in the workplace can be divided into four categories: physical, chemical, biological, and ergonomic and psychosocial. EHCSS has identified the specific hazards that are relevant to EHCSS operations (including construction activities). The ESMS places priority on avoidance of negative impacts from each hazard, by eliminating or substituting the equipment, material, or work activity that is causing the hazard. If it is not possible to eliminate the hazard, EHCSS seeks to minimize the impacts of hazards by instituting engineering controls (for example by installing machine guards or active ventilation) and administrative controls (including warning signs).

EHCSS provides technically appropriate personal protective equipment (PPE) according to requirements of the respective activities, and trains personnel on the appropriate use and maintenance of the same. Usually, a combination of all controls is applied. OHS emergency situations often occur because of gaps in a company's management system. Thus, even though accidents may seem to be very different, (for example slips and falls due to spilled liquids) they are often the result of the same root cause – ineffective implementation of the ESMS, such as: an incomplete risk assessment, the lack of safety procedures, and insufficient worker training. EHCSS periodically reviews OHS provisions and addresses any gaps to determine potential root-causes of problems during your risk assessment.

In addition to emergencies that may result from workplace hazards, workplaces may also be vulnerable to emergencies caused by external events. The following list includes possible artificial and natural disasters pertinent to EHCSS that can result in significant worker injury or death, as well as disruption of operations, destruction of property, and severe financial losses.

- Storms (that can result in flooding).
- Flooding and earthquakes.
- Local and regional fires.
- Explosions, including accidental, military or terrorism; and
- Civil unrest.

EHCSS engages in **internal and external communications** via ESMS. External communications are partly addressed through the **grievance procedure**.

ESMS has various quantitative or qualitative indicators that allow periodic assessment of ESMS **performance** against set goals.

Some examples of key performance indicators (KPIs) are as follows:

- energy consumption.
- water consumption.
- volume of solid waste disposal.
- liquid effluents discharge.
- emissions into the air.
- accidents (injuries, ill-health, property damage) and near misses.
- lost time injury frequency, incidence, and severity rates.
- emergency response incidents.
- average working hours and wages paid.
- wage levels.
- incidences of child labor.
- incidences of disciplinary and discrimination complaints; and
- employee demographics matching access to training, jobs, and wages.

Regarding the ESF issues requiring mitigation for all expansion silos, the following measures will be implemented to ensure safety and compliance during the construction phase:

1. **Food Safety:** As the existing silos will continue to operate during construction, measures will be taken to prevent dust and industrial debris contamination. Protective barriers and dust suppression techniques will be employed to ensure that the operational silos remain free from contamination, thereby maintaining food safety standards.

2. **Fire and Explosion Safety:** It is crucial to ensure that fire and explosion safety equipment remains operational and fully connected throughout the construction phase. Plans are in place to provide safe and uninterrupted access for fire trucks and ambulances to the existing silos. This will ensure prompt response capabilities in case of emergencies, minimizing any risk to the facility and personnel.

3. **Fire Safety Monitoring:** All silos, including the existing ones, will be equipped with temperature and CO_2 sensors. These sensors will enable continuous monitoring of fire risks, allowing for early detection and intervention to prevent potential fire hazards.

6.3 Mitigation Measures

Mitigation measures during both construction and operation phases are provided in Tables (6.1 and 6.2). The contractors are required to develop their own construction ESMP (C-ESMP) based on table 6.1 below and management plans present in this ESMP.

Table (6.1): Mitigation measures during the construction phase. Note the budget for the mitigation measures during the construction phase was calculated for two years (the construction period).

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
Environmental	Risks on Ambient air due to airborne Dust	• Airborne dust can be generated from construction activities such as excavation. This dust can pollute the air and can also pose a health hazard to workers and nearby residents.	• Demolition debris and dust shall be kept in controlled areas, well protected from the wind by installing enclosures and covers to the stored piles/friable materials and sprayed with water mist to reduce debris dust. The storing of the excavated soil and any other materials will take into consideration the direction of the wind. • Use dust sweeping methods to reduce water usage in dust suppression • Ensure water conservation measures and practices are in place for concrete mixing by ensuring the use of best practice concrete/water ratios	• Contractor and subcontractor • Supervised by Environmental specialist, social specialist for reporting on grievance.	16,000

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• During pneumatic drilling/wall destruction dust shall be suppressed by ongoing water spraying and/or installing dust screen enclosures at site. • The surrounding environment (sidewalks, roads) shall be kept free of debris to minimize dust. • There will be no open burning of construction / waste material at the site. • Transportation trucks should be properly covered to minimize dust and air emissions. • Use ready mix concrete whenever possible. • Spray water on roads to minimize dust emissions because of vehicles moving. • Ensure vehicles and trucks use paved roads wherever possible. • Speed limits shall be enforced on unpaved roads, to be <30km/hr. • Implement a preventive maintenance program for vehicles and equipment		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			working on site and promptly repair vehicles with visible exhaust fumes. • Using newer equipment for more fuel-efficient alternatives • Using low sulfur content diesel • Ensure turning off vehicles when not in use. • Ensure Grievance mechanism is functional to address workers, and community complains regarding air emissions. • Schedule construction activities to avoid rainfall and high wind periods to the extent practical		
	Gaseous emissions from Engine Exhaust Gases	• Exhaust fumes and gaseous emissions such as NOx, Sox and Particulate matter (PM2) and (PM10) from internal combustion engines/ generators/ vehicles and machineries used present another risk to air quality on and close to construction sites.	• Implement a preventive maintenance program for vehicles and equipment working on site and promptly repair vehicles with visible exhaust fumes. • Procurement of energy efficient equipment and machineries from certified contractors.	• Contractor and subcontractor • Supervised by Environmental specialist, social specialist for reporting on grievance	12,000

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Using newer equipment for more fuel-efficient alternatives • Inspect machineries regularly. • Using low sulfur content diesel • Ensure workers turn off vehicles when not in use. • Ensure Grievance mechanism is functional to address workers and community complains. • In case a generator will be used, conduct air emission tests stipulated under the current legislation for generators • Ensure regular machine and vehicle maintenance. • Ensure energy conservation measures and practices are in place by raising awareness to workers on good practices and measures above.		
	Risks on Soil and Water resources contamination	The project may impact soil quality and groundwater quality from;	• Include spill prevention kits on site to control and contain and clean up any potential spills.	• Contractor and subcontractor • Supervised by Environmental	12,000

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
		• Accidental oil and fuel spills from machineries and vehicles and generator used. • Runoff risks from pesticides used which could pollute nearby lands/soils	• Use offsite equipment fueling and oil stations as much as possible or dedicated fueling areas onsite. • Perform periodical maintenance on equipment and machinery. • Cover on-site stockpiles of soil and fill. • Establish appropriate erosion and sediment control measures. • Schedule construction activities to avoid rainfall and high wind periods to the extent practical • Ensure all chemicals are labelled, stored, handled, and disposed of according to their safety data sheets (SDSs) by trained workers. • Ensure that all chemicals are stored on insulated areas from the ground and in secondary containment. • Conduct regular maintenance of equipment to minimize leakage risks. Conduct regular groundwater quality testing during the construction	specialist, social - specialist for reporting on grievance.	

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			phase to detect any contamination early. • Develop and implement a pest management plan for rodenticides (refer to Annex I). • In case generators will be used, locate them on concrete base to avoid leaks to the soil and ensure they are located in properly ventilated areas. • Store fuel in secondary containment on concrete bases • Monitor fuel used to detect leakage • Ensure the Grievance mechanism is functional to addressing workers and community complaints. • Train workers on emergency response procedures for spills, including immediate containment and reporting protocols.		
	Risks on Ambient Noise	• The following equipment used in excavation and grading of the site may produce high noise emissions:	• Construction noise will be limited to the restricted times agreed to in the permit. • Avoid construction work in the evening.	• Contractor and subcontractor • Supervised by Environmental	14,000

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
		○ the use of heavy machinery, such as trucks, bulldozers, and excavators. ○ the operation of construction equipment, such as generators and compressors.	• Reduce workers' exposure to noise. • Ensure noise does not exceed the safety limits stipulated in the Egyptian environmental law in addition to occupational safety and health standards. • Provide workers in areas of activities with high noise levels with earplugs. • The contractor must train all workers before starting construction work on the danger of noise and how to avoid them. • Restricting the movement of lory cars/trucks to prevent noise in the early morning and late evening periods. • Ensure all machines and vehicles are turned off when not in use. • Keep machineries and vehicles in good working conditions and perform maintenance regularly • Monitor noise and vibration levels to confirm the effectiveness of measures implemented. • Select equipment with low noise emissions and that is	specialist, social specialist for reporting on grievance.	

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			technically and financially feasible. • Ensure Grievance mechanism is functional to address workers and community complaints.		
	Biodiversity/ pesticides consumption by non-targeted species	• Impacts on biodiversity may result in the disturbance of wildlife from noise, dust, air, light emissions and waste generation including chemicals. • Non targeted wildlife may consume rodenticides by accidents or consume the dead rodent if not collected right away and disposed properly and in turn leading to their secondary poisoning. • Bird migratory route is located near the project site	• Follow measures present in the pest management plan (appendix I) to avoid consumption of pesticides by non-targeted species or secondary poisoning. • Follow measures for air, noise, waste emissions reduction. • Ensure barriers are added around excavated areas in order to ensure no animals fall within excavated zones • Inspect excavated areas regularly • Aviation obstruction lighting which is used to enhance visibility of airplanes and birds in order to avoid any collision or obstacles will be used.	• Contractor and subcontractor • Supervised by Environmental Specialist.	16,000
	Waste generation (solid, liquid, and hazardous	**Solid waste** • Increased waste generation from materials, packaging, debris.	Develop a waste management procedure with the following requirements:	Contractor and subcontractor	24,000

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
	waste) emissions.	• Construction waste • Large quantity of excavated soil will be generated among other construction waste. **Liquid waste** • Potential wastewater from concrete mixing, equipment washing, sanitation. **Hazardous waste** • Potentially hazardous waste from paints, solvents, oils, pesticides containers and chemicals.	**Waste management:** - Proper handling of raw material to minimize waste. - Waste collection and disposal pathways and sites will be identified for all major waste types expected from demolition and construction activities. - Wastes will be segregated by type (solid, hazardous, liquid, construction wastes). - Construction waste will be collected and disposed properly by licensed collectors and disposed in site approved by the responsible municipality/government authority. - The records of waste disposal will be maintained as proof for proper management as designed. - Whenever feasible the contractor will reuse and recycle appropriate and viable materials. - Avoid accumulation of organic wastes and food remains. - Implement pest and rodent control measures by following the PMP in annex 1.	Supervised by Environmental specialist, and social specialist for reporting on grievance.	

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			- Ensure the reuse or recycling of materials. - Adopt measures to reduce or eliminate the use of toxic or hazardous raw materials. - Ensure raw materials are not sought from ecologically sensitive zones. - Record grievances. **Wastewater:** - Workers will use existing onsite latrines/toilets. - Construction vehicles and machinery will be washed only in designated areas. - Open urination and defecation shall be prohibited. - Record grievances. **Hazardous chemicals, materials, and waste:** - Temporarily storage on site of all hazardous or toxic substances will be in safe containers labelled with details of composition, properties, and handling information. - The containers of hazardous substances shall be placed in a leak-proof container to prevent spillage and leaching and		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			should be stored on concrete surfaces. - Spill prevention kits shall be present on site and any spills should be removed instantly - The wastes shall be transported by specially licensed carriers and disposed in a licensed facility. - Paints with toxic ingredients or solvents or lead-based paints will not be used. - All chemicals and hazardous materials should be stored, handled, and disposed according to their materials safety data sheets (SDSs) and by trained workers. - Record grievances. - Workshop area/ machine maintenance and oiling will be carried out on concrete bases to avoid soil contamination. - Store E-waste separately according to manufacturer's guidelines and dispose of hazardous waste (including e-waste) through certified waste disposal services to ensure safe and environmentally friendly handling.		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			Pest Management Plan (for onsite worker camps and facilities): - Ensure a suitable pest and rodent management plan (annex 1) is in place and carefully followed. - Ensure guidelines of hazardous materials and wastes are followed.		
Socioeconomic Aspects	Risks to labor from inappropriate working conditions	• Unfair treatment (discrimination, delayed payments, unsafe working conditions). • Unresolved complaints from the lack of grievance mechanism for workers.	• The project owner and contractor will share information related to labor rights and working conditions, labor grievance mechanisms, and will ensure that appropriate insurance schemes are in place and operational to cover different types of workers. • Workers will be made aware of their rights regarding working hours, days off, salaries. • All workers will sign contracts • A grievance mechanism (present in chapter 7) will include channels for workers. Workplace grievances will be handled in a positive manner with no retaliation, and this will be communicated to workers.	• Contractor and subcontractor • Supervised by Environmental specialist, and social specialist for reporting on grievance. • PMU	16,000

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Provision of anonymous grievances • Follow project level Labor Management Plan (LMP). • Implement inclusive hiring practices for vulnerable populations by selecting lower income individuals • Providing jobs to vulnerable groups, if possible, based on needs. There will be jobs available for vulnerable groups including (low-income people), but not for elderly people, because the conditions for employment require only young people. • Regular inspections by the food security Project Management Unit (PMU) will be performed.		
	Disturbance to Silo operations and users	• Noise, dust, traffic disruptions. • Restricted access to facilities or services. Construction activities and stock-piling of construction material can potentially block the access routes and roads inside and in the vicinity of the silo sites.	• The contractor formally agrees that all work will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment. • Dust suppression and noise mitigation measures will be followed as stated in the above sections.	• Contractor and subcontractor • Supervised by Environmental specialist, and social specialist for reporting on grievance.	10,000

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Access roads and time schedule for construction material and workers shall be determined prior to construction work in coordination with the traffic authority which will minimize pedestrian interactions with construction vehicles. • Regarding the onsite traffic management during the construction phase, there will be a separate road for the construction trucks than the existing road for grain trucks • The contractor will be asked to create a barrier between the location of the existing silos and the location of the storage area. A special entrance will be allocated to this area to minimize the impact on the existing Silos and its operation. • The contractor and the site engineer should choose a location for temporary storage of construction materials and equipment and waste before construction work starts to ensure no traffic disruptions due		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			to routes blockages occurring on site. • Perform: regular maintenance of vehicles and trucks • Ensure low speed and good driving practices on site. • Construction site to be fenced and guarded by security personnel in order to prevent any unauthorized access to the site. • Ensure implementing the Labor Management Plan (LMP) and train workers on the code of conduct (present in project's LMP and in annex V). • Report any major injuries and accidents to the WB within 48 hours. • Provide information to farmers and different stakeholders on the progress of the project including civil works and on mitigation measures and grievance redress mechanisms during general meetings and information posted on local levels and conduct focus group discussions (FGD) with women and vulnerable groups. • Safety signage should be placed at the work sites.		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Develop and implement the traffic management plan in appendix II. • Banners are present at Silo area with project information Silo management will announce prior ahead to silo users that the silos will be closed on certain dates (1 day closure for electricity room and transformer) and suggesting other measures /temporary for silo users to store their grains until the silo is operational again		
	Child Labor	• Exploitation of children in construction work. • Hazardous working conditions. • Interference with education.	• Maintain daily attendance sheets to verify that workers do not include staff under 18 years. • Maintain a copy of IDs of workers to prevent hiring workers under 18 years. • Fines and penalties will be set in case child labor is detected • Awareness to contractor on danger of child labor and penalties will be communicated before project implementation and will be part of the contractor's contract.	• Contractor and subcontractor • Supervised by Environmental specialist, social specialist for reporting on grievance. PMU	10,000

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• EHCSS will check labor policies of the contractor. • The contractor will ensure primary suppliers do not employ child labor by checking the supplier's labor requirements and OHS procedures and by communicating their policies on child and forced labor to the primary supplier • Regular inspection will be conducted by the environmental and social specialists and the Food Security PMU (Project Management Unit) • Ensure implementing the Labor Management Plan (LMP).		
	Risks of SEA/SH	• Risk of sexual exploitation and abuse and harassment may increase due to the presence of workers near local communities and lack of awareness on SEA/SH issues	• Appropriate signposting to be added at the sites which will inform workers of key rules and regulations to follow. • Contractor to implement the SEA/SH plan (annex IV) and will ensure workers are trained and adhering to compliance to the prevention of Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) risks.	• Contractor and subcontractor • Supervised by Social specialist for reporting on grievance. • PMU	10,000

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Workers must read and sign the code of conduct. • Establish an accessible Grievance Mechanism with channels to receive different types of grievances including SEA/SH grievances (see SEA/SH related grievance in chapter 7). • Provision of anonymous grievances. • The Contractor formally agrees that all work will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment. • Ensure developing and implementing the Labor Management Plan (LMP) and train workers on the code of conduct. • Implement the stakeholder engagement plan (SEP)		

	Community health and safety: Traffic risks and accidents	• Traffic accidents due to the increase in number of trucks during construction phase which may pose a risk to pedestrians and residents, particularly children, near the silo premises and construction site. • roads passing through residential areas could increase the likelihood of vehicle-pedestrian collisions. • Traffic congestion due to the increase in transportation trucks for materials, machineries and wastes to and from the site. • Potential risks from air and noise emissions and vibration from high traffic volume during transportation of materials and machineries and wastes to and from the site. • Unprotected excavated zones near the construction site could result in accidental falls by pedestrians or children from nearby communities.	• The contractor will develop and implement a traffic management plan (including routes and alternative routes, truck movements and transport of workers, assess the number of vehicles for the routes leading to the silos and routes widths and capacities) appendix II. • Avoid peak hours when transferring machinery and construction trucks to the site. There will be coordination with the traffic authorities in the governorate regarding the time of the construction of the expansion, as well as considered in the plan for construction and operational phase to avoid peak hours. Traffic regulations and local regulations for trucks will be applied. • The safety record of vehicles in purchase or leasing should be present. • Speed limits are set on banners for vehicles near the project site and community areas. • Ensure barriers are added around excavated areas • Perform regular maintenance of vehicles and trucks • Minimize pedestrian interactions with construction vehicles by selecting appropriate time for	• Contractor and subcontractor • Contractor and subcontractor • Supervised by Environmental specialist, and social specialist for reporting on grievance.	12,000

			truck movement in coordination with local authority. • Pedestrian lanes/zones are present on site. • Install warning signs at strategic locations near the construction site to alert pedestrians and vehicles about construction activities. • Presence of flagman for site arrangement • Ensure transport vehicles maintain speed limits and good driving practices. • Conduct drug check-ups on workers. • Ensure workers have driving licenses for trucks. • Use locally sourced materials whenever possible to minimize transport distances. • The contractors should make sure that the employed drivers of construction machinery (such as trucks and loaders) have received sensitization/training on safety utilization of their machines to minimize accidents risks. • Unusual traffic delays or accidents caused during construction, or any complaints received should be reported in the monthly report prepared by the construction supervisor.		

			• Report any major injuries and accidents to the WB within 48 hours. • The contractor formally agrees that all work will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment. • Banner at site entrance with project description and details is present		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
	Lack of stakeholder engagement and proper grievance mechanism	• Risks of untransparent sharing of information • Risks of increase in unresolved complains.	• The local construction and environment inspectorates and communities have been notified of upcoming activities related to the expansion of the Silo. • The public has been notified of the works through appropriate notification in the media and/or at publicly accessible sites (including the site of the works). • All legally required permits have been acquired for construction. • Develop a well communicated and accessible grievance mechanism for community members to address any complaints (chapter 7). • Develop communication channels with surrounding communities • Presence of complaint boxes on site and banners including numbers for grievance submission • Provide information to farmers and different stakeholders on the progress of the project including civil works and on mitigation measures and grievance redress mechanisms	• Silo manager, Social Specialist	10,000

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			during general meetings and information posted on local levels and conduct focus group discussions (FGD) with women and vulnerable groups as per the SEP document. • Some of the consulted women preferred to receive information through their husbands. As with all vulnerable groups who are either illiterate or have no access to the internet, face-to-face communication is the preferred method of communication • For vulnerable groups including women and small-scale farmers, use preferred means of communication using Arabic language and illustrations including location sketches, physical models, and film presentations • For other vulnerable groups such as people with disabilities use preferred means of communication using Arabic language and tailored means of communications for different types of disabilities.		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
	Risks on Cultural Heritage and archeological sites	• Impacts on archaeological and historic sites during the construction phase are expected to be negligible since there are no archeological sites nearby and the subproject is located within existing premises.	• In case of any finds/discoveries apply chance find procedure as follows: ○ Stop excavation and construction activities immediately in the area, ○ Delineate the site. ○ Ensure the site is secured to prevent any damage or losses of archaeological objects. Add signs and barriers around the site. ○ Notify the Silo Managers and Environmental Specialist who should immediately notify the responsible local authorities (Supreme Court of Antiquities) (within 24 hours or less). ○ Responsible local authorities and SCA will decide on the way forward and appropriate procedures. ○ Construction work could resume only after permission is obtained from the SCA and any relevant authority. These procedures must be taken	• Contractor and subcontractor • Supervised by Environmental specialist • Silo Manager	• Not Applicable

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			into consideration in the construction contracts. • It shall be ensured that provisions are put in place so that artifacts or other possible "chance finds" encountered in excavation or construction are noted and registered, responsible officials contacted, and works activities delayed or modified to account for such finds. • Workers shall be made aware of the chance find procedure.		
Occupational Health and Safety (OHS)	Risks on workers' health and safety	• The use of hazardous materials and chemicals and waste can pose a risk to workers' health (i.e. cement, paints, oil, bitumen etc.). • Falls from heights are a possible cause of injuries in construction (silo rooftop areas/ use of scaffoldings etc.). • Electrical hazards can cause serious injuries or death. • Machinery can cause crushing injuries or amputations/moving loads.	• OHS risk assessment shall be conducted prior the start of any work including Job Hazard Analysis (JHA), developing Permit to Work (PTW), Stop Work Authority (STA)…etc. • Develop a site specific OHS Manual to include the results of the OHS risk assessment, responsibilities and staffing, preventative measures, mitigation measures, emergency plans, training program, etc.	• Contractor and subcontractor • Supervised by the OHS Specialist with support from the Environmental specialist, and social specialist for reporting on grievance.	40,000

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
		• Dust and fumes can irritate the eyes, nose, and throat, and can also cause respiratory problems. • Noise emissions may disturb workers. • Falling into excavated zones. • Working during bad weather conditions (dust storm, heat wave, rainy seasons etc.). • Injuries and burns from welding activities. • Accidents while transporting materials and machinery to and from the subproject site. • Accidental loads falling on workers while being lifted by cranes. • Injuries from demolishing equipment and activities • Physical injuries from physical activities and wrong lifting techniques, wrong posture while conducting any work. • Slip trip and fall • Injuries and cuts from machineries and hand arm vibration syndrome from machineries used • Physical injuries from physical activities and wrong lifting techniques, wrong posture while conducting any work	• Ensure the adequate implementation of occupational health and safety provisions on-site such as providing the personal protective equipment (PPE) to the workers including ear mufflers, masks, eye googles, head helmets and safety boots are adhered to by workers. • Workers' PPE will comply with international good practice (always hardhats, as needed masks and safety glasses, harnesses, and safety boots). • Communication and training programs to prepare workers to recognize and respond to workplace hazards. Programs should include aspects of hazard identification, safe operating and materials handling procedures, work permit, safe work practices, basic emergency procedures, first-aid, and		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
		• Getting hit by moving load/vehicle/machine • Working in a confined area (risk of asphyxia while working inside the silos) during construction phase. • Risks of electrocution while installing the Silos electrical units. • Generator and fuel fire hazard and gas emissions and while installing the new transformer.	special hazards unique to their jobs. • Follow the labor management procedures (LMP) and the workers grievance mechanism (GM). The GM should be established, and well-functioning and workers should be made aware of their rights regarding working hours, days off, salaries, etc. • Prohibit all forms of child and forced labor. • Monitoring and record-keeping activities, including audit procedures designed to verify and record the effectiveness of prevention and control of exposure to occupational hazards, and maintaining accident and incident investigation reports. • Provide medical and life insurance for all workers • Provide potable water supply and regular breaks to workers. • Encourage workers to ask for help.		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Raise awareness to workers on proper posture and hand lifting techniques to avoid back and muscle injuries • Train drivers on traffic safety rules and measures (e.g., leave safe distances and avoid distractions with mobile phones). • Conduct drug check-ups on workers. • Ensure workers have driving licenses for trucks. • Use locally sourced materials whenever possible to minimize transport distances. • The contractors should make sure that the employed drivers of construction machinery (such as trucks and loaders) have received sensitization/training on safety utilization of their machines to minimize accidents risks • Arrange work site vehicles and set speed limits and use a flagman for guiding vehicles and workers.		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Provide site boundaries by installing suitable physical boundaries (barriers, tape, or fence) • The contractor should prepare and implement an Occupational Health and safety Management Plan (appendix III). • The contractor is provided with safety performance procedures and safety and hazard information. • Contractors observe safety practices. • Ensure proper housekeeping is maintained. • Use dust suppression techniques and provide dust masks and ear mufflers during excavation and noisy activities. • Inspect equipment and machines before usage. • Provide soap and water and disinfectants at the site. • Workers' accommodation if needed should be according to international standards (i.e. EBRD/IFC		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			guidance note for workers' accommodation). • Any accidents should be communicated to the WB within 48 hours. • Although unlikely due to the nature of the site, it provides precautionary measures to protect workers and site personnel and visitors against insect bites, snake bites or other animal/reptiles which could pose threats to humans. • Provide awareness training to workers on physical handling to avoid back and muscle injuries. • Check weather forecasts prior to conducting any work. • Safety signs and banners are added around work areas • Provide daily OHS toolbox talks • Provide a rest area with chairs for workers • Workers to strictly maintain safe distance		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			(marked) between demolishing zone and equipment Falling in excavated zones (5m deep). • Mark excavated holes with physical boundaries (barriers, tape, or fence) and provide signs alerting workers and machines of excavated zones. • Maintain a buffer zone between workers and excavations • Providing safe means of access and egress from excavations, such as graded slopes, graded access route, or stairs and ladders • Ensure presence of a well-fixed ladder for entering and existing excavations and ensure workers are wearing proper PPEs including dust masks, head helmets and fall prevention devices while entering and existing the excavated zone.		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Keep excavated piles away from the excavated areas by 2 m. • Ensure a flagman is present for movements at work site. • Always check if workers are present within dredged zones prior to establishing any foundations. Handling hazardous chemicals and waste • All workers should be trained in handling, storing, and disposing of all types of chemicals and waste according to their material safety data sheets (SDSs) and manufacturer's guidelines. • Ensure chemicals and materials and hazardous waste are properly labeled. • Empty oil containers or chemical containers to be stored and disposed of according to manufacturer's guidelines and SDSs and can be returned back to manufacturer		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Bitumen safety measures[7]: • Store handle and dispose of bitumen according to SDS and manufacturer's guidelines. For fire risks of bitumen ensure Water spray, foam, dry powder or carbon dioxide are used and stored next to bitumen. Do not use water jets as an extinguisher. • Store away from oxidizing agents. Store in accordance with local regulations. Use containers made of carbon steel and stainless steel. • All handling should only take place in well-ventilated areas. • PPEs include Wear tight-fitting, chemical splash goggles or face shield. Thermally insulated protective gloves. Change protective gloves regularly. Protective gloves should be according to		

[7] https://www.neste.com/files/pdf/5jSUbFKwtrYoTqetXkhDIH-10507_bitumen.pdf

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			standards EN 374 and EN 407. • PPEs are temperature resistant. • At high concentrations a breathing apparatus must be used (self-contained or fresh air hose • At high concentrations a breathing apparatus must be used (self-contained or fresh air hose breathing apparatus). Filter must be changed often enough. Respirator according to standard EN 140. • First aid: If it is suspected that volatile contaminants are still present around the affected person, first aid personnel should wear an appropriate respirator or self-contained breathing apparatus. If spray/mist has been inhaled, proceed as follows. Remove person to fresh air and keep comfortable for breathing. If breathing stops, it provides artificial		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			respiration. Get medical attention if symptoms are severe or persist. Do not induce vomiting. Get medical attention. In case of skin contact remove contaminated clothing and rinse skin thoroughly with water. Continue to rinse for at least 10 minutes. Do not use the following: Solvent. No attempt must be made to remove the bitumen adherent to the skin at the worksite. In the case of a circumferential burn with adhesion of the bitumen, the adhering material should be split to prevent a tourniquet effect as it cools. If adhesive bonding occurs, do not force skin apart. Get medical attention. In case of eye contact Rinse immediately with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention. Risks of falling loads on workers • Close the lifting /crane area with fence to prevent		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			access to the lifting area during lifting work. • Install warning signs for lifting activities. • Prevent accessibility to non-workers at lifting zones or any construction zone. • Ensure all workers are standing at a safe distance from the lifting zone. • Carry out lifting work by well trained, qualified, and certified lifting team. • Ensure a flagman is present on site to manage workers and machineries movements. • Provide workers with all necessary Personal Protective Equipment PPEs and safety materials including head helmets, safety boots etc. • Use well-maintained cranes for lifting that are appropriate for the weight; well checked and tested. • Secure loads when lifting and use strong and reliable fixation materials to make		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			sure that the load is well tighten. • Lifting device capacity shall be higher than the maximum calculated static load at that point. • An ultimate load shall be ≥ 4 times the maximum static load. Risks from falling from height/working at height: • In case working from height risks is present, the contractor shall ensure the presence of fall arrest systems/harness and PPEs including head helmets and fall prevention devices and lifelines. • Ensure proper use of ladders and scaffolds by trained workers and inspected, tested regularly by competent inspectors, train workers on the use of fall prevention devices, including safety belt and lanyard to prevent risks of falls, or fall protection devices such as full body harnesses and head helmet		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			used in conjunction with shock absorbing lanyards. • Do not move ladders when workers are standing on them. • Inspect scaffolds and ladders prior usage. • Installation of guardrails with mid-rails and toe boards at the edge of any fall hazard area where practical. • Inclusion of rescue and/or recovery plans, and equipment to respond to workers after an arrested fall and a fall protection plan should be in place which includes the following aspects: ○ Training and use of temporary fall prevention devices, such as rails or other barriers able to support a weight of 200 pounds, when working at heights equal or greater than two meters or at any height if the risk		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			includes falling through an opening in a work surface. o Training and use of personal fall arrest systems, such as full body harnesses and energy absorbing lanyards able to support 5000 pounds. Risks from working in confined spaces/entering the silos: • For entering confined workspaces, gas emissions including nitrogen dioxide should be quantified and monitored, with costs covered by the Contractor. Machinery, equipment, and processes under their control are safe and without risk to health, • Carry gas tests prior to entering the silo to confirm its safety. • Measure oxygen content prior entering the silo and ventilate silo prior entering		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Ensure the breathing apparatus was inspected prior to entering. • Adhere to oxygen breathing devices/breathing apparatus while working in silos. • Always ensure workers in confined areas are supervised and checked up on regularly. • Ensure worker receive a confined aid training prior to working in silos. • Develop a rescue plan for confined space. • Ensure adhering to safety ropes and lanyards. • All machineries are stopped before entering silos • Ensure an emergency stop button to stop augers. • Keep shirts, and hair properly tightened to avoid being tangled in augers. Risks from welding activities and burns: • Train workers on welding safety measures prior to conducting any welding work.		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Ensure workers are wearing heat and fire-resistant clothing, gloves, overalls, head and eye protection and respiratory protection equipment, boots, welding helmets and side shields and ear protection/mufflers. • Use only well-maintained equipment and regularly maintain equipment. • Inspect equipment prior usage. • Avoid welding activities at areas with high risks of fire hazards. • Welding activities should be avoided during rainy periods and avoiding damp areas. • Carry welding activities at well-ventilated areas. Risks from electrocution while performing electrical work. • Ensure only trained workers/electricians perform such work. • Ensure workers adhere to insulated PPEs. • Never work during rainy periods.		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• If construction work to be carried out on elevated areas, ensure working from height measures are followed. Emergency and fire risks: • Presence of an emergency preparedness and response plan with site specific procedures so workers know what is expected and what to do in the event of emergency and fire risks. • Ensure presence of fire prevention and mitigation measures including fire extinguishers and spill prevention kits next to generator and fuel and next to silo units. • Monitor generator fuel consumption • Carry regular maintenance on generator • Wear masks while working close to generators to avoid inhaling emitted gas		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Train workers on emergency and fire prevention plans. • Avoid working in bad weather conditions (dust storm, rainy periods, heat waves) and check weather forecast before conducting any work. • Presence of PPEs and fire extinguishers. • Presence of first aid kits on site. • Material and banners indicating the nearest police station and hospital (with accident and emergency facilities) should be posted at the site. • Provide first aid kits in different places of the work site and train workers on first aid. • The presence of emergency procedures to transfer sick or injured workers on site to the nearest hospital. • Provide fire extinguishers on work sites.		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• All silos must be equipped with temperature and CO2 sensors to monitor the risks • The existing silos must continue to be connected to fire and explosion safety equipment during the construction phase of the expansion site and gas detectors must remain connected and functional. Regular inspections on gas detectors must be carried out. • The existing silos have separate entrances from the expansion silo areas / construction site which will be used for ambulances and firefighting trucks in case risk emerge. • The entrance will remain uninterrupted, and no cars will be allowed to park there, and a flagman will be present for site arrangement and vehicle movements. • When fire events occur the OHS Specialist and trained workers split into groups to activate water hose/extinguishers and		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			distribute fume masks to workers and a group to notify the Qena firefighting unit (8.4km drive), police inspection unit (9km drive) and ambulance unit (1.5 km drive). • There are also firefighting measures signs added on the walls. • The Security guard working for the police unit also notifies the firefighting unit through walkie talkie. • Silo gate and area are quickly emptied to allow the firefighting unit to enter (see appendix VIII for more details on existing fire safety measures). • Ensure corrective actions are implemented instantly • Report any major injuries to WB within 48 hours. Additional measures for transformers: • Understand Transformer Specifications: Always know the voltage and current limits of the transformer to avoid		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			overloading and potential hazards. • Wear Proper Personal Protective Equipment (PPE): This includes insulated gloves, safety goggles, hard hats, flame-resistant clothing, rubber boots, and insulating mats. • De-energize Before Maintenance: Always disconnect the transformer from power and use Lockout/Tagout (LOTO) procedures to prevent accidental reactivation. • Maintain Safe Distances: Keep a safe distance from live equipment and avoid placing metallic objects near transformers. • Regular Inspections and Preventive Maintenance: Conduct routine checks for signs of wear, oil leaks, unusual noises, and test insulation resistance. • Proper Installation and Grounding: Ensure correct alignment, adequate spacing, secure connections, and		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			proper grounding to dissipate fault currents safely. • Overload Protection: Monitor the load on the transformer and ensure the cooling system is functioning optimally to prevent overheating. • Lightning and Surge Protection: Install surge arresters and ensure adequate shielding to protect against lightning strikes and switching surges. • Fire Safety Measures: Equip installations with fire suppression systems and maintain adequate clearance around transformers. • Regular Training and Safety Protocols: Train personnel on safety procedures and emergency response plans specific to transformer failures. Accessibility for temporary disabled/injured workers and or visitors: • Train construction workers on assisting colleagues and		

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			visitors with disabilities and injuries. • Ensure all construction safety protocols accommodate the needs of disabled individuals.		
Unplanned events	Catastrophic events can produce major negative impacts on OHS and public health and safety	• Fire and explosion risks from badly stored fuel/ poorly stored/installed generator and mishandling of chemicals during construction phase and explosion from existing silo operations (unpredicted events) can lead to the death of workers in silos construction area and existing silo users. • Potential damage to nearby buildings may occur from explosion of existing silo which may cause injuries to communities and individuals in those areas.	• Follow similar measures present in the section above under "emergency and fire risks" • Ensure proper grievance procedure is followed. • The current operating silos have explosion reduction systems in their designs including heat sensors and automated dust removal systems to reduce explosion risks and fire risks. • The existing silo has a plastic window to reduce explosion magnitude. • Develop and implement a fire and emergency response plan • Procure and increase the number of firefighting equipment such as fire extinguishers, fire hose reels, smoke detectors, fire alarms and fire hydrants as needed, and place them at appropriate locations within the construction site.	• Contractor and subcontractor. • Silo management (existing) Supervised by OHS Specialist, Environmental specialist, and social specialist for reporting on grievance. • PMU.	20,000

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Ensure firefighting equipment are serviced quarterly by fire service providers. • Install fire and emergency exits at appropriate locations within the construction site and existing silos sites. • Ensure good ventilation is maintained within the existing silos and for fuel and generator area and follow Safety Data Sheet for storage and handling and disposal of different chemicals used. • Regularly perform maintenance on generators and other units. • Install fire extinguishers and spill prevention kits next to generator and fuel. • Train staff on fire safety and have fire marshals on standby • Conduct fire drills and fire safety audits for construction workers and existing silo workers.		
Unplanned events	Risk of property losses	Fire and explosion (i.e. generator/fue) events from construction work can produce major negative impacts on society (i.e. loss of livelihood and property) as follows:	• Silo management unit provides instant grain deposit receipts to farmers who deposited their grains. • Ensure proper grievance procedure under chapter 7 is followed.	• Contractor and subcontractor. • Silo management. • Supervised by OHS Specialist, Environmental Specialist, and	

Factors	Impacts/risks	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
		• Loss of stored grains and loss of storage area. Farmers and traders will not be able to sell and buy grains at the silo • Potential damage to nearby buildings.	• Immediately report to the WBG any major events / incidents within 48 hours • The Taramsa silo has a comprehensive damage insurance that covers potential property damage caused by accidents or operational incidents. • In case of property loss, affected individuals or households will be compensated promptly through the insurance policy. • Affected parties will need to submit claims for damages, and the process will be overseen by EHCSS. • A Grievance Mechanism is established for residents to report damages or property loss.	Social Specialist for reporting on grievance (in case of explosion risks from existing silos).	

