
**Submitted to:**

Suez Canal Container Terminal
Help define Egypt's future every day

**Suez Canal Container Terminal (SCCT)**
**Engineer: Ahmed Sharaby**
**Phone:** (+20) 66 3258 970
**Fax:** (+20) 66 3258 960
**Mobile: (+20**) 66 3258 970
**East Port Said, Special Free Zone, East Tafraya, Port Said Governorate**
**Link:** https://scct.com.eg
**Email:** Ahmed.Sharaby@scctportsaid.com

# Environmental and Social Impact Assessment for the Expansion of the Suez Canal Container Terminal in East Port Said

## January 2023

**Submitted by:**

EcoConServ ENVIRONMENTAL SOLUTIONS

**EcoConServ Environmental Solutions**
Telephone: 0020-2736 4818
Fax: 0020-2736 5397
12 El Saleh Ayoub St., Zamalek, Cairo, Egypt
Website:
http://www.ecocohttp://www.ecoco/http://www.ecoco
www.ecoco/http://www.ecoco/nserv.com
Email: geneena@ecoconserv.con

# Table of Contents

# List of Illustrations

# List of Tables

# Executive Summary

## Project Background

The Suez Canal Container Terminal, located in East Port Said Port, Egypt is a joint terminal with APM Terminals owning a 55% stake in shares and being in management and operational control.

With a total pavement length of 2.4 km and a courtyard depth of 500 meters, it was developed on the basis of two equal phases of a concession agreement signed with the Egyptian Government with the start of operation of the second phase in 2013.

The project includes the development and operation of two quay walls recently constructed by the government to the south of the current station, with a total berth length of 955 meters. The wall of the berth wall to the south of SCCT is 455 meters long (Phase 3), and the second berth wall adjacent to Phase 3 is 500 meters long, (Phase 4). SCCT proposes to develop a full free-standing pier consisting of Phase 3 and Phase 4 at this site, (SCCT expansion) which achieves continuity of yard operations between the expansion and the current station.

The development requirements are to offer an extension of the existing container terminal with a total berth length of 955 meters and a depth of 500 meters from the yard. The extension will include cranes from ship to shore and will accommodate floor openings and refrigerated sockets with refrigerated shelves.


Illustration I Expansion project location and current container station

## Project Description

Phase 3 and 4 quay walls were built and container crane rails were installed from the shore side on concrete pier, however some adjustments are required to realign the shore crane rails to achieve the continuous rail line for Phase 3 and 4, as well as the ongoing courtyard operations between the expansion and the current terminal. The components of the project are listed below:

1. Infrastructure required for electrical equipment
2. IT Infrastructure
3. Power supply and electricity distribution
4. Concrete structures, stacked and concrete foundations
5. Improved land, heavy and medium pavements
6. Sewer network, common services (pits, manholes, canals, etc.)
7. Reefer plugs
8. Leak container set
9. Equipment wash and maintenance areas, if required
10. Mechanical services include all networks:
    1. Firefighting network for yards and buildings in accordance with the requirements of the Egyptian Civil Defense
    2. Potable Water Network
    3. Sewage Network
    4. Refueling facilities Civil works including concrete and steel works, buried and cast pipes and fittings
    5. Other facilities include but are not limited to pipes, storm water drainage, and manholes.
11. New buildings, workshops, gas station, charging station and hazardous container leakage control area

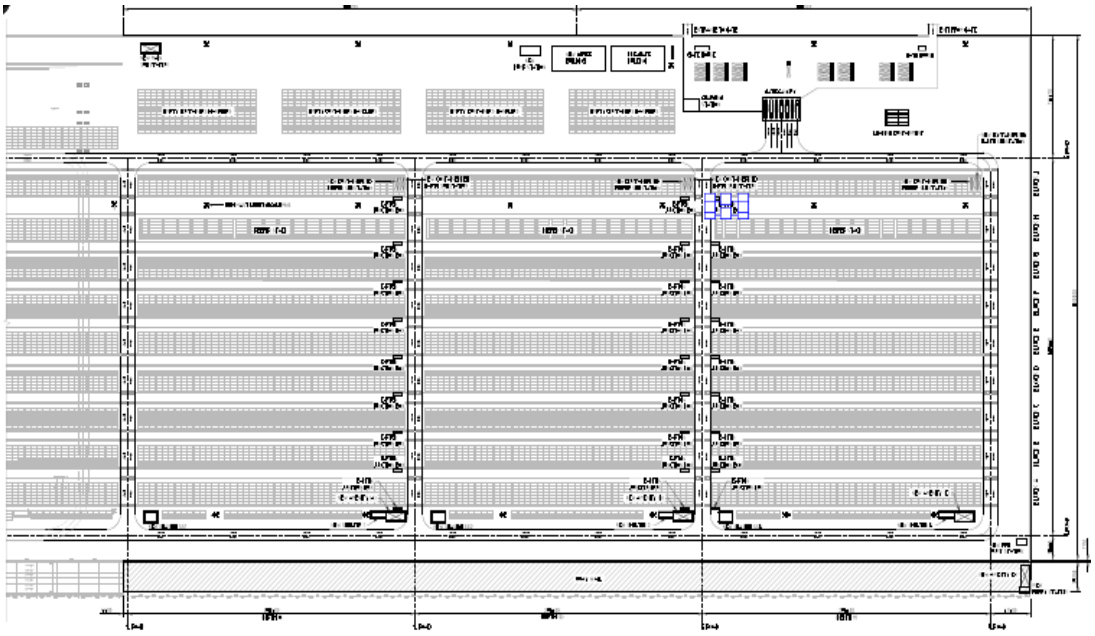

illustration II Drawing Engineering For the square Containers

## Legislative and Institutional Framework

- Environmental Protection Law No. 4 of 1994 as amended by Law No. 9 of 2009 and 105 of 2015;
- Economic Authority Law No. 83 of 2002 and its amendments 27/2015;
- Law 102/1983, Nature Reserves;
- Solid and Hazardous Waste Management Law No. 202 of 2020;
- Law 48 of 1982 on the protection of the Nile River, waterways and groundwater;
- Law No. 38 of 1967 on Public Health, as amended by Law No. 31 of 1976;
- Law 12/2003, Book Five on the Organization of Workers;
- Decree No. 458 of 2007 on the quality of drinking water issued by the Ministry of Health;
- Decree No. 192 of 2001 on hazardous waste issued by the Ministry of Health;
- Law No. 93/1962 on the disposal of wastewater and effluents and Decree 44 of 2000 on the discharge of liquid wastes issued by the Ministry of Housing;
- Public Hygiene Law No. 38 of 1967;
- Relevant international treaties signed by Egypt;

In addition to the laws related to the project, there are guidelines related to the project activities, which are as follows:

- Guidelines for the application of environmental management systems in seaports.
- Guidelines for the prevention of pollution caused by ships.

## Project Alternatives

The failure to establish the proposed project at the present time will have direct negative consequences on the Egyptian economy in general, and the maritime transport sector and the handling of marine containers in particular due to the dependence of many national industries on materials and products transported through these containers. In addition, the terminal is expected to handle more vessels due to the expected increase in the trade volume in Egypt which constitutes the need for higher capacity terminal to be constructed.

Environmentally and socially, the best location to expand the container handling terminal is the one that will reduce land use change, impact on ecological nature, intersection with residential areas and special nature areas such as religious buildings and historical areas. This strategy is in line with SCZONE's strategy to choose a location away from residential areas, and in locations with existing infrastructure lines/cables to minimize disruptions in new locations.

## Environmental and Social Management Plan

Table I Environmental and social management, monitoring and follow-up plan

| Impact | Impact Summary | Proposed Mitigation Actions | Direct Execution Responsibility | Responsibility for Direct Supervision | Estimated Cost |
|---|---|---|---|---|---|
| **Management Plan and Environmental Mitigation Actions During the Construction Phase** | | | | | |
| Air Quality | – The main impacts arise from the construction activities in the utilization of heavy equipment and transport vehicles and the construction of the terminal yard.<br>– The impact classification is **Moderate**. | – Moisturize the surrounding areas of any soil works.<br>– Store the output of digging soil and sand in contained isolated areas or any excavated soil should be covered with a suitable covering material (such as polyethylene) to avoid soil dispersion.<br>– Cover vehicles transporting dispersible construction materials.<br>– Set a maximum speed of vehicles/trucks, especially on unpaved roads.<br>– Implementing companies are committed to using equipment and motor vehicles that have high efficiency.<br>– Use paved roads to access the site as much as possible.<br>– Reduce unnecessary trips. | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | Within the contractor's cost |

| Impact | Impact Summary | Proposed Mitigation Actions | Direct Execution Responsibility | Responsibility for Direct Supervision | Estimated Cost |
|---|---|---|---|---|---|
| Noise and Vibrations | – The impacts result from the operation of construction equipment and machinery such as excavators, cranes, loaders, power generators and the movement of transport trucks.<br>– The impact classification is **Moderate.** | – Reduce the periods of exposure of workers to noise and vibrations so that they do not exceed the safety limits stipulated in environmental laws in addition to occupational safety and health standards.<br>– Placing restrictions on the movement of vehicles and trucks to prevent noise in the early morning and late evening periods.<br>– All machines and vehicles must be stopped if not in use.<br>– Maintenance of construction equipment and trucks/vehicles periodically and their proper operation during the construction phase.<br>– Encourage shutdown/stop of the engine during loading and unloading activities. | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | Within the contractor's cost |
| Thermal Stress | – Thermal stress may result in the construction periods as a result of welding works of pipelines and metal pipes.<br>– The impact classification is **Moderate.** | – The importance of wearing appropriate prevention equipment will be relayed to the workers.<br>– Avoid direct exposure to high heat for a long time unless necessary.<br>– Distribution of drinking water to workers.<br>– An appropriate distribution of rest shifts is in line with the duration of workers' exposure to heat. | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | Within the contractor's cost |

| Impact | Impact Summary | Proposed Mitigation Actions | Direct Execution Responsibility | Responsibility for Direct Supervision | Estimated Cost |
|---|---|---|---|---|---|
| Surface Water | – During the construction phase, the quality of coastal waters may be affected by construction work as a result of the terminal yard works during implementation, excavation, and backfilling in addition to spills from the construction activities.<br>– The impact classification is **Moderate.** | – Proper and safe procedures will be followed for the storage of materials and equipment.<br>– Proper and safe procedures will be followed for the storage and disposal of waste resulting from construction activities.<br>– Commitment to remove all distortions – backfilling of pits – leveling of land that is not part of the permanent changes allocated to the project to prevent unexpected land movements and dispersions into the water.<br>– Commitment to change equipment oils off-site and in designated places (petrol stations).<br>– Proper and safe procedures will be followed to handle materials and respond quickly in case of leaks or spills.<br>– In case of oil spill on the coastal waters, an alert will be issued to the authorities to respond to the oil spills with the coordination of the SCZONE. | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | Within the contractor's cost |
| Land Use and Landscaping | – Construction activities in the container terminal expansion project are not expected to affect the land uses on which the project site will be located | – The design of the plant and the project must consider how it blends into the surrounding environment. The colors of different installations must be considered to improve the image of the port and terminal from the outside.<br>– Allocate and use appropriate on-site temporary storage sites for generated waste. | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | Within the contractor's cost |

| Impact | Impact Summary | Proposed Mitigation Actions | Direct Execution Responsibility | Responsibility for Direct Supervision | Estimated Cost |
|---|---|---|---|---|---|
| | since it is located in a currently unused location whose entire land belongs to the Egyptian government.<br>– The impact classification is **Minor.** | | | | |
| Soil and Groundwater | – Potential contamination may occur as a result of spillage or leakage of chemicals during construction or as a result of poor storage of materials and residues generated by construction work.<br>– The impact classification is **Moderate.** | – Proper and safe procedures will be followed for the storage of materials and equipment<br>– Proper and safe procedures will be followed to store and dispose of waste resulting from the activities of the plant (As per section 3.8)<br>– Commitment to change equipment and truck oils off-site and in designated places (petrol stations)<br>– Proper and safe procedures will be followed to handle materials and respond quickly in case of leaks or spills. | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | Within the contractor's cost |