Table (6.2): Mitigation measures during the operation phase. Note the budget for the mitigation measures during the operation phase was calculated for one year.

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
Environmental	Airborne Dust	• Airborne dust can be generated from activities such as loading and unloading grain, and from the movement of grain through the Silos. This dust can pollute the air and can also contribute to the formation of smog.	• Grain trucks should be properly covered to minimize dust and air emissions. • Spray water for dust suppression. • Minimize using water during dust suppression by applying dust sweeping methods. • Maintain proper housekeeping • Check weather forecasts prior to loading and unloading activities. • Ensure vehicles and grain trucks use paved roads wherever possible. • Speed limits shall be enforced on unpaved roads, to be <30km/hr. • Ensure turning off vehicles / grain trucks when not in use. • The design of the silo includes automated grain dust extraction systems. • Ensure Grievance mechanism is functional to address operation workers and community complains.	• Silo Management Environmental specialist, and social specialist for reporting on grievance.	8,000
	Gaseous emissions from Engine	• The major activities at this phase are maintenance procedures and transport of	• Ensure turning off vehicles / grain trucks when not in use.	• Silo Management Environmental specialist, social	8,000

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
	Exhaust Gases and from fumigation process	many cars during the daytime. Trucks transporting grains and generator will release exhaust emissions, containing carbon monoxide (CO), sulfur dioxide (SO2), oxides of nitrogen (NOX), and particulate matter (PM). • Fumigation emissions from silos and airborne drift from pesticides application may also reduce ambient air quality	• Maintain trucks and vehicles belonging to EHCSS in good working conditions and perform regular maintenance and maintain a maintenance log. • Ensure Grievance mechanism is functional to address operation workers and community complains. • Provide awareness raising on energy reduction measures to workers. • Gas tight Pressure tests must be carried out when grains are added and prior to each fumigation activity. • Pressure tests need to be part of the annual maintenance of silos. • Monitor and maintain and repair seals regularly when silos are empty. • Add gas sensors around silos • Perform regular maintenance on generators and other units • Follow PMP in annex I	specialist for reporting on grievance.	
	Impacts on Soil and ground Water Quality from	• Sources of soil contamination are accidental and lubricant/fuel spills of	• Include spill prevention kits on site to control and contain and clean up any potential spills from	• Silo Management Environmental specialist, social	8,000

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
	trucks and machineries and any potential chemical	trucks transporting grains to and from the Silo Complex in Taramsa. Other sources also include inappropriate waste disposal from the offices and inappropriate sewage disposal which may contaminate the soil. Spills may also result from result from badly stored chemicals and materials and waste. • Badly stored and bad disposal of fumigation chemical (Phostoxin) may pose risk of contamination • Accidental spills from generator and transformer and soil contamination. from battery	grain trucks immediately during the operation. • Perform periodical maintenance on equipment used during the operation phase, for example during loading and uploading of grains. • Schedule operation activities to avoid rainfall and high wind periods to the extent practical • Ensure all chemicals are labelled, stored, handled, and disposed according to their safety data sheets (SDSs) and manufacturer's guidelines by trained workers. • All chemicals are stored on insulated areas from the ground and in secondary containment. • Ensure the grievance mechanism is functional to address operation workers and community complaints. • Ensure good housekeeping • Wastewater is collected in an existing tank and regularly disposed of in the sewage network. Wastewater amount is not expected to increase with expansion work.	specialist for reporting on grievance.	

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Presence of fire extinguishers and CO2 extinguishers next to stored chemicals. • Ensure Phostoxin is stored in tight containers, ensure the storage area of Phostoxin is equipped with good ventilation system. • Do not store Phostoxin next to water and sewage areas and strictly store in dry areas. • Remove any spills based on directions by manufacturers. • Coordinate with a local certified contractor to dispose hazardous chemicals and wastes. • Generator and fuel and transformer area are stored on concrete base and well-ventilated zones. • Store fuel in secondary containment on concrete bases. • Monitor fuel is used to detect any leakage. • Inspect soil around generator and transformer and fuel storage area and detect if any soil color changes occur.		

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Ensure proper concrete base is maintained, and ventilation is functional. • Inspect soil around generator and fuel storage area and transformers and batteries and detect if any soil color changes occur. Ensure proper concrete base is maintained and ventilation is functional. Batteries are stored on acid resistant flooring and in a well-ventilated room. • Carry out routine checks and maintenance on transformers, battery and generator.		
	Noise	• The following activities can generate noise pollution: a) the loading and unloading of materials as well as the loading and unloading of grains from the trucks to and from the silos, b) the operation of conveyer belts, motors and other units and c) the movement of vehicles and machinery in and around the Silos project site • Noise from the generator and transformer	• Ensure noise does not exceed the safety limits stipulated in the Egyptian environmental law in addition to occupational safety and health standards by conducting regular noise measurements. • Restricting the movement of grain trucks to prevent noise in the early morning and late evening periods in coordination with local authorities. • Ensure all vehicles are turned off when not in use. • Monitor noise levels during operation activities to confirm the	• Silo Management Environmental specialist, and social specialist for reporting on grievance.	7,000

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			effectiveness of measures implemented. • Select equipment with low noise emissions and that is technically and financially feasible. • Conduct regular maintenance of equipment and units and generator and transformer to reduce noise emissions • Ensure Grievance mechanism is functional to address workers and community complaints. • Regular health checkups to ensure protection from noise.		
	Biodiversity	• The following activities can have a negative impact on biodiversity in the study area: a) the use of pesticides can be consumed by non-targeted species and can lead to their poison/death b) the emission of pollutants from vehicles and machinery can pollute the air and water, which can harm animals if any. • The bird migratory route is located near the silo (risk of collision)	• Follow measures present in the pest management plan to avoid consumption of pesticides by non-targeted species or secondary poisoning. • Follow the same measures for air, noise and wastes emissions. • The silo design already includes aviation obstruction lighting which is used to enhance visibility of airplanes and birds in order to avoid any collision or obstacles, and the risk of collision is higher when the buildings are made of glass which is not the case in the silos.	• Silo Management Environmental specialist	8,000

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
	Waste Management	**Solid waste** • Ongoing generation from operations, maintenance, offices. **Liquid waste** • Potential wastewater from grain washing, equipment cleaning, sanitation (water use is minimal). **Hazardous waste** • Potentially hazardous waste from pesticide use, grain fumigation, maintenance.	**Waste management:** - Waste collection and disposal pathways and sites will be identified for all major waste types expected from the operation activities. - Wastes will be segregated by type (solid, hazardous, and liquid wastes). - Waste generated during operation activities will be regularly collected and disposed properly by licensed collectors and disposed in site approved by the responsible government authority. - The records of waste disposal will be maintained as proof for proper management as designed. - Avoid accumulation of organic wastes and food remains. - Implementing pest and rodent control measures (Annex 1). - Record grievances. **Wastewater:** - The approach to handling sanitary wastes and wastewater from the existing silos must be approved by the local authorities. - Wastewater/sewage from toilets/latrines (existing offices) will be collected in existing tank	• Silo Management Environmental specialist, and social specialist for reporting on grievance • Waste contractors	10,000

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			and disposed at the closest sanitation network. Wastewater amount is not expected to increase with expansion work. - Record grievances. **Hazardous chemicals, materials, and waste:** - Temporarily storage on site of all hazardous or toxic substances will be in safe containers labelled with details of composition, properties, and handling information. - The containers of hazardous substances shall be placed in a leak-proof container to prevent spillage and leaching. - The wastes shall be transported by specially licensed carriers and disposed in a licensed facility. - All chemicals and hazardous materials should be stored, handled, and disposed according to their safety data sheets (SDSs) and by trained workers. - Remove any spills regularly based on directions by manufacturers. - Coordinate with a local certified contractor to dispose hazardous chemicals and wastes (see baseline for names of certified contractors) - Record grievances.		

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			- For E-waste ensure they are stored separately according to their manufacturer's guidelines, and they are disposed by E-waste contractors. **Pest Management Plan (fumigation in silos, rodenticides around site and offices):** - Follow and develop the pest management plan (PMP) annex1 and ensure fumigation and pesticides applications and handling are carried according to the PMP - Ensure guidelines of hazardous materials and wastes are followed.		
Socio-economic Aspects	Risks to labor and lack of appropriate work conditions and Workers	• Silo workers and seasonal workers may face unfair treatment (discrimination, delayed payments, unsafe working conditions and unresolved complaints from the lack of grievance mechanism. • Workers may face occupational health and safety hazards (e.g., grain	• The project owner and contractor will share information related to labor rights and working conditions, labor grievance mechanisms, and will ensure that appropriate insurance schemes are in place and operational to cover different types of workers. • Workers should be made aware of their rights regarding working hours, days off, salaries	• Subcontractors for seasonal workers supervised by social specialist and environment health and safety specialist • Silo Management Social specialist and environment health and safety specialist for silo operations	10,000

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
		dust exposure, machinery accidents). • Seasonal workers, including cleaning workers during operational phase are at risk from working from height and confined areas, utilizing child labor and improper PPEs, from the following activities: ➢ There is a contractor that brings seasonal workers to empty seed bags and conducting cleaning activities including silos cleaning. • The cleaning specialists remove the grains from the bottom and sides of the silos. Cleaning is done every beginning of the season	• All workers will have valid signed contracts • A grievance mechanism (present in chapter 7) will include channels for workers. Workplace grievances will be handled in a positive manner with no retaliation, and this will be communicated to workers • Provision of anonymous grievances. • Implement the project level labor management plan (LMP) which also addresses subcontracted workers. • Subcontractor will provide all the needed PPEs and safety tools with supervision of silo management. • Subcontractor and silo management will ensure proper OHS mentioned in this document are followed by seasonal workers and subcontractors. • The silo management will provide the following based on consultation: o Providing industrial security equipment for site employees in accordance with	• EHCSS	

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			occupational safety and health requirements. ○ Paying transportation allowances to site employees and providing cars to reduce the burden of transportation to and from the sites due to the distance of the silo sites from residential areas and considering establishing silos in places close to residential areas and with available means of transportation. ○ Organizing shifts so that daily working hours comply with the controls of the labor law and paying for additional working hours in the event that additional working **hours are achieved.** • PMU will conduct regular inspections on silos.		
	Risks on vulnerable populations	• Gender, ethnicity and other social stratification of beneficiaries may lead to disproportionate distribution of project benefits especially on vulnerable populations (minorities, women,	• Develop a well communicated and accessible grievance mechanism for community members to address any complaints including anonymous grievances (see GM in chapter 7) • Provide various grievance channels to obtain grievances.	• Silo Management, and Social Specialist	8,000

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
		disabled and very poor populations) as follows: ➢ Limited access to silo services by small farmers and vulnerable populations due to elite capture. Risk of unequal access to food distribution channels and purchasing power which can lower food accessibility to vulnerable population.	• Ongoing stakeholder consultation will include female farmers, disabled and vulnerable populations through regular focus group discussions. • Provide continuous information to farmers and different stakeholders on the progress of the project and on mitigation measures and grievance redress mechanisms during general meetings and information posted on local levels and conduct focus group discussions (FGD) with women and vulnerable groups as per the SEP document. • Some of the consulted women preferred to receive information through their husbands. As with all vulnerable groups who are either illiterate or have no access to the internet, face-to-face communication is the preferred method of communication • For vulnerable groups including women and small-scale farmers, use preferred means of communication using Arabic language and Illustration, Location		

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			sketches, physical models, and film Presentations • For other vulnerable groups such as people with disabilities, they use preferred means of communications using Arabic language and tailored means of communications for different types of disabilities. • Liaison with the communities will be maintained. • The silos operations will include lines for elderly and small farmers separate from big farmers and traders. The small farmers and elderly pathway lines will be a fast-tracking line. • Include a separate fast-tracking lane for women. Provide the following on site based on consultation results: • Organizing the operations of supplying and dispensing wheat from silos to reduce the accumulation of cars around and inside the site • Reducing the waiting time for wheat suppliers to reach the silos.		

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Expediting the procedures for disbursing wheat suppliers' dues. • Using laboratory equipment to settle disputes that may arise between suppliers and the sorting committee regarding the degree of wheat cleanliness. • Providing yards and waiting areas equipped with bathrooms segregated by sex for wheat suppliers. • Engage regularly with small farmers, women and elderly and inform them with them with the services tailored for their needs • Accessibility measures: ➢ Install ramps, elevators, and wide pathways to ensure accessibility for people with disabilities and elderly. ➢ Designate accessible parking spots and clearly marked accessible entrances for elderly and special needs. ➢ Ensure that public areas and facilities within the silo are accessible for the people with disabilities and elderly,		

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			including restrooms and workstations.		
	Risks on child labor/children present in silos during grain transport Risks of child labor by seasonal workers subcontractors	• The presence of children in grain handling or transport and loss of educational opportunities. • Children being Exposed to hazardous substances or working conditions.	• The security persons in the Silo will check IDs and will include a supervisor to prevent the children from accessing high risk areas and from reaching any active operations in the silos during the loading and unloading of grains and in vehicle pathways for safety. • Ensure implementing the Labor Management Plan (LMP) • For silo workers, maintain a copy of IDs of workers to prevent hiring workers under 18 years. • The silo management will add signs and banners on the danger of child labor and will raise the awareness of silo users. • For subcontractors of the seasonal workers, awareness on danger of child labor and penalties will be communicated and will be part of the subcontractor's contract. fines and penalties will be set in case child labor is detected. • EHCSS will check labor policies of the contractor.	• Subcontractor for seasonal workers supervised by social specialist and OHS Specialist • Silo Management, Social specialist and OHS Specialist • EHCSS	5,000

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Regular inspection will be conducted by the Food Security PMU (Project Management Unit).		
	Risks of SEA/SH	• Potential SEA/SH among staff and visitors.	• Follow the same measures for this risk present in the construction phase.	• Silo Management, and social specialist	5,000
	Community health and safety: Traffic risks and accidents	• The risk of road accidents may increase during high storage seasons. The number of grain transport trucks is expected to increase.	• Update and implement the traffic management plan (including routes and alternative routes, truck movements and transport of workers, assess the number of vehicles for the routes leading to the silos and routes widths and capacities) appendix II. • Access roads for grain trucks shall be determined in coordination with the traffic authority. • EHCSS truck drivers: • Ensure truck drivers have valid license • Ensure truck drivers received training on good practice driving such as maintaining speed limits and wearing seat belts	• Silo Management, and social specialist with support from Environmental Specialist	6,000

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Ensure drug check-ups are regularly conducted on truck drivers. • Monitor unusual traffic delays or accidents. • Ensure regular maintenance is conducted for the trucks. • Avoid peak hours. • For onsite traffic Pedestrian lanes/zones are present on site. • Presence of flagman for site arrangement • Follow, develop and implement the traffic management plan (appendix II) and GM (chapter 7). • Report any major injuries and accidents to the WB within 48 hours.		
Occupational Health and Safety (OHS)	Risks on workers health and safety	• Risks on workers respiratory system: Grain dust pollution while loading and offloading grains may lead to impacts on human health. Long-term exposure to grain dust can cause respiratory problems.	• Develop a site specific OHS Manual to include the results of the OHS risk assessment, responsibilities and staffing, preventative measures, mitigation measures, emergency plans, training program, etc. • Ensure the adequate implementation of occupational	• Silo Management, OHS Specialist with support of Environmental specialist, and social specialist for reporting on grievance	15,000

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
		• Gaseous exposures from trucks and generator causing severe respiratory irritation, • Falling from height or accidently falling in silos while working at height during maintenance • Asphyxia from working in confined areas while conducting maintenance works. • Grain dust is a fire hazard, and a fire at the silos could cause serious injuries or death. • Generator and fuel fire hazard and gas emissions • Grain dust explosions can also cause serious injuries or death. • Risks from grain engulfment • Risks of being entangled in unguarded auger and potential injuries • Risks of burns from hot surfaces	health and safety provisions on-site such as providing personal protective equipment (PPE) to the workers during operation activities and dust masks while loading and unloading grains. • Wear masks while working close to generators to avoid inhaling emitted gas • Check weather forecasts prior to loading and unloading to prevent grain dust emissions • Ensure regular site cleaning is kept. • Ensure toilets are well kept and cleaned regularly • Provide ear mufflers to workers working near noisy units. • Communication and training programs to prepare workers to recognize and respond to workplace hazards. Programs should include aspects of hazard identification, safe operating and materials handling procedures, work permit, safe work practices, basic emergency procedures, first-aid, and special hazards unique to their jobs. • Monitoring and record-keeping activities, including audit procedures designed to verify and	• Subcontractor for seasonal workers supervised by Silo management OHS Specialist with support of Environmental specialist, and social specialist for reporting on grievance • EHCSS	

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
		• Noise and vibration emissions from silos operations and units, • Unhygienic practices • Handling of toxic substance, chemicals and wastes, such as pesticides and rodenticide especially during application • Risks of skin and eye burns and irritation from handling, storing and disposing chemicals and empty containers and other types of waste including domestic waste	record the effectiveness of prevention and control of exposure to occupational hazards, and maintaining accident and incident investigation reports. • Follow the labor management procedures (LMP) and the workers grievance mechanism (GM. The GM should be established, and well-functioning and workers should be made aware of their rights regarding working hours, days off, salaries, etc. • Prohibit all forms of child and forced labor. • Provide medical and life insurance for all workers • Material/banner indicating the nearest police station and hospital (with accident and emergency facilities) should be posted at the site. • Provide first aid kits in different places on the work site and trained workers in first aid. • The presence of emergency procedures to transfer sick or injured operation workers on site to the nearest hospital. • All workers should be trained in handling, storing, and disposing		

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			of all types of chemicals and wastes according to their safety data sheets (SDSs). • Ensure workers handling chemicals and pesticides are properly trained. • Ensure all EHCSS transport/truck drivers have valid driving licenses and raise awareness on good road practices such as maintaining speed limit and wearing seat belts. • Ensure vehicles are regularly maintained. • Conduct drug check-ups on workers. • Report any major incident to WB within 48 hours. • Body harness and safety line and breathing PPE must be worn when working on top of the silos in case of accidental falls within the silo, worker can be pulled back to safety. • All workers entering the silo must adhere to safety-line.body harness and breathing apparatus and must be supervised and in case of grain engulfement, they can be pulled away. • Gas detectors are in place and continuously monitor gas		

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			emissions to maintain safe working conditions. In the event of maintenance within the silos, the phosphine atmosphere is replaced with breathable air to ensure worker safety. • Apply same measures present under construction phase for silo workers as well as any seasonal workers including specific measures for working in confined areas, handling chemicals and hazardous wastes, falling from height, electrocution and follow EHCSS emergency procedures. • Ensure grain augers (if present) and grain elevators are turned off prior to conducting any operational and maintenance works inside the silos. • Follow safety procedures in the pest management plan annex I. • Food security PMU will conduct regular inspections • Ensure fuel and generator area are located on concrete base, well-ventilated and fuel is in secondary containment, presence of spill prevention kits and follow Safety Data Sheet for storage and handling and disposal of different chemicals used.		

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Regularly perform maintenance on generators transformers and other units • Install fire extinguishers and spill prevention kits next to generator and fuel and transformer • All silos must be equipped with temperature and CO2 sensors to monitor the risks. • The existing silos must remain connected to fire and explosion safety equipment and gas detectors must remain connected and functional. Regular inspections on gas detectors must be carried out. • The entrance will remain uninterrupted, and no cars will be allowed to park there, and a flagman will be present for site arrangement and vehicle movements. • When fire events occur the OHS Specialist and trained workers split into groups to activate water hose/extinguishers and distribute fume masks to workers and a group to notify the Qena firefighting unit (8.4km drive), police inspection unit (9km drive) and ambulance unit (1.5 km drive).		

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• There are also firefighting measures signs added on the walls • The Security guard working for the police unit also notifies the firefighting unit through walkie talkie • Silo gate and area are quickly emptied to allow the firefighting unit to enter (see appendix VIII for more details on existing fire safety measures). **Handling Phostoxin (fumigation):** • Keep ignition sources away • Do not smoke. • Protect against electrostatic charges. • Keep protective respiratory device available • Store away from water, acids, bases, strong oxidizing agents and strong reducing agents • Do not store with acids • Store products in a locked, dry, cool, well-ventilated area away from heat. Post as a pesticide storage area. • Do not store in buildings inhabited by humans or domestic animals.		

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Do not breathe dust/fume/gas/mist/vapors/spray. • Do not allow contact with water • Respiratory protection will most likely be required during cleanup of spilled aluminum phosphide fumigants. If the concentration of phosphine (hydrogen phosphide, PH3) is unknown, NIOSH/MSHA approved SCBA or its equivalent must be worn. Full-face gas mask canister combinations may only be worn at concentrations no higher than 15 ppm. • Wear dry gloves of cotton or other material if contact with tablets, pellets, or dust is likely. Gloves should remain dry after use. Aerate gloves and other clothing that may be contaminated in a well-ventilated area prior to laundering. • Wear tightly sealed goggles. • Wear face protection. • Wear respiratory protection. • Wash thoroughly after handling. • All ventilation should be designed in accordance with OSHA standard (29 CFR		

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			1910.94). Use local exhaust at filling zones and where leakage and dust formation is probable. Use mechanical (general) ventilation for storage areas. • Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing and wash before reuse. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin. • If on skin: Wash with plenty of water. • If skin irritation occurs: Get medical advice/attention • If inhaled: Remove person to fresh air and keep comfortable for breathing • If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. • Specific treatment is urgent (see supplementary first aid instructions on this Safety Data Sheet). • If swallowed: Immediately call a poison center/doctor.		

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Keep containers tightly closed and proper ventilation. • Containers to be disposed based on SDSs and manufacturers recommendations. • Properly label and store the material according to its MSDS. • During fumigation, EHCSS staff and workers are required to gather and stand at a safe distance from the silos **Seasonal Workers** • The silo's manager and OHS Specialists make sure that the cleaning workers for silos have the capacity to work in silos and aware of the OHS measures and how to use PPEs properly and knowledge about risks in working in silos. • The manager and OHS Specialists reviews safety measures with cleaning workers before entering the silos. • Silos are emptied before the worker enters • All machineries are shut down before the worker enters the silo • The LMP has procedures to deal with contractors and		

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			subcontractors obtained by EHCSS, on the labor rights and OHS for seasonal workers. • Follow child labor mitigation measures. **Accessibility measures** • • Conduct regular training sessions for all staff on disability awareness and assistance. • Maintain an inclusive workplace by continually updating accessibility measures and ensuring they meet current standards.		
Unplanned risks	Catastrophic events can produce major negative impacts on OHS, health and safety of silo users including non-workers and individuals in neighboring industries	• Fire and explosion during existing silo operations (unpredicted events) can lead to the death of workers and silo users. • Potential damage to nearby buildings may occur from explosion of existing silo which may cause injuries to communities and individuals in those surrounding areas. • Phostoxin/Aluminum phosphide may ignite	The existing facility and expansion facility include the following: • Guidelines attached to walls on fire fighting • The presence of water firefighting system • Presence of FM 200 and FMD fire extinguishers in control room • Presence of CO_2 fire extinguisher in electricity room • Presence of water hose in machine towers • There is heat thermometer to calculate heat in silos and there is	• Silo Management, OHS Specialist, Environmental specialist, and social specialist for reporting on grievance. • EHCSS/PMU	15,000

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
		spontaneously and may lead to explosion. • Risk of leaks of Phostoxin during transportation • Fire risks from generators and transformer	a ventilation system to adjust the weather condition within the silo. • The bucket elevators have heat sensors as well • All filters for dust must be activated before any machine is operating in silo • The silos include systems to reduce the impact of explosion (design phase) including windows and gates • Ensure corrective actions are taken In addition to the above, the silo management will: • Develop and implement a fire and emergency response plan • Procure and increase the number of firefighting equipment such as fire extinguishers, fire hose reels, smoke detectors, fire alarms and fire hydrants as needed, and place them at appropriate locations within the silos • Ensure firefighting equipment are serviced quarterly by fire service providers • Install fire and emergency exits at appropriate locations within the silos • Ensure good ventilation is maintained within the silos and		

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			generator room and appropriate extinguishers are placed • Train staff on fire safety and have fire marshals on standby • Conduct fire drills regularly and fire safety audits annually Follow EHCSS evacuation procedures, OHS plan and firefighting procedures. Immediately report to the WBG any major events / incidents within 48 hours. • Ensure proper grievance procedure is followed. **Phostoxin/Aluminum phosphide management according to its SDS[8]:** • Never allow the buildup of phosphine gas (hydrogen phosphide, PH3) to exceed explosive concentrations. Open containers of metal phosphides in open air only and never in a flammable atmosphere • Do not confine spent or partially spent dust from metal phosphide fumigants as the slow release of phosphine gas (hydrogen phosphide, PH3) from these materials may result in the formation of an explosive atmosphere. Spontaneous		

[8] For more information and guidance on Phostoxin follow https://label.westernpest.com/files_techservices/live/degesch.phostoxin052418.sds.pdf

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			ignition may occur if large quantities of aluminum phosphide are piled in contact with liquid water. • Do not store next to water and wet areas and do not dispose in sewage • Do not allow to enter sewers/surface or ground water. • If possible, dispose of spilled material by use according to label instructions. Freshly spilled material which has not been contaminated by water or foreign matter may be placed back into its original or other air-tight container. Punctured flasks, pouches or containers may be temporarily repaired using aluminum tape. • If the age of the spill is unknown or if the product has been contaminated with soil, debris, water, etc., gather up the spillage in small open buckets having a capacity no larger than about 1 gallon. Do not add more than about 1 to 1.5 kg (2 to 3 lbs.) to a bucket. If on-site wet deactivation using deactivation solution is not feasible, transport the uncovered buckets in open vehicles to a suitable area according to local authority and manufacturer's guidelines. Small amounts of spillage, from about 4 to		

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			8 kg (9 to 18 lbs.) may be spread out over the ground in an open area to be deactivated by atmospheric moisture. Alternatively, spilled aluminum phosphide fumigants may be deactivated by using the deactivating solution as noted on the SDS and guidelines of manufacturer. • Inform relevant authorities in case of seepage in water resources or sewage system • In case of fire, use CO2, sand, extinguishing powder. Do not use water. Use firefighting measures that suit the environment. • Respiratory protection will most likely be required during cleanup of spilled aluminum phosphide fumigants. If the concentration of Phosphine (hydrogen phosphide, PH3) is unknown, NIOSH/MSHA approved SCBA or its equivalent must be worn. Full-face gas mask canister combinations may only be worn at concentrations no higher than 15 ppm. • As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent) and full protective gear to prevent contact with skin and eyes. Wear a NOISH/MSHA		

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			approved full-face gas mask – phosphine gas canister combination may be used at levels up to 15 ppm or following manufacturers' use conditions instructions for escape. Above 15 ppm or in situations where the phosphine gas concentration is unknown, a NIOSH/MSHA approved SCBA must be worn. • Follow EHCSS evacuation procedures, OHS plan and firefighting procedures. • Immediately report to the WBG any major events / incidents within 48 hours. • Ensure proper grievance procedure is followed. • Storage precautions mentioned in the document for Phostoxin will be considered also during the transportation of these pesticides. Additional measures for transformers: • Understand Transformer Specifications: Always know the voltage and current limits of the transformer to avoid overloading and potential hazards.		

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Wear Proper Personal Protective Equipment (PPE): This includes insulated gloves, safety goggles, hard hats, flame-resistant clothing, rubber boots, and insulating mats. • De-energize Before Maintenance: Always disconnect the transformer from power and use Lockout/Tagout (LOTO) procedures to prevent accidental reactivation. • Maintain Safe Distances: Keep a safe distance from live equipment and avoid placing metallic objects near transformers. • Regular Inspections and Preventive Maintenance: Conduct routine checks for signs of wear, oil leaks, unusual noises, and test insulation resistance. • Proper Installation and Grounding: Ensure correct alignment, adequate spacing, secure connections, and proper grounding to dissipate fault currents safely.		

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• Overload Protection: Monitor the load on the transformer and ensure the cooling system is functioning optimally to prevent overheating. • Lightning and Surge Protection: Install surge arresters and ensure adequate shielding to protect against lightning strikes and switching surges. • Fire Safety Measures: Equip installations with fire suppression systems and maintain adequate clearance around transformers. • Regular Training and Safety Protocols: Train personnel on safety procedures and emergency response plans specific to transformer failures.		
Unplanned risks	Risk of property losses	• Catastrophic events such as explosions and fire events can produce major negative impacts on the livelihood of silo users. • Catastrophic events such as fire and explosions can lead to property damage in neighboring buildings.	For socio-economic risks: • Silo management unit provides instant grain deposit receipt to farmers who deposited their grains • Ensure proper grievance procedure under chapter 7 is followed.	• Silo Management, Social specialist • EHCSS	

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
			• and raise awareness to farmers and grain buyers on the grievance mechanism. • Taramsa silo has a damage insurance. • Ensure proper grievance procedure is followed. • Immediately report to the WBG any major events / incidents within 48 hours. • The Taramsa silo has a comprehensive damage insurance that covers potential property damage caused by accidents or operational incidents. • In case of property loss, affected individuals or households will be compensated promptly through the insurance policy. • Affected parties will need to submit claims for damages, and the process will be overseen by EHCSS. • A Grievance Mechanism is established for residents to report damages or property loss.		
Unplanned risks	Pesticides leaks	• Pesticides during fumigation activities may leak into the atmosphere	• Pressure tests must be carried out prior to handing over.	• Silo Management, and Environmental Specialist /EHCSS	

Factors	Risks and Impacts	Description	Mitigation Measures	Responsibility	Budget (USD/Year)
		and cause health and safety and environment risks.	• Gas tight Pressure tests must be carried out when grains are added and prior to each fumigation activity. • Pressure tests need to be part of the annual maintenance of silos • Monitor and maintain and repair seals regularly when silos are empty. • Add gas sensors around silos.		

6.4 Training and Awareness

The policy and objectives of this ESMP will only be met successfully when all those responsible for its implementation and review are thoroughly conversant with its content, interpretation, and performance measurement.

It is the responsibility of the EHCSS and contractors, with the assistance of the Occupational, Health and Safety Specialist (OHS), in implementing environmental education measures to ensure that all workers and all sub-contractors on the site are aware of and appreciate the need to implement the measures contained within this ESMP. Records of all environmental and social education / training / induction activities are to be kept and stored within the environmental management file on the site.

All employees and sub-contractors in Taramsa Silo are to be inducted and given appropriate environmental and social awareness training. The training is to be relevant to their different roles to ensure that they are aware of:

- The importance of conformance with the environmental and social policy and procedures and with the requirements of this ESMP of Taramsa Silo.
- The actual and potential environmental and social impacts of their work activities and the environmental and social benefits of improved personal performance.
- Their roles and responsibilities in achieving conformance with the environmental and social policy and this ESMP.
- The potential consequences of departure from specified operating procedures.

Generally, the EHCSS will provide three forms of training in Taramsa site: a) Site induction, b) Environmental and social management training, and c) Toolbox talk training.

Records of induction and training will be kept in the environmental and social file on the Taramsa Silo site, including the topic of training, dates, names, and trainer details. Trainees will be required to sign off that they have been informed of the environmental and social issues and that they have understood their responsibilities. Specific individuals with environmental and social responsibilities may require the following training: a) Emergency response training, b) Emergency kit training, c) Environmental and social auditing; and d) sampling and monitoring.

All environmental and social training records are to be held at the EHCSS and Taramsa Silo office. The environmental and social manager will have responsibility for maintaining and updating these records. As a requirement for each training session a record should be completed with the date of the training exercise, a description of the training content, the name of the trainer and trainees, and the signature of the trainer and relevant manager. The principal contractors and sub-contractors may use their own format if available.