| Impact | Impact Summary | Proposed Mitigation Actions | Direct Execution Responsibility | Responsibility for Direct Supervision | Estimated Cost |
|---|---|---|---|---|---|
| Natural Disasters Hazards (Impact on Project from Environment) | – Earthquakes and floods may interrupt construction activities, especially in the winter period where rainfall multiplies during peak periods.<br>– The impact classification is **High.** | – Consider weather conditions during construction work and stop work in periods of floods and nuclei.<br>– Develop a comprehensive contingency plan to act when unforeseen circumstances such as earthquakes and floods occur.<br>– Train workers to follow the contingency plan and provide fake accident experiences. | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | Within the contractor's cost |
| Hazardous and Non-Hazardous Waste Management | – Contamination of spills may result of improper and unsafe handling and disposal of waste resulting from project construction activities as impacts on soil and plant or animal life. Remnants of construction activities will include non- | **Generation of Non-Hazardous Waste**<br>– The contractor will apply to the local authorities for official permits to dispose of the generated construction waste before the construction work begins or sign with a certified waste disposal contractor for the removal, transport, and disposal of solid waste.<br>– The waste will be separated and temporarily stored securely in the designated waste storage areas in the construction site. It is recommended that the waste areas are within the boundaries of the site.<br>– Licensed and suitable trucks belonging to an authorized contractor be used to transport the quantities of waste generated by construction activities. | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | Within the contractor's cost |

| Impact | Impact Summary | Proposed Mitigation Actions | Direct Execution Responsibility | Responsibility for Direct Supervision | Estimated Cost |
|---|---|---|---|---|---|
| | hazardous residues and some hazardous wastes.<br>– The impact classification is **High.** | – It is forbidden to accumulate or store waste on the shores of the sea, and it is strictly forbidden to dispose of construction waste and various wastes in the sea.<br>– Ensure periodical removal of waste to avoid accumulation.<br>**Generation of Effluents**<br>– Effluent will be disposed of by scavenging vehicles and transported to wastewater treatment plants in the case of heavy rainfalls or rough seas.<br>– Connect all wastewater generating utilities (caravans, offices) to the municipal wastewater network or construct a septic tank which will be periodically emptied and disposed of in a wastewater treatment plant by a certified contractor.<br>**Generation of hazardous waste**<br>– Activities that require refueling, or lubrication, will take place off-site and in designated places (petrol stations) to avoid contaminating the soil, generating more hazardous waste. If these activities are necessary to be carried out within the site, they should be performed on an impermeable surface with the provision of leak prevention and spill absorption equipment at the site.<br>– The chemical containers used will be collected and disposed of in a safely certified | | | |

| Impact | Impact Summary | Proposed Mitigation Actions | Direct Execution Responsibility | Responsibility for Direct Supervision | Estimated Cost |
|---|---|---|---|---|---|
| | | landfill for hazardous waste in coordination with local authorities.<br>– Hazardous effluents will be collected in dedicated barrels and disposed of by a licensed contractor. | | | |
| **Management Plan and Social Mitigation Actions During the Construction Phase** | | | | | |
| Operational Health and Safety | – | – The contractor is bound by occupational safety and health instructions in accordance with Egypt's Labor Code No. 12 of 2003.<br>– The contractor is also obliged to prepare a complete plan for occupational safety and health in line with SCCT's safety and health rules to adopt the most stringent procedures for occupational safety and health.<br>– Verification of workers' safety before recruitment by means of a health check or a health certificate to ensure protection against transmitted diseases, in particular the coronavirus and B virus;<br>– Workers' training in occupational safety and health procedures (workers mean any on-site contractor or SCCT workers). The training is designed to reflect each work task, meaning that there is training for welders different from drilling labor and so on. The training provided for employment consists of initial training and then specialized training according to the type of work, in addition to daily training, which is provided in the form of daily guidance for employment and related | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | Within the costs allocated to safety and health, especially protective equipment.<br>As for training, it is at the heart of the work of supervisors and engineers of the site and has no cost |

| Impact | Impact Summary | Proposed Mitigation Actions | Direct Execution Responsibility | Responsibility for Direct Supervision | Estimated Cost |
|---|---|---|---|---|---|
| | | to the various tasks of work and how to achieve safety.<br>- Providing prevention and safety tasks according to the type of activity carried out. In general, there is a range of basic protective equipment such as safety shoes, gloves and face masks.... etc. Workers must also be obliged to use them.<br>- Maintaining workers' health from gas emissions and air pollutants resulting from drilling and car exhaust emissions by maintaining on-site equipment and vehicles in compliance with Environmental Law No. 4 of 1994 as amended by Law No. 9 of 2009.<br>- Maintaining the health of workers from solid and dangerous waste by following good and practical methods of managing the waste well both when storing on site and during transportation and final disposal.<br>- The availability of the station's ambulance to intervene in the event of an accident at the site.<br>- Ensure the quality of the water provided to workers within the site, in particular the water bottled inside reservoirs or any other water.<br>- Provision of adequate lighting for on-site staff at night (in the event of having to work at night). | | | |

| Impact | Impact Summary | Proposed Mitigation Actions | Direct Execution Responsibility | Responsibility for Direct Supervision | Estimated Cost |
|---|---|---|---|---|---|
| Community Health and Safety | | Since there is no residential area close to the station and the nearest residential area is Port Fouad City, we can confirm that the community risks are minimal in terms of the effects of old employment from other areas. We can therefore propose the following actions:<br>− Generally speaking, good waste management standards, gas emission reduction standards and noise levels that may affect the nearest populations must be adhered to.<br>− Checking workers' safety and conducting tests to detect workers in order to ensure the reduction of transmission of diseases, especially coronavirus, to the surrounding community.<br>The need to adhere to all precautionary measures to curb the spread of the coronavirus at construction sites. All necessary measures must be taken in the event of suspected injury to an employee, including but not limited to:<br>− Provision of temperature measurement devices for workers at the site.<br>− Use disinfectants and sanitizer periodically.<br>− Isolate people suspected of contracting the virus from the workplace. | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | Included in contractor's costs |