6.4.1. Training Requirements

Experienced, well-trained personnel are essential for the successful implementation of this plan. EHCSS and contractors and sub-contractors will ensure that persons engaged in project operation are informed of the operation issues and concerns and that they attend and receive training regarding these requirements as well as all laws, rules, and regulations applicable to the work. Prior to operation, all project personnel will be trained on environmental permit requirements and environmental and social specifications, including fuel handling and storage, cultural resource protection methods, stream and wetland crossing requirements, and sensitive species protection measures. Different levels of training will be required for different groups of worker and contractor personnel. EHCSS supervisors, managers, field foremen, and other contractor's personnel designated by EHCSS will attend a comprehensive environmental and social training session. All other workers personnel will attend a training session before the beginning of operation and during seasonal operation as environmental and social issues and incidents warrant. Additional training sessions will be held for newly assigned personnel prior to commencing work on the project.

All workers personnel will attend the training session prior to entering the operation site. All workers' personnel shall sign an acknowledgement of having attended the appropriate level of training. To ensure successful compliance, workers personnel shall attend repeat or supplemental training if compliance is not satisfactory or as new, significant new issues arise. All visitors and any other personnel without specific work assignments shall be required to attend a safety and environmental and social awareness orientation.

OHS Training Requirements:

All workers involved in the construction and operation of the silo expansion must receive OHS training on the following topics:

- General OHS principles: This should include training on hazard identification and risk assessment, safe work practices, and emergency procedures.
- Silo-specific hazards: This should include training on the following hazards: a) falling from heights, b) confined space hazards, c) silo dust explosions, d) grain entrapment, and e) machinery hazards.
- Silo-specific safety procedures: This should include training on the following procedures: a) safe work practices for silo construction and maintenance, b) Silo lockout/tagout procedures, and c) Silo emergency response procedures.

OHS training will be provided by a qualified trainer and will be tailored to the specific tasks that each worker will be performing. Workers should be retrained on OHS procedures on a regular basis, and refresher training should be provided whenever new hazards are identified or when there have been changes to work procedures.

6.4.2. Site Induction

Prior to working on site all personnel and subcontractors will attend a site induction session incorporating Environmental and Occupational Health and Safety requirements. The induction will address a range of environmental and social awareness issues, as a general environmental module, including but not limited to:

- The ESMP (purpose, objectives, method statements, procedures, key issues)
- Legal requirements including due diligence, duty of care and potential consequences of infringement.
- Environmental and social responsibilities.
- Conditions of licenses, permits and approvals.
- Environmental and social policy of EHCSS.
- Significant environmental and social issues and areas of the site including site boundaries; waste types, their segregation and location of waste disposal containers; washing, re-fuelling and maintenance of vehicles/trucks and equipment.
- Environmental and social management techniques for key environmental elements (soil, water, waste and recycling, flora and fauna, heritage etc.)
- Incident management and emergency response plans.
- Reporting process for environmental and social incidents.

6.4.3. Task-Specific Training

The environmental and social manager will determine activities and personnel required to have specific instructions, when this training will take place, how it will be delivered and if there is a need to retrain personnel. This includes advanced training on noise minimization for staff working at night and any other subjects listed in Sub-Plans and/or work method statements.

6.5. Roles and Responsibilities

The EHCSS and their contractors, as project initiator and applicant for the environmental authorization, has overall accountability and responsibility for environmental and social management, and for ensuring that any conditions attached to the record of decision are communicated to, implemented, and complied with by the EHCSS and main contractor and its sub-contractors during construction and operation. The EHCSS and contractors will organize the project implementation team. Although it will be the responsibility of these parties to prepare and implement detailed method statements and management plans, the EHCSS and contractors will remain accountable for their implementation.

Currently EHCSS has a technical consultant on board who supports the preparation of bidding documents. The plan is that the technical consultant will constitute the supervision work related to the construction phase. The technical consultant will contract with a consulting firm to bring Environmental, social, and OHS specialists during the construction phase, and the technical consultant will supervise their work. The technical consultant and the consulting firm work will be finished at the end of the construction work.

Regarding the operation phase, EHCSS will contract with a consulting firm to bring in environmental, social, and OHS experts (roles mentioned below) who will take the responsibility of the ESMP implementation and supervision during the operation phase, until they (EHCSS) build their own team which will consist of (environmental, social, and OHS specialists) as permeant staff in the Taramsa silo.

Table (6.3): Roles and responsibilities at Taramsa Silo for the Emergency Food Security and Resilience Support Project.

Staff and Individuals	Responsibility
All Staff including workers and sub-contractors	All staff have responsibility for their own environmental and social performance and the impact they have on the environmental and social performance of the project. In particular, all staff should: • Undertake all activities in accordance with the agreed plans of management, procedures, and work methods. • Ensure that they are aware of the contact person(s) regarding environmental and social matters. • Report any activity that has resulted, or has the potential to result, in an environmental and social incident. • Ensure they attend the environmental and social training provided.
Contractors	• Prepare Contractors' ESMP (C-ESMP) based on the WB approved ESMP, get clearance from EHCSS and implement • Take actions to mitigate all potential negative impacts • Hire/appoint qualified Environmental Specialist, OHS specialist, and Social Specialist to be endorsed by EHCSS. • Actively communicate with local residents and take actions to prevent disturbance during construction and operation. • Ensure all the construction and operation activities having sufficient documents from the related organization. • Ensure that all staff and workers understand the procedure and their tasks in the environmental and social management program.
Silo Manager	• The primary responsibility of the Silo Manager is to ensure that the workers and contractors comply with the environmental specifications in this document. Over-all workers and contractor's representative to direct, manage, coordinate, and supervise all workers and contractor's personnel assigned at the silo site; and, Responsible for the over-all management of all operation activities including all related OHS and quality control activities at the silo site (Taramsa Silo in Qena). In addition, the Silo Manager will:

Table (6.3): Roles and responsibilities at Taramsa Silo for the Emergency Food Security and Resilience Support Project.

	• Assume overall responsibility for the effective implementation and administration of the ESMP. • Ensure that the ESMP is included in the workers and contractor's contrac • Ensure that the ESMP is given to the applicable construction and operati supervisor and the contractors. • In conjunction with the construction and operation supervisor; underta regular inspections of the workers and contractor's site as well as t installation works to check for compliance with the ESMP in terms of t specifications outlined in this document. • Inspections shall take place at least once a week and copies of the monitori checklist contained in the file. • Keep a register of all incidents (accidents, injuries, complaints, leg transgressions, etc) and other documentation related to the ESMP. • Responsible for the overall management of all operation activities including all related OHS and quality control activities at the silo site. • Provide environmental and social advice on matters specified in the conditions of approval, project contracts, licenses and permits. • Facilitate induction and training programs for all persons involved in the construction works. • Liaise with all relevant government authorities such as the EEAA. • Implement and review compliance with the EHS management system and associated environmental and social documents. • In addition, the Silo Manager is responsible for: • Apprise the Site Foreman of requirements of the EHS management system, and their responsibilities within them. • Allocate resources to meet the requirements of the EHS management system. • Investigate complaints to determine effective resolution. • Maintain all necessary monitoring records and reports. • Take action in the event of an emergency and allocating the required resources to minimize the environmental and social impact. • Share the monthly environmental, health, safety and social report with EHCSS/PMU • Report to EHCSS/ PMU any activity that has resulted, or has the potential to result, in an environmental and social and OHS incident.
Technical Consultant	• Responsible for bidding documents preparation • Responsible to assign the environmental and social and OHS experts during construction phase and to supervise ESMP implementation during construction phase by the contractor.
	During the construction phase:

Table (6.3): Roles and responsibilities at Taramsa Silo for the Emergency Food Security and Resilience Support Project.

Environmental Specialist	• Identify potential environmental impacts of the construction activities. • Ensure that construction activities comply with environmental regulations and standards. • Develop and implement waste management plans to minimize the environmental footprint. • Monitor air, and soil quality to prevent contamination and mitigate any adverse effects. • Ensure that construction activities do not harm local wildlife and habitats.
	During the operation phase: • Continuously monitor environmental parameters to ensure compliance with regulations. • Promote and implement sustainable practices in the operation of the silo. • Oversee the management of operational waste to minimize environmental impact. • Prepare and submit regular environmental reports to regulatory authorities. • Conduct training sessions for staff on environmental best practices and compliance requirements.
Occupational Health and Safety Specialist (OHS)	**During the construction phase:** • Develop and implement a comprehensive safety plan for the construction site. • Conduct regular risk assessments to identify potential hazards and implement measures to mitigate them. • Provide training for all workers on health and safety protocols and emergency procedures. • Investigate any accidents or incidents to determine causes and prevent recurrence. • Ensure compliance with all occupational health and safety regulations and standards.
	During the operation phase: • Develop and oversee the implementation of workplace safety programs and policies.

Table (6.3): Roles and responsibilities at Taramsa Silo for the Emergency Food Security and Resilience Support Project.

	• Provide continuous training for employees on health and safety practices and emergency response. • Conduct regular health check-ups and monitor the health of workers to prevent occupational illnesses. • Ensure that emergency response plans are up to date and conduct regular check. • Investigate any workplace incidents to improve safety measures and prevent future occurrences. • Maintain records of safety incidents and prepare reports for regulatory authorities and internal review.
Social Specialist	**During the construction phase:** • Facilitate communication and engagement with local communities to address their concerns and incorporate their feedback into the project. • Conduct and manage social impact assessment to understand the social implications of the construction activities. • Establish and manage a grievance mechanism to address community complaints and concerns. • Organize and participate in stakeholder meetings to ensure transparent communication.
	During the operation phase: • Maintain positive relationships with the local community and address any ongoing concerns. • Continuously monitor the social impact of silo operations and make necessary adjustments to mitigate negative impacts. • Maintain an effective grievance mechanism to handle any complaints from the community. • Document and report on social performance and community engagement activities.
Sub-Contract Personnel	All sub-contract personnel must carry out the work in accordance with contract instructions and shall conduct their activities in an environmentally and socially sound manner. All sub-contract personnel will undergo environmental and social and OHS induction before they commence any work on the site.

6.6. Environmental and Social Monitoring

Monitoring is an essential part of the ESMP. The purpose of the environmental and social monitoring program is to serve as an early warning system of undesirable impacts arising from the project activities. From this information, the ESMP is amended as necessary to provide an effective remedy. This ensures that environmental protection is optimized and demonstrates compliance with regulatory requirements.

The Environmental Monitoring Program has important objectives as follows:

- To assess compliance and to enable corrective actions to be taken in the case of non-compliance.
- To provide evidence in connection with contractor's claims (e.g., unexpected weather or sea conditions).
- To provide data to be used as evidence in claims from third parties about impacts affecting them during and after operation and
- To provide data to support assessment of impacts in future ESMPs in the region.
- To assess the effectiveness of control measures and identify if further controls/corrective action is required.
- To identify any negative impacts from construction and operation activities.

Environmental and Social Monitoring Plan contains the following information:

1. Frequency of sampling / sampling points. Sampling should be done at the same locations and at effluent release points to check whether permit requirements are met.
2. Sampling parameters: soil quality air quality, noise, etc.
3. Sampling methodology for the following: (Air quality, Soil and, biological conditions, Temperature and ventilation, Noise, and social conditions).

The monitoring results are then evaluated to determine compliance with the imposed requirements. Adaptive environmental monitoring is consistent with the principle of "continual improvement" as per the 'Plan -Do-Check' approach expressed in ISO 14001 and ESSs of the WB. The frequency of monitoring and reporting will largely be dictated by requirements of the planning obligation and the objectives and targets set in the ESMP. An environmental monitoring program for the operation period must be implemented to monitor the environmental impacts and recovery of affected areas and to monitor and document that environmental requirements are complied with.

Table (6.4): Monitoring measures during construction phase. Note the budget for monitoring measures during the construction phase was calculated for two years (the construction period).

Factors	Impacts/risks	Description	Monitoring Methods	Monitoring frequency	Monitoring indicators	Monitoring Locations	Responsibility and Staffing[9]	Budget (USD/Year)
Environmental	Risks on Ambient air due to airborne Dust Gaseous emissions from Engine Exhaust Gases	• Airborne dust can be generated from construction activities such as excavation. This dust can pollute the air and can also pose a health hazard to workers and nearby residents. • Exhaust fumes and gaseous emissions such as NOx, Sox and Particulate matter (PM2) and (PM10) from internal combustion engines/ generators/ vehicles and machineries used present another risk to air quality on and close to construction sites.	• Visual inspections • Spot check measurements of ambient air quality • Review of maintenance records of machinery- according to Egyptian national requirements • Recording and documentation of complaints/ Grievance records • Monthly report.	• Daily inspections onsite of weather conditions and operating machinery and excavation and construction activities • Prior to procurement of machinery for maintenance log and monthly onsite: verification of maintenance records. • Weekly for grievance	• Weather conditions: visual ambient dust levels; windy conditions. • Operating vehicles and machinery: dust generation and black exhaust emissions observed. • Dust generated during construction activities (earthworks)/visible dust cloud. • Compliance for machinery inspection records and number of maintenances performed. • Number of grievance records related to air emissions.	• Construction site and surroundings • Point source: machinery, equipment, and vehicles exhaust and generators.	• Contractor and subcontractor • Environmental specialist, social specialist for reporting on grievance.	16,000
	Risks on Soil and Water resources contamination	• The project may impact soil quality and groundwater quality • Groundwater contamination from accidental spills • Accidental oil and fuel spills from machineries and vehicles used and generators. • Runoff risks from pesticides used which could pollute nearby lands/soils	• Visual inspection of site: backfilling and restoration • Visual inspection on soil. • Regular groundwater quality monitoring tests during the construction phase should be included to detect any potential contamination early • Inspection of equipment and machinery used and associated maintenance records.	• Daily visual inspection especially during excavation and backfilling • Daily visual inspection on soil. • Daily visual inspection on chemicals storage and proper labelling.	• Change in soil colour. • Maintenance records for equipment and machineries and number of maintenances performed • Number of grievance records and complaints related to soil, contamination	• Construction site and surrounding.	• Contractor and Subcontractor • Environmental Specialist, social Specialist for reporting on grievance.	16,000

			• Grievance records. • Fuel consumption records	• Prior the start of the construction activities and monthly for: inspection of machinery records. • Weekly for grievance • Monthly for fuel consumption and water tests.	• Significant decrease in stored fuel • Groundwater tests show parameters above legal limit and international recognized limits.			
	Risks on Ambient Noise	• The following equipment used excavation and grading of the site may produce high noise emissions: ○ the use of heavy machinery, such as trucks, bulldozers, and excavators. ○ the operation of construction equipment, such as generators and compressors.	• Inspection and tests of operating machineries and vehicles onsite for proper functioning. • Grievance records.	• Weekly noise tests • Daily inspection of operating machinery onsite • Prior the start of the construction activities and monthly for: inspection of machinery maintenance records.	• Noise level below permissible levels applicable by zone (nearby community). • Maintenance records for equipment and number of maintenances performed and inspection of proper noise enclosure fitting • Time logs for work/construction activities. • Number of grievance records related to noise emissions.	• Construction site and surroundings.	• Contractor and Subcontractor • Environmental Specialist, social Specialist for reporting on grievance.	12,000

[9] The PMU will ensure provision of Environment, Social and OHS monitoring supervision during construction work

	Biodiversity/ pesticides consumption by non-targeted species Bird collision risks	• Impacts on biodiversity may result in the disturbance of wildlife from noise, dust, air, light emissions and waste generation including chemicals. • Non targeted wildlife may consume rodenticides by accidents or consume the dead rodent if not collected right away and disposed properly and in turn leading to their secondary poisoning. • Bird collision into the silo construction site during migratory seasons	• Surveys at project site and surroundings	• Daily on site and surrounding.	• Presence of dead animals including birds	• Project site and surroundings	Contractor and Subcontractor • Environmental Specialist.	16,000
	Waste generation (solid, liquid, and hazardous wastes) emissions.	**Solid waste** • Increased waste generation from materials, packaging, debris. • Construction waste • Large quantity of excavated soil will be generated among other construction waste. **Liquid waste** • Potential wastewater from concrete mixing, equipment washing, sanitation. **Hazardous waste** • Potentially hazardous waste from paints, solvents, oils,	• Visual inspection on site and surrounding. • Inspect waste storage sites. • Inspect soil colour. • Review of maintenance records of machines and generators. • Grievance records related to waste and pollution.	• Daily inspection on site and surrounding and waste areas. • Weekly inspection on waste receipt • Monthly inspection on machine maintenance records including generators • Weekly on grievance	• Presence of waste in undesignated areas. • Change in soil colour. • Presence of waste receipt. • Number of maintenances performed on equipment and machines. • Number of grievances recorded.	Project site, waste storage area and surrounding	• Contractor and subcontractor • Environmental specialist, social specialist for reporting on grievance.	20,000

		pesticides containers and chemicals.						
Socioeconomic Aspects	Risks to labor from inappropriate working conditions.	• Unfair treatment (discrimination, delayed payments, unsafe working conditions). • Unresolved complaints from the lack of grievance mechanism for workers.	• Inspection of documents, labor contracts and LMP • Grievance records.	• Prior the start of any work for labor contracts and LMP and awareness sessions records to workers on their rights. • Weekly for grievance. • Monthly inspections by the PMU.	• Presence of grievance mechanism in place and adequate LMP • Number of awareness sessions performed to workers on their rights • Number of contracted workers /presence of contracts versus number of actual workers. • Number of grievances reported from workers and number of solved grievances. • Number of visits conducted by the PMU.	• Site location	• Contractor and subcontractor • Environmental specialist, social specialist for reporting on grievance.	16,000
	Disturbance to silo operations and users	• Noise, dust, traffic disruptions. • Restricted access to facilities or services. Construction activities and stock-piling of construction material can potentially block the access routes and roads inside and in the vicinity of the silo sites.	• Inspection of community grievance log. • Inspection of proper safety signage, fencing delimiting construction site, detour signage • Inspection on signed code of conduct (COC)	• Daily safety inspection of site and surrounding. • Weekly inspection of records reports, grievance logs. • Before implementing construction	• Number of reported complaints from community and surrounding industries if any and number of solved complaints • Presence of a separate entrance for the construction	• Site and surrounding communities. •	Contractor and Subcontractor • Social specialist with support from Environment Specialist	10,000

				work for the code of conduct • Monthly inspections by the PMU.	trucks/machineries and signages • Number of workers who signed the code of conduct versus number of actual workers.			
	Child Labor	• Exploitation of children in construction work. • Hazardous working conditions. • Interference with education.	• On site inspection and ID inspection • Workers logs inspections • Inspection on contractor's labor policies • Grievance mechanism	• Daily for ID inspections • Prior to starting any work for child labor policies inspection and for awareness sessions to contractors • Weekly for grievances • Upon occurrence for penalties	• Number of workers below the age of 18. • Presence of contractor's policy on child labor • Number of awareness sessions provided to contractor on child labor • Number of visits conducted by the PMU • Number of recorded grievances related to child labor • Number of penalties/ fines.	• On site	Contractor and Subcontractor • Social Specialist and OHS Specialist	12,000
	Risks of SEA/SH	• Risks of sexual exploitation and abuse and harassment may increase due to the presence of workers near local communities and lack of awareness on SEA/SH issues>=.	• Complaint records. • Inspection on LMP and CoC. • Inspection on signposts. • Inspection on contractor's SEA/SH policies.	• Weekly for complaints. • Prior to the start of any work for LMP and COC and awareness sessions on SEA/SH and	• Number of complaints regarding SEA/SH and number of solved complaints • Presence of LMP and code of conduct • Presence of SEA/SH in contractor's policies	• On site and surrounding.	• Contractor and Subcontractor. • Social Specialist.	10,000

				contractor's policies. • Daily for signposts.	• Number of awareness sessions provided to workers on SEA/SH • Number of workers who signed the COC versus actual number of workers • Presence of signposts.			
	Community health and safety: Traffic risks and accidents	• Traffic accidents due to the increase in number of trucks during construction phase may pose a risk on other road users. • Traffic congestion due to the increase in transportation trucks for materials, machineries and wastes to and from the site. • Potential risks from air and noise emissions and vibration from high traffic volume during transportation of materials and machineries and wastes to and from the site.	• Traffic management plan in place • Grievance records • Accidents log inspection • Maintenance log inspection •	• Prior to the start of work for the traffic management plan • Weekly for grievances • Weekly for accidents log • Monthly for maintenance log.	• Number of traffic complaints • Number of incidents, injuries to local communities and workers with details • Number of maintenances performed	• On site and District-regional level	Contractor and Subcontractor • Social Specialist with support from Environmental Specialist	16,000
	Lack of stakeholder engagement and proper grievance mechanism	• Risks of untransparent sharing of information • Risks of increase in unresolved complains	• Community consultations/consultation records • Inspection on required permits and documents. • Complaint records inspection	• Prior to the start of any work for permits, documents signage and posting and previous	• Presence of required permits • Number of complaints received versus number of solved complaints	• Site location and surrounding.	• Social Specialist • Silo Manager	10,000

			• Signage and posting are present on site.	consultation records. • Weekly complaints received • Monthly for consultations	• Presence of signage on site • Presence of consultation records and stakeholder types (including small farmers, women, disabled farmers and other vulnerable groups) • Number of consultations performed • Presence of complaint boxes and banners including number for grievance • Presence of LMP.			
	Risks on Cultural Heritage and archeological sites	• Impacts on archaeological and historic sites during the construction phase are expected to be negligible since there are no archeological sites nearby and the subproject is located within an existing facility's premises.	• Document with chance find procedure • Awareness logs on chance find procedures	• Before and during construction works.	• Presence of cultural artifacts and number of encounters. • Number of workers aware of the chance find procedure	• Project work site.	Contractor and Subcontractor • Environmental Specialist • Silo Manager	Not applicable
Occupational Health and Safety (OHS)	Risks of injuries and accidents	• The use of hazardous materials and chemicals and waste can pose a risk to worker health (i.e. cement, paints, oil, bitumen etc.). • Falls from heights are a possible cause of injuries in construction (silo rooftop	• Visual inspection for proper use of PPE, emergency preparedness, fire extinguishers adequate signage for health and safety measures etc. and fencing.	• Daily site inspection and surrounding. for PPEs and proper safety measures (i.e. barriers and fences are in place, fire extinguishers,	• Number of recorded incidents and injuries and type. • Number of non-compliances including not wearing PPEs	• Site location and surrounding and rented apartments for workers,	• Contractor and Subcontractor • Occupational Health and Safety Specialist with support of	40,000

		areas/ use of scaffoldings etc.). • Electrical hazards can cause serious injuries or death. • Machinery can cause crushing injuries or amputations/moving loads. • Dust and fumes can irritate the eyes, nose, and throat, and can also cause respiratory problems. • Noise emissions may disturb workers. • Falling into excavated zones. • Working during bad weather conditions (dust storm, heat wave, rainy seasons etc.). • Injuries and burns from welding activities. • Accidents while transporting materials and machinery to and from the subproject site. • Accidental loads falling on workers while being lifted by cranes. • Injuries from demolishing equipment and activities • Physical injuries from physical activities and wrong lifting techniques, wrong	• Visual inspection for good housekeeping and storage of hazardous materials and equipment. • Verification of training records including daily induction for general construction related risks and hazards, proper use of PPE. • Inspection of complaints and grievance reports and register. • Inspection of employment contracts. • Records about occupational injuries and infectious diseases among workers. • Records of GM and complaints. • Perform gas tests for silos/confined areas • Inspection of insurance policies and attendance sheets. • Report major accidents to WB • Checking meteorological conditions/forecasts prior the start of work daily.	presence of flagman banners with emergency measures and daily induction for OHS risks etc) • Prior entering silos for gas emissions • Monthly on workers accommodation. • Weekly inspection of GM • Monthly inspection on training records and maintenance of equipment. • Major accidents reported within 48 hours • Prior start of construction work for OHS plan	• Presence of potable water supply and disinfectants • Presence of fire extinguishers on site. • Number of grievances and solved grievances. • Presence/proof of valid insurance coverage for all workers on site • Presence of trainings materials and records of trained personnel and type of trainings. • Number of maintenances performed on equipment. • Number of major accidents reported within 48 hours.		Environmental Specialist, social Specialist for reporting on grievance.	

		posture while conducting any work. • Slip trip and fall • Injuries and cuts from machineries and hand arm vibration syndrome from machineries used • Physical injuries from physical activities and wrong lifting techniques, wrong posture while conducting any work • Getting hit by moving load/vehicle/machine • Working in a confined area (risk of asphyxia while working inside the silos) during construction phase. • Risks of electrocution while installing the Silos.						
Unplanned events	Catastrophic event can produce major negative impacts on OHS and public health and safety	• Fire and explosion risks from badly stored fuel/ poorly stored/installed generator and mishandling of chemicals during construction phase and explosion from existing silo operations (unpredicted events) can lead to the death of workers in silos construction area and existing silo users. • Potential damage to nearby buildings may occur from explosion of existing silo	• Presence of fire safety measures (i.e fire extinguishers) Incidence report/log • Report on major accidents to WB • Grievance log.	• Daily for safety measures, presence of fire extinguishers and PPEs in place • Daily for corrective actions • Monthly for incident log • Report of major accidents within 48 hours to WB	• Number of incidences and near misses • Number of injuries • Number of fire events • Presence of fire extinguishers • Number of grievances and number of solved grievances	• Site location and surrounding	Contractor and Subcontractor • Occupational, Health and Safety Specialist, Environmental Specialist, and Social Specialist for reporting on grievance.	20,000

		which may cause injuries to communities and individuals in those areas.		• Monthly for grievances.	• Number of major accidents reported to WBG within 48 hours.			
Unplanned events	Risk of property losses	Fire and explosion (i.e generator/fuel) events from construction work can produce major negative impacts on society (i.e loss of livelihood and property) as follows: • Loss of grains and loss of storage area • Potential damage to nearby buildings.	• Complaint records inspection • Insurance records inspection for silos • Payment receipt inspections	• Weekly for complaints • Monthly on insurance papers and policies • Report of major accidents within 48 hours to WB	• Number of complaints and number of solved complaints • Presence of payment receipts • Presence of insurance papers • Number of major accidents reported to WBG within 48 hours	• District and regional level Site location (existing silo users)	• Occupational, Health and Safety Specialist, Environmental Specialist, and Social Specialist for reporting on grievance	

Table (6.5): monitoring measures during operational phase. Note the budget for monitoring measures during the operational phase was calculated for one year.

Factors	Risks and Impacts	Description	Monitoring Methods	Monitoring frequency	Monitoring indicators	Monitoring Locations	Responsibility and Staffing	Budget (USD/Year)
Environmental	Airborne Dust Gaseous emissions from Engine Exhaust Gases and from fumigation process	• Airborne dust can be generated from activities such as loading and unloading grain, and from the movement of grain through the Silos. This dust can pollute the air and can also contribute to the formation of smog. • The major activities at this phase are maintenance procedures and transport of many cars during the daytime. Trucks transporting grains and generators will release exhaust emissions containing carbon monoxide (CO), sulfur dioxide (SO2), oxides of nitrogen (NOX), and particulate matter (PM). Regular maintenance to silos trucks (belonging to EHCSS) and machinery will reduce	• Visual inspections • Spot check measurements of ambient air quality • Review of maintenance records according to Egyptian national requirements • Recording and documentation of complaints/ Grievance records • Monthly report. • Pressure tests for fumigation	• Daily inspections onsite of weather conditions • Monthly Verification of maintenance records. • Monthly for fumigation pressure tests • Weekly for grievances related to air emissions	• Weather conditions: visual ambient dust levels; windy conditions. • Operating vehicles and grain trucks: dust generation and black exhaust emissions observed. • Dust generated during operation work (loading and uploading of grains). • Onsite ambient air quality compliance with WB limits and national limits for PM • Compliance for inspection records. • Number of grievance	• Silo Complex site and surroundings. • Point source: equipment, grain trucks and vehicles and generator exhaust.	• Silo management Environmental specialist, social specialist for reporting on grievance	8,000

Factors	Risks and Impacts	Description	Monitoring Methods	Monitoring frequency	Monitoring indicators	Monitoring Locations	Responsibility and Staffing	Budget (USD/Year)
		equipment failure and loss of integrity. • Fumigation emissions from silos and airborne drift from pesticides application may also reduce ambient air quality			records related to air emissions. • Number of maintenances performed • Number of pressure tests performed versus number of fumigation activities			
	Impacts on Soil and on ground Water Quality from trucks and machineries and any potential chemical	• Sources of soil contamination are accidental and lubricant/fuel spills of trucks transporting grains to and from the Silo Complex in Taramsa. Other sources also include inappropriate waste disposal from the offices and inappropriate sewage disposal which may contaminate the soil. Spills may also result from result from badly stored chemicals and materials and wastes and generator and fuel and transformer	• Visual inspection of site: backfilling and restoration • Visual inspection on soil • Inspection of equipment used during the operation phase and associated maintenance records. • Grievance records.	• Daily visual inspection especially during loading and uploading of grains. • Daily visual inspection on the soil. • Daily visual inspection of stored chemicals and proper labeling and presence of fire extinguishers • Weekly for grievances	• Change in soil colour. • Maintenance records. • Number of grievance records and complaints related to soil, geology, and topography. • Number of spills • Significant decrease in fuel consumption	• Silo Complex and surrounding.	• Silo Management • Environmental specialist, social specialist for reporting on grievance.	8,000

Factors	Risks and Impacts	Description	Monitoring Methods	Monitoring frequency	Monitoring indicators	Monitoring Locations	Responsibility and Staffing	Budget (USD/Year)
			• Generator fuel consumption records.	• Monthly for fuel consumption.				
	Noise	• The following activities can generate noise pollution: a) the loading and unloading of materials as well as the loading and unloading of grains from the trucks to and from the silos, b) the operation of conveyer belts, motors and other units and c) the movement of vehicles and machinery in and around the Silos project site • The use of generator and transformer.	• Inspection of operation activities for proper functioning. • Noise Tests • Maintenance records • Grievance records.	• Daily inspection of operating activities onsite • Weekly for noise tests and grievances • Monthly for maintenance records	• Noise level below permissible levels applicable by zone (nearby community). • Maintenance records for equipment and inspection of proper noise enclosure fitting. • Number of grievance records related to noise emissions.	• Silo Complex site and surroundings.	• Silo Management • Environmental specialist, social specialist for reporting on grievance.	6,000
	Biodiversity	• The following activities can have a negative impact on biodiversity in the study area: a) the use of pesticides can be consumed by non-targeted species and can lead to their poison/death b) the emission of pollutants from vehicles and	• Surveys at project site and surroundings	• Daily on site and surrounding.	• Presence of dead animals and birds	• Silo Complex location and surroundings	• Silo Management • Environmental specialist	8,000

Factors	Risks and Impacts	Description	Monitoring Methods	Monitoring frequency	Monitoring indicators	Monitoring Locations	Responsibility and Staffing	Budget (USD/Year)
		machinery can pollute the air and water, which can harm animals if any. • Bird collision risk						
	Waste Management	**Solid waste** • Ongoing generation from operations, maintenance, offices. **Liquid waste** • Potential wastewater from grain washing, equipment cleaning, sanitation (water use is minimal). **Hazardous waste** • Potentially hazardous waste from pesticide use, grain fumigation, maintenance.	• Visual inspection on site and surrounding. • Inspect waste storage sites. • Inspect soil colour. • Review of maintenance records. • Presence of labels on wastes and materials • Grievance records related to waste and pollution.	• Daily inspection on site and surrounding and waste areas. • Weekly inspection on waste receipt • Weekly for grievances related to waste.	• Presence of waste in undesignated areas. • Change in soil colour. • Presence of waste receipt. • Number of maintenances performed in the sites. • Number of grievances recorded.	Silo complex site, waste storage area and surrounding	• Silo Management Environmental specialist, social specialist for reporting on grievance	10,000

Factors	Risks and Impacts	Description	Monitoring Methods	Monitoring frequency	Monitoring indicators	Monitoring Locations	Responsibility and Staffing	Budget (USD/Year)
Socio-economic Aspects	Risks to labor and lack of appropriate work conditions and risks on Seasonal Workers	• Silo workers and seasonal workers may face unfair treatment (discrimination, delayed payments, unsafe working conditions and unresolved complaints from the lack of grievance mechanism. • Workers may face occupational health and safety hazards (e.g., grain dust exposure, machinery accidents). • Seasonal workers including cleaning workers during operational phase are at risk from working from height and confined areas, utilizing child labor and improper PPEs, from the following activities: ➢ There is a contractor that brings seasonal workers to empty seed bags and conducting cleaning activities including silos cleaning.	• Inspection of documents, labor contracts including seasonal labor and LMP • Grievance records • Inspection on signage and boxes for grievance	• Prior the start of any work for labor contracts and LMP and awareness sessions provided to workers including seasonal workers on their rights • Weekly for grievances • Monthly inspections by the PMU	• Presence of grievance mechanism in place and adequate LMP and awareness sessions records to workers on their rights • Presence of grievance boxes and signage on site • Number of contracted workers /presence of contracts versus number of actual workers observed • Presence of contracts for seasonal workers. • Number of grievances reported from workers and number of	• Site location	• Silo Management Social specialist and environment health and safety specialist • EHCSS	8,000

Factors	Risks and Impacts	Description	Monitoring Methods	Monitoring frequency	Monitoring indicators	Monitoring Locations	Responsibility and Staffing	Budget (USD/Year)
		The cleaning specialists remove the grains from the bottom and sides of the silos. Cleaning is done every beginning of the season			solved grievances • Number of visits conducted by the PMU.			
	Vulnerable populations	• Gender, ethnicity and other social stratification of beneficiaries may lead to disproportionate distribution of project benefits especially on vulnerable populations (minorities, women, disabled and very poor populations) as follows: ➢ Limited access to silo services by small farmers and vulnerable populations due to elite capture. • Risk of unequal access to food distribution channels and purchasing power which can lower food accessibility to vulnerable population.	• Inspection of community grievance log • Reviewing community consultation reports and outreach minutes of meetings. • Site inspection for separate lines (small farmers vs big farmers) and presence of grievance boxes and signs.	• Weekly inspection of records reports, grievance logs. • Number of grievances and number of solved grievances • Every 2 months for community consultation reports and outreach • Monthly site inspection by PMU	• Number of reported complaints from community if any and number of solved complaints • Number of female complainers • Number of consultations and FGDs performed and targeted group types • Number of incidents, injuries to local communities from operations • Presence of fast-tracking line for small farmers • Presence of grievance boxes and signage on site.	• Site and surrounding communities/district level	• Silo Management Social Specialist	5,000

Factors	Risks and Impacts	Description	Monitoring Methods	Monitoring frequency	Monitoring indicators	Monitoring Locations	Responsibility and Staffing	Budget (USD/Year)
					• Presence of ramp and latrines for disability			
	Risks on child labor/children present in silos during grain transport Risks of child labor by seasonal workers subcontractors	• Presence of children in grain handling or transport. • Children being exposed to hazardous substances or working conditions.	• Site inspection • Visitors ID inspection • Seasonal workers ID inspection • Awareness records • Grievance Log	• Daily for visitors' ID inspection and seasonal workers ID inspections • Prior the start of any work for for awareness sessions to subcontractors on child labor • Weekly for grievances • Upon occurrence for penalties	• Number of children present in silos • Number of children present near loading and unloading activities • Number of children identified during maintenance works • Number of awareness sessions provided to subcontractor on child labor • Number of visits conducted by the PMU • Number of recorded grievances	• Site area	• Social specialist and OHS Specialist • EHCSS	5,000

Factors	Risks and Impacts	Description	Monitoring Methods	Monitoring frequency	Monitoring indicators	Monitoring Locations	Responsibility and Staffing	Budget (USD/Year)
					related to child labor • Number of penalties/ fines.			
	Risks of SEA/SH	• Continued potential for SEA/SH among staff and visitors.	• Same measures as in construction phase	• Same measures as in construction phase	• Same measures as in construction phase	• Same measures as in construction phase	• Silo management Social Specialist	5,000
	Community health and safety: Traffic risks and accidents.	• Risks of road accidents may increase during high storage seasons.	• Inspection of community grievance log • Accidents log • Maintenance log	• Weekly for grievance log • Weekly for accidents log • Monthly for maintenance log	• Number of accidents • Number of maintenances performed • Number of grievances submitted.	• Silo area • District area/communities around silos • District /regional area for accidents	• Silo Management Social specialist	8,000
Occupational Health and Safety (OHS)	Injuries and accidents to workers	• Risks on workers respiratory system: Grain dust pollution while loading and offloading grains may lead to impacts on human health. Long-term exposure to grain dust can cause respiratory problems. • Gaseous exposures from trucks causing severe respiratory irritation,	• Visual inspection for proper use of PPE, emergency preparedness, fire extinguishers adequate signage for health and safety measures etc.	• Daily site inspection and surrounding. • Monthly inspection on training records and maintenance of equipment • Prior entering silos for gas test	• Number of recorded incidents and injuries and near misses during operation work and type. • Presence of fire extinguishers on site.	Silo complex site and surrounding.	Silo Management Occupational Health and Safety Specialist (OHS) with support of Environmental specialist, social specialist for reporting on grievance including on subcontractor of seasonal workers EHCSS	15,000

Factors	Risks and Impacts	Description	Monitoring Methods	Monitoring frequency	Monitoring indicators	Monitoring Locations	Responsibility and Staffing	Budget (USD/Year)
		• Falling from height or accidently falling in silos while working at height during maintenance • Asphyxia from working in confined areas while conducting maintenance works. • Grain dust is a fire hazard, and a fire at the silos could cause serious injuries or death. • Grain dust explosions can also cause serious injuries or death. • Risks from grain engulfment • Risk of fire from diesel generator and fuel and transformer and toxic gaseous emissions • Risks of being entangled in unguarded auger and potential injuries • Risks of burns from hot surfaces	• Visual inspection for good housekeeping and storage of hazardous materials. • Inspection of complaints and grievance reports. • Records about occupational injuries and infectious diseases among operation workers. • Records of GM and complaints. • Perform gas tests for silos/confined areas • Inspection of insurance policies and attendance sheets.	• Major accidents reported within 48 hours.	• Presence of first aid equipment on site • Number of grievances and solved grievances. • Presence/proof of valid insurance coverage for all workers on site • Presence of trainings materials and records of trained personnel and type of trainings. • Number of maintenances performed on equipment. • Number of gas tests performed and results • Number of major			

Factors	Risks and Impacts	Description	Monitoring Methods	Monitoring frequency	Monitoring indicators	Monitoring Locations	Responsibility and Staffing	Budget (USD/Year)
		• Noise and vibration emissions from silos operations and units, • Unhygienic practices • Handling of toxic substance, chemicals and wastes, such as pesticides and rodenticide especially during application • Risks of skin and eye burns and irritation from handling, storing and disposing chemicals and empty containers and other types of waste including domestic waste.	• OHS training records • Report major accidents to WB		accidents reported within 48 hours.			
Unplanned risks	Catastrophic events can produce major negative impacts on OHS, health and safety of silo users including non-workers and individuals in neighboring industries. Phostoxin/Aluminum	• Fire and explosion during existing silo operations (unpredicted events) can lead to the death of workers and silo users. • Potential damage to nearby buildings may occur from the explosion of existing silo which may cause injuries to communities and	• Incidence log • Site inspection on safety measures • Grievance log • Report major accidents to WB • Fire drills records	• Monthly for incidence log and for grievance • Daily for site inspection • Daily for corrective actions • Daily for safety measures and PPEs in place	• Number of incidents • Number of injuries • Number of corrective actions taken • Number of grievances and number of solved grievances	• Silo site area and surrounding and district-regional level (silo users)	• Silo Management, Occupational Health and Safety Specialist, Environmental specialist, and social specialist for reporting on grievance. • EHCSS	10,000

Factors	Risks and Impacts	Description	Monitoring Methods	Monitoring frequency	Monitoring indicators	Monitoring Locations	Responsibility and Staffing	Budget (USD/Year)
	phosphide may ignite spontaneously and may lead to explosion Risk of leaks of Phostoxin during transportation.	individuals in those surrounding areas.	• Pressure tests	• Daily for presence of fire extinguishers • Report on major accidents within 48 hours to WB • Monthly fire drills • Monthly Pressure tests and maintenance performed	• Number of fire extinguishers • Presence of evacuation and emergency plans • Number of fire drills performed • Number of pressure tests and silos gate maintenance performed • The number of major accidents reported within 48 hours.			
Unplanned risks	Risk of property losses	• Catastrophic events such as explosions and fire events can produce major negative impacts on the livelihood of silo users. • Catastrophic events such as fire and explosions can lead to property damage in neighboring buildings.	• Complaint records inspection • Insurance records inspection for silos • Payment receipt inspections	• Weekly for complaints • Monthly on insurance papers and policies • Report of major accidents	• Number of complaints and number of solved complaints • Presence of payment receipts	• District and regional level Site local (silo users)	• Silo Management, and social specialist • EHCSS	

Factors	Risks and Impacts	Description	Monitoring Methods	Monitoring frequency	Monitoring indicators	Monitoring Locations	Responsibility and Staffing	Budget (USD/Year)
				within 48 hours to WB.	• Presence of insurance papers • Number of major accidents reported to WBG within 48 hours			
Unplanned risks	Pesticides leaks	• Pesticides during fumigation activities may leak into the atmosphere and cause health and safety and environment risks.	• Leak test • Maintenance repair log • Report major accidents to WB	• Leak tests/pressure tests prior handing over • Leak tests prior fumigation event • Seasonal for repair and maintenance of seals • Report on major accidents within 48 hours to WB	• Number of incidents/leaks • Number of injuries as result of leak • Number of grievances and solved grievances • Number of major accidents reported to WBG within 48 hours.	• Silo site area and surrounding	• Silo Management Environmental Specialist /EHCSS	8,000

6.6.1. Monitoring Strategy

The monitoring strategy proposed for the project can best be termed "Adaptive Environmental Monitoring". It is adaptive in the sense that the responsible entity must adapt its methods and activities to the prevailing environmental conditions in a continuous process. Adaptive Environmental Monitoring is in fact a cyclic process.

This ESMP sets out the basic parameters to be monitored to determine that mitigation measures identified above are being implemented effectively. The parameters in the monitoring plan are expected to focus on potential air and water pollution, especially in areas of higher sensitivity.

6.6.2. Monitoring Duration and Sampling Plan

A monitoring grid will be established on the site, consisting of 6 sampling sites for air, soil, and water quality. The monitoring program will be implemented during the construction and operation and maintenance phase. The monitoring plan will be in accordance with the main principles of the EHCSS ESMP. The monitoring sampling map is provided in the appendix (V.4)

6.6.3. Environmental Monitoring Program

Monitoring is an essential part of ecosystem science and management. It provides baseline data to help track natural changes, identify new threats, and assess the effectiveness of management programs. The consulting firms during the construction phase and the one during operation phase responsible for ESMP implementation and supervision during each phase (see section 6.5 roles and responsibilities) will support Silos in managing programs to monitor air, noise, and soil quality, water quality during (construction phase), as well as chemicals and waste management. Several physical, chemical, and biological characteristics will be monitored regularly throughout the year to track the impacts of the EHCSS's operations.

6.6.4. Social Monitoring Program

Social monitoring must be undertaken to ensure compliance of involved entities with the mitigation and monitoring requirements as detailed in the ESMP requirements. This should be completed by the Silo Operator and contractors as applicable. Inspection and monitoring should include the following as applicable and as highlighted in the table that follows.

- Daily inspection and monitoring at the site and preparation of a daily observation report stating therein the corrective measures on observed safety deficiencies, unsafe acts, and conditions.
- Weekly site inspections to be carried out using the weekly site inspection checklists template based on requirements of the ESMP.
- Social Audits to be undertaken by Silo Manager and contractors to ensure compliance with ESMP requirement.

Social audits should be undertaken quarterly during the operation phase. Monitoring of social aspects will be carried out by a) communicating with stakeholders, b) reviewing the feedback from stakeholders, and c) reviewing complaints.

6.6.5. Data Management

The monitoring program will generate a large amount of data on several environmental and social parameters. To ensure correct interpretation and to secure easy access to the data by all relevant authorities, it is a requirement that the EHCSS, in cooperation with the contractor, establishes an environmental information system, which includes a database containing all the monitoring data, as well as information on ongoing and past operation activities and other relevant data on meteorology, hydrography etc. The system will be based on a geographical information system (GIS) to allow the users to view the geographical distribution of data and will include collecting data, reports, and other relevant information.

6.6.6. Monitoring Reporting

The consultant SENS, in cooperation with EHCSS, prepared a plan for reporting the monitoring results for approval by the World Bank and EEAA as follows:

Table (6.6): Timetable for reporting of the monitoring results for Taramsa Silo.

Every Year	Items	Description
A	The air, noise, and soil quality Report	• Monthly report • One final report annually
B	OHS report	• Monthly report • One final report annually
C	The Social condition Report	• Monthly report • One final report annually

The contractor should report monthly on environment and social and OHS aspects to supervision consultancy firm and the supervision consultancy firm should verify the information and consolidate the report and send it to EHCSS. EHCSS should report quarterly to WB.

6.7. Budget for Implementation of ESMP

The total Budget for implementation of the ESMP for Taramsa Silo is provided in Table (6.7).

Table (6.7): Budget for implementation of the ESMP for Taramsa Silo.

No.	Categories	Description of Items	Budget (USD / yearly)	Total (USD)
A	**Mitigation Measures during Construction phase***			
1	Environmental Mitigation Measures	Dust control measures	8,000	16,000
		Control of engine emissions	6,000	12,000
		Soil contamination measures	6,000	12,000
		Noise reduction measures	7,000	14,000
		Biodiversity protection measures	8,000	16,000
		Waste management systems	12,000	24,000
2	Socioeconomic Mitigation Measures	Improvement of working conditions	8,000	16,000
		Disturbance to Silo operations and users	5,000	10,000
		Child labor prevention measures	5,000	10,000
		SEA/SH prevention measures	5,000	10,000
		Community health and safety measures	6,000	12,000
		Stakeholder engagement	5,000	10,000
3	OHS Mitigation Measures	Safety training	12,000	24,000
		Provision of PPE	8,000	16,000
4	Catastrophic Events Mitigation Measures	Fire and explosion prevention measures	10,000	20,000
	Total budget for mitigation measures during construction phase		**111,000**	**222,000**
B	**Mitigation Measures during Operation phase****			
5	Environmental Mitigation Measures	Dust control measures	8,000	8,000
		Emission control systems	8,000	8,000
		Soil contamination measures	8,000	8,000
		Noise reduction measures	7,000	7,000
		Biodiversity protection measures	8,000	8,000
		Waste management systems	10,000	10,000
6	Socioeconomic Mitigation Measures	Improvement of working conditions	10,000	10,000
		Risks on vulnerable populations	8,000	8,000
		Child labor prevention measures	5,000	5,000
		SEA/SH prevention measures	5,000	5,000
		Community health and safety measures	6,000	6,000
7	OHS Mitigation Measures	Safety training	10,000	10,000
		Provision of PPE	5,000	5,000
8	Catastrophic Events Mitigation Measures	Fire, explosion, and leakage prevention measures	15,000	15,000
	Total budget for mitigation measures during operation phase		**113,000**	**113,000**
C	**Monitoring during Construction Phase***			
9	Environmental Monitoring	Air quality monitoring	8,000	16,000
		Soil and groundwater contamination monitoring	8,000	16,000

		Noise level monitoring	6,000	12,000
		Biodiversity monitoring	8,000	16,000
		Waste management compliance monitoring	10,000	20,000
10	Socioeconomic Monitoring	Work conditions inspections	8,000	16,000
		Disturbance to Silo operations and users	5,000	10,000
		Child labor monitoring	6,000	12,000
		SEA/SH prevention monitoring	5,000	10,000
		Community health and safety monitoring	8,000	16,000
		stakeholder engagement	5,000	10,000
11	OHS Monitoring	safety audits	10,000	20,000
		Health check-ups and monitoring	10,000	20,000
12	Catastrophic Events Monitoring	Fire and explosion safety monitoring	10,000	20,000
	Total budget for monitoring during construction phase		**107,000**	**214,000**
D	**Monitoring during Operation Phase****			
13	Environmental Monitoring	Air quality monitoring	8,000	8,000
		Soil contamination monitoring	8,000	8,000
		Noise level monitoring	6,000	6,000
		Biodiversity monitoring	8,000	8,000
		Waste management compliance monitoring	10,000	10,000
14	Socioeconomic Monitoring	Work conditions inspections	8,000	8,000
		Vulnerable Populations	5,000	5,000
		Child labor monitoring	5,000	5,000
		SEA/SH prevention monitoring	5,000	5,000
		Community health and safety monitoring	8,000	8,000
15	OHS Monitoring	Safety audits	7,000	7,000
		Health check-ups and monitoring	8,000	8,000
16	Catastrophic Events Monitoring	Fire, explosion, and leakage safety monitoring	10,000	10,000
		Pesticides Leaks	8,000	8,000
	Total budget monitoring during operation phase		**104,000**	**104,000**
	Total Budget			**653,000**

Note: *The total budget for the mitigation measures and monitoring activities during the construction phase was calculated for two years, and **The total budget for the mitigation measures and monitoring activities during the operation phase was calculated for one year.

7 STAKEHOLDERS CONSULTAIONS AND PUBLIC PARTICIPATION

Stakeholders' consultations were carried out to ensure that the stakeholders are provided with the opportunity to engage in the planning process, to raise questions and receive input and responses to their concerns. Stakeholders' consultation helps to identify opportunities and risks, it improves project design / implementation and increases project sustainability. Consultations were conducted before and during the preparation of the ESMP to identify the environmental and social risks and impacts and mitigation measures of the project. The consultation related to the ESMP followed ESS10 and the SEP principles.

7.1. Key Stakeholders

The key stakeholders relevant to the scope of the assessment in the current activity of the project include the following:

a) *The Egyptian Holding Company for Silos and Storage (EHCSS):*
The company maintains several silo complexes across Egypt that are either located near production areas *i.e.*, near farms, or consumption areas near wheat millers and bakeries. EHCSS is responsible for upkeep of silo complexes including admitting quality wheat locally or internationally; maintaining the quality of wheat during storage; and transporting stored wheat to millers to be ready for consumption.

b) *Population and farms close to the construction sites of the silos:*
Some project locations might be in the proximity to residents and/or farms. These locations will be impacted by the construction related impacts.

c) *Residence near silos or/and on the route of transportation to silos:*
Population living near silos may be impacted by road safety especially during the construction phase.

d) *Farmer Based Organizations and Cooperatives:*
Medium-scale organizations that purchase locally produced wheat supplies from small farmers and organize the logistics to be transported to silos managed by EHCCS.

e) *Agriculture Trading Companies:*
Large-scale organizations that purchase locally produced wheat supplies from small farmers and organize the logistics to be transported to silos managed by EHCCS.

f) *Private Large Scale Agriculture Companies:*
Large-scale locally producer of wheat supply.

g) *Small Farmers:*
They are at risk of exclusion from the benefits of the project. Offering equal opportunities to small farmers might be a challenge. This applies to opportunities to access silos to deliver local wheat and to benefit from technical support that the project will be providing in terms of knowledge, skills, and tangible resources such as agriculture seeds, equipment, and others.

h) *Female Farmers and/or Small-scale Agriculture Workers*
They are at the same risk of exclusion from the benefits of the project. Risk of sexual abuse and/or exploitation may apply in the case of small-scale female farmers. Sexual Exploitation, Abuse and Sexual Harassment (SEA/SH) plans will be developed. The SEA/SH plan should include measures to target cooperatives, female workers, and other relevant actors. The plan will disseminate information on the code of conduct to use and the appropriate referral mechanism to report cases of abuse and/or exploitation at local level.

i) *Informal Construction Workers:*
Daily and informal workers under contractors and subcontractors who are at risk of accepting working conditions that are not appropriate.

j) *Previous and current land users:*
This includes any individual, or a group who have previously or/and currently using the land for livelihood activities or/and for residential purpose.

k) *Near-by- landowners:*
This include any landowner near the newly constructed or/and silos that will be expanded under the project to assess the impact of the project's activities on their livelihoods and/or other social activities.

l) *Other Relevant stakeholders:*
Included other relevant stakeholders not mentioned in the previous section.

The consultations were conducted in a manner that was meaningful, informed, and inclusive. The consultations were open to all participants to ensure that the views of interested and affected parties were incorporated into the project design.

7.2. Previous consultations for Dandara - Al–-Marashda – Assiut - as part of the ESMP preparation

1- Consultations were conducted with EHCSS silo's stakeholders including Taramsa Silo in order to increase their awareness on of the benefits of establishing silos, which are as follows:

- Providing highly advanced storage capacity within the country.
- Eliminating the percentage of wheat losses resulting from poor storage, which reaches about 10%.
- The country maintains a secure strategic balance of wheat.
- Tightening the process of maintaining and controlling the stock, which leads to an economy in the use of pest control methods with pesticides and maintaining the

quality of the grain as a result of the high quality of storage.

- Reducing the average purchasing price of wheat throughout the year as a result of entering the global purchasing market at appropriate times.
- Creating new areas of attraction and agricultural expansion in order to encourage farmers to grow wheat and grains next to the sites where silos are being established.
- Providing new job opportunities for young people in construction areas.

2- Work to resolve stakeholders' complaints as follows:

- Organizing the operations of supplying and dispensing wheat from silos to reduce the accumulation of cars around and inside the site.
- Reducing the waiting time for wheat suppliers to reach the silos.
- Expediting the procedures for disbursing wheat suppliers' dues.
- Using laboratory equipment to settle disputes that may arise between suppliers and the sorting committee regarding the degree of wheat cleanliness.
- Providing yards and waiting areas equipped with bathrooms for wheat suppliers.
- Studying the establishment of new silos near agricultural areas to reduce the burden of distance on farmers during the wheat supply.

3- Working to resolve site employee complaints

4- Providing a suitable work environment for site employees.

- Providing industrial security equipment for site employees in accordance with occupational safety and health requirements.
- Paying transportation allowances to site employees and providing cars to reduce the burden of transportation to and from the sites due to the distance of the silo sites from residential areas and considering establishing silos in places close to residential areas and with available means of transportation.
- Organizing shifts so that daily working hours comply with the controls of the labor law and paying for additional working hours in the event that additional working hours are achieved.

7.3. Site-Specific Consultations

The consultations were conducted with the local community through site-specific consultations (focus group discussions) during the site visit on the 22nd of September 2023. Group discussion is an effective method of consulting because it encourages the sharing and discussion of opinions and ideas related to the proposed project.

Several focus group discussions were conducted with the relevant groups as part of the preparation of the ESMP, including consultations with farmers and grain traders. The number of consulted people was 21 persons, and their type was farmers, traders, women, and vulnerable groups as presented in the next section. During the consultations, the ESMP consultant team explained to stakeholders the findings and results of the ESMP study including project design, findings, risks, impacts, including possible impacts on bordering communities and agricultural lands, including noise, dust, and traffic-related risks during construction and operation phases, risks to current silo users due to construction activities, such as temporary disruptions or delays during peak supply periods, potential risks to laborers working on the silo expansion, including occupational health and safety hazards, and mitigation measures and were open to receive feedback and concerns and suggestions. The funding sources were also discussed with the interested parties.

Farmers (small- and large-scale farmers) Feedback:

- The main problem faced by them from the current silos operations was the long waiting time to submit their grains, because the Silos cells were already full. increasing the number of cells will increase the capacity and will reduce the waiting time to deliver their grains.
- The number of produced grains (particularly wheat) ranges from two to 28 tons per year.
- Most of the farmers sell their grains to the Silo in Taramsa, some of them sell their grains in the supply locations, and in the local market.
- Most of the farmers confirmed that the expansion of the silo will decrease the waiting time to deliver their grains, and the process will be faster for them.
- None of the farmers has concerns about the impact of the silo expansion on wheat prices.
- None of the farmers have concerns about the silo's impact on the environment.
- Their expectations regarding the expansion of the silo were that the supply process would be faster than before.
- Bordering communities, including residential buildings and agricultural lands located next to the silo, were also consulted. The feedback from these stakeholders indicated that they have no significant concerns regarding the expansion project. The bordering communities expressed confidence in the measures outlined in the Environmental

and Social Management Plan (ESMP) to mitigate potential risks, such as dust, noise, traffic safety, and waste management.

Grain Traders Feedback:

- The amount of wheat that traders sell varies between 50 and 150 tons per year, and some of them sell above 150 tons.
- Most of the Traders sell their grains to the Silo in Taramsa, some of them are growing it or buying it from other farmers and few of them sell their grains in the market.
- The Traders' opinion in the impact of the expansion of the silo that it would make the buying and selling process faster for them than before.
- None of the traders has concerns about the impact of the silo expansion on wheat prices.
- None of the traders have concerns about the silo's impact on the environment.
- Most of the traders mentioned that the expansion of the silo will facilitate the delivering process of grains, few of them mentioned that it will facilitate the grain collection.

While the traders expressed that the expansion of the silo would facilitate the grain collection process, their feedback did not imply an increase in grain prices for the end buyer, particularly for local consumers. The primary benefit traders expect from the expansion is an improvement in the efficiency of the delivery and collection process, which will lead to reduced transportation costs and shorter waiting times. These logistical improvements are anticipated to streamline operations, increasing the availability of grains for storage and distribution, which in turn can stabilize the market and reduce operational challenges. Therefore, the benefits to traders from the silo expansion are largely operational, and there is no expectation that grain prices for the end buyer, particularly local consumers, will increase as a result of the expansion.

Women Feedback:

- Women expressed a positive view toward the silo expansion project. They highlighted the following benefits:
- The proximity of the expanded silo to agricultural lands would facilitate easier and faster grain supply to the silo.
- The project's expansion is expected to encourage an increase in the area of land planted with wheat, leading to higher productivity and greater economic opportunities.
- They highlighted their active involvement in the grain production process, contributing significantly to farming, planting, and harvesting activities.
- They confirmed that they had no concerns about the project's impact on their safety, security, or the well-being of their children and families.

Vulnerable Group Feedback:

- Vulnerable groups, including individuals with special needs and the elderly people, also expressed positive views about the silo expansion.
- They mentioned that they will get the benefits of the 5% of administrative positions in the silo for people with special needs, ensuring they have work opportunities suited to their capabilities.
- The project aims to simplify the grain supply process for elderly individuals by implementing measures to ensure a smooth and efficient experience without prolonged waiting times.
- They recognized the expansion as a beneficial project that would enhance their economic opportunities, both as workers in the silo and as traders supplying grain.

Main concerns and mitigation measures:

The main concerns identified during consultations and their mitigation measures are as follows:

1) Accessibility for Vulnerable Groups:

Some farmers, particularly elderly individuals and women reported difficulties in accessing silo services due to limited assistance during the grain delivery process.

Mitigation Measures: a) establish on-site teams specifically trained to assist vulnerable groups during grain delivery, b) incorporate ramps to facilitate easy access for individuals with mobility challenges, c) implement a scheduling system during peak periods hours to reduce congestion and ensure that vulnerable groups receive timely assistance and d) include a fast-tracking lane for elderly and small farmers and separate lane for women, e) include parking space for special needs and elderly f) engage regularly with small farmers, women and elderly and inform them with the above mentioned services tailored to their needs.

2) Transportation Challenges:

Farmers and traders face logistical difficulties due to a lack of adequate transportation support, which increases costs and delays grain deliveries.

Mitigation Measures: a) The Silo Manager will collaborate with local transport providers to secure reliable, cost-effective vehicle services for grain delivery, b) encourage the formation of cooperatives among local farmers to share transportation resources, reducing individual costs and delays, and c) implement a robust traffic management plan to facilitate efficient loading and unloading operations, minimizing delays.

3) Technical and Physical Constraints:

Existing silo facilities, including loading and unloading equipment, are insufficient to manage peak harvest demands efficiently.

Mitigation Measures: a) the increase in the number of storage cells will expand the overall capacity and reduce congestion, b) the installation of modern, automated loading and unloading systems will accelerate grain handling processes, and c) enhance regular maintenance and inspection schedules to ensure that all equipment is functioning optimally, especially during peak periods and (d) implement a scheduling system during peak periods hours to reduce congestion (as mentioned under concern 1 accessibility for vulnerable groups, mitigation measure c above).

It is worth mentioning that the existing administrative buildings include ramps for people with disabilities. EHCSS will make sure ramps are also present in the public restroom area and any area needed. The restrooms will be split by gender and will be upgraded to accommodate disabled people.

EHCSS will also establish a kiosk at the silo location to provide seeds and fertilizers directly to farmers. This initiative aims to address the lack of availability of seeds and fertilizers in the market and aims to stabilize fertilizer prices and prevent farmers from being exploited. EHCSS confirmed that the necessary permissions and licenses for the kiosk have already been secured (Appendix V9).

There is already a grievance mechanism in the Silo, as well as channels to submit grievances and timeframe for solving grievances already existing, including grievance for public grievance, SEA/Grievance (to be explained more in the next section and in the appendix IV, which focus on SEA/SH), and workplace grievance.

7.4. Grievance Mechanism

Existing Unified GM

During the design, construction and implementation of any sub-project, a person or group of persons may perceive or may experience potential harm, directly or indirectly, due to the activities of the project. The grievances that are likely to arise could be related to social issues such as eligibility and entitlement criteria, disruption of services, temporary or permanent loss of livelihood and other socio-cultural issues. Grievances may also relate to environmental issues such as excessive dust generation, damage to infrastructure due to vibrations associated with construction or transportation of raw materials, noise, traffic congestion, reduced quality or quantity of private/public surface/ground water resources, damage to home gardens and farmland, etc. Should such a situation occur, there should be a mechanism through which the affected parties can resolve these issues amicably with the project staff in an efficient, impartial, transparent, timely and cost- effective manner. To achieve this objective, a grievance mechanism has been included in the ESMP.

All implementing partners under the Food Security project including EHCSS are encompassed under the national unified electronic complaints portal hosted by Prime Minister Office, Egypt's Portal. The unified government GM was established by Presidential Decree No. 314 of 2017 to receive, examine, direct, and respond to all complaints electronically. Its scope of work extends to all ministries, departments, government agencies, local administration units, public bodies and other government agencies. The unified electronic complaints portal has a clear referral system for the concerned entities who receive their relevant complaints, address it and either respond directly to the complainant or through the unified system.

Any citizen may submit feedback and complaint through the following multiple channels under the unified electronic complaints portal:

- Egypt's Portal website, https://www.shakwa.eg/GCP/Default.aspx,
- Hotline 16528
- At "Your Service" app on Google Play.
- WhatsApp numbers: 01555516528 and 01555525444 to receive messages, complaints and suggestions.
- Citizen service departments and offices in all government agencies and authorities.

All complaints are kept confidential and ID information of complainants is protected to ensure nonretaliation and transparency. Multi-level entry to the system is defined as allow those who are authorized from the relevant Government departments to enter the electronic system and access information about complaint submitted. All complaints are registered electronically, classified and referred to by relevant authorities to address.

Procedures and standards for sorting, processing and following up on complaints

Complaints are received as soon as they are submitted. Complaints are received through the government complaints system and directed to the relevant ministry to examine them, prepare a response, send the response to the government portal, and follow up on that.

- Determine who is responsible for receiving complaints and the channels connection.
- The complaint is received on the government portal, sorted, and forwarded to each ministry concerned.
- Each ministry has a work team specialized in following up on complaints on the designated website.
- The response will be sent after examining the complaint.
- The complainant will be contacted by the government complaints system in the Council of Ministers to inquire about the response.

Localized GM at EHCSS level

During the preparations for food security project EHCSS confirmed that they receive complaints and feedback at a timely manner from Egypt's portal and it is by mandate they must give feedback within a specific timeframe from receiving the complaint.

Nevertheless, each implementing partner under the project including EHCSS has their own localized GM procedures that support stakeholders in submitting a complaint and/or feedback.

At EHCSS level, the complaints are usually received from farmers depositing grains or grain buyers in the silos. The main complaints are about the quality of the seeds that are being deposited and tested immediately on site. In case there are any complaints from farmers and contractors, the complainant can raise their complaints to the Taramsa Silo manager office or through his phone number 01009374798. If it is not resolved, it escalates to the customer services office at EHCSS. The silo manager documents and sends the complaints to EHCSS or the farmer/ contractor can reach the customer service through the EHCSS customer service number visible at silo level.

EHCSS customer service number for complaints: 01279671142/ 01279671143

The documentation of complaints raised at silo level exists and it will be continuously improved during the project implementation. For grievance log sheet/form, see annex VII.

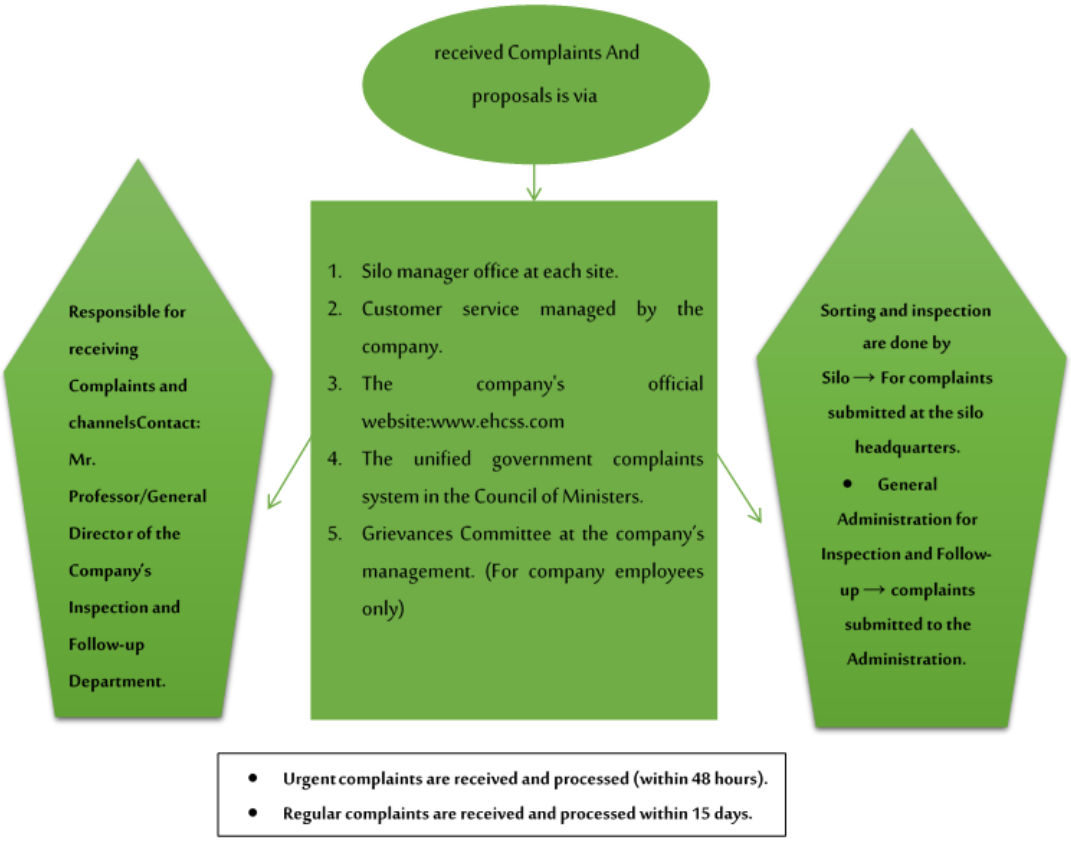

Figure (7.1): Scheme of proposed grievance procedures.

Procedures and standards for sorting, processing and tracking complaints

- Verify and transfer complaints to the relevant sectors to study the complaint.
- Monitoring is done and evaluation through the recipient of the complaint (silo/General Administration for Inspection and Follow-up).
- Feedback is done by responding to the complaint through the same means and channel of communication.

Below is the detailed procedure:

- The complaint is received and the date, number of the complaint, its subject, and the name of the complainant are recorded.
- Acknowledgment and review are made by giving the complainant the number and date of the receipt to complain.
- Complaints are referred to by the Inspection and Follow-up Department to be sorted and transferred to the relevant sectors.

- Responses to complaints are received from the relevant sectors.
- Responses are sent to the same entities receiving the complaint to notify the complainant through the same means and channel of communication.

Summary of communication channels (EHCSS):

- Channels /current contacts are: -
  (1) Taramsa Silo Manager: 01009374798
  (2) Customer service managed by the EHCSS company: 01279671142/01279671143.
  (3) The company's official **website: www.ehcss.com**
  (4) The unified government complaints system in the Council of Ministers.
  (5) Grievances Committee at the company's management. (For company employees only).
- Suggested future communication channels are: -
  (1) Create a group on WhatsApp to receive complaints.