| Impact | Impact Summary | Proposed Mitigation Actions | Direct Execution Responsibility | Responsibility for Direct Supervision | Estimated Cost |
|---|---|---|---|---|---|
| Temporary Labor Migration | | In view of the importance of the effects of labor migration on the project site, whether they are permanent contractor or employed workers, the following must be done to reduce such effects:<br>− All personnel must be trained on the Code of Conduct in initial training and then in refresher and daily training.<br>− The code of conduct must be signed and adhered to by the subcontractor.<br>− Sensitize local people on the project's commitment to communities and mitigation measures through public consultation, focal and collective discussions<br>− Impose penalties on workers who violate the rules of conduct in accordance with the gravity of the error made. | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | Within the contractor's training cost. Outreach activities are conducted with each meeting of the contractor's company |
| Child Labor | | Include strict conditions in contractor contracting to reduce the employment of children under the age of 18<br>− Register the National Employment Number on a daily basis and follow up the absence of any children on the site.<br>− If a child is on site, the necessary penalties shall be imposed on the contractor. | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | No Costs |

| Impact | Impact Summary | Proposed Mitigation Actions | Direct Execution Responsibility | Responsibility for Direct Supervision | Estimated Cost |
|---|---|---|---|---|---|
| **Management Plan and Environmental Mitigation Actions During the Operational Phase** | | | | | |
| Air Quality | – Gas and dust emissions are expected during operation from the movement of container trucks to and from the terminal. In addition, transport of some liquid and gaseous substances leads to the emissions of some fumes during the container washing phase.<br>– The impact classification is **Moderate.** | – In case of transportation of goods, the transportation vehicles and trucks must be covered.<br>– Installation of air purification filters on the exhaust outlet of shore cranes<br>– Set a maximum speed of vehicles/trucks on the roads.<br>– Use paved roads to reach the container terminal as much as possible.<br>– Validate ship engine performance documentation and certification to ensure compliance with combustion emissions specifications (including NOx, SOx, and PM), within the limits established by international regulations, and as noted in the EHS Guidelines for Shipping.<br>– Where possible, rely on the use of low sulfur fuel.<br>– Trucks are periodically maintained and operated in an appropriate manner during the transport of containers to and from the terminal to ensure that exhaust emissions from diesel/gasoline engines comply with the limits set forth in the Environmental Law and the EHS guidelines of the World Bank in addition to using transport vehicles with engines that have high efficiency or electrical engines. | SCCT | Director of Health, Safety, and Environment Department of Suez Canal Port Container Terminal Company | Within SCCT's cost |

| Impact | Impact Summary | Proposed Mitigation Actions | Direct Execution Responsibility | Responsibility for Direct Supervision | Estimated Cost |
|---|---|---|---|---|---|
| | | – Reduce unnecessary journeys of vehicles/trucks and stop machinery and equipment when not in use.<br>– Encourage engine shutdown/shutdown during loading and unloading activities in accordance with the IFC EHS guidelines.<br>– Implement a preventive program for on-site vehicles and equipment and immediate repair of exhaust emission vehicles.<br>– Upgrade land vehicles, where possible, with low emission vehicles, including use of alternative energy sources such as vehicle and equipment fleets powered by electricity or compressed natural gas as per the World Bank standards for ports. | | | |
| Noise and Vibrations | – Noise during the operating phase may be produced as a result of the docking and tying of ships, the laying of loading and unloading arms, the movements of the cranes, as well as the movement of container trucks. | – All machines and vehicles must be stopped if not in use.<br>– Maintenance of container and truck/vehicle transport equipment periodically and its proper operation during container transport operations to and from the terminal.<br>– Encourage shutdown/stop of the trailer trucks engine during loading and unloading activities.<br>– Periodic maintenance of pump motors and pumps at the water pump platform to ensure that no noise is made from them. | SCCT | Director of Health, Safety, and Environment Department of Suez Canal Port Container Terminal Company | Within SCCT's cost |

| Impact | Impact Summary | Proposed Mitigation Actions | Direct Execution Responsibility | Responsibility for Direct Supervision | Estimated Cost |
|---|---|---|---|---|---|
| | – The impact classification is **Moderate.** | | | | |
| Thermal Stress | – The impact may arise from welding activities in some maintenance work.<br>– The impact classification is **Minor.** | – Avoid direct exposure to high heat for a long time unless necessary.<br>– An appropriate distribution of rest shifts is in line with the duration of workers' exposure to heat. | SCCT | Director of Health, Safety, and Environment Department of Suez Canal Port Container Terminal Company | Within the contractor's cost |
| Surface Water | – There will be a continuous but limited impact on the water quality of the yard area as a result of the continuous movement of container ships.<br>– The impact classification is **Moderate.** | – Comply with the permissible limits in the EHS IFC guidelines.<br>– Oily waste and wastewater should be collected in barges, vehicles, or central collection systems and storage tanks According to IFC guidelines.<br>– Good selection of various loading and unloading equipment (cranes and others) and maintenance of container and truck transport equipment and operating them in an appropriate manner during the operation phase to ensure that seawater is not contaminated with oils, or various exhausts.<br>– The use of treatment chemicals and oil waste disposal vessels to prevent the spread of various oil leaks.<br>– Develop a comprehensive contingency plan to confront water pollution with the | SCCT | Director of Health, Safety, and Environment Department of Suez Canal Port Container Terminal Company | Within SCCT's cost |

| Impact | Impact Summary | Proposed Mitigation Actions | Direct Execution Responsibility | Responsibility for Direct Supervision | Estimated Cost |
|---|---|---|---|---|---|
| | | development of a system to monitor and follow up violations and accidents.<br>– Consider that all units are connected to sewage collection tanks and are discharged at the nearest drainage point connected to the public sewage network.<br>– Covering and moistening raw materials storage places except for non-waterproof materials such as cement.<br>– Setting rules for the process of disposal of industrial waste for activities expected to grow near the site of the plant and preferably disposing of it away from the sea. | | | |
| Fauna and Flora | – The diversion of oils, oil residues from container ships, container transport and storage equipment, and various residues may damage marine organisms and marine habitats near the project site. | – Vegetation removal should be limited as much as possible.<br>– Manage the movement of vehicles and trucks to ensure minimal loss of vegetation during the operation phase. | SCCT | Director of Health, Safety, and Environment Department of Suez Canal Port Container Terminal Company | Within SCCT's cost |