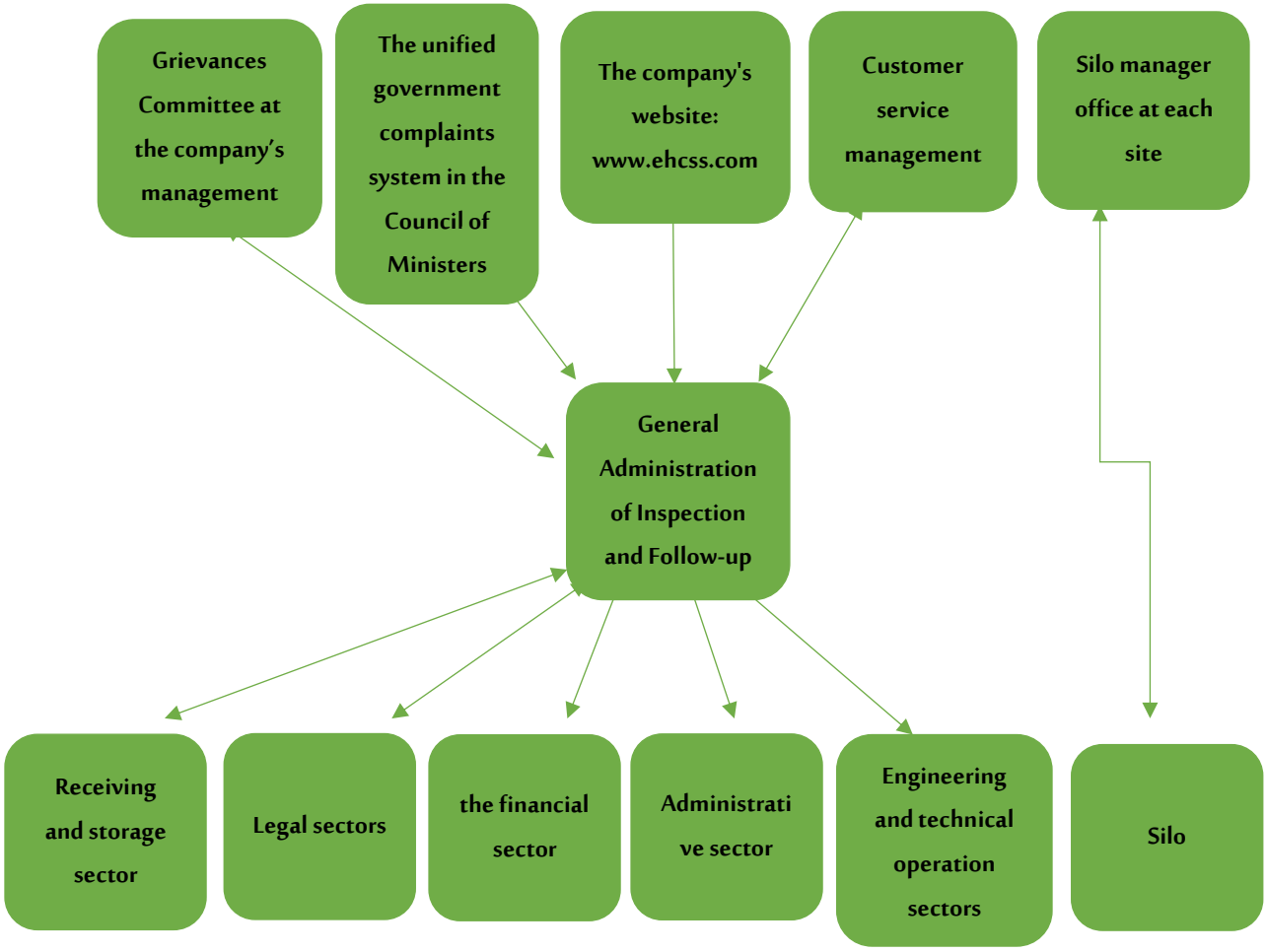

Figure (7-2): Organizational structure to receive complaints.

Workplace Grievance:

A well-communicated and easily accessible grievance mechanism will be provided for all direct and contracted project workers, as well as community workers to raise workplace concerns related to the recruitment process and/or workplace conditions. Such workers will be informed of the grievance mechanism at the time of recruitment and the measures put in place to protect them against reprisal for their use. The PMU is responsible for managing direct workers' grievances, while the contractor for contracted workers.

The workplace grievance mechanism will be designed to be easily understandable, clear, and transparent and to provide timely feedback. The policy of confidentiality and non-retribution will be reinforced, along with the ability to raise anonymous grievances.

The mechanism will include multiple communication channels dedicated for workplace complaints only, including but not limited to an email address/website link; phone number; and a physical address for handing the complaints and grievances in person. Workers will have the freedom to pick the one they are comfortable using.
The workplace grievance mechanism will not impede access to other judicial or administrative remedies that are available under the law or through existing arbitration procedures, or substitute for grievance mechanisms provided through collective agreements.

GM Procedures

Workers will be encouraged to discuss their grievance and complaint informally with their direct managers. In cases where the direct manager is related to the subject of the complaint, the employee would most probably choose to directly submit a formal grievance. For all cases where the employees decide to submit a formal grievance, the following provides details about the step-step procedure they will be using:

1- Receipt, acknowledgment and registration

- The worker will submit the grievance through one of the dedicated channels indicated above.
- The worker will be requested to use to the extent possible a grievance template which will be shared with all workers in hard/soft copies /available to download from the website.
- If the worker wishes to submit the grievance orally via phone or in person, the project staff will lodge the complaint on their behalf, and it will be processed through the same channels.
- Under request of the plaintiff, grievances can be lodged anonymously. This option shall be made clear to the complainant in the Grievance template and/or in cases of oral submissions.
- In case of anonymity opt-out, the worker will provide contact details or any other suitable means for him/her to be updated on the status of their complaints/grievances.
- All received grievances shall be logged into the workplace grievance log.
- In all cases, the staff in charge should provide a timely communication back to the complainant(s) that their grievance has been received, will be logged and reviewed for eligibility and provide them with the registration number. Clean and announced standards for the time frame of the response should be established, announced and adhered to.

2- Grievance verification and assessment

- In order to verify the grievance, it should be discussed with the worker, investigated and evidence gathered to the extent possible. This should include field inspections if needed in order to conduct interviews and gather information about the incident or the case.

- The GM staff will need to make a decision with regards to the eligibility of the grievance or whether it should be directed to other mechanisms such as the project GRM. The following represents the proposed eligibility criteria:

- Is the complainant one of the project's workers: direct; contracted or primary supply workers?
- Is the complaint related to one of the following OHS and/or worker and labor conditions: 1- OHS; 2-Forced labor; 3- Child Labor; 4- Social insurance; 5- wages and working hours; 6- discrimination and unequal opportunities; 7- Freedom of association and collective bargaining?
- Is the complaint not related to any of the above categories but still related to labor and working conditions?

3- Response and Feedback

- **As an initial response**, the complainant will be informed with the eligibility results as well as all the steps being taken to address his concerns. This initial response shall be provided via a formal letter; an email; or a phone call within 5 working days from the date of receipt of the grievance.
- **For eligible and straightforward grievances**, GM staff will provide a response without further investigation within 10 days from the initial date of receipt of the grievance, where actions are proposed to resolve the complaint and agreement on the response is sought with the complainant.
- **For eligible grievances that require further assessment**, GM staff will further engage with the complainant via a phone call or a formal meeting in order to collect further information. Based on this, they will provide within 14 days from the initial date of receipt of the grievance, where actions are proposed to resolve the complaint and agreement on the response is sought with the complainant.
- **Imminent and serious safety risks reported** by the worker will be addressed immediately and will not follow the normal timeline.

In all the above-mentioned scenarios, the response should include a clear explanation of the proposed response including any alternative options, while clarifying to the extent possible the rights of the complainant, and the choices he has including: 1- to agree to proceed; 2- request for a second round of assessment; 3- to consider any other organizational, judicial or non-judicial possibilities.

In case the grievance feedback is satisfactory to the complainant, the response should be implemented and recorded in the grievance log with the date of grievance resolution.
In case the grievance feedback is not satisfactory to the complainant, he/she has the right to appeal within 5 working days. In such a case, a second tier should be initiated where the GRM staff will attempt to propose alternative options and carry out additional investigation in order to meet the concerns of the complainant, and other stakeholders. The complainant will be invited to attend an appeal meeting or to discuss the appeal over a pre-scheduled phone call, during the first three days following the appeal. It would be preferred that more senior staff attend/discuss the appeal with the employee. Where needed, a grievance

committee might be established representing different sectors as relevant to the complaint, in addition to worker representative(s) (upon the complainant consent) in order to help achieve a transparent process. The GRM staff should send their response within 7 days from the date of the appeal. The second-tier response should also include a clear explanation of the proposed response including all alternative options and the choices the complainant has as described above.

4- Agreement and implementation of the response

- If the grievance has been resolved, the GM staff will document the actions taken, time it took to resolve the grievance and satisfactory resolution.
- If the grievance has not been resolved, GM staff should document additional information including actions taken, communication with the complainant, and the final decisions made by the complainant and the organization with regards to any other alternatives.
- In general, confidentiality should be maintained in GRM documentation, if the complainant has requested so.
- In all cases, the total number of grievances should be recorded including time it took to resolve them, as well as the number of unresolved cases.

SEA/SH Grievance Mechanism at national level:

In order to avoid the risk of stigmatization, aggravation of psychological/emotional harm and possible retaliation for the survivors, the grievance mechanism must take a different and sensitive approach to cases related to gender-based violence. The grievance response mechanism also applies to workers who experience SEA/SH. When such a case is reported to the Grievance Mechanism, it should be immediately referred to appropriate service providers, such as medical and psychological support, emergency accommodation, and any other necessary services. In the case of the project, it is suggested to include and disseminate the contacts of NCW (below) to ensure safe referral to survivors along with offering the services needed. Implementing partners should be trained on topics including the survivor centered principles and should establish coordination with NCW.

Current and proposed SEA/SH complaints mechanism:

- Women's Complaints Office at the National Council for Women
- Hotline: 15115
- Email: complain.office.2001@gmail.com
- Fax: 68-23490066 (02) WhatsApp: 01007525600
- Face book: https://www.facebook.com/ncwegyptpage

Recommendation for strengthening the overall EHCSS GM process:

- The grievance mechanism should be gender and socially inclusive to address potential access barriers for women, older persons, persons with disabilities, youth and other potentially marginalized groups as appropriate for the project and will not retaliate against any person who will be submitting complaints.
- The grievance mechanism impedes access to judicial or administrative remedies that may be relevant or applicable and would be readily available to all stakeholders at no cost and without penalty.
- Information regarding the grievance mechanism and how to submit a complaint and/or grievance should be communicated during the stakeholder engagement process and placed in prominent locations to inform key stakeholders.
- All complaints and/or grievances related to social and environmental issues can be received through available channels either orally (to field staff), by telephone or in writing where it has to the project management team and the construction contractor must maintain a record of grievances received at the respective project site offices, this includes worker grievances. In the above-mentioned register, the following information will be recorded:
    - The time, date and nature of the investigation, concerns, complaints and/or grievances.
    - The type of communication that took place (e.g. telephone, letter, personal contact).
    - Names, contact addresses and contact numbers.
    - Anonymous complaints are also recorded, investigated and resolved.
    - Response and review resulting from your inquiry, concern, complaint and/or complaint.
    - Actions taken and the name of the person who took the action.

The project is managed by EHCSS which has a grievance mechanism. The PMU will work with EHCSS parties to evaluate the effectiveness of the current grievance mechanism and work to address gaps in terms of capacity, access, transparency, etc.

8 SUMMARY AND CONCLUSIONS

8.1. Summary and Conclusions

The ESMP of the proposed extension of Taramsa Silos has reviewed the impacts of the project on the existing environmental, biological, and social factors. Potential impacts were identified and analyzed, and subsequently mitigation measures and improvement controls were identified to ensure that any potentially harmful impacts are minimized and reduced to minor levels.

There are no environmentally significant impacts that should prevent the proposed of Taramsa Silos in the identified site, provided that the recommended mitigation and management measures are implemented. Most significant impacts will occur during the construction phase. There is no significant threat from the project on the terrestrial ecosystem including flora and fauna in the project area. The loss of habitat, disturbance, or any interaction in the project site is not anticipated to have a significant negative impact on terrestrial ecosystem in the area. The construction of the expansion will have both positive and negative social impacts. It will create employment and business opportunities for the local community during both the construction and operational phases. The ESMP will tackle all identified environment, social and OHS risks and impacts throughout the project phases.

Overall, the proposed project needs to be viewed as a whole and be determined on the vast array of potential benefits that it will bring to Egypt. EHCSS expects that the construction of the expansions of Taramsa Silos will increase the capacity of the existing Silos in storing grains, as well as improving the resilience of the wheat supply chain and reducing loss and waste.

The ESMP will be publicly disclosed on EHCSS website and banners on the site on project information and updates will be also available on site in Arabic.

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Appendix I: Pest Management Plan (PMP)

1. Background

Once a cereal crop is harvested, it may be stored for a certain period before it is marketed or used as food, feed, or as raw commodity. The length of time during which the cereals can be safely stored will depend on the harvest condition, the post-harvest treatment (such as drying and cleaning) and the type of storage facility being used. Grains stored at low temperatures and low moisture content can be kept in storage for longer periods of time before quality deterioration. The presence and build-up of insects, mites, molds, and fungi – all of them influenced by grain temperature and moisture content of the crop– will affect grain quality and duration of grain storage.

Storage silos are structures designed to store grain and other material in bulk or powder. They are also used for storing other elements such as cement, calcium oxide, calcium hydroxide, activated carbon or plastic resins, among others. The most common storage silos are cylindrical with metal support although there are also rectangular and square ones. They are like a tower and the material with which they are built can be metal, stainless steel, reinforced concrete, wood, reinforced plastic, fiberglass, etc. They are made to measure, considering the product to be stored, the environmental conditions or their location. They can be closed or open, and the interior surface is smooth and lined with special coatings.

2. Advantages and Disadvantages of Storage Silos

a) Advantages

The use of storage silos presents several advantages including a) they need less area to store the same amount of material than if it were stored in a horizontal warehouse, b) products are stored in optimal conditions, and c) its cost is lower than that of other storage systems.

b) Disadvantages

The most common disadvantages are a) the risk of fire and explosion, which unfortunately are very common in grain elevators, b) accidents due to suffocation and risks of poisoning. This circumstance occurs when inhaling the flammable vapors that are generated with the decomposition of grains, c) risk of intoxication due to the use of fumigants and pesticides, and d) risk of suffocation when opening the silos by accumulation of carbon dioxide.

3. Pest Management Targeted Silos

Taramsa Silo Complex is located near Al Taramsa village in Qena governorate on the western side of the Nile Valley. Taramsa Silo Complex covers an area of 20,000 m^2 and consists

of 12 cells with a total capacity of 60,000 tons, it is equipped with the latest storage technology which includes inventory management and control system, steaming system and stock temperature control, firefighting system, and wireless system.

4. Regulatory framework for implementing the PMP

a) World Bank Environmental and Social Standard 3 ESS 3 The selected pesticides and their management (handling, storage, and disposal) shall comply with ESS3, Environmental, Health and Safety General Guidelines (EHSGs) and applicable international conventions and good international practices.

World Bank criteria for Pesticide Selection and Use

According to paragraph 22 of the ESS3 guidance note10 "In the procurement of any pesticide the Borrower will assess the nature and degree of associated risks, considering the proposed use and the intended users.20 The Borrower will not use any pesticides or pesticide products or formulations unless such use is in compliance with the EHSGs. In addition, the Borrower will also not use any pesticide products that contain active ingredients that are restricted under applicable international conventions or their protocols or that are listed in, or meeting, the criteria of their annexes, unless for an acceptable purpose as defined by such conventions, their protocols, or annexes, or if an exemption has been obtained by the Borrower under such conventions, their protocol, or annexes, consistent with Borrower commitments under these and other applicable international agreements. The Borrower will also not use any formulated pesticide products that meet the criteria of carcinogenicity, mutagenicity, or reproductive toxicity as set forth by relevant international agencies. For any other pesticide products that pose other potentially serious risk to human health or the environment and that are identified in internationally recognized classification and labelling systems, the Borrower will not use pesticide formulations of products if: (a) the country lacks restrictions on their distribution, management, and use; or (b) they are likely to be used by, or be accessible to, lay personnel, farmers, or others without training, equipment, and facilities to handle, store, and apply these products properly"

According to paragraph 23 of the guidance note "The following additional criteria apply to the selection and use of such pesticides: (a) they will have negligible adverse human health effects; (b) they will be shown to be effective against the target species; and (c) they will have minimal effect on nontarget species and the natural environment. The methods, timing, and frequency of pesticide application are aimed at minimizing damage to natural enemies. Pesticides used in public health programs will be demonstrated to be safe for inhabitants and domestic animals in the treated areas, as well as for personnel applying them; (d) their use will take into account the need to prevent the development of resistance in pests; and (e) where registration is required, all pesticides will be registered or otherwise authorized for use on the crops and livestock, or for the use patterns for which they are intended under the project."

[10] WBG (2018). Guidance Note on ESS3. Retrieved from https://documents1.worldbank.org/curated/en/112401530216856982/ESF-Guidance-Note-3-Resource-Efficiency-and-Pollution-Prevention-and-Management-English.pdf

The Bank requires that any pesticides it finances be manufactured, packaged, labelled, handled, stored, disposed of, and applied according to relevant international standards and codes of conduct, as well as the EHSGs.

b) Pest Management in Egypt

According to law no. 53 of 1966, Chapter VI (Planting protection).

Table I.1: Applicable Articles.

Chapter One: Agricultural pest control		
Article No.	**Subject**	
Article 72	The word "pest" means every organism that may cause economic damage to plants, and the word "plants" in this chapter means all types of crops, seedlings, weeds, wild plants, their fruits, seeds, and all other parts and products thereof.	
Article 73	The Minister of Agriculture shall specify, by a decision issued by him, harmful pests and plants, methods of protection against them, means of controlling them, and measures to be taken for this purpose, particularly in the following matters:	Determining areas considered to be contaminated with a particular pest, adjusting their borders, and regulating the transfer or passage of plants and other objects capable of transmitting the pest from a contaminated area to another healthy or infected area.
		Establishing a system for pest control, including a statement of the chemicals and tools used in the control, and an indication of the treatment and control work carried out by the competent administrative authority at the expense of the plant owner.
		Setting the conditions and procedures for plant treatment and pest control by the employees of the competent administrative authority or whomever is entrusted with this from among individuals, bodies, cooperative societies, companies, or institutions.
		A statement of the pests that the owner of agricultural land must report

		to the competent authorities about the methods of such notification, and a statement of the measures to be taken to combat and treat them.
Article 74	If the infection is a source of danger threatening the plants due to the impossibility of treating the disease or the emergence of a new pest for which no successful treatment is known, the Minister of Agriculture may order the taking of any measure to ensure the prevention of the spread of the disease or pest, including uprooting and destroying infected plants by the workers of the competent administrative authority and at its expense. In this case, the Ministry shall pay compensation to the owner of the plants according to their value. The Minister of Agriculture shall issue a decision regarding the measures to be taken in estimating this compensation and how to settle the dispute arising from this estimation.	
Article 38 law 4/1994	It is prohibited to spray or use pesticides or any other chemical compounds for agricultural, public health, or other purposes except after observing the conditions, controls, and guarantees specified by the executive regulations of this law, in a way that does not guarantee that humans, animals, plants, waterways, or other components of the environment are not exposed. Directly or indirectly, it affects the current or future harmful effects of these pesticides or chemical compounds	
Article 39 law 4/1994	When carrying out excavation, drilling, construction, or demolition work, or transporting the resulting waste or dust, all parties and individuals are obligated to take the necessary precautions for safe storage or transportation to prevent their	

	dispersal, as stated in the executive regulations.	
Chapter Two: Agricultural pesticides		
Article No.	**Subject**	
Article 78	Agricultural pesticides mean substances and preparations used in the control of plant diseases, insects, rodents, weeds and other organisms harmful to plants, as well as in the control of insects and external parasites harmful to animals.	
Article 79	A committee for agricultural pesticides shall be formed in the Ministry of Agriculture. Its formation and work system shall be determined by a decision of the Minister of Agriculture. This committee shall be concerned with proposing agricultural pesticides that may be traded and specifying their specifications, registration procedures and trading conditions.	
Article 80	The Minister of Agriculture issues, based on the committee's proposal, the decisions that implement the provisions of this chapter, in particular the decisions related to the following issues:	Types of agricultural pesticides that may be imported and traded, specifying their specifications and import and trading conditions.
		Conditions and procedures for licensing the import and trade of pesticides.
		Banning the transfer of some types of pesticides from one place to another.
Article 81	Pesticides may not be manufactured, prepared, sold, offered for sale, imported, traded in, or released from customs without a license from the Ministry of Agriculture.	
Article 82	The advertisement of pesticides or the publication of data about them must be in conformity with their specifications, conditions of handling and registration, and the recommendations of the Ministry of Agriculture regarding their use.	

5. Pesticides management in EHCSS silos

Once a cereal crop is harvested, it may be stored for a certain period before it is marketed or used as food, feed, or as raw commodity. The length of time during which the cereals can be safely stored will depend on the harvest condition, the post-harvest treatment (such as drying and cleaning) and the type of storage facility being used. Grains stored at low temperatures and low moisture content can be kept in storage for longer periods of time before quality deterioration. The presence and build-up of insects, mites, molds and fungi – all of them influenced by grain temperature and moisture content of the crop– will affect grain quality and duration of grain storage.

Rapid deterioration of the crop quality might occur with combined attacks by insects, acaroid and larvae. For cereals, a rise in temperature is expected due to respiration; it might also occur due to insect or fungal activity. Heating leads to moisture condensation within the grain mass in cool areas, which can increase insect infestation (Appert, 1987; Imura & Sinha, 1989).

Things to consider when assessing storage monitoring systems (Burrill *et al*., 2021):

- Measuring both grain temperature and equilibrium relative humidity (ERH) is valuable as it provides information on storage conditions, grain moisture content and providing insight as to how active insect pests are, if present.
- Tests following phosphine fumigation have shown that sensors inside a silo designed to measure humidity in grain can be permanently damaged by phosphine gas during standard fumigation. To tackle this damage first the humidity in grains must be measured to know if it's possible to add phosphine gas or not.
- Sensor location inside a silo is critical. If sensors are too close to silo walls, readings may be influenced by excessive grain trash or external temperatures i.e., sun or shade on walls.
- Some sensors may be difficult to install in silos and to access later if they require maintenance.
- Grain storage sensors and cables are in a hostile environment with dust, heat, moisture, and significant physical stresses when the silo is filled, emptied and as grain settles during storage.
- Sensor's build quality, lifespan and long-term accuracy will be important for each parameter i.e., grain temperature, humidity and in some cases gas concentration measurements.
- Reliable communication of data between the internal storage sensors and external reading / recording devices will be required.

a) Plan for insect control before storage:

- Management plans should include:
  - Good hygiene as an essential part of insect control,
  - Methods to try to prevent insect problems developing,
  - Inspection for insects and other quality problems, and

  - Methods to control insects if they do develop.

- Methods that aim to prevent infestations, include:
  - Cooling grain with aeration,
  - Treating grain by spraying with residual chemicals, or
  - Treating grain by mixing amorphous silica powder.

b) Inspection

In an aerated silo, the smell of the air coming out of the grain is a guide to the state of the grain. A musty smell later in storage is an indicator of insect and/or moisture problems. High temperature is an indicator of insect or moisture problems. A rod of not less than a meter or two is driven into the grain and left to equilibrate with the grain for an hour if it is metal, or half a day if it is wood. After pulling the rod out, pike samples are taken and checked for insects and molds.

c) Cleaning

Before harvest all machinery and equipment used to handle grain are cleaned out, including headers, augers, field bins, truck bins, silos, and other storages. Any equipment used to treat or handle pickled seed must be thoroughly cleaned to prevent contamination of new grain.

Special care should also be taken to clean out bags of seed, feed troughs, shed floors, heaps of old bags or any other places where grain and insects may be present. Grain and residues from cleaning should be fumigated with phosphine, buried, burned, or spread thinly over the ground away from insect control in stored grain buildings and storages. Grain held over from the previous season should be inspected and treated if insects are found.

d) Treatment of storage and equipment

Treating the surfaces of storages and equipment before they are used may kill insects walking on those surfaces but will not control insects in grain placed in the storage or equipment.

e) Sampling of pests in grain silos

Sampling or pest monitoring is an important component of the Integrated Pest Management (IPM) approach with which one can know the nature of pests in full detail so that suitable management tactics should be made accordingly. With the help of sampling, one can show the status of a pest, whether the population is below or exceeds the economic thresh hold level, and accordingly, physical, biological, or chemical approaches can be recommended.

- **Sequential sampling method**

Sampling should be performed frequently after fixed intervals for best observations, and to gather information about population changes from time to time. For example, those stored grain pests stored above 20°C should be visited after a gap of 25–30 days. Grains held below 20°C permits sampling intervals to be longer than 25–30 days. These are test frequencies to determine if there are any pests in the silos and then use fumigation to control pests in silos.

- **Population density estimation method in silos**

  Absolute estimation: In this method number of insects per kilogram of grain or the number of moths per square meter are estimated.

Fumigation method/ treatment

The Taramsa Silo uses the fumigation method in pest control, and this is done by using Phostoxin tablets. Where the stored grains are examined in the laboratories and by monitoring the temperatures, and then the extent of the infection is determined. The number of tablets is calculated based on 4 tablets per ton.

The number of used tablets is calculated based on the severity of the infection, as the infection depends on the duration and time of storage, infection in Taramsa Silo usually does not occur (the monitoring frequency to detect the pests and use the fumigation method is 25-30 days).

f) Sampling for pests around silos

- **Population density estimation method**

I. Indirect estimation: Here pests are marked with a specific dye and then recaptured after releasing into the stored grains, hence commonly referred to as mark-release-recapture methods. It can be easily performed with the help of suitably designed traps with baits.

II. Relative estimation: This method can be done by counting all the insects caught in a sticky trap, food baited trap or perforated probe trap. The Frequency of sampling pests around the silos should be every 2-3 days.

- **Trapping method**

Trapping is a convenient approach in small as well as in larger volumes. There are fixed trapping and mobile trapping.

Table I.2: Insect and rodent control methods.

No.	Pest type	Control method	Pesticide used	Places of use
1	Rodents	Traps	Glue forte Live traps	1. Around the silo wall from the inside. 2. Around warehouses from the outside. 3. Around the administrative building.
2	Flying insects	Sticky traps	Flyribbon attractive	Inside the administrative building and at the doors.

Table I.3: A form for the record of conducting the disinfection and pest control process.

Control type (check mark)			Control area	Active substance used with concentration	Usage rate	Amount of pesticide used	Method used for control
Disinfection	Rodent control	Reptile control*					
√	√	√	Tunnel	–	100 cm^3 per 100 liters of water	2 packs of malathion, 1 pack of Master Fog*	Metal trap
–	√	√	Scales	–			Metal trap
–	√	√	Control	–			Metal trap
√	√	√	Next to the fence	–			Metal trap
√	√	√	Below the cells	–			Metal trap
–	–	–	–	–			–

According to the follow-up report on rodent control, there are 14 metal traps distributed in the silo, offices and fences, and there are 20 fixed traps distributed in the silo. They are managed by a specific person in the staff of Silo who is an expert at dealing with traps.

* Pesticides are allowed under international conventions guidelines and national regulations

g) Physical methods

Once the stored grains are infested, some physical methods used for the management of the stored grain pests are:

- Physical exclusion: Fine perforated floors are made for the collection of dusty fines at the bottom that are susceptible to insect infestation.
- Grain distribution: Grains inside granaries as well as inside bins and containers should be properly levelled. Improper levelling can create room for insect infestation and mold development due to the accumulation of moisture into the peaked grained mass. To prevent the stored grains, removing grains from the old bins and redistributing them to other containers are very helpful.
- Temperature: Based on the nature of pests, the temperature can be set either at low or high degrees. As some pests like moist and cool places and some like hot and humid regions. Most pests require temperatures above 60–70°F to reach damaging populations. Hence maintaining a cool temperature can reduce the excess loss. In certain situations, maintenance of −4°C to 0°C can kill many stored grain pests. Maintenance of very high temperatures can also be recommended but it has certain drawbacks such as it can crack, harden, and make brittle grains inside bins.

- Hermetic sealing: To maintain a very low oxygen level inside stored grain containers this method is used. Low oxygen level causes suffocation to the pests and hence has insecticidal property.
- Aeration: Air flown at the rate of 0.1–0.5 cubic feet per minute per bushel are used to cool stored grains. This low-volume airflow is an important component of the management of the stored grain pests. Grains remain uniform and to some extent in dry conditions as some grains are susceptible to pest attack in moist climates.
- Oxygen saturation: Insects perform aerobic respiration for their survival. Maintenance of low O2 atmosphere is blown at the base of the containers, bins, and other stored chambers, forcing out the existing O2 rich atmosphere is a convenient method for infestation control.
- Sanitation: All bins, containers, granaries, and other stored places should be cleaned using shovels, brooms, vacuum cleaners to clear old grains, dust, spider web, and fines from all cracks and crevices, windows, doors, vents, fans, elevators, and floor. Even a small old grain or fines left in any place where new grains are to be stored can harbour insects that can infest the whole grain. A suitable dryer should be used to remove the moisture from bins. To improve storability, especially in the case of wet, damaged, or immature grains, grain cleaners can be used frequently (Ahmad *et al*., 2021).

h) Aeration Cooling

Temperature effects on grain insects

- The common grain pests increase by 20-25 times a month at high temperatures (30-35ºC) and moistures (14-16% grain moisture for wheat, equivalent to 70-80% relative humidity (RH)).
- Reducing grain temperature slows insect development. For example, flour beetles can complete their development in three weeks at 35ºC and 70% RH but take ten weeks at 22.5ºC and 70%RH.
- Although adult grain insects live a long time at cool temperatures, their young stages stop developing at temperatures below 15ºC for weevils or 20ºC for most other species.
- Reducing moisture also slows development. Weevils cannot reproduce in wheat below 10-10.5% grain moisture, but the lesser grain borer will build up in numbers at moistures as low as 8%.

Controlled aeration cooling can greatly reduce insect and mold activity in stored grain, as well as preserving grain quality. Aeration cooling lowers the temperature of the grain by blowing cool air through it. An automatic controller is more effective than thermostats, timers, or manual switches in selecting the coldest air available.

Aeration may fail to control insects because of heating of the surface layer, particularly in summer, or because of insects flying into the surface layer. Both these problems can be overcome by mixing amorphous silica into the top 30 cm of grain at the rate of 1 kg/ton of grain. The amorphous silica is diluted when out-loading to levels that are acceptable to buyers. Painting the roof and northwestern side of the storage white can reduce the effects of surface heating.

6. Risks and Impacts of Pest Management

Chemical insecticides are still considered as entomological weapons for the foreseeable future because of their wide host range, quick knockdown effects, and easily availability to consumers. Their use in stored grain insect pests is still restricted as they pose a threat to health hazards and other environmental issues. Most of the chemical insecticides are carcinogenic and other health disorders. The repeated application of insecticides leads to insecticide residues, secondary pest outbreaks (Burrill *et al*., 2021).

Reduction of risks arising from agricultural pesticides: (OECD Programme on Pesticides and Sustainable Pest Management)

- High standards will be used for registration and placing on the market of active substances and products.
- National action plans will be developed with mandatory and voluntary provisions and requirements for proper manufacturing, marketing, and use of agricultural pesticides.
- Progress in risk reduction will be monitored.
- The effective and efficient compliance with regulatory requirements will be ensured through enforcement policies and measures.
- Integrated pest management will be promoted, leading to a broader suite of control methods and lower risks to health and the environment.

7. Mitigation and Monitoring Measures

a) Mitigation Measures: (The World Bank environmental and social framework, 2017).

- Identifies mitigation measures and significant residual negative impacts that cannot be mitigated and, to the extent possible, assesses the acceptability of those residual negative impacts.
- Identifies differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable.
- Assesses the feasibility of mitigating the environmental and social impacts; the capital and recurrent costs of proposed mitigation measures, and their suitability under local conditions; and the institutional, training, and monitoring requirements for the proposed mitigation measures.
- Specifies issues that do not require further attention, providing the basis for this determination.

Measures to handle, store and dispose pesticides include the following:

- ***Management of Pesticides***
  Pesticides will be properly handled, stored, and disposed through the following measures (Adapted from FAO (2001) [11] and IFC guidelines for annual crop production (2016)[12]):
  - Whenever possible obtain pesticides from a low GHG manufacturer.
  - Follow the manufacturer guidelines for pesticides used.
  - Pesticides must be classified and labelled in an appropriate manner with their names, date of purchase and expiry date and material safety data sheet (MSDS).
  - The storage area of pesticides is far from any equipment and chemicals including flammable materials. The storage area must be secure and inaccessible to wildlife.
  - Training including OHS training on handling pesticides must be provided to workers.
  - Pesticides application should be carried out by trained personnel.
  - Following regular inspection as indicated in the "sampling method" section, pesticides dosage and frequencies will be decided to ensure minimal usage whenever possible.
  - The selected pesticides should be applied based on the manufacturer's label including its recommended dose rate and number of treatments and method of application.
  - Workers will follow treatment intervals prior re-entry to the treated area, to avoid health and safety issues and exposure to pesticides residues.
  - Pesticides empty containers will be disposed as hazardous waste material and should not be re-used for any other purposes. Empty containers can be delivered back to suppliers whenever possible.
  - If containers cannot be returned to suppliers, they shall be collected and disposed by licensed hazardous waste contractors.
  - Regular cleaning of trucks, equipment and containers transporting pesticides shall be performed.

Safety requirements for Handling Phostoxin (fumigation) [13]:

- Keep ignition sources away
- Do not smoke.
- Protect against electrostatic charges.
- Keep protective respiratory device available

[11] FAO (2001). Guidelines on Good Practice for Ground Application of Pesticides
[12] IFC (2016). Environmental and social health and safety guidelines for annual crop production. Retrieved from https://www.ifc.org/content/dam/ifc/doc/mgrt/annual-crop-production-ehs-guidelines-2016-final.pdf
[13] For more information and guidance on Phostoxin follow https://label.westernpest.com/files_techservices/live/degesch.phostoxin052418.sds.pdf

- Store away from water, acids, bases, strong oxidizing agents and strong reducing agents
- Do not store with acids
- Store products in a locked, dry, cool, well-ventilated area away from heat. Post as a pesticide storage area.
- Do not store in buildings inhabited by humans or domestic animals.
- Do not breathe dust/fume/gas/mist/vapors/spray.
- Do not allow contact with water
- Respiratory protection will most likely be required during cleanup of spilled aluminum phosphide fumigants. If the concentration of phosphine (hydrogen phosphide, PH3) is unknown, NIOSH/MSHA approved SCBA or its equivalent must be worn. Full-face gas mask canister combinations may only be worn at concentrations no higher than 15 ppm.
- Wear dry gloves of cotton or other material if contact with tablets, pellets, or dust is likely. Gloves should remain dry after use. Aerate gloves and other clothing that may be contaminated in a well-ventilated area prior to laundering.
- Wear tightly sealed goggles.
- Wear face protection
- Wear respiratory protection
- Wash thoroughly after handling.
- All ventilation should be designed in accordance with OSHA standard (29 CFR 1910.94). Use local exhaust at filling zones and where leakage and dust formation are probable. Use mechanical (general) ventilation for storage areas.
- Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing and wash before reuse. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin.
- If on skin: Wash with plenty of water.
- If skin irritation occurs: Get medical advice/attention
- If inhaled: Remove person to fresh air and keep comfortable for breathing
- If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- Specific treatment is urgent (see supplementary first aid instructions on this Safety Data Sheet).
- If swallowed: Immediately call a poison center/doctor.
- Keep containers tightly closed and proper ventilation.
- Containers to be disposed based on SDSs and manufacturers recommendations.
- Properly label and store the material according to its MSDS.

Fire and spill risks procedures for phostoxin:

- Phostoxin/Aluminum phosphide management according to its SDS[14]:

[14] For more information and guidance on Phostoxin follow https://label.westernpest.com/files_techservices/live/degesch.phostoxin052418.sds.pdf

- Never allow the buildup of phosphine gas (hydrogen phosphide, PH3) to exceed explosive concentrations. Open containers of metal phosphides in open air only and never in a flammable atmosphere
- Do not confine spent or partially spent dust from metal phosphide fumigants as the slow release of phosphine gas (hydrogen phosphide, PH3) from these materials may result in the formation of an explosive atmosphere. Spontaneous ignition may occur if large quantities of aluminum phosphide are piled in contact with liquid water.
- Do not store next to water and wet areas and do not dispose in sewage
- Do not allow to enter sewers/surface or ground water.
- If possible, dispose of spilled material by use according to label instructions. Freshly spilled material which has not been contaminated by water or foreign matter may be placed back into its original or other air-tight container. Punctured flasks, pouches or containers may be temporarily repaired using aluminum tape.
- If the age of the spill is unknown or if the product has been contaminated with soil, debris, water, etc., gather up the spillage in small open buckets having a capacity no larger than about 1 gallon. Do not add more than about 1 to 1.5 kg (2 to 3 lbs.) to a bucket. If on-site wet-deactivation using deactivation solution is not feasible, transport the uncovered buckets in open vehicles to a suitable area according to local authority and manufacturer guidelines. Small amounts of spillage, from about 4 to 8 kg (9 to 18 lbs.) may be spread out over the ground in an open area to be deactivated by atmospheric moisture. Alternatively, spilled aluminum phosphide fumigants may be deactivated by using the deactivating solution as noted on the SDS and guidelines of manufacturer.
- Inform relevant authorities in case of seepage in water resources or sewage system
- In case of fire, use CO2, sand, extinguishing powder. Do not use water. Use firefighting measures that suit the environment.
- Respiratory protection will most likely be required during cleanup of spilled aluminum phosphide fumigants. If the concentration of phosphine (hydrogen phosphide, PH3) is unknown, NIOSH/MSHA approved SCBA or its equivalent must be worn. Full-face gas mask canister combinations may only be worn at concentrations no higher than 15 ppm.
- As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent) and full protective gear to prevent contact with skin and eyes. Wear a NOISH/MSHA approved full-face gas mask – phosphine gas canister combination may be used at levels up to 15 ppm or following manufacturers' use conditions instructions for escape. Above 15 ppm or in situations where the phosphine gas concentration is unknown, a NIOSH/MSHA approved SCBA must be worn.

PPE Required for Working with Phostoxin:

Phostoxin requires specific personal protective equipment (PPE) for safe handling. The following PPE is recommended for working with phostoxin, beyond just in cases of fire:

- **Respiratory Protection:**
  - Use a full-face respirator with an appropriate filter to protect against inhalation of toxic phosphine gas released by phostoxin.

- **Skin Protection:**
  - Wear chemical-resistant gloves to prevent skin contact with phostoxin tablets or dust.
  - Use long-sleeved shirts and full-length pants to cover as much skin as possible.
  - Consider additional protective clothing such as a chemical-resistant suit for added protection.

- **Eye Protection:**
  - Use safety goggles or a full-face shield to protect eyes from dust or accidental splashes.

- **Foot Protection:**
  - Wear chemical-resistant boots to prevent contact with phostoxin residues on the ground.

- **General Safety Measures:**
  - Always work in well-ventilated areas to avoid the accumulation of phosphine gas.

Have an emergency eye wash station and safety shower readily accessible in case of accidental exposure.

Recommended actions to be followed by Silo Management before fumigation application:

- Gas tight pressure tests must be carried out when grains are added and prior to each fumigation activity
- Pressure tests need to be part of the annual maintenance of silos
- Monitor and maintain and repair seals regularly when silos are empty
- Add gas sensors around silos

Specific management measures for rodenticides shall be followed (Adapted from EBPF, (n.d)[15] and Tobin, (2005)[16]).

- Pesticides and baits shall be located at areas away from non-targeted species. Specific bait zones shall be selected carefully to ensure efficiency and consumption by the targeted rodent/pest.

[15] EBPF (n.d). Guideline on Best Practice in the Use of Rodenticide Baits as Biocides in the European Union
[16] Tobin, M. E., & Fall, M. W. (2004). Pest control: rodents.

- Use insulated trays to add bait should not contaminate the soil and to ensure its proper removal at the end of the treatment period.
- Use enclosed trays/traps that are only accessible to the targeted pest.
- The pesticide/bait can be located in the burrow of the targeted rodent.
- Inspection in and around treated areas shall be done on a regular basis (daily) and dead animals shall be removed instantly to avoid any secondary poisoning by non-targeted species.
- Dead pests that have consumed the bait may be disposed as hazardous waste by a certified hazardous waste contractor.

- Rodent repellent devices including ultrasonic devices can be used to minimize the use of pesticides.
- Store food properly to prevent its accessibility by rodents.
- Doors and windows and any openings shall be tightly closed.

b) Monitoring:

- Weekly and Monthly checking of grain in storage for insect pests (sieving / trapping) as well as checking grain quality and temperature. Record these details, including any grain treatments applied.
- After an application:
- Record application date, product used, rate, and location of application.
- Follow up to confirm that treatment was effective.

- For pests inside silos, regular sampling and monitoring will be conducted frequency around 25-30 days)
- For rodent monitoring: estimate the abundance of rodents using live traps or tracking plates to detect tracks of animals or electronic devices, the regular frequency of rodents will be every 2-3 days.
- Check which rodents are the most abundant and track if they are significantly increasing.

- **Indicators:** number of pest manifestation incidents in silos and number and type of rodents trapped number and amount of pesticides/fumigation used, number of fumigation leak incidents.

8. Capacity Building and Training on Pesticide Use and Handling

It is necessary to maintain careful and continuous control over the use and handling of pesticides during the transport, storage, mixing, loading, application, and disposal.

The need to accurately identify and diagnose pests and pest problems and understand ecosystem interactions could enable farmers with biological and ecological control opportunities and in making pragmatic pest control decisions. Therefore, it is required to have a strong linkage between researchers, governmental authorities, and the implementers of IPM techniques.

Agricultural workers and pesticide handlers need Worker Protection Standard (WPS) training annually if they will be working in treated areas on an agricultural establishment, and their activities are directly related to agricultural production. Currently certified pesticide applicators and certified crop advisors are exempt from WPS worker and handler training. Any worker who has been trained as a handler does not need to receive worker training.

Training on IPM shall include: (Pest Management Plan, Draft Report, July 2014)

- Learning-by-doing/discovery training programs – experiences indicate that farmers are most apt to adopt new techniques when they acquire knowledge and skills through personal experience, observation, analysis, experimentation, decision-making and practice. This allows to identify farmers' own knowledge and for farmers to understand how IPM applies to their own farms.
- Recovering collective memory - Pest problems often emerge because traditional agricultural methods were changed in one way or another or lost. These changes can sometimes be reversed. This approach uses group discussions to try to identify what changes might have prompted the current pest problem.
- Smallholder support and discussion groups -Weekly meetings of smallholders, held during the cropping season, to discuss pests and related problems can be useful for sharing the success of various control methods. However, maintaining attendance is difficult except when there is a clear financial incentive (e.g., credit).
- Demonstration projects - Subsidized experiments and field trials at selected farms (farmer-field school) can be very effective at promoting IPM within the local community. These pilots demonstrate IPM in action and allow farmers to compare IPM with ongoing cultivation supported by synthetic pesticides.
- Educational material - Basic written and photographic/figures guides or even videos to pest identification and crop-specific management techniques are essential for training and could be an important factor in motivating farmers to adopt IPM.
- Youth education - Promoting and improving the quality of programs on IPM and the risks of synthetic pesticides has been effective at technical schools for rural youth. In addition to becoming better farmers in the future, these students can bring informed views back to their communities now.

Training for workers by EHCSS

The company has trained groups of technical and administrative engineers in various scientific and technical specializations due to warehousing, quality of subscriptions, accounting, management, and other specializations. Some of them have obtained master's degrees in these fields and are currently practicing their work in project management, operation, and maintenance. The company also follows up the stages of training its representatives through internal programs, whether in the treaty and government

universities, or through on-the-job training to qualify and develop the capabilities and skills of employees, with the following internal training specializations: -

- **Programs in the financial and financial field:** to focus on specialized programs in the financial and financial field to develop their competence in the work assigned to them.
- **Programs in specific specializations:** to focus on developing the capabilities and skills of employees in the field of maintenance of precision equipment in silos.
- **Programs in the field of computers:** The aim of these programs is to master the computer and maintain it.
- **Professional industrial and computer programs:** To focus on the field of the industrial workforce, the need to provide employees with basic skills in combat security work, security guards, emergency preparedness, and understanding the principles of achieving security in industrial innovation.

Training on the use of pesticides shall include the following:

- Pesticide Selection – Indicating the list of authorized pesticides per target pests, indicating its level of toxicity and hazardous, possible harmful effects and experience using those pesticides for the pest and the crop.
- Understanding the Pesticide Label – Explain all the information included in the label.
- Pesticide Transport – Give indications on how to transport pesticides to avoid any leakages and avoiding the contact with persons or animals.
- Mixing and Loading Pesticide – Explain the importance of ensure the proper dilution of the concentrated pesticide and the need to use protective clothing.
- Pesticide Storage – Give indications on how to storage pesticides – site location (not allowed in flood areas), security (against illegal entries, as well as children and livestock), isolated from other houses, be well ventilated, waterproof roof, have a current inventory list of pesticide stock.
- Container Disposal – Give indications on how to destroy used pesticide containers.
- Obsolete pesticides – Explain the risks associated with obsolete pesticides and procedures to be followed.
- Calibration, Product Quantity and Pesticide Application – Explain the importance of application equipment calibration and how to do it.
- Determining the Amount of Chemical to Use – Give explanations on methods to find out the amount of chemical to apply per hectare and its level of dilution.
- Important Cautions related to the Application of Pesticides – Give indications on important cautions for safe use of pesticide.
- Toxicity, Human Protection and First Aid – Explain the possible effects of pesticide on human health, ways of pesticides entering in the body, importance of protective clothing & other protective equipment, basic first aid for pesticide exposure (with skin, mouth, eye, or respiratory system).
- Training on using the material safety data sheet (MSDS).

9. Implementation of PMP

This Implementation Plan outlines the role of individuals involved in the implementation of this PMP. The PMP will be on-site to set up and take down the lane closure and associated devices, assist with any incidents that may occur, and assist with access and egress into the work area as needed. During active work, trucks and vehicles will use the closed lane to access the work area.

9.1. Supervisor of PMP

The Supervisor of PMP is responsible for conducting daily toolbox meetings, addressing issues, and being the point of contact with the EHCSS Representative.

The pest control department in the Taramsa Silo consists of 6 people, with the following positions: 2 agricultural engineers, 3 agricultural diplomas personnels, and a laboratory technician.

1- Agricultural engineers solve problems concerning power supplies, machine efficiency, the use of structures and facilities, pollution and environmental issues, and the storage and processing of agricultural products.
2- Agricultural diplomas personnels maintain crops and tend livestock, plant, inspect, and harvest crops, irrigate farm soil and maintain ditches or pipes and pumps, operate and service farm machinery and tools, apply fertilizer or pesticide solutions to control insects, fungi, and weeds.
3- Laboratory technicians work alongside scientists and engineers in a laboratory and assist with a range of experiments and investigations. They carry out both routine procedures and one-off projects, which will be dependent on the function of the laboratory – a laboratory technician could help develop new products, diagnose diseases, or carry out mechanical or diagnostic texts, subject to the nature of the work that the company employing them specializes in.

9.2. The PMP Budget

The costs of implementing the PMP are related to the preparation of Specific Pest Management Plans, capacity building, training, and awareness-raising campaigns.

Appendix II: Traffic Management Plan (TMP)

1. Background

The safety of workers and road users during construction is dependent on the ability of contractors to effectively manage the risks. The risk management process is embodied in the contractor's Traffic Management Plan (TMP), which is a document that details the way activities in the road corridor will be carried out. The TMP is a site-specific plan that covers the design, implementation, maintenance and removal of Temporary Traffic Management (TTM) measures while work or activities are carried out in the road corridor (road, footpath or berm). The plan details how road users, particularly vulnerable cyclists and pedestrians, will be directed around a work site, crashes, or other temporary road disruption, to minimize inconvenience while providing safe conditions for both the road user and the workers carrying out the activity. The assessment needs to consider: (i) the existing regulatory environment for TTM and how it reflects good practice; (ii) the capacity of contractors to effectively implement TTM; and (iii) the ability of the IA and the Supervision Engineer (SE) to enforce TTM standards.

Monitoring of the adherence of contractor vehicles to the Contractor's TMP is essential. These plans need to clearly define as a minimum: (i) the approved haul routes for all construction traffic; (ii) maximum speed limits (which are often lower than the legal speed limit) at locations on the route (for example 40 km/h or 30 km/h when vulnerable users are present, such as during school hours starting 200m before to 200m after a school), and the hours at which vehicles operate and; (iii) Temporary Traffic management (TTM) in work zones. The SE is to monitor and report on the contractor's adherence to the TMP.

Construction vehicles and equipment on public roads are specifically mentioned in World Bank ESS4. This is because they are often large and unwieldly and not well suited for operation in mixed traffic on normal roads. Examples include large, self-propelled excavators, cranes and graders. In energy projects, there is frequent use of large, specialized vehicles that carry equipment and pre-fabricated elements.

Traffic management plan aim to protect workers, pedestrians, and motorists by minimizing the risks associated with traffic movement. Establishing effective methods for managing traffic in Taramsa Silo and workplace and the surrounding area serves an important role. The Taramsa silo is located on the Qena/Luxor Road. This road does not have a traffic jam (check the location map of Taramsa Silo in figure 1.1).

They are designed for the following purposes:

- **Safety:** a traffic management plan eliminates or reduces the chances of accidents that may occur while working in the Taramsa Silo.
- **Accessibility:** a traffic management plan aids in the smooth traffic flow and makes it easier for people to get around. It makes sure that pedestrians, trucks, and vehicles can share the same space without coming into conflict.
- **Compliance with relevant legislation:** a traffic management plan helps organizations to comply with relevant legislation.

A traffic management plan may include details of:

- The desired flow of pedestrian and vehicle movements
- The expected frequency of interaction of vehicles and pedestrians
- Illustrations of the layout of barriers, walkways, signs, and general arrangements to warn and guide traffic around, past, or through a work site or temporary hazard, and,
- How short term, mobile work and complex traffic situations will be managed.

Key stakeholder groups could include roadside communities, transport providers and users, commuters, vulnerable road users (pedestrians, motorcyclists, and bicycle riders), traffic police, non-governmental organizations (NGOs), and post-crash service providers. Processes for engagement will depend on available and feasible communication means, and may include door-to-door surveys, opportunistic surveys, informal discussions, focus groups and community meetings. These consultations may provide useful information on relevant patterns of behavior and risk exposure but should not be used as a guide to what will work to address risk.

There is various stakeholder groups concerned by this TMP. Project Workers are the individuals and groups engaged in the sub-project Implementation Phase such as direct workers, contracted workers, workers bringing supplies and materials to the work site, and community workers. Affected Communities are the individuals and groups directly exposed to project construction activities and that may also face ongoing exposure to operations once construction is completed.

Road Users are the public using the project road either during construction or operation phases. Statistically, during the operation phase, this group is by far the dominant contributor to traffic-related FSIs. Vulnerable road users are pedestrians, cyclists, and motorcyclists. Well over 50% of deaths in LMICs are these three road user groups. These users are most at risk of an FSI in the event of a crash with a motor vehicle. Ideally, vulnerable users should be protected through segregation—such as through the provision of footpaths or dedicated cycle/motorcycle lanes. As segregation is impossible in many situations, the next option is speed management: vulnerable road users require a low-speed environment to interact with traffic.

2. Taramsa Silo

- **Current traffic to Taramsa Silos**

Taramsa Silo Complex is located near Al Taramsa village in Qena governorate on the western side of the Nile Valley. Taramsa Silo Complex covers an area of 20,000 m^2 and consists of 12 cells with a total capacity of 60,000 tons. It is equipped with the latest storage technology which includes inventory management and control system, steaming system and stock temperature control, firefighting system, and wireless system.

The number of trucks that deal with the silo ranges from 350 per day in the harvest and supply season, and to 20 per day on normal days of the year (according to Silo Manager). There are no specific schedules to deliver grains to silos, the expected average wait time for trucks to load or unload grains depends on the weight of grains to be delivered. But in general, all the trucks deliver the grain to Silo on the same day on which they arrive.

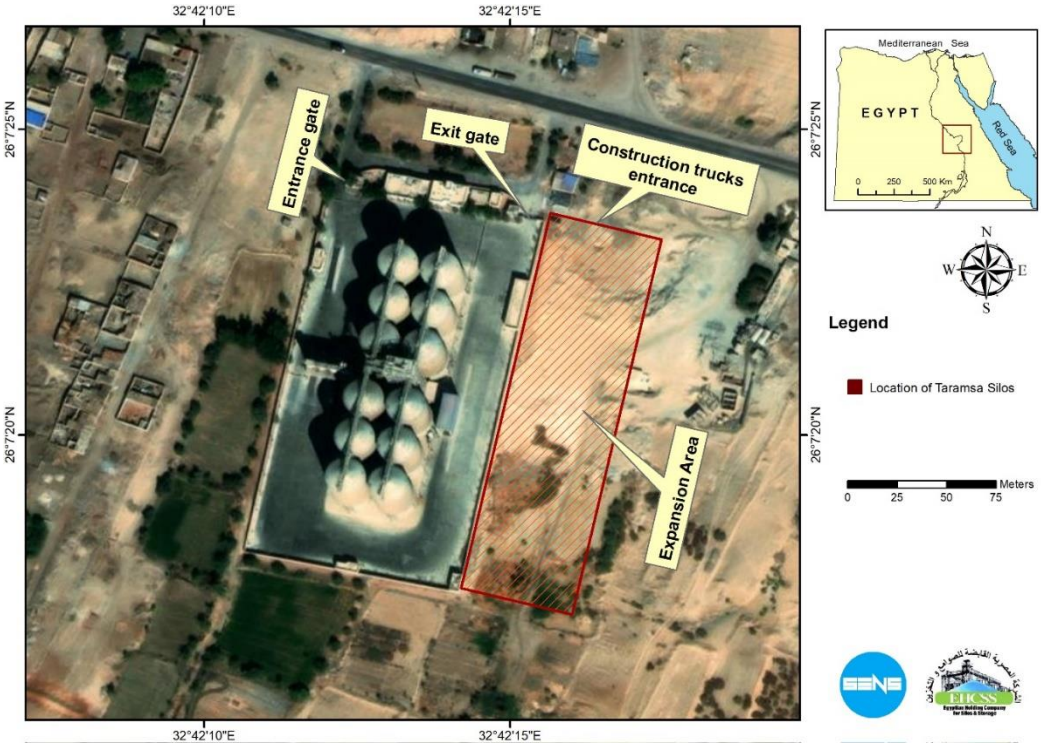


Figure (II.1): Map showing the traffic in Taramsa Silo.

- **Traffic during construction phase**

The main road that will be used for transporting construction equipment will be the Qena Luxor Road (which is located in front of the existing Silo). Roads with lowest population densities will be selected to transfer equipment from construction contractor

equipment storage area to the main road. The roads will be identified by the contractor as part of their C-ESMP in coordination with the consulting firm contracted by EHCSS during the construction phase and approved by the EHCSS and /or their approved consulting firm (see section 6.5 on the roles and responsibilities)

The access road of the construction trucks will be different road than the road that is currently used by the grain trucks (It will be extended from the main road and not from the existing road leading to the existing silo). So, it will not interrupt the flow and access of grain trucks to the current operating/existing silos check the above map (figure II.1).

- **Traffic after silos expansion phase/operational phase**

After the construction phase the traffic will be normal for the grain trucks as it was before the construction of the expansion. And there will be no trucks for construction.

It is important to clarify that the expansion will not lead to an increase in the number of operation trucks. Instead, the number of days allocated for loading and unloading grains will increase.

The capacity of the Taramsa Silos for loading and unloading will remain unchanged after the expansion. Therefore, while the storage capacity will increase, the logistics of truck operations will continue as before, with the same number of trucks being utilized. The extended days for loading and unloading will accommodate the increased storage volume without necessitating additional trucks.

Since the number of trucks will not increase, there will be no impact on traffic as a result of the construction and operation of the expansion. This approach ensures efficient grain management while maintaining existing transportation operations and minimizing any potential traffic disruptions.

The silo design consultant will develop a traffic management plan during operation phase in coordination with EHCSS. Main roads leading to the silo were provided in Figure (II.1) and in Figure (4.8).

3. Traffic Management Requirements

3.1. Records

Participants using the Transport Code are required to keep and maintain records for these actions to demonstrate adherence to this Transport Code. (GTA Grain Transport Code of Practice, July 2014). The following includes some records that must be kept:

- All loads carried by vehicles (e.g., collection/delivery tickets, load sheets etc.)
- All cleaning operations
- Inventory of all vehicles and trailers
- List of approved Subcontractors

- Audit records of sub-contractors
- Staff training/instruction/Qualifications
- Insurance documents
- Operator's license – if applicable
- Container weight declaration – if applicable
- Complaints
- Internally produced records must be signed.

3.2. Managing Traffic Risks

Traffic management is about keeping people safe by managing traffic conditions. It is important to be aware of the potential hazards posed by silos traffic and to put measures in place to minimize the risks. Silos safety duties are identifying hazards, assessing them, and controlling traffic risks. We can take several steps to control the risks associated with silos traffic.

3.3. Identifying Traffic Hazards

Many potential hazards can cause problems for employees in the workplace of the Taramsa expansion Silos. Traffic Hazards are one type of hazard that can pose a serious threat to workers. Traffic hazards can include cars and trucks driving through the work area to pedestrians walking through the work area. Traffic hazards can result in injuries or even death if not adequately controlled.

When identifying hazards with traffic management, it is essential to consider the layout of the silos and how people and vehicles interact, this includes:

- Looking at the floor plan layout and determining where there are overhead structures Consider whether work is close to public areas.
- Consider high traffic volumes, which can impact traffic flow and create hazards.
- Checking for blind spots, as these can be areas where accidents are more likely to occur.
- Checking if there are areas of poor visibility, as this can also impact safety.

While managing traffic flow, we would consider the vehicles using space and height for other objects. Loading and unloading areas should be marked, and vehicles should be directed to park in designated areas that provide the appropriate road surface and allow for easy entry and exit and that’s all provided in Taramsa Silo as the road surface is appropriate and there is appropriate parking space for trucks inside and outside the workplace. (GTA Grain Transport Code of Practice, July 2014).

3.4. Assessing Traffic Risks

Risk assessments are an essential part of ensuring silos safety. By identifying potential hazards and assessing their likelihood, employers can take steps to minimize the risk of harm to employees. Traffic hazards are common workplace hazards, and a thorough risk assessment can help identify potential risks and control measures. Some factors to consider when assessing traffic hazards include:

- The volume and speed of traffic.
- The layout of the workplace.
- The type of work being undertaken.

By considering these factors, employers can develop effective control measures to reduce the risk of accidents and injuries. Also, we'd be considering some basic elements in this traffic management plan.

- The type of operation work that will take place: This is important information for drivers, as it will help them know what to expect when traveling through the work zone.
- The operation site's location (Taramsa Silo): This will help drivers plan their route and avoid the operation area if possible.
- The expected traffic volume: will help to determine the necessary traffic control measures. There is no information about the number of cars and trucks unrelated to the project per day and including peak hours. But, in general, it will be considered in the plan for construction and operational phase to avoids peak hours,
- The traffic control measures that will be in place: This includes things like road closures, detours, and lane closures.
- A diagram of the construction site and proposed traffic flow: This will help drivers understand the traffic control measures that are in place.
- The contact information for the project manager: This is important in case there are any questions or concerns about the traffic management plan.

3.5. Risk Control Measures for Traffic Management

This framework prioritizes the most effective control measures over the least effective ones. Therefore, the traffic management plan will incorporate technically and financially feasible road safety measures into the project design to prevent and mitigate potential road safety risks to road users and other communities.

There is no information about the offsite traffic. But in general, there will be coordination with the traffic authorities in the governorate regarding the time of the construction of the expansion, as well as it will be considered in the plan for construction and operational phase to avoid peak hours.

Projects need to undertake baseline data collection to not only establish the appropriate project interventions to address road safety risks, but also as a way of assessing whether the project improved or worsened the situation. Stakeholder engagement will also usually provide detailed guidance on prevailing road safety issues.

Increased traffic volume during any sub-project phase may result from:

- Sub-project-related vehicle fleets (e.g. heavy construction trucks or additional grain carriers reflecting the increased grain storage capacity).
- Project-related pedestrian, bicycle, or motor traffic.

- Induced traffic, (that is, local vehicles altering their usage patterns to or from another corridor to compensate for changes in traffic patterns caused by the sub-project, sometimes to avoid congestion or arrive more quickly at destinations).

A traffic study concerning potentially affected local offsite roads will be implemented prior to the site preparation phase of the sub-project. Projects need to undertake baseline data collection to not only establish the appropriate project interventions to address road safety risks, but also as a way of assessing whether the project improved or worsened the situation. Stakeholder engagement will also usually provide detailed guidance on prevailing road safety issues.

Elimination: the person conducting a business or undertaking is responsible for ensuring the safety of employees, contractors, and visitors in the workplace. One of the ways to do this is by implementing controls to eliminate traffic hazards. For example, consider if powered mobile plants or other vehicles present in the workplace can be removed.

Substitution, Isolation, and Engineering Controls: it may be possible to substitute the hazard for something safer. For example, trucks and forklifts could be swapped for load-shifting equipment such as a walker stacker. Alternatively, the risk could be isolated from workers by isolating pedestrians from vehicles using overhead walkways. Engineering controls could also be used, such as fitting vehicles with devices such as reversing sensors and cameras.

Administrative controls: if risk remains, even after implementing engineering controls and safe work practices, administrative control measures should be implemented. These measures are designed to reduce the chances of an accident or injury. Administrative controls can take many forms, but some common examples include training, instruction, and supervision.

Personal Protective Equipment (PPE): PPE helps to protect workers from being hit by trucks or other hazards. High visibility clothing is one type of PPE often used in traffic control measures. PPE is designed to protect workers from injuries but cannot eliminate all risks. PPE should only be used as a last resort when all other control measures have been implemented. Examples of PPE for traffic risks include:

- High-visibility vests.
- Lace steel cap boots.
- Hard hats with brim.
- Earplugs or earmuffs.
- Safety glasses or goggles.

3.5.1. Information, training, instruction, and supervision

- Workers including contractors who are required to perform duties associated with traffic management at the workplace should be trained to perform those duties. Training should be provided to workers by a competent person.
- Responsibilities for health and safety management must be clearly allocated. It is important each worker, contractor, subcontractor, visiting driver and other relevant people

clearly understand their role in following safe work practices and taking reasonable care of themselves and others.

- EHCSS would provide supervision to ensure safety procedures are being followed, particularly if you are relying on administrative control measures to minimize risks.
- EHCSS must ensure so far as is reasonably practicable, everyone who has access to the workplace including visitors are provided with information necessary to protect them from risks to their health and safety, for example instructions on designated safe routes, parking areas, pedestrian exclusion zones and speed limits. This could be addressed through an induction process at your workplace.
- Visitors should report to the reception area or site office and be given information on the safety procedures for the workplace before they are allowed into areas where vehicles and powered mobile plant are used.
- EHCSS must ensure that any information, training, and instruction provided, is presented so it is easily understood by workers. This may require providing information and training material in different languages.

3.5.2. Keeping people and Trucks apart

Regarding the onsite traffic management during the construction phase, there will be a separate road for the construction trucks than the existing road for grain trucks.

The best way to protect pedestrians is to make sure people and trucks cannot interact. Where a powered mobile unit is used at a workplace, you must ensure it does not collide with pedestrians or another powered mobile unit.

This can be achieved by not allowing vehicles or trucks in pedestrian spaces or not allowing pedestrians in vehicle or trucks operating areas, for example using overhead walkways. However, this may not be reasonably practicable in all workplaces. If people and vehicles or trucks cannot be separated, you should consider using:

- Barriers or guardrails at building entrances and exits to stop pedestrians walking in front of vehicles or trucks.
- High impact traffic control barriers.
- Temporary physical barriers.
- Separate, clearly marked footpaths or walkways e.g., using lines painted on the ground or different coloured surfacing.

3.5.3. Trucks Routes

- Vehicle routes at the workplace should have a firm and even surface, be wide and high enough for the largest vehicle using them and be well maintained and free from obstructions. They should be clearly sign-posted to indicate speed limits, traffic calming measures like speed humps and parking areas.
- Reducing speed is very important where administrative control measures are the only reasonably practicable approach. Speed limits should be implemented and enforced and

traffic-calming devices like speed humps considered. Variations to speed limits should be clearly signposted.

3.5.4. Pedestrian Crossings

If pedestrians have to cross vehicle / trucks routes in the workplace you can manage the risk in a number of ways, for example interlocked gates or gates with warning devices, physical barriers or rails, traffic light systems or having a competent worker direct traffic.

Pedestrian crossings should be clearly marked with ground markings, lights or signs. If the vehicle / trucks route to be crossed is a road or railway, consider control measures that will work with those already established by the relevant authority, for example a local council or rail authority. Both pedestrians and vehicles or trucks should have good visibility, for example pallet goods should not be stored in a way that would obscure vision. Procedures indicating who has right of way at crossings should also be established (Safe Work Australia, 2014).

3.5.5. Parking Areas

Parking may be needed for workers, visitors, trucks, and other vehicles used in the workplace. Consider setting out the workplace so parking areas:

- Are located away from busy work areas and traffic routes.
- Have walkways leading to and from parking areas which are separated from vehicles or vehicle routes e.g., use physical controls like barriers or bollards to prevent vehicles from crossing into walking areas,
- Are clearly marked and sign-posted, well-lit and unobstructed.

3.5.6. Reversing Trucks

If reasonably practicable, eliminate the need for reversing by using drive-through loading and unloading systems, multi-directional mobile plants, or rotating cabins. Where this is not possible, consider:

- Using devices like reversing sensors, reversing cameras, mirrors, rotating lights, or audible reversing alarms
- Using a person to direct the reversing vehicle if they cannot see clearly behind—this person should be always in visible contact with the driver and wear high-visibility clothing.
- Providing designated clearly marked, signposted and well-lit reversing areas, and excluding non-essential workers from the area.

3.5.7. Loading and Unloading Trucks

It is important to make sure visitors, including visiting drivers, are aware of the workplace layout, the route they should take and safe working procedures for the workplace. Provide drivers

with safe access to amenities away from loading areas or other vehicular traffic. To reduce driver, fatigue, a seat should be provided for long loading times.

If you have created zones to separate vehicles from people - called ‘exclusion zones’ - the person operating the powered mobile plant such as forklifts should control the exclusion zone. Clear operating procedures should be understood and always implemented. Provide effective ways to warn of loading in progress to other plant operators, drivers, and pedestrians. Warning devices can include signage, cones, lights, alarms, and horns.

Ways to stop vehicles or trucks from moving during loading and unloading activities include using: a) Trucks or trailer restraints, b) Dock locks, c) Air brake isolation interlock devices, d) Traffic lights, e) Barriers or other ‘stop’ signals, f) Systems for controlling access to vehicle keys or the cabin, and, g) Safe systems of work which make sure the driver is aware of when it is safe to leave.

3.5.8. Signs and road markings

Clear road markings like reflective paint and signs should be used to alert pedestrians and vehicle / trucks operators to traffic hazards in the workplace. Signs should be provided to indicate exclusion and safety zones, parking areas, speed limits, vehicle crossings and hazards like blind corners, steep gradients and where forklifts are in use. Signs and road markings should be regularly checked and maintained so they can be easily seen (Safe Work Australia, 2014).

3.5.9. Lighting

Traffic routes, maneuvering areas and yards should be well lit with particular attention given to junctions, buildings, walkways, and vehicles / trucks routes. Where possible they should be designed to avoid extreme light variation, for example drivers moving from bright into dull light or vice versa (Safe Work Australia, 2014).

3.6. Safe Work Method Statements for Traffic Management

Before undertaking any operation work on or next to a public road, it is important to assess the risks involved first. This type of work is classified as high risk due to the potential for injuries from moving traffic. As such, it is essential to have a safe work method statement in place. The safe work method statement is an important part of traffic management plans. It outlines the work to be done, the hazards associated with the work, and the traffic control measures in place to minimize the risks. The safe work method statement should be developed prior to undertaking any work that could pose a risk to workers and should be reviewed and updated as required (Safe Work Australia, 2014).

The developed plan also shall adopt the best transport safety practices across all aspects of project phases to prevent traffic accidents and minimizing injuries suffered by project personnel and the public by including:

A) Safe Grain Loading and Unloading: Loading and unloading grain from trucks or other transport vehicles can be hazardous. EHCSS will address best practices for securing loads, operating machinery safely, and preventing falls during loading and unloading processes including the securing and appropriate weather protection of the load, all parties will be responsible so far as it is practical for checking that pre-loaded vehicles were loaded in a safe and satisfactory manner.

B) Grain Auger Safety: Operation of grain auger poses risk of hand, arm, feet, and leg injury caused by being entangled in an unguarded auger flight. This injury is common. Crush injury may also occur in unguarded pulleys, belts, and drive-shafts. Ensure that all auger flights, engine pulleys, drive belts and shafts are properly guarded and that the guards are in good condition before using all augers. Make sure that all guards are in place before the augers are operated, especially after maintenance. Full augers are unstable and pose risk of toppling when moved. An injury may occur if the operator or bystander in the vicinity. Ensure that all auger flights, engine pulleys, drive belts and shafts are properly guarded and that the guards are in good condition before using all augers. Make sure that all guards are in place before the augers are operated, especially after maintenance. Ensure all bystanders are kept away. To prevent toppling, empty, and lower augers before moving them (Temperley and Fragar, 2017).

Carriers must hold the licenses and comply with any codes or licenses required for the performance of services, including but not limited to:

- Operating the vehicle or trucks or other machinery or equipment supplied or operated by the carrier.
- Carrying particular kinds of goods, including dangerous goods.
- Entry to facilities/premises for the purposes of loading and/or unloading grain.
- Operating the vehicle / trucks supplied to carry the specified capacity of the vehicle on the routes that will be used.

3.6.1. Induction Processes

- The carrier will satisfactorily complete any site induction process required as a condition of entry to the facilities/premises.
- Work facilities will provide such training where appropriate and ensure documentation is available to assist carriers with achieving compliance.