| Impact | Impact Summary | Proposed Mitigation Actions | Direct Execution Responsibility | Responsibility for Direct Supervision | Estimated Cost |
|---|---|---|---|---|---|
| | – The impact classification is **Minor.** | | | | |
| Land Use and Landscaping | – The impact arises from the change in the shape of the banks and the uses of the land there so that the effect is permanent, however due to lack of activity in the project's area, the impact will be minimal.<br>– The impact classification is **Minor.** | – Allocate and use appropriate on-site temporary storage sites for generated waste.<br>– Allocate storage places for containers and goods away from nearby roads to avoid disturbing residents with flashlights and lighting. | SCCT | Director of Health, Safety, and Environment Department of Suez Canal Port Container Terminal Company | Within SCCT's cost |
| Soil and Groundwater | – Contamination to the soil and groundwater will only occur in the event of sedimentation accidents or spills.<br>– The impact classification is **Minor.** | – Proper and safe procedures will be followed for the storage of materials and equipment<br>– Proper and safe procedures will be followed to store and dispose of waste resulting from the activities of the plant.<br>– Commitment to change equipment and truck oils off-site and in designated places (petrol stations) | SCCT | Director of Health, Safety, and Environment Department of Suez Canal Port Container Terminal Company | Within SCCT's cost |

| Impact | Impact Summary | Proposed Mitigation Actions | Direct Execution Responsibility | Responsibility for Direct Supervision | Estimated Cost |
|---|---|---|---|---|---|
| | | – Proper and safe procedures will be followed to handle materials and respond quickly in case of leaks or spills. | | | |
| Natural Disasters Hazards (Effect of Environment on Project) | – Natural disasters such as earthquakes, and floods can damage the container terminal. A fire may occur or explosion in affected areas which may lead to serious injury or death.<br>– The impact classification is **Major.** | – Considering weather conditions during the operation of the station and the suspension of work in periods of floods and nuclei.<br>– Develop a comprehensive contingency plan to act when unforeseen circumstances such as earthquakes and floods occur.<br>– Give the necessary instructions on identifying possible accidents and emergencies that may occur during the operation of the plant and how to respond to them to reduce the risks and impacts that may accompany these emergency situations. Employees will be provided with adequate training and simulation of the contingency plan and response to it. Emergency preparedness and response procedures include the following aspects:<br>– Emergency Management Overview<br>– Brief description of emergency levels<br>– Responsibilities of key employees<br>– Typical on-site emergency procedure<br>– Emergency Communications Plan<br>– The Director General of Safety, Health, and Environment at Suez Canal Container Terminal Company coordinates with all | SCCT | Director of Health, Safety, and Environment Department of Suez Canal Port Container Terminal Company | Within SCCT's cost |

| Impact | Impact Summary | Proposed Mitigation Actions | Direct Execution Responsibility | Responsibility for Direct Supervision | Estimated Cost |
|---|---|---|---|---|---|
| | | concerned departments to review and update the emergency plan at least once a year and provides all terminal sites with the appropriate and adequate tools and capabilities to cope with emergency situations. These tools include but are not limited to:<br>– Fire Fighting Equipment<br>– Firefighting systems and automatic safety control systems<br>– Personal Protective Equipment | | | |
| Hazardous and Non-Hazardous Waste Management | – Some negative impacts may be generated as a result of improper and unsafe handling and disposal of waste resulting from project operation activities. Waste from operating activities will include non-hazardous residues and some hazardous wastes. | **Generation of non-hazardous waste**<br>– Follow the existing solid waste management procedures of the Suez Canal Container Terminal Company. The current management system includes special parts for waste reduction, waste reuse and recycling, and waste separation with the aim of reducing the quantities that need to be disposed of off-site.<br>– The owner (Suez Canal Container Terminal Company) will apply to the local authorities for official permits to dispose of the generated plant operating waste before starting the commissioning work.<br>– The waste will be separated and temporarily stored securely in the designated waste storage areas in the vicinity of the plant site, where a temporary storage site will be allocated near the station site. | SCCT | Director of Health, Safety, and Environment Department of Suez Canal Port Container Terminal Company | Within SCCT's cost |

| Impact | Impact Summary | Proposed Mitigation Actions | Direct Execution Responsibility | Responsibility for Direct Supervision | Estimated Cost |
|---|---|---|---|---|---|
| | – The impact classification is **Major.** | – Residues will be covered to avoid ambient air pollution by the spread of dust.<br>– Licensed and suitable trucks belonging to an authorized contractor (Municipal Solid Waste Transport Company) will be used to transport the quantities of waste resulting from the plant's activities.<br>– Waste disposal shipments will be recorded.<br>– Reuse container waste and non-hazardous raw materials and sell them to other projects.<br>– It is forbidden to accumulate or store waste on the shores of the sea and it is strictly forbidden to dispose of container residues and various wastes at sea.<br>– Waste will be collected daily and transported to agreed safe disposal sites using conveniently equipped trucks. The supervisor should make sure that this process takes place without risks or problems.<br>**Generation of Effluents**<br>– It is the water resulting from the washing water of various equipment, and others. This water will be disposed of by scavenging vehicles and transported to the municipal wastewater network.<br>**Generation of hazardous waste**<br>– Activities that require refueling, or lubrication, will take place outside the station and in designated places (petrol stations) to | | | |