3.6.2. Safety Equipment

- All parties will supply and wear appropriate standard safety equipment.
- Drivers must be always in control of their vehicles during loading and unloading.
- All parties must conduct themselves and always operate their vehicles / trucks in a safe and reasonable manner.
- All parties shall only smoke in designated areas.

- Drivers must obtain approval from facilities/premises they visit before they carry out any form of maintenance or repair work on vehicles whilst on those facilities/premises.
- All parties must ensure that full safety precautions applying at the point of loading or unloading appropriate to the vehicle and its load, are taken during loading and un-loading for the protection of the driver, employees, third parties and plant and equipment, (GTA Grain Transport Code of Practice, 2014).
- Vehicles, equipment, and load carrying areas must be inspected before loading and if necessary, cleaned, and dried to remove any applicable residue accumulations or foreign material that may lead to contamination of the grain to be loaded.
- As part of the commitment to this Transport Code, it is the carrier's responsibility to ensure that if the load carrying area requires painting, then food grade paint is used. Note: the paint must not discolour or taint the grain to be transported in any way.
- Prior to leaving a facility/premise where the grain was loaded, the exterior of a vehicle must be suitably cleaned of spilt grain and all relevant biosecurity requirements of that facility/premise complied with. On arrival at the destination, drivers must: -
    - Report to the weighbridge or other site-designated point, hand over the delivery note for the load and any evidence of the vehicle's three previous loads/cleaning records if required by the receiver.
    - Under no circumstances discharge their load before the documentation has been checked, sampling completed, and the vehicle weighed (where appropriate).
    - Obtain instructions identifying where to unload. Drivers should only discharge bulk product into the intake pit or other area, as instructed by intake staff, and should ensure that they leave the intake area in an acceptable state.
    - On arrival of a truck on site, receival facilities must ensure drivers are aware of the expected loading or unloading time. On site means when a truck joins a queue either inside or outside the facility.
    - If drivers are unsure about what grain to load/where to unload and cannot obtain advice at the loading point/destination, they must contact the supplier/consignor and not commence loading/unloading until they have had instructions that identify the correct facility to load from/into which to unload, respectively.
- Drivers must attend their vehicles / trucks whilst loading and unloading.
- All grain should be removed from the vehicle / truck after unloading, to the appropriate level of cleanliness.
- Receiving facility is responsible for providing a means for cleanout and disposal of residues at the drop off point. Sweepings, washings, and similar residues from vehicle bodies should be disposed of in a point designated and provided by the receival facility.
- If any grain is spilled during unloading the approximate quantity of the spillage must be noted by the Driver. This estimated quantity should be noted both on the receipt note to be returned to the consignor and on the delivery, document left with the recipient. (Records Required)
- If any grain cannot be unloaded and is redirected, the Driver must record the destination of the grain.

Monitoring:

- Rregular monitoring will be carried out, the frequency of monitoring will be based on the schedule of the work in the construction of the expansion, considering and avoiding the peak hours, and in coordination with the traffic authorities in the governorate.

4. Implementation of the Plan

This Implementation Plan outlines the role of individuals involved in the implementation of this Traffic Management Plan. Traffic control people (TCPs) will be on-site to set up and take down the lane closure and associated devices, assist with any incidents that may occur, and assist with access and egress into the work area as needed. During active work, trucks and vehicles will use the closed lane to access the work area.

4.1. Site Supervisor

The Site Supervisor or Silo Manager of Taramsa Silo will be responsible for conducting daily toolbox meetings, addressing issues as they occur, leading the crew, and being the point of contact with the EHCSS Representative. As part of his role, he will ensure that:

- Each silo member is familiar with the Traffic Control Plan
- Each silo member wears the required safety apparel.
- Each silo member has adequate training on the equipment they will be using.
- The work area is protected by implementing this TMP.

He will also be responsible for liaising with the Traffic Control Supervisor to inform them of the work schedule, day's activities, and to address any incidents, improvements or changes which need to be made.

4.2. Traffic Control Plan (TCP)

A traffic control plan (TCP) is a document that outlines the steps necessary to manage and control traffic in a workplace. The plan includes a section on emergency procedures, as well as how to deal with incidents or accidents that occur. A traffic control plan can also be a diagram or layout plan illustrating the arrangement of signage and devices used to manage traffic at your worksite. It is an important tool that helps traffic controller's safely and efficiently direct traffic around construction zones, temporary road closures, and other potential hazards. TCP also allows for allocating traffic control and information measures in response to a pre-defined scenario.

There are a variety of traffic control plans that are used to help regulate the flow of traffic and keep motorists safe. The typical traffic controls include:

- Give way signs: to indicate who has the right of way.
- Signages: used to warn motorists of potential hazards ahead.

- Speed limits: sets the maximum speed that vehicles are allowed to travel to ensure that vehicles are travelling at a safe speed.
- Traffic cones: used to direct traffic around a construction site or other hazard.
- Barricades: used to block off an area entirely
- Traffic controllers: used with other traffic controls, such as signs and cones, to help direct motorists safely through an area.
- Roundabouts: to regulate the flow of traffic
- Traffic lights: to control the sequence of traffic flow.
- One-way streets: to restrict the direction of traffic flow.
- Pedestrian crossings: to provide safe crossing points for road users.

4.3. Traffic Control Supervisor

Typically, there will only be 1 TCP on site as the work area is not on the travelled roadway. In these cases, the TCP will assume the role of, and be considered, the Traffic Control Supervisor. However, if more than 1 TCP is on site, such as during busy periods or if an incident occurs, a Traffic Control Supervisor will be named to provide support. Their name will be recorded on the Daily Traffic Control Log. The Traffic Control Supervisor (TCS) will be responsible for, but not limited to, the following tasks:

- Overseeing traffic control operations, ensuring traffic control is executed according to the Traffic Control Plan, and taking note of any improvements or changes that should be made.
- Ensuring compliance with the requirements BSS10 Occupational Health and Safety Regulations regarding supervision of TCPs
- Supervision and authority over all the TCPs on site
- Providing direction to TCPs
- Ensuring traffic control devices are in place, checked, maintained, and moved as required.
- Ensuring daily traffic control setups are documents and changes are identified in the daily traffic control log.
- Ensuring traffic concerns are reported to the Traffic Control Manager and/or Site Supervisor, as required.

On site, the TCS will also be responsible for ensuring all TCPs are:

- Carrying evidence of their current TCP certification.
- Wearing the required safety apparel and have the appropriate equipment.
- Performing traffic control duties competently and safely.
- Positioned in safe locations.
- Provided with rest breaks.

Appendix III: Occupational Health and Safety Management Plan (OHSMP)

1. Background

Occupational Health and Safety Management Plan (OHSMP) means a detailed plan proposed by the Borrower describing the organizational structure, planning activities, responsibilities, practices, procedures, processes, and resources for developing, implementing, achieving, reviewing, and maintaining an occupational health and safety policy complying with the Agreed Environmental Requirements.

2. OHSMP for Silos project includes the following:

- **Identifying the Hazards:** Identifying the specific hazards associated with construction of the expansion of Taramsa Silos as well operation of silos. Considering factors such as the design of the silo, maintenance programs, and the training and experience of workers entering confined spaces.

- **Controlling Risks:** Implementing measures to control the risks associated with working with silos. This may include following manufacturer's instructions for concrete slab preparation, locating silos away from houses, powerlines, and water holes, providing safety features such as roof platforms, ladder cages, and wire mesh guards, and installing ladders inside the silo for emergency exits.

- **Involving Management and Employees:** Ensuring that management and employees are actively involved in the development and implementation of the OHSM Plan. This includes providing leadership, participation, and resources necessary for the plan's success.

- **Planning the Safety Management System:** Developing a comprehensive plan that outlines the goals, objectives, and strategies for managing safety and health risks specific to silos construction and operation. This plan should align with the requirements of ISO 45001, which provides guidance on occupational safety and health management systems.

- **Implementing and Operating the Safety Management System:** Putting the plan into action by assigning roles and responsibilities, providing training, conducting inspections, and collecting hazard control data. This step ensures that the OHSMP is effectively implemented on the silo's construction project.

- **Monitoring, Evaluating, and Correcting the safety Management System:** Regularly review the plan to assess its effectiveness and make necessary adjustments. This includes monitoring the performance of the safety management system, evaluating it against expectations, and making corrections as needed.

- **Management Review of the Safety Management System:** Conduct a formal review of the plan to ensure that it is meeting the organization's goals and objectives. This step involves management's assessment of the OHSMP's performance and making improvements as necessary.

3. Legal Framework

World Bank Environmental and Social Standards

a) Environmental and Social Standard (ESS) 2: Labor and Working Conditions

The main objective of this standard is to promote safety and health at work, to promote the fair treatment, non-discrimination and equal opportunity of project workers and to protect project workers, including vulnerable workers such as women, persons with disabilities, children (of working age, following this ESS) and migrant workers, contracted workers and primary supply workers, as appropriate and to prevent the use of all forms of forced labor and child labor (Standard (ESS) of the World Bank).

b) Environmental and Social Standard (ESS) 4: Community Health and Safety

The main objectives of this standard is to anticipate and avoid adverse impacts on the health and safety of project-affected communities during the project life cycle from both routine and non-routine circumstance, to promote quality and safety, and considerations relating to climate change, in the design and construction of infrastructure, including dams, to avoid or minimize community exposure to project-related traffic and road safety risks, diseases and hazardous materials, to have in place effective measures to address emergency events, to ensure that the safeguarding of personnel and property is carried out in a manner that avoids or minimizes risks to the project-affected communities (Standard (ESS) of the World Bank).

More details about the legislation, including the applicable international and local legislation, are provided in chapter three of this report.

4. OHSMP Requirement

The cornerstone of an effective occupational health and safety management strategy is the promotion of increased employee wellbeing, health, and safety. The OHSMP attempts to reduce the risks to employees from work-related activities and ensures their work safety while they are on the job.

The following major categories of occupational hazards may be considered while conducting risk assessment, evaluation, and control:

- **Chemical hazards**: silo fumes, gases, and vapours.
- **Physical risks**: Noise, heat, cold, vibration, ionizing radiation, ultraviolet light, and workplace lighting.
- **Biological risks**: Mosquito-borne viruses, contaminants in potable water, and other water-borne risks like legionella.

- **Mechanical risks**: Risks of falling from heights, sudden disintegration or breakage of gears or large parts of silo filling machines.
- **Life threating risks**: Some of the previously mentioned risks, whether chemical, physical, biological, and mechanical, each of them contains risks that threating life such as inhaling toxic gases, sudden explosion of huge parts of machinery because of their disintegration, sudden fall from heights, exposure to electric shock, exposure to fire and collision with large vehicles or trucks located inside the silo. These risks are avoided as much as possible, and when they occur, they will be dealt with quickly with first aid by trained workers, with immediate transportation to the nearest health care unit.

A) Occupational Hygiene

The H&S expert must guarantee dedication to occupational health risk monitoring and reporting, as well as the implementation of controls to lower risk in line with all applicable laws and, whenever practical, with adherence to recognized best practices. Specific assessments of occupational hygiene will be performed using recognized procedures and relevant standards. For the following workplace health risks, ongoing evaluations must be done, and controls must be put in place as necessary.

✓ ***Sanitation and Good Hygiene***

H&S Expert is required to provide workers with suitable facilities including:

- A reasonable distance between restrooms and each workspace.
- Clean, well-maintained sanitation and hygiene facilities.
- Dining establishments with enough seating, tables, and facilities for hand washing and waste disposal.
- Potable water supplies accessible to all employees.

Additionally, employees are not permitted to misuse or harm any given sanitation or hygiene facilities or purposefully pollute work areas.

B) Safety

✓ ***Personal Protective Equipment (PPE)***

To safeguard employees and visitors from danger, the H&S expert must make sure that everyone wears or uses the personal protective equipment that is offered. According to the Environmental, Health, and Safety (EHS) Guidelines, General (EHS) Guidelines of the World Bank 2007 as shown in table (III.1), personal protective equipment will be fitted appropriately, and users will be trained on how to use it. All provided personal protective equipment must meet appropriate standards, be kept in good condition, and be replaced if it ever breaks down.

According to Environmental, Health, and Safety (EHS) guidelines, the available PPE to be provided include:

- Hearing protective devices, such as earmuffs and ear plugs

- Respiratory protective equipment
- Eye and face protection, such as safety glasses
- Safety helmets
- Fall arrest harnesses for working at heights
- Skin protection, such as gloves and gauntlets
- Clothing, such as high visibility vests and coveralls
- Footwear, such as safety boots and rubber boots.

Table (III.1) Recommended personal protective equipment for silo workers by hazard type according to the World Bank 2007 Environment, Health, and Safety (EHS) and Common Guidelines.

Objective	Workplace Hazards	Suggested PPE
Eye and face protection	Flying particles, molten metal, liquid chemicals, gases or vapors, light radiation.	Safety Glasses with side-shields, protective shades, etc.
Head protection	Falling objects, inadequate height clearance, and overhead power cords.	Plastic Helmets with top and side impact protection.
Hearing protection	Noise, ultra-sound.	Hearing protectors (ear plugs or earmuffs).
Foot protection	Falling or rolling objects, pointed objects. Corrosive or hot liquids.	Safety shoes and boots for protection against moving & falling objects, liquids, and chemicals.
Hand protection	Hazardous materials, cuts or lacerations, vibrations, extreme temperatures.	Gloves made of rubber or synthetic materials (Neoprene), leather, steel, insulating materials, etc.
Respiratory protection	Dust, fogs, fumes, mists, gases, smoke, vapors.	Facemasks with appropriate filters for dust removal and air purification (chemicals, mist, vapors, and gases). Single or multi-gas personal monitors, if available.
	Oxygen deficiency	Portable or supplied air (fixed lines). On-site rescue equipment.
Body/leg protection	Extreme temperatures, hazardous materials, biological agents, cutting and laceration.	Insulating clothing, body suits, aprons etc. of appropriate materials.

✓ ***Silo Gas***

The potential threat of silo gases represents as a type of hazard associated with silo filling. Gas formation can begin immediately after filling and can peak within two to four days after filling if not vented or exhausted. If workers must enter the silo during this time, they should be protected by wearing a respirator while maintaining both visual contact and using a wireless communication device with another person outside the silo.

✓ ***Noise Prevention***

The Occupational Safety and Health Administration (OSHA) recommends hearing protection when workers and bystanders are exposed to 85 decibels or more for an 8-hour workday. During silo filling, workers are exposed to high noise levels through unloading and blowering processes simultaneously. Sound levels of 100 dB or more for even short periods of time, can result in permanent hearing loss. Therefore, it requires the protection of workers in high-noise work areas can be protected by using Personal protective equipment (PPE) such as ear plugs or earmuffs can significantly reduce the noise level. Other interventions would include limiting the worker's exposure by maintaining the tractors and machinery in good condition and requiring that the workers rotate out of the high noise area after shorter work sessions of no more than 10-15 minutes for 100 dB levels.

✓ ***Fall Prevention***

To lessen the risk of a person falling from one level to another, a health and safety expert must ensure that all employees who participate in works where there is a risk of falling carry out those works in a controlled manner. H&S experts therefore carry out comprehensive risk assessments, checking the condition of ladders, handrails and cages and the integrity of the silo roof. In addition to ensuring that they are well trained in dealing with fall accidents. So, if a worker falls or is injured while working at heights, or suffers a heart attack, heat stroke, or sprains his ankle while on top of the silo, a rapid rescue will be carried out to safely lower the stricken individuals by trained silo workers on site as immediate assistance without relying on requesting external assistance, because any delay may be crucial to their health.

✓ ***Machinery inspection***

One of the main risks involved in filling the silo stems from the operator being exposed to numerous moving machine parts in a relatively crowded work area. These mechanical hazards include pinch, wrap, shear, and crush points as well as freewheeling parts hazards. Hazards on self-unloading wagons include a combination of moving aprons, beaters, conveyors or augers, and an assortment of chains and sprockets. To prevent injury incidents, all protective machinery shields must be in place, in addition to regular maintenance and permanent inspection of these machines. Workers also should wear comfortable and close-fitting clothing and under no circumstances. No one should be around while unloading process.

✓ ***Warning Signs***

The H&S expert must make sure that there is enough safety signs put on buildings and roadways to deter accidents, identify dangers, point out where fire and safety equipment is located, and provide instructions on what to do in an emergency.

✓ ***Driving Safety***

The H&S expert is required to make sure that anyone who is allowed to operate a vehicle in a silo area or a silo vehicle on a public road has a valid driver's license and is adhering to the applicable traffic laws for that type of vehicle.

All employees operating vehicles on silo property are required to follow all traffic regulations, adhere to road conditions, and follow any applicable traffic (transportation) management plans.

✓ ***Fire Safety Requirements***

- The quantity and size of staircases and emergency exits for fast evacuate.
- Regular drills in accordance with the fire safety plan, testing and monitoring of fire safety equipment on a regular basis, and training for fire wardens.
- Data processing rooms, telecommunication switches, and process control rooms—areas containing priceless or essential equipment—are protected by fixed extinguishing systems and fixed fire extinguishing/suppression systems.
- Employee Alarm Systems: By ensuring that alarm systems function correctly and that protocols are in place to notify employees of workplace emergencies, employee alarm systems can lessen the severity of workplace accidents and injuries.
- Portable fire extinguishers, which help reduce the damage caused by these fires. Fire extinguishers, when used correctly, can put out a minor fire or contain a fire until further assistance arrives, saving lives and protecting property.
- There is already a plan for escape routes, and evacuation in case of emergency in Taramsa Silo (Emergency evacuation plan Appendix VI).

✓ ***Fire Prevention Requirements***

- Regular upkeep of safety measures put on heat-producing equipment to avoid the unintentional igniting of combustible materials.
- Controlling the accumulation of flammable and combustible waste products.
- In the event of a major accident, as a huge fire in the Silo. The fire will be dealt with quickly and immediately, in addition to quickly requesting the nearest assistance from the Civil Defence Department in Qena, which is 11 km (19 min) away from the Taramsa Silo.

C) Security

- Workplace theft and assault prevention measures are implemented as part of a security plan.
- A security strategy with explicit guidelines on the use of force has been carefully created and put into action.
- The security crew has undergone background checks to make sure they have not been connected to any wrongdoing or abuse in the past. Security personnel are hired from both genders when suitable.
- Security personnel have received sufficient training in dealing with domestic violence and the use of force, and they are aware of the value of upholding both individual rights and the rights of entire communities.
- Body searches are only permitted under certain conditions, and professionally trained security personnel carry them out in the least invasive manner possible.
- Security personnel act appropriately toward employees.

✓ ***Access and site security***

The H&S expert shall restrict access to the silo area and install all essential safeguards, including fencing the area and erecting the requisite signage, among other things. The H&S expert oversees ensuring that all site security standards for this activity that were listed in the risk assessment are adequately executed.

✓ ***Site Induction and Site Safety Rules***

The H&S expert will conduct site orientations. The following are the arrangements for site inductions:

- Any new employee reporting to the work site will receive a briefing on the site safety rules, including the site logistics plan, hazards, evacuation procedures, emergency and first aid procedures, and the duties and responsibilities of all individuals on site. A Site Induction briefing, and Site Safety Rules will be developed in Arabic and in English.
- Visitors will receive a brief site induction (based on an oral or written form) and will be always accompanied during their visit to the site.
- All attendees of the Site Induction briefing will have their names recorded.

✓ ***Inspections of Workplace***

Weekly inspections must be performed. H&S Expert will conduct weekly inspections of the whole work site, paying particular attention to the following: equipment, scaffolds, small tools, lifting equipment, electrical lines, fire extinguishers, and first aid supplies. H&S Expert will maintain records of the inspections.

H&S Expert

- H&S expert is the main person who is responsible for health and safety of workers with the help of two other engineers.
- As needed, offers office H&S support and assistance.
- Make Weekly and monthly assessments and monitoring of the safety performance.
- Creates all required OHSAS 18001 Systems Document
- Creates fundamental H&S strategies, practices, and guidelines, etc.
- Establishes an inspection scheme and schedule that involves all levels of site supervision, office staff, and other parties exposed to the specified stage of the project. Effectively manages the safety personnel under his control and gives them the necessary direction and training as needed to maximize their effectiveness on site.
- Introduces a program for H&S training.
- Coordinates any incident's inquiry.
- Recognizes any patterns that emerge in incident investigations and makes sure that corrective measures have been agreed upon, taken, and recorded.
- Examine, assemble, analyze, and evaluate Key Performance Indicator data to identify significant severity potential incidents, causes, trends, and relationships of injury/illness, and all other unexpected occurrences.
- Examines the workplace using equipment for mechanical testing and visual observation to look for probable breaches of the H&S standards and to report them.
- Gathers information and creates reports on safety violation complaints and work-related accidents and fatalities.
- Examines accident, injury, and illness reports to identify problem areas relating to employee safety.
- Participate in all incident investigation committees, when necessary, as a team member.

D) Housing

✓ ***Construction workers housing***

While construction workers will be provided with their own accommodation facilities (rented apartments in the city of Qena as mentioned previously), which will conform to specifications and standards for workers' accommodation according to the IFC and the EBRD which was mentioned before.

✓ ***Visitors housing***

Visitors' facility, it serves as a rest stop for a day or two days for guests and VIP visitors, whether observers, followers, or officials from government ministries to follow up on the silo's work. As for the workers in the silo, there is no need to provide them with

permanent or even temporary housing, given that most of them are residents of the governorate and reside in their own homes near the silo.

- ***Visitors' facility specifications***
  - It is positioned to be at a reasonable distance of the workplace.
  - It is constructed with sufficient materials, maintained in good condition, kept clean, and devoid of trash and other waste.
  - Safe and simple transportation to the silo as the location of visitors' facility is inside the silo.

✓ ***Lightning Heating and Cooling***

- There is both natural and artificial illumination available, as well as emergency lighting.
- In accordance with the climate, sufficient ventilation and/or air conditioning systems are offered, as well as heating systems.

✓ ***Water***

- Workers always have access to a sufficient and convenient supply of free potable water.
- Drinking water fulfils national/local or WHO drinking water criteria. It is frequently checked. All tanks used to hold drinking water are built and oversized to keep the water inside from getting contaminated or polluted.

✓ ***Hand wash basins and showers***

- There are enough hand washing stations available for employees. Hand washing stations should have a sink and a tap, soap, and a sanitary way to dry hands.
- Workers have access to enough shower/bathroom facilities with enough cold and hot running water. The flooring in bathrooms and showers is composed of durable, washable anti-slip materials.

✓ ***Toilet and Drainage***

- All restrooms are well-lit, have decent ventilation or exterior windows, and have an acceptable quantity of hand wash basins. Additionally, there are convenient locations and easy access to all restrooms.
- The location of the resting-building is properly drained to prevent the buildup of stagnant water, keeping possible disease vectors like mosquitoes, flies, and others at bay.

✓ ***Liquid and solid waste***

- All waste products are properly disposed of, in accordance with regional or World Bank requirements, whichever is more demanding, and without having a major negative impact on the biophysical environment or the populations in the vicinity.

- Specific garbage collection bins are offered and regularly emptied. Standards might include having enough trash cans or having leak-proof, non-absorbent, rust- and corrosion-resistant containers that are protected from rodents and insects.
- Pest extermination, vector control, and disinfection are performed on a regular basis throughout the resting building in accordance with local requirements and/or good practice.
- Such containers are emptied at regular intervals (to be determined based on temperatures and volumes generated) to avoid unpleasant odors associated with decaying organic materials.

E) Medical Care

- It's critical to provide access to sufficient medical facilities for employees to preserve their health, to respond appropriately to medical crises, and to ensure that there is transportation to such facilities.
- The number of first aid kits in the first aid room should be sufficient for the number of workers wherever possible, in addition to the fact that there is a first aid service center near the silo that is open 24 hours a day, seven days a week and is easily accessible.
- First aid kits are stocked properly and include items like a pamphlet with general first aid instructions, like the HSE leaflet. simple guidelines for workplace first aid. Assorted size individually wrapped sterile triangle bandages, sterile eye pads, safety pins, disposable gloves, and medications including painkillers, fever reducers, and burns ointments. Individually wrapped sterile adhesive and non-medicated wound dressings. In addition, vaccines for scorpions and rodents are available due to the desert nature of the place.
- An appropriate number of employees are educated to administer first aid, helping to save lives and stop minor injuries from worsening.
- In case of a major accident, the case will be transferred to the nearest health care unit via an equipped ambulance belonging to the health care unit of Qena Governorate. For example, Qena University Hospital which is 11.4 km (20 min.) away from the Taramsa Silo.
- The remedial actions shall also take into account the status of the project worker in terms of wage level and age, the degree of injury or adverse impact and the number and age of dependents concerned.

5. Monitoring Plan for Occupational Health and Safety Risks

The usage of machinery, inhalation of grain, falls from heights, entanglement in grain-moving equipment, poisonous atmospheres from fumigation and fermenting grains, electrocution, fire breakouts, and grain dust explosions are all possible safety and health dangers during silo operation. This might have a negative impact on human health or result in fatalities. To create a successful plan of action and to guarantee compliance with the Occupational Safety and Health

Act of 2007, the monitoring plan's goal is to evaluate current controls in addition to possible health and safety hazards.

✓ ***Monitoring Strategy***

The main components of the monitoring schedule for workplace safety and health are:

- Producing reviews and reports on occupational safety and health.
- The identification of hazards through the examination of actions that pose a threat now or in the future.
- Ensuring that all mishaps and events that occur on the property are immediately reported and investigated.
- Maintaining records of events, accidents, and hazardous happenings; ensuring that situations that require reporting are sent to the health, safety, and environment specialist.
- Regular examinations of the building and its apparatus.
- Visual assessment and key employee interviews to find areas that need improvement.
- Completing and analyzing reports for risk, energy, and fire assessments
- Review of standards for fire safety training, fire drills, and safety awareness.
- A review of the workforce's health and safety education's efficacy.
- Action plans based on the risk assessment's key findings.
- Having emergency plans, escape routes, and safety signs, among other things.
- there are 3 trained workers on OHS affiliated to the receiving and storage department.

✓ ***Monitoring Frequency***

Medical monitoring is required, also providing new PPE to the workers every six months, conduct yearly fire and health and safety audits, hold quarterly fire drills, and make sure that all serviceable equipment is maintained on schedule.

✓ ***World Bank accidents and diseases monitoring***

- The employer should establish procedures and systems for reporting and recording:
    - Occupational accidents and diseases
    - Dangerous occurrences and incidents
      These systems should enable workers to report immediately to their immediate supervisor any situation they believe presents serious danger to their life or health.
- The systems and the employer should further enable and encourage workers to report to management all:
    - Occupational injuries and near misses

- Suspected cases of occupational disease
- Dangerous occurrences and incidents

- All reported occupational accidents, occupational diseases, dangerous occurrences, and incidents together with near misses should be investigated with the assistance of a person knowledgeable/competent in occupational safety. The investigation should:
  - Establish what happened.
  - Determine the cause of what happened.
  - Identify measures necessary to prevent a recurrence.
- Occupational accidents and diseases should, at a minimum, be classified according to Table (III.2). Distinction is made between fatal and non-fatal injuries. The two main categories are divided into three sub-categories according to time of death or duration of the incapacity to work. The total work hours during the specified reporting period should be reported to the appropriate regulatory agency.

Table (III.2): Occupational accident reporting about fatal and non-fatal injuries.

a. Fatalities (number)	b. non-fatal injuries (number)	c. Total time lost non-fatal injuries (days)
a.1 Immediate	b.1 Less than one day	
a.2 Within a month	b.2 Up to 3 days	c.1 Up to 3 days
a.3 Within a year	b.3 More than 3 days	c.2 More than 3 days

Figure (III.1): Fire equipment, Fire exit, warning, and prohibition safety and First aid signs.

Figure (III.2): Personal Protective Equipment (PPE).

7. Implementation of OHSMP

Implementation of OHSMP in Silos project involves several steps and considerations including the following:

a) **Establishing a Safety Culture:** Make safety and health a core value in the workplace. This involves creating a culture where safety is prioritized, and everyone understands its importance.

b) **Employee / Workers Participation:** Management should lead by example and actively involve employees /workers in the development and implementation of the OHSMP. This can be done through regular communication, training, and encouraging employee feedback and participation.

c) **Defining OHSM Competence:** Assessing the competence needed for employees and contractors to effectively implement the OHSMP. Providing training, or other methods to ensure that employees and contractors are aware of the OHSMP requirements and understand their importance.

d) **Developing a Reporting System:** Implementing a reporting system that allows employees to report any safety and health issues or concerns. This system should be

easily accessible and encourage timely reporting. There is already a Grievance Mechanism system and GM channels for workers in the Silo.

e) **Providing Training:** Ensure that all employees / workers receive appropriate training on safety procedures, hazard identification, and emergency response protocols. Training should be ongoing and tailored to specific job roles and tasks. Training take place in the training center in EHCSS in Cairo.

f) **Conducting Inspections:** Regularly inspect the workplace to identify hazards and assess the effectiveness of safety measures. Inspections should be documented, and any identified hazards should be addressed promptly. Inspections are carried out according to planned schedules by EHCSS.

g) **Implementing Hazard Controls:** Take steps to control and mitigate identified hazards. This may involve implementing engineering controls, administrative controls, or personal protective equipment (PPE).

h) **Monitoring and Reviewing:** Continuously monitor and review the effectiveness of the OHSMP. This can be done through regular audits, incident investigations, and feedback from employees. Make necessary adjustments and improvements to the plan as needed. The monitoring and reviewing are carried out internally in the Silo according to planned schedules by EHCSS.

i) **Compliance:** Ensure compliance with relevant occupational health and safety regulations and standards. Stay updated on any changes in regulations and make necessary adjustments to the OHSMP to remain compliant.

j) **Documentation:** Maintain proper documentation of the OHSMP, including policies, procedures, training records, incident reports, and any other relevant documentation. This documentation should be easily accessible and regularly reviewed.

Appendix IV: Sexual Exploitation Abuse and Sexual Harassment Plan

Table (IV): SEA/SH Prevention and Response Action Plan:

Action to Address SEA/SH Risks	Who is Responsible for Action	Project Update/ Comments	Notes	Ongoing Risk Management & Timeline	Estimated Budget
Agree with PMU/EHCSS and MALR on Code of Conduct (CoC) that is focused on SEA/SH **Clearly define the SEA/SH requirements and expectations in the bid documents.** **Biding documents should:** • **emphasize that the construction company must comply with all relevant laws and regulations concerning sexual harassment and abuse prevention in the workplace.** • **Specify that the construction company must establish clear and accessible reporting mechanisms for incidents or suspicions of sexual abuse and harassment**	PMU, contractor and silos management		Code of conduct should draw on national legislation and assessment conducted as part of ESMP and should include clear language to prohibit sexual harassment at workplace. COC should be disclosed in a clear place visible for workers and silos users.	All staff must be regularly informed about CoC in meetings and other venues. Relevant staff and workers including of the contractors should sign the CoC.	As part of the contract budget

Action to Address SEA/SH Risks	Who is Responsible for Action	Project Update/ Comments	Notes	Ongoing Risk Management & Timeline	Estimated Budget
Sensitize PMU/ EHCSS Team including Supervising Engineer and Silo managers/staff on the SEA/SH risks at project level.	PMU, contractor and silos management		Topics should encompass exclusions, and the misuse of power based on gender particularly toward female clients, as well as ensuring fair payment practices to minimize gender disparities.	• Prior to the construction • Prior to Wheat Season (March-April) and throughout operation of the silo	As needed brining in experts in GBV and SEA/SH to conduct the sensitization sessions

Action to Address SEA/SH Risks	Who is Responsible for Action	Project Update/ Comments	Notes	Ongoing Risk Management & Timeline	Estimated Budget
Establish GRM mechanism for SEA/SH cases. as per Stakeholder Engagement Plan (SEP) - **Setup safe uptake channels for SEA/SH that is separate and confidential.** - **Ensure coordination and collaboration with National Council for Women is done to refer cases as needed.** - **Disclose the information related to NCW hotline to allow access to safe referral to different services in case of SEA/SH incidents** - **Ensure the information is disseminated at silo level and all staff and users are aware of how to report SEA/SH cases.**	PMU, contractor and silos management		Focal Point for social aspect with good knowledge about SEA/SH needs to be assigned by the contractor and the Supervision engineer	• Disseminate information to staff at silo level. • Regularly assess confidentiality of reporting and introduce any enhancement to reinforce the survivor centered principles. • Ongoing monitoring and reporting on GRM to verify it is working as intended. • Follow a survivor centered approach to ensure, as appropriate, that reported cases/survivors are receiving the appropriate services.	Travel cost to silo. Posters and others to disseminate SEA/SH uptake channel in silo.

Action to Address SEA/SH Risks	Who is Responsible for Action	Project Update/ Comments	Notes	Ongoing Risk Management & Timeline	Estimated Budget
Map out SEA/SH prevention and response services and introduce the project SEA/SH risks to services providers namely: - **Contact person at National Council for Women to support in case management Procedures.** - **Contacts related to other services (health, legal, psychosocial) in coordination with NCW.**	PMU, contractor and silos management		Coordinate with National Council for Women to identify contact person and inform them of SEA/SH risks at project level.	• Update mapping as appropriate	Travel cost to silo. Training cost of contact persons.
As part of SEP, conduct consultations with affected population and relevant stakeholders, specifically women farmers, and women staff to inform them about SEA/SH risks, measures in place to address (e.g. CoC, GRM and referral pathway). Given the cultural sensitivity, it is preferable to have separate meetings for women and girls.	PMU, contractor and silos management		Coordination with MALR to engage with women farmers.	• Monitoring of implementation of Stakeholder Engagement Plan. • Ongoing consultations	Cost of implementing the SEP.
				Report as part of the ESF reports	Cost included in the contractor's agreement.

Appendix V: Taramsa Subproject Documents and Figures

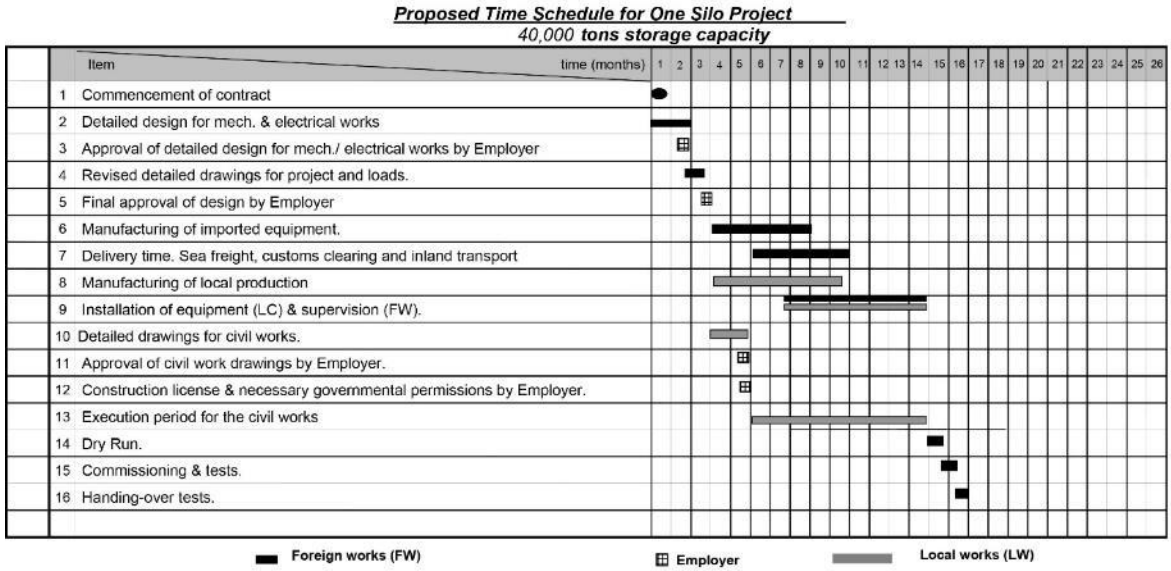


Figure (V.1): Time Schedule for the Silo project.