| Impact | Impact Summary | Proposed Mitigation Actions | Direct Execution Responsibility | Responsibility for Direct Supervision | Estimated Cost |
|---|---|---|---|---|---|
| | | avoid contaminating the soil, generating more hazardous waste. If these activities are necessary to be carried out within the plant, they must be performed on an impermeable surface with the provision of leakage prevention and spill absorption equipment at the plant.<br>– Provide a safety sheet for chemicals at the plant.<br>– The chemical vessels used will be collected and disposed of in a safely certified landfill for hazardous waste (such as the Nasiriyah landfill) in coordination with local authorities.<br>– Apply the company's policy to the companies that are generally using in the field of reducing waste as much as possible.<br>– Hazardous effluents will be collected in dedicated barrels and disposed of by a licensed contractor.<br>– As per the World Bank standards, hazardous materials storage and handling facilities should be constructed away from traffic zones and should include protective mechanisms (e.g., reinforced posts, concrete barriers, etc.) to protect storage areas from vehicle accidents. | | | |

| Impact | Impact Summary | Proposed Mitigation Actions | Direct Execution Responsibility | Responsibility for Direct Supervision | Estimated Cost |
|---|---|---|---|---|---|
| **Management Plan and Social Mitigation Actions During the Operational Phase** | | | | | |
| Occupational Health and Safety | | As the station and SCCT have an integrated local and international contingency and accident plan, the actions to mitigate the risk of accidents to employees consist of:<br>- Training new workers on the plan and providing another ambulance in the new phase and training all first aid workers as it helps the injured until the arrival of the ambulance.<br>- All workers in the new stages must also be trained to reduce harassment and provide safe space to report such cases if they occur. Strict penalties must also be emphasized. | SCCT | Director of Health, Safety, and Environment Department of Suez Canal Port Container Terminal Company | Within Project's costs |
| Temporary Labor Mitigation | | Since most employment is based on overseas recruitment companies, SCCT must implement all the measures proposed in the construction phase to reduce the effects of temporary labor migration. | SCCT | Director of Health, Safety, and Environment Department of Suez Canal Port Container Terminal Company | Within project's costs |

## Environmental and Social Monitoring Plan

Table II and Social Monitoring and Follow-up Plan

| Impact | Monitoring indicators during the operational phase | Supervision | Site | Methods, methods and follow-up periods |
|---|---|---|---|---|
| **Environmental Monitoring and Follow-Up Plan** | | | | |
| Air Quality | – Exhaust and gas emissions from trucks, equipment, storage and unloading machines<br>– Exhaust and gas emissions from container ships.<br>– Dust resulting from the movement and speed of vehicles at the station<br>– Efficient operation of equipment, machinery, and vehicles/trucks | – Suez Canal Container Terminal Company Inspection Department at Head Office | – Suez Canal Port Container Terminal Company Headquarters<br>– Station Location | – Site Monitoring (Daily Field Visits)<br>– Monitor the speed and movement of vehicles/trucks<br>– Review periodic maintenance reports<br>– Review of the periodic monitoring and measurement report |
| Noise and Vibrations | – Sound intensity levels and periods of exposure<br>– Efficient operation of equipment, machinery and vehicles/trucks<br>– Noise levels from the movement of container ships | – Suez Canal Container Terminal Company Inspection Department at Head Office | – Suez Canal Port Container Terminal Company Headquarters<br>– Station Location | – Site Monitoring (Daily Field Visits)<br>– Review periodic maintenance reports<br>– Review of the periodic monitoring and measurement report |
| Thermal Stress | – Temperatures of active workers in various activities.<br>– Work shifts and rest periods | – Suez Canal Container Terminal Company Inspection Department at Head Office | – Suez Canal Port Container Terminal Company Headquarters<br>– Station Location | – Site Monitoring (Daily Field Visits)<br>– Review periodic maintenance reports |

| Impact | Monitoring indicators during the operational phase | Supervision | Site | Methods, methods and follow-up periods |
|---|---|---|---|---|
| | – Periods of exposure of workers to the sun | | | – Review of the periodic monitoring and measurement report |
| Surface Water | – Procedures for docking and maintenance of container ships.<br>– Procedures for storage and disposal of generated waste.<br>– The quality of seawater, the proportions of silt and the substances attached to it. | – Suez Canal Container Terminal Company Inspection Department at Head Office | – Suez Canal Port Container Terminal Company Headquarters<br>– Station Location | – Site Monitoring (Daily Field Visits)<br>– Review of equipment records and periodic maintenance<br>– Review the quantities of waste generated and waste disposal contracts on a daily basis |
| Fauna and Flora | – Movement of vehicles/trucks/container ships | – Suez Canal Container Terminal Company Inspection Department at Head Office | – Suez Canal Port Container Terminal Company Headquarters<br>– Station Location | – Site Monitoring (Daily Field Visits) |
| Land Use and Landscaping | – Storage area locations of containers and temporary waste | – Suez Canal Container Terminal Company Inspection Department at Head Office | – Suez Canal Port Container Terminal Company Headquarters<br>– Station Location | – Site Monitoring (Daily Field Visits) |

| Impact | Monitoring indicators during the operational phase | Supervision | Site | Methods, methods and follow-up periods |
|---|---|---|---|---|
| Soil and Groundwater | – Record any spills or leaks and periodically analyze that data<br>– Methods of storage of materials and waste at the plant and the final disposal of waste | – Suez Canal Container Terminal Company Inspection Department at Head Office | – Suez Canal Port Container Terminal Company Headquarters<br>– Station Location | – Site Monitoring (Daily Field Visits)<br>– Review of spill/leakage accident logs<br>– Review the quantities of waste generated and waste disposal contracts on a daily basis<br>– Review the implementation of the plan to remove all distortions - backfilling of pits - leveling the land |
| Natural Disasters Hazards | – The amount of rain and floods<br>– Unexpected accidents such as earthquakes<br>– Contingency Plan | – Suez Canal Container Terminal Company Inspection Department at Head Office | – Suez Canal Port Container Terminal Company Headquarters<br>– Station Location | – Review weather reports<br>– Review reports of rain quantities.<br>– Site Monitoring (Daily Field Visits)<br>– Review the contingency plan and staff readiness to implement it |

| Impact | Monitoring indicators during the operational phase | Supervision | Site | Methods, methods and follow-up periods |
|---|---|---|---|---|
| | | | | – Review staff training records on the contingency plan. |
| Hazardous and Non-Hazardous waste | – Use of dedicated storage sites at the plant site to store waste<br>– Separation of hazardous and non-hazardous waste elements on site<br>– Quantities and types of waste generated<br>– Off-site residue transportation for final disposal<br>– Regular visual inspection of all waste storage collection and storage areas for evidence of accidental releases and to verify that wastes are properly labeled and stored.<br>– Inspection of vessels for leaks, drips or other indications of loss<br>– Identification of cracks, corrosion, or damage to tanks, protective equipment, or floors. | – Suez Canal Container Terminal Company Inspection Department at Head Office | – Suez Canal Port Container Terminal Company Headquarters<br>– Station Location | – Site Monitoring (Daily Field Visits)<br>– Review records of the quantities and types of waste generated<br>– Review of off-site final disposal logs |

| Impact | Monitoring indicators during the operational phase | Supervision | Site | Methods, methods and follow-up periods |
|---|---|---|---|---|
| | − Monitoring records for hazardous waste collected, stored, or shipped<br><br>Effluents:<br><br>− Procedures for the disposal of water resulting from the washing of vehicles and equipment. | | | |
| **Social Monitoring and Follow-up Plan** | | | | |
| Occupational Health and safety | − Verification of the guides prepared for occupational safety and health<br>− Verification of availability of on-site PPE tasks<br>− Ensure that workers wear personal protection tasks according to the nature of their work<br>− Provision of first aid equipment on site<br>− Number, type and causes of accidents<br>− Number of workers trained in safety and health | − Suez Canal Container Terminal Company Inspection Department at Head Office | − Head Office of Suez Canal Container Terminal<br>− Station Location | − Site Monitoring and Worker Performance Monitoring<br>− Audit of incident records<br>− Audit of workers' course records<br>− Review of periodic maintenance reports for equipment, machinery and vehicles/trucks<br>− Inspection of the efficiency of firefighting equipment |

| Impact | Monitoring indicators during the operational phase | Supervision | Site | Methods, methods and follow-up periods |
|---|---|---|---|---|
| | – Monitoring the movement and speed of vehicles/trucks at the station<br>– Monitoring the efficient operation of equipment, machinery and vehicles/trucks<br>– Ensure the provision and safety of firefighting equipment<br>– Verification of adequate on-site lighting, especially at night<br>– Verification of water availability of acceptable quality<br>– Verification of compliance with coronavirus protection measures | | | |
| Community Health and Safety | – Checking the availability of road safety procedures<br>– Checking Working Times<br>– Verification of environmental measurements and noise levels.... etc. | – Suez Canal Container Terminal Company Inspection Department at Head Office | – Head Office of Suez Canal Container Terminal<br>– Station Location | – Through Safety Procedures<br>– Through the reports of the engineer responsible for accidents, especially on the roads |

| Impact | Monitoring indicators during the operational phase | Supervision | Site | Methods, methods and follow-up periods |
|---|---|---|---|---|
| | – Number of accidents resulting from operating activities<br>– Indicative signs in construction areas | | | – Through measurement reports<br>– Audit of incident reports |
| Temporary Labor Migration | – Availability of Career Code of Conduct<br>– Number of workers trained in the Code<br>– Number of workers who broke the code of conduct<br>– Number and quality of disciplinary proceedings | – Safety, Occupational Health and Environment Officer at Suez Canal Container Terminal | – Head Office of Suez Canal Container Terminal<br>– Station Location | By reviewing the Career Code of Conduct and Job Conduct Training Reports |
| Child Labor | Number of children monitored at the station | – Safety, Occupational Health and Environment Officer at Suez Canal Container Terminal | Head Office of Suez Canal Container Terminal<br>Station Location | On-site employment records |

# 1 Introduction

## 1.1 Background

Egypt's current strategy is to increase foreign investment in the Arab Republic of Egypt in various fields and focus on major national projects aimed at achieving sustainable development (Egypt Vision 2030).

In this regard, the Egyptian government has tried to develop various sectors to achieve a popularity of economic activities, which contributes to solving the problem of unemployment on the one hand, increasing per capita income and achieving development.

One of the sectors that received a large share of attention in the last phase was the maritime transport sector and port development.

Container ships went through stages of development starting in 1926 when a passenger ship was used to transport four containers between London and Paris, and there were many experiences in Europe after World War II, especially for container transport between England and the Netherlands and also in Denmark in 1951. In the same year, the United States began to use similar ships. In the twenty-first century according to statistics in 2009. About 90% of non-bulk cargo was transported by container ships. In the same year, China accounted for about 26% of the total container traffic in the world, with an estimated 106 million transactions (domestic and international) while about 34 million movements took place in the United States of America. Some container ships such as Emma Maersk carry about 14,500 TEUs and were the largest in the world when they were first used in 2006.

The container ship industry has evolved considerably in the last ten years and ships have reached lengths of 400 meters and can carry 18,800 TEUs.

The total containers traded in Egyptian ports amounted to 6.073 million TEUs, carrying 58.946 million tons, and the percentage of container goods amounted to 48% of the total volume of goods traded during 2013.The monthly average of the containers traded reached 506,000 TEUs, and December witnessed the highest volume of trading with 547,000 TEUs by 9% carrying 5,410 million tons, while February witnessed the lowest volume of trading with 437,000 TEUs by 7% carrying 4,314 million tons. The following figures show the average volume of container handling in Egyptian ports in 2013 and the intensity of ship traffic for Egyptian ports in the Mediterranean.

Based on the above, the volume of containers in Egypt is increasing and due to the increase in national requirements in this regard, and the increase in the movement of goods through the sea through containers, which requires the establishment of a container terminal.

The proposed project is the expansion of the container terminal in the Suez Canal managed by Suez Canal Container Terminal Company (SCCT) and APM Terminals, to receive container ships, store containers and keep pace with maritime traffic.

As stipulated in Egyptian legislation, the Environment Law No. 4/1994 as amended by Law No. 9/2009, an environmental and social impact assessment study must be prepared before the implementation of the projects for the construction of piers and ports and the approval of the Egyptian Environmental Affairs Agency before the start of the project. The project contractor's company must also ensure that the implementation of the project will comply with national standards.