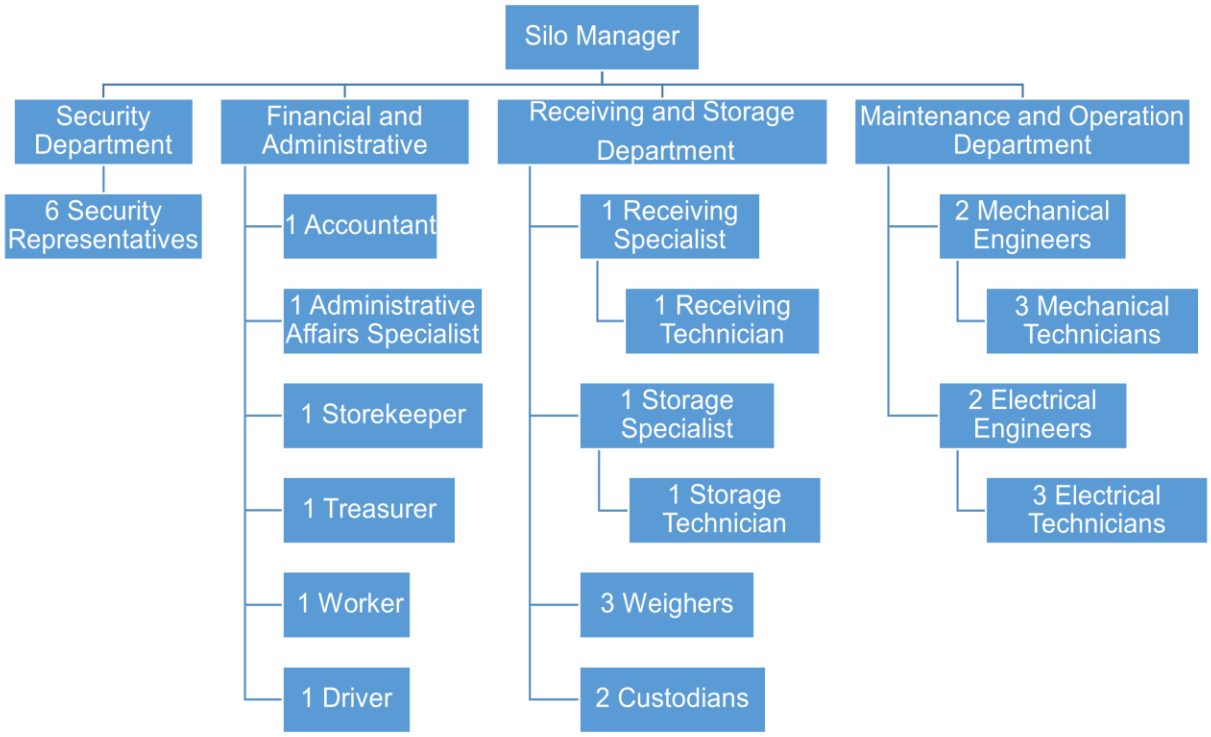


Figure (V.2): Administrative structure of Taramsa Silo Complex in Qena.

Figure (V.3): Some photos from Taramsa Silo Complex in Qena.

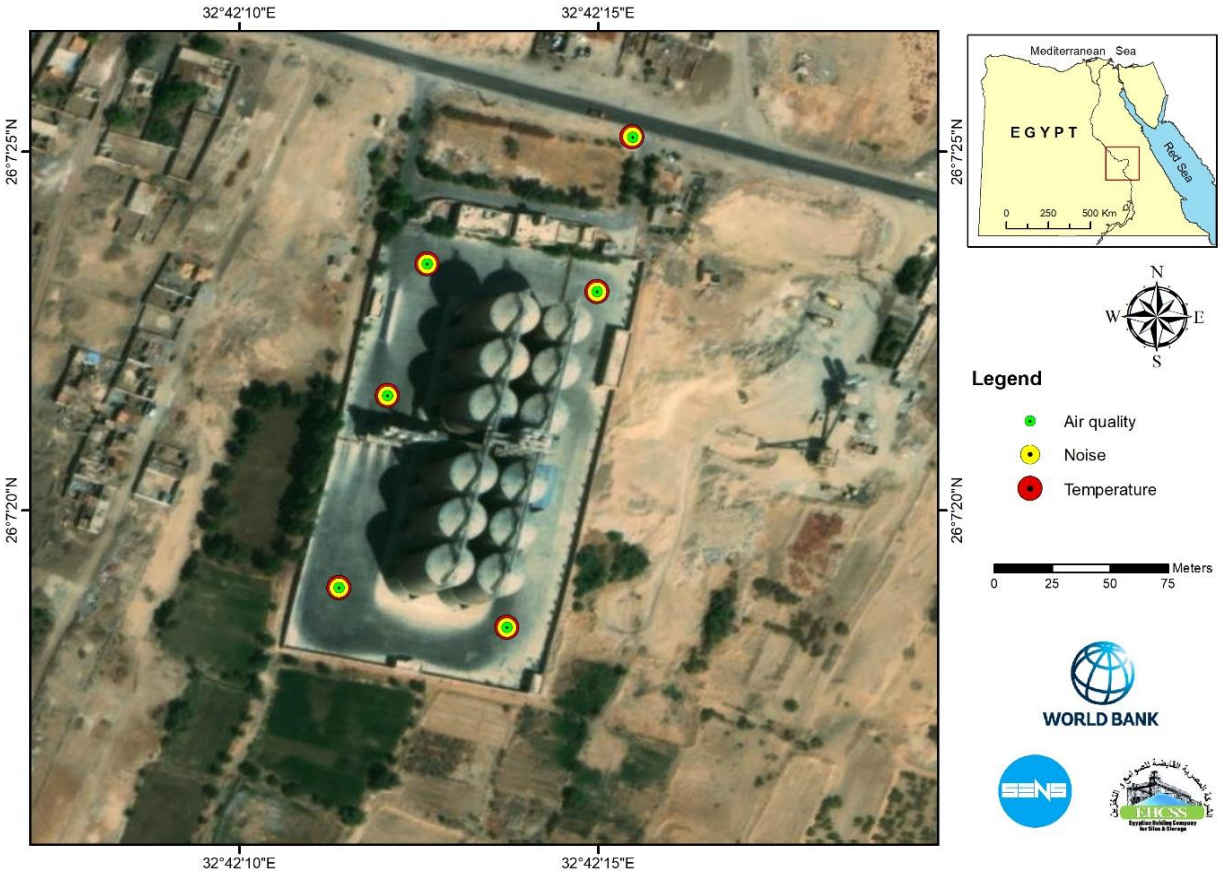


Figure (V.4): General distribution of sampling sites for monitoring program for Taramsa Silo.

Figure (V.5): Some photos of consultation at Taramsa Silo Complex in Qena.

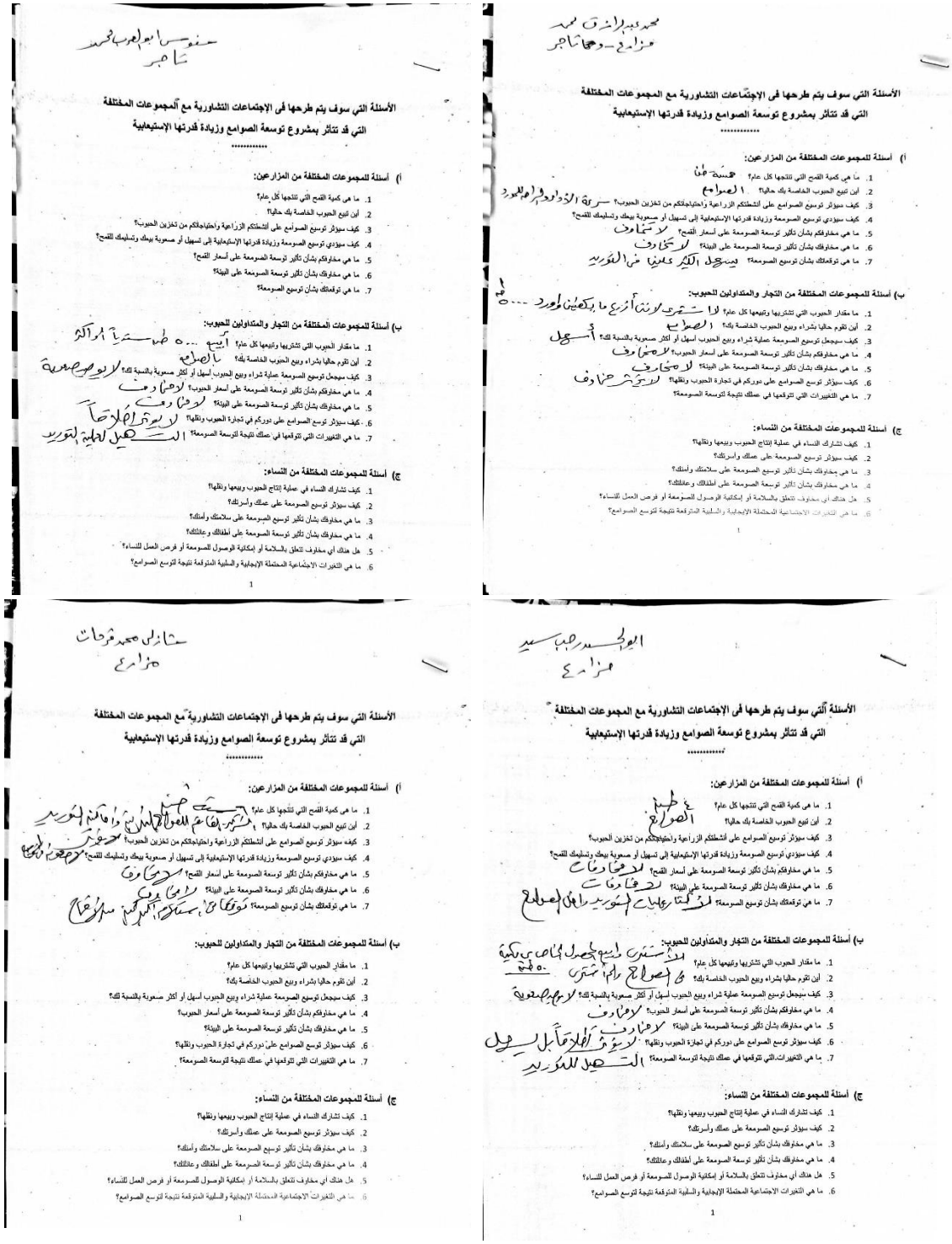
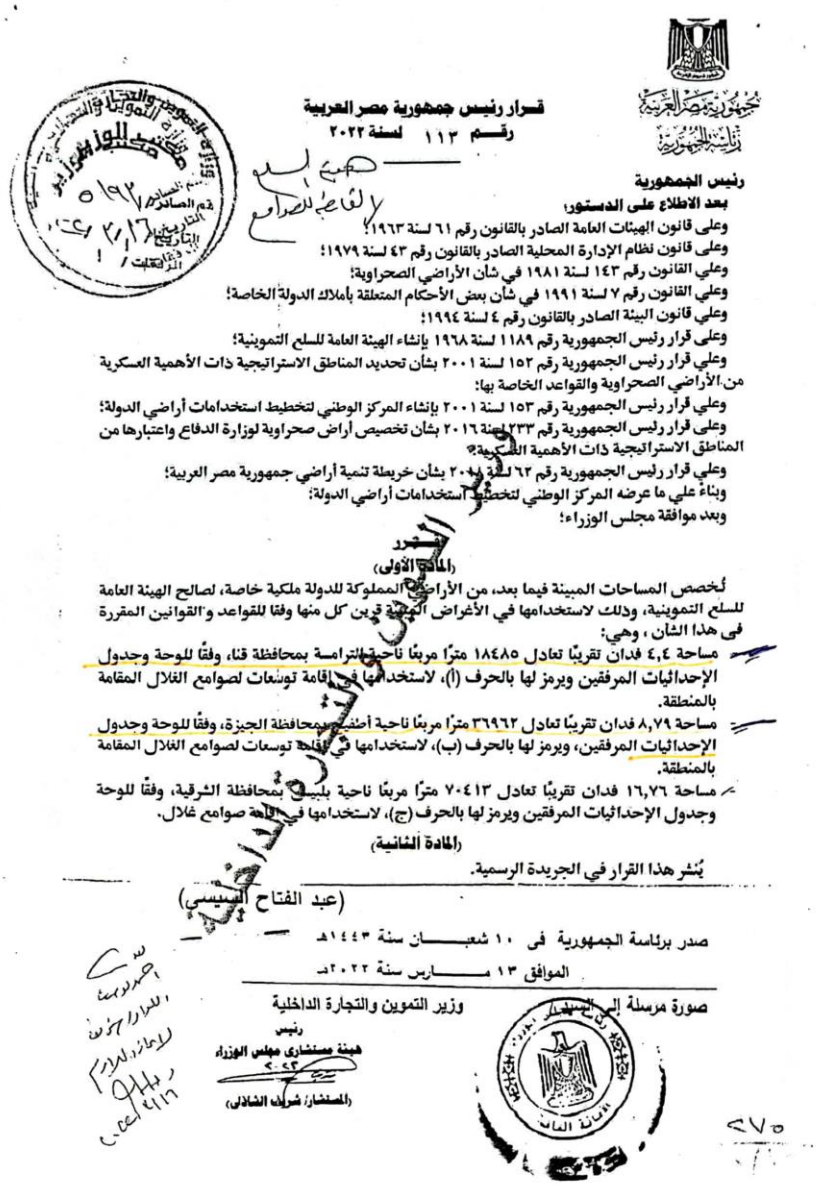


Figure (V.6): Examples of the consultations feedback at Taramsa Silo Complex in Qena.



جمهورية مصر العربية
رئاسة الجمهورية

قرار رئيس جمهورية مصر العربية
رقم ١١٣ لسنة ٢٠٢٢

رئيس الجمهورية

بعد الاطلاع على الدستور؛

وعلى قانون الهيئات العامة الصادر بالقانون رقم ٦١ لسنة ١٩٦٣؛

وعلى قانون نظام الإدارة المحلية الصادر بالقانون رقم ٤٣ لسنة ١٩٧٩؛

وعلي القانون رقم ١٤٣ لسنة ١٩٨١ في شأن الأراضي الصحراوية؛

وعلي القانون رقم ٧ لسنة ١٩٩١ في شأن بعض الأحكام المتعلقة بأملاك الدولة الخاصة؛

وعلي قانون البيئة الصادر بالقانون رقم ٤ لسنة ١٩٩٤؛

وعلى قرار رئيس الجمهورية رقم ١١٨٩ لسنة ١٩٦٨ بإنشاء الهيئة العامة للسلع التموينية؛

وعلي قرار رئيس الجمهورية رقم ١٥٢ لسنة ٢٠٠١ بشأن تحديد المناطق الاستراتيجية ذات الأهمية العسكرية من الأراضي الصحراوية والقواعد الخاصة بها؛

وعلي قرار رئيس الجمهورية رقم ١٥٣ لسنة ٢٠٠١ بإنشاء المركز الوطني لتخطيط استخدامات أراضي الدولة؛

وعلى قرار رئيس الجمهورية رقم ٢٣٣ لسنة ٢٠١٦ بشأن تخصيص أراض صحراوية لوزارة الدفاع واعتبارها من المناطق الاستراتيجية ذات الأهمية العسكرية؛

وعلي قرار رئيس الجمهورية رقم ٦٢ لسنة ٢٠٠١ بشأن خريطة تنمية أراضي جمهورية مصر العربية؛

وبناءً علي ما عرضه المركز الوطني لتخطيط استخدامات أراضي الدولة؛

وبعد موافقة مجلس الوزراء؛

قرر

(المادة الأولى)

تُخصص المساحات المبينة فيما بعد، من الأراضي المملوكة للدولة ملكية خاصة، لصالح الهيئة العامة للسلع التموينية، وذلك لاستخدامها في الأغراض المبينة قرين كل منها وفقا للقواعد والقوانين المقررة في هذا الشأن ، وهي:

مساحة ٤,٤ فدان تقريبًا تعادل ١٨٤٨٥ مترًا مربعًا ناحية تهالترامسة بمحافظة قنا، وفقًا للوحة وجدول الإحداثيات المرفقين ويرمز لها بالحرف (أ)، لاستخدامها في إقامة توسعات لصوامع الغلال المقامة بالمنطقة.

مساحة ٨,٧٩ فدان تقريبًا تعادل ٣٦٩٦٢ مترًا مربعًا ناحية أصفون بمحافظة الجيزة، وفقًا للوحة وجدول الإحداثيات المرفقين، ويرمز لها بالحرف (ب)، لاستخدامها في إقامة توسعات لصوامع الغلال المقامة بالمنطقة.

مساحة ١٦,٧٦ فدان تقريبًا تعادل ٧٠٤١٣ مترًا مربعًا ناحية بلبيس بمحافظة الشرقية، وفقًا للوحة وجدول الإحداثيات المرفقين ويرمز لها بالحرف (ج)، لاستخدامها في إقامة صوامع غلال.

(المادة الثانية)

يُنشر هذا القرار في الجريدة الرسمية.

(عبد الفتاح السيسي)

صدر برئاسة الجمهورية في ١٠ شعبان سنة ١٤٤٣هـ
الموافق ١٣ مارس سنة ٢٠٢٢م

صورة مرسلة إلى السيد المستشار
وزير التموين والتجارة الداخلية
رئيس
هيئة مستشاري مجلس الوزراء
(المستشار/ شريف الشاذلي)

Figure (V.7): Decree for Taramsa Silo in Qena.

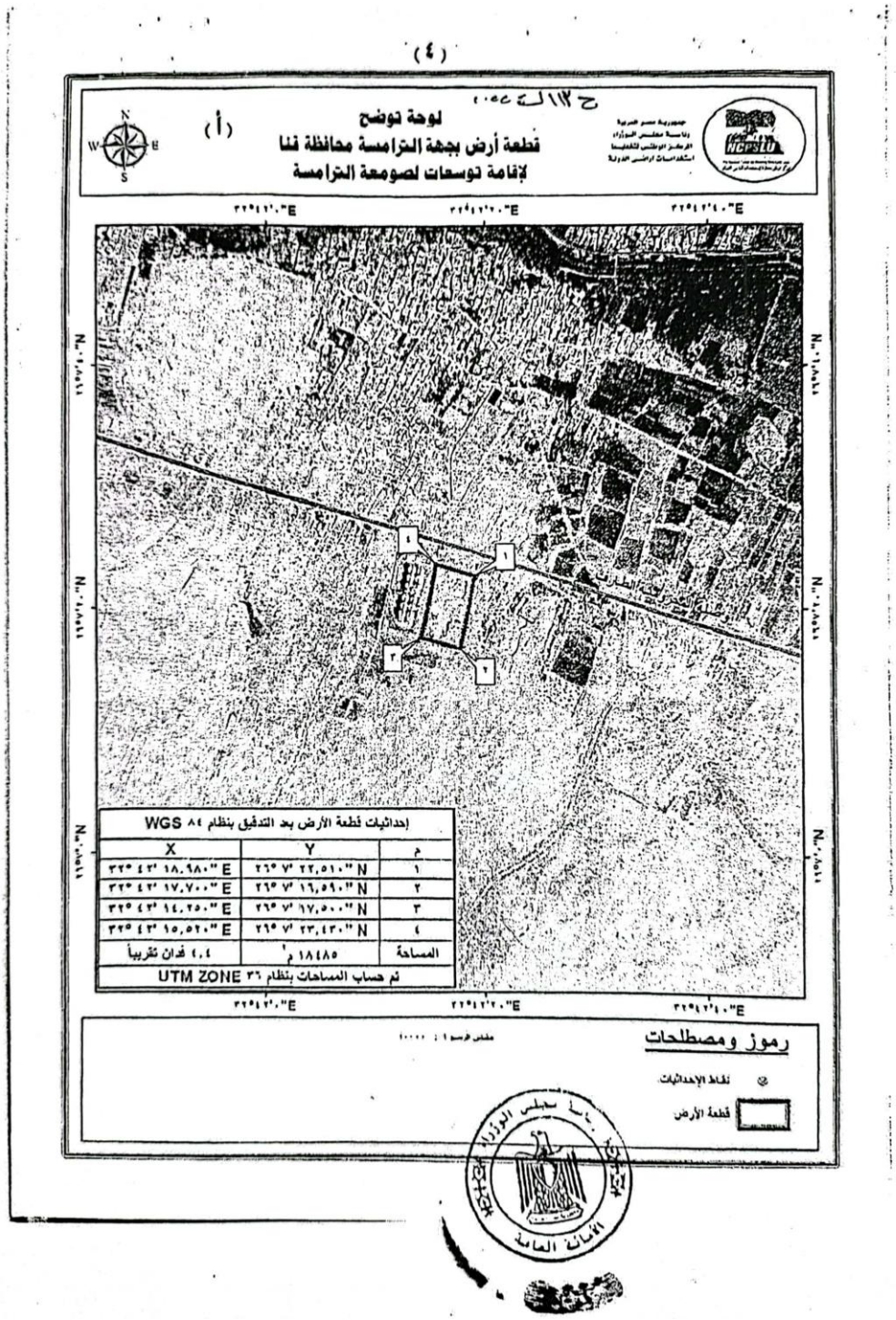


Figure (V.8): Decree for Taramsa Silo in Qena.

وزارة الزراعة وإستصلاح الأراضى
الإدارة المركزية لفحص واعتماد التقاوى
الإدارة العامة لمعايير وتطوير التقاوى
إدارة التراخيص

CENTRAL ADMINISTRATION FOR SEED CERTIFICATION

ترخيص رقم(١٩٧٩٢)
بالإتجار وتخزين تقاوى الحاصلات الزراعية
طبقاً لأحكام القانون رقم ٥٣ لسنة ١٩٦٦

يصرح لشركه/ المصريه القابضه للصوامع والتخزين

السمه التجاريه / صومعه الترامسه

بمحله/محلها الكائن فى / طريق قنا المحروسه الغربى - قريه الترامسه

عنوان المخزن وسعته/ نفس العنوان - ٢.٥م ×٢.٥م ×٣.٥م

بمحافظة (قنا) بالإتجار وتداول وتخزين تقاوى الحاصلات طبقاً للمادة (٥٦) من القانون رقم ٥٣ لسنة ١٩٦٦ والقرارات الوزارية المنفذة لها.

ويسرى هذا الترخيص لمدة (خمس سنوات)

تبداء فى : ٢٠٢٣/٥/٣١ وتنتهى فى : ٢٠٢٨/٥/٣٠

المدير المسئول / الحسين سيف الدين حسن عويضه

تحريراً في : ٢٠٢٣/٥/٣١ روجع م /

رئيس	مدير عام	مدير
الإدارة المركزية لفحص واعتماد التقاوى	معايير وتطوير التقاوى	إدارة التراخيص
د/ أحمد محمد أحمد عضام وكيل وزارة الزراعة رئيس "د/ أحمد محمد عضام" الإدارة المركزية لفحص واعتماد التقاوى	"د/ أحمد على حسن"	"م/ انصاف ابراهيم"

٨ شارع الجامعة القاهرة - الجيزة ت: ٣٥٧٢٠٨٣٩ - ٣٥٧٣٠٣٢٨ (٢٠٢) فاكس: ٣٥٧٢٥٩٩٨ (٢٠٢)
8 Elgamaa St., Giza 12211 Egypt. Tel: (202)35720839 - 35730328 Fax: (202)35725998
E-mail: casc.egypt@hotmail.com, ahmed.casc@gmail.com

CASC 0008366

Figure (V.9): License for the kiosk.

Contractor Code of Conduct:

- All employees, associates, and representatives commit to treating women, children (under the age of 18), and men with respect, regardless of race; color; language; religion; political or other opinion; national, ethnic or social origin; sexual orientation or gender identity; disability; birth or other status.
- GBV constitutes acts of gross misconduct and is therefore grounds for sanction, which may include penalties and/or termination of employment. All forms of GBV are unacceptable, regardless of whether they take place on the worksite, the worksite surroundings, or off-site. In addition to the potential sanctions listed above, legal prosecution will be pursued, if appropriate, for any employees, associates, and representatives alleged to have committed GBV.
- Demeaning, threatening, harassing, abusive, or sexually provocative language and behavior are prohibited among all company employees, associates, and representatives.
- Sexual favors, making promises or favorable treatment dependent on sexual acts are prohibited.
- Unless there is full consent by all parties involved, sexual interactions between the company's employees (at any level) and members of the surrounding communities are prohibited. This includes relationships involving the withholding or promise of any kind of reward.
- All employees, including sub-Contractors are expected to report suspected or actual GBV by a fellow worker, whether in the same company or not. Reports must be made in accordance with GBV allegation procedures.
- All employees are required to attend an induction training course prior to commencing work on site to ensure they are familiar with the GBV Code of Conduct.
- All employees must attend a mandatory training course once a month for the duration of the contract starting from the first induction training prior to commencement of work to reinforce their understanding of the institutional GBV Code of Conduct.
- All employees will be required to sign an individual code of conduct confirming their agreement to support GBV activities.

I do hereby acknowledge that I have read the foregoing GBV Code of Conduct, and on behalf of the company agree to comply with the standards contained therein. I understand my role and responsibilities to prevent and respond to GBV. I understand that any action inconsistent with this Code of Conduct or failure to act mandated by this Code of Conduct may result in disciplinary action.
Company Name:

Signed by: Title: Date:

Document (V.10): Contractor Code of Conduct.

The detailed code of conduct is present in the project LMP.

Appendix VI: Emergency Evacuation Plan

The evacuation plan is considered one of the important means of civil protection requirements that aims to reduce human losses to the minimum possible extent by removing all people present, without exception, from inside buildings or dangerous and vulnerable areas to an area where security and safety are available.

1. Objectives of the Evacuation Plan

Reducing or preventing human losses to the least possible extent, whether injuries or deaths, by evacuating the building of its occupants, preventing any overcrowding in escape routes, preserving property to limit the area of the event, and working to prevent it from spreading to another area.

- Confront the event in an optimal way to reduce losses to a minimum.
- Study the causes of the event (positives - negatives) and work to avoid the negatives.
- Working to restart the facility safely.

2. Reasons for Evacuation

The building is evacuated in the event of an emergency, such as (a fire, a building collapse, or the spread of smoke).

3. Evacuation Direction

Evacuation is always carried out downward towards the surface of the ground through escape routes (which are the transportation paths taken by the occupants of the building from any point in it to outside the building in the open air on the public road or in a safe place), and it is prohibited to evacuate upward to the top of the facilities and buildings except in special cases.

4. Plan Elements

Forming a special committee consisting of a chairman and a group of members responsible for managing and implementing the evacuation plan. It consists of building employees, for example (mechanical engineer, electrical engineer, occupational health and safety expert, security specialist, receiving specialist, mechanical technician, electrical technician). This committee is devoted to the following: supervising the building's civil protection plan, organizing civil defense services to confront emergency situations, calling external assistance, and assessing the situation, organizing building evacuation operations and ensuring that each individual is aware of his role at the time of the accident, ensuring the adequacy of civil protection devices to perform their mission by continuing experiments and evaluating them and avoiding what is revealed.

The individuals participating in the evacuation plan are divided into groups and each group is assigned to a specific task:

- Guidance and counselling group (works to direct people to nearby escape routes).
- Organization group (organizing the evacuation process on floors).
- Anti-rebound group (located at the building exits to prevent entry into the building).
- Confrontation group (which is the fire and rescue group).
- Aid group (working to provide aid in the safe area).
- A group of technicians (represented in gas, plumbing, elevators, air conditioners, and switches).
- Inspection group (working to ensure that there are no people in the building after the evacuation process).

5. Implementing the Evacuation Plan

- Ensure that everyone who contributes to the evacuation plan is trained on an ongoing basis so that they can perform their role and act automatically in times of danger.
- It is necessary to have explanatory signs or guide signs drawn with arrows that guide everyone to what they must do when implementing the evacuation plan. They should be in four colors (red - green - yellow - blue), and each color leads to a path that leads to an exit door or corridor to ensure the flow of workers. On the exits evenly.
- There are specific instructions to be followed when implementing the evacuation plan in terms of arranging the landing of each floor separately in an organized manner to ensure that individuals are not exposed to injury.
- Providing a place for gathering, which could be outside the building as a safe place at the expense of what circumstances may require at the time of danger (to leave a safe distance between it and the building, equipped with an ambulance unit for the injured with means of communication, and the presence of a number of security personnel at the gathering place to prevent entry or exit any people except after making an inventory of those present and identifying the people who are likely not to leave the building).

5.1. In the Event of a fire

The following must be followed:

- Tight control of fire sites and preventing the presence of non-specialists at the fire site.
- Disconnect the electrical current.
- Close the gas and fuel valves if any.
- Inform firefighting unit in the district about the emergency
- Directing and guiding fire and rescue vehicles and officials from outside the building to the fire site.
- Evacuating infected individuals from the site.
- Evacuate all people present in the place.
- Providing first aid to the injured.

- Fighting fires using existing firefighting methods and equipment.
- Prevent the spread of fire by removing any flammable materials.
- Follow up on the situation and inform the operating rooms about its developments.
- Maintaining the morale of individuals and announcing the nature of the situation and the danger to which they are exposed.

5.2. Actions Taken upon the Arrival of Firefighters

1) The site official gives an initial statement of the position explaining:

- The location of the fire or its starting area.
- The exact sources of the fire.
- Ensure that the electrical current is disconnected.
- Ensure that the fuel supply is disconnected if there are gas cylinders in the buffet.
- Individuals trapped behind doors or trapped by fire.
- Injured individuals to try to provide first aid or transfer them to hospital for treatment in the event of serious injuries.

2) Assisting the firefighting forces with personnel and equipment if requested

3) The presence of the person in charge of the site always next to the head of the fire brigade to provide him with information if requested.

5.3. Actions Taken after Completing the Firefighting Process

- Loss inventory (individuals - equipment - materials - fire pumps).
- Restoring the situation to what it was before the fire (removing the accumulated water from the extinguishing process - pulling the equipment and materials that were extinguished outside the place to ensure that they do not ignite again).
- Fire report (writing a detailed report on the incident and submitting it to the security official to indicate the negatives and positives of the incident, along with an evaluation report on the measures taken regarding the incident or after its end).

5.4. In the Event of an Earthquake

- The situation must first be calmed, and panic removed from the souls of the people present in the building, and they must be directed to remain in their places while taking shelter under the desk or tables to protect them from injury because of falling hanging objects, or to take shelter under the concrete beams in the building's construction.
- After the earthquake ends, the security team manager directs the team members to the exit points that were not affected by the earthquake, then implements the evacuation plan as mentioned previously.

Appendix VII: Grievance Log Form

Ref No.	How Was grievance submitted	Classification of complaints	Date of Submission of Grievance	Name and Contact Information	Description of Grievance	Actions Taken to Resolve the Grievance	Mean of Communication for the Solution reached	Has grievance been resolved (Y/N) if not explain why

Appendix VIII: Current Procedure for Fire and evacuation plan

Current Procedure for Fire and evacuation plan:

The existing facility includes the following to reduce risks and fire explosions:

- There is a dust filter system to suppress dusts and reduce risks of fire and explosion
- All filters for dust must be activated before any machine starts operating in the silo
- There is heat thermometer to calculate heat in silos and there is a ventilation system to adjust the weather condition within the silo.
- The bucket elevators have heat sensors as well
- The silos include systems to reduce impact of explosion (design phase) including windows and gates
- The silo conveyers and system include plastic windows that release pressure from the silo.
- There is an alarm system.
- Guidelines attached to walls on fire fighting
- The presence of water firefighting system
- Presence of FM 200 and FMD fire extinguishers in control room and self-activated fire extinguisher/system
- Presence of CO2 fire extinguisher in electricity room and self-activated fire extinguisher/system
- Presence of water hose in machine towers

Firefighting and Evacuation procedure:

- Responsible personnel: OHS specialist:
- Fire in electricity room or control room:
    - In case of fire, the heat sensors and smoke detector technologies will be activated.
    - An alarm system/awareness system will be activated (in the form of noise)
    - The self-activated firefighting system will be activated in electricity rooms and in control rooms.
- Fire in machine tower:
    - In case of fire in machine tour: there are water hose /extinguishers in each floor of the tower.
- In case of heat change within silo:
    - The sensor for heat change within the silo is activated
    - An alarm system is activated and reaches the control system
    - The OHS specialist and trained workers (15 worker) will access the machine tower to manually open-air gates to reduce pressure in silos.

There are gates around the silos to reduce pressure in addition to other gates that can be opened manually.
    - Water hoses are present on machine tower and are used to suppress the fire.
- When fire events occur the OHS Specialist and trained workers split into groups to activate water hose/extinguishers and distribute fume masks to workers and a group to notify the Qena firefighting unit (٨,٤ km drive), police inspection unit (9km drive) and ambulance unit (1.5 km drive).
- There are also firefighting measures signs added on the walls
- The Security guard working for the police unit also notifies the firefighting unit through walkie talkie
- Silo gate and area are quickly emptied to allow the firefighting unit to enter.

Procedure evacuation in case of fire for workers and clients:

- The trained workers provide direction for exist and evacuation areas
- There are arrows indicating exist areas on walls.

In case of injuries:

- The OHS Specialist and 2 trained workers perform First Aid/CPR.
- The ambulance located at 1.5km drive from the silo site transfers injured to Qena University Hospital located at about 11.4km drive away

Existing facility OHS procedures

Procedure for silo workers inside silo:

1. Gains are emptied before the worker enters the silo
2. The silo system/machineries are turned off/shut down before the worker enters the silo.
3. OHS Specialists reviews safety measures with cleaning workers before entering the silos.
4. Worker adheres to safety belt and filter mask.
5. Worker accesses the silo from a gate/door. He enters using safety belt and filter mask and he has a ladder.

Silo workers working at height:

- Workers on machine towers are not at risk of falling from height as the towers have barriers and safe floor to walk. The silos gates are linked to a rope. This rope can be pulled by the worker to open those gates.