Based on the General Manual on the Foundations and Procedures of Environmental Impact Assessment issued by the Environmental Affairs Agency – Second Issue – in January 2009 and amended in October 2010 and based on the last update of the lists of projects issued on October 19, 2015, the proposed project is a list of (C) projects, and the study has been prepared in accordance with the recommendations contained in the General Manual referred to and the Environmental Impact Assessment Guidelines Manual for the Docks, Ports and Container Terminals Sector.

The Consultant (EcoConServ Environmental Solutions) and SCCT have been contracted to conduct an environmental and social impact assessment study to comply with national and international standards. The following table shows the names and tasks of the advisory group.

Table1 Names of experts who are in the advisory group to conduct the ESIA

| Name | Roles |
|---|---|
| Dr. Tarek Genena | Team Leader and Environmental Management Expert |
| Eng. Fatma El-Kassas | Quality Assurance/ Quality Control |
| Eng. George Efram | Project Coordinator and Environmental Specialist |
| Dr. Zainab Hafez | Senior Social Expert |
| Ms. Amina Khalil | Social Specialist |
| Eng. Mohamed Mohsen | Air and Noise Specialist |

## 1.2 About the Project

The Suez Canal Container Terminal, from East Port Said Port, Egypt is a joint terminal with APM Terminals and SCCT owns a 55% stake in shares, and where APMT owns management and operational control.

With a total pavement length of 2.4 km and a courtyard depth of 500 meters, it was developed on the basis of two equal phases of a concession agreement signed with the Egyptian Government with the start of operation of the second phase in 2013.

The project includes the development and operation of two quay walls recently constructed by the government to the south of the current station, with a total berth length of 955 meters. The wall of the berth wall to the south of SCCT is 455 meters long (Phase 3), and the second berth wall adjacent to Phase 3 is 500 meters long, (Phase 4). SCCT proposes to develop a full free-standing pier consisting of Phase 3 and Phase 4 at this site, (SCCT expansion) which achieves continuity of yard operations between the expansion and the current station.

The development requirements are to offer an extension of the existing container terminal with a total berth length of 955 meters and a depth of 500 meters from the yard. The extension will include cranes from ship to shore and will accommodate floor openings and refrigerated sockets with refrigerated shelves.


Illustration 1 Expansion project location and current container station

## 1.3 Methodology of the Study

### 1.3.1 Study Method

The study was prepared in accordance with the recommendations contained in the General Manual on the Foundations and Procedures for Environmental Impact Assessment and the Environmental Impact Assessment Guidelines Manual for the Docks, Ports and Container Terminals Sector.

### 1.3.2 Study Methodology

The Environmental and Social Impact Assessment Study is prepared according to the following approach:

1. Initiate meetings with the SCCT project team to understand their plans and activities related to the proposed project.
2. Conduct field visits to the project site, to collect data to characterize the current environmental and social situation of the area where the container station is located.
3. Ensure compliance with local environmental regulations and standards relevant to the type and activities of the project.
4. Review available information and documentation regarding the project including required government permits.
5. Perform measurements of air quality and noise levels in the area where the project is located in Port Said and compare them with the permissible national boundaries.
6. Assess the potential impacts of the proposed project.
7. Develop an environmental and social management plan.
8. Develop an institutional development plan to ensure the effective and efficient implementation of proposed environmental and social management and monitoring activities.

## 1.4 Data Collection Methodology

The data required for the preparation of the report was collected through meetings with SCCT that included details of the terminal site, crossings, engineering details of the container terminal, construction and operation activities, and government approvals. Other project-specific data were collected through field visits to the project site that were carried out to inspect land use in the areas surrounding the station site. Site visits were conducted in a manner that covered as much area as possible.

A preliminary desk review and study of maps with the project's engineering designs was carried out to identify potential sensitive receivers around the project site, during the visit sensitive receivers and various activities likely to be affected by the project activities were monitored, and environmental measurements (ambient air quality and noise levels) were identified.

Data related to meteorological conditions, soil topography and geology, as well as water availability and quality, were collected through the desk review of recent studies conducted in the field of SCCT port site as well as through environmental and social characterization reports for the Egyptian governorates of the Egyptian Environmental Affairs Agency.

# 2 List of Environmental Laws and Regulations

## 2.1 Egyptian Laws and Regulations

### 2.1.1 Introduction

This chapter provides a brief description of the legal and administrative framework of the proposed project. It also lists the basic laws at the local level as well as the international requirements relevant to the project and presents the necessary permits to allow the implementation of the project.

Law No. 4 of 1994 as amended by Law 9/2009 and the Executive Bylaws issued by Resolution No. 1095/2011 as amended by Resolution No. 710/2012, known as the Law on Environmental Protection, are stipulated. The law mostly deals with the protection of the environment from pollution. Ministerial Decree No. 631 of 1982 considering the Environmental Affairs Agency as the competent authority for environmental affairs in Egypt. Law No. 4 also stipulates the role of the EEAA as the main regulator of environmental matters.

According to Article 19 of Law 4, the legal entity responsible for a particular project is required to assess the potential impact of the project on the natural, social and cultural environment before the implementation of that project. The results of the assessment are submitted to the EEA for review and approval before other relevant government authorities can issue their permits for the implementation of the project.

The environmental and social impact assessment study is an integral part of the project planning process in accordance with the requirements of the Egyptian Environmental Affairs Agency. The Environmental and Social Impact Assessment study helps to confirm that environmental and social aspects have been considered with technical and economic aspects. The purpose of these implementing regulations is to facilitate and measure the process of evolution in the analysis of environmental impact assessment studies and to interpret the exact details required for environmental projects, including the conditions for environmental impact assessment.

The EEAA is the government agency responsible for managing and regulating environmental issues, and Egyptian law defines three main roles for the EEAA:

1. Organize and coordinate most activities as well as the executive role in the management of nature reserves and pilot projects.
2. The Authority is responsible for formulating the environmental management policy, developing the necessary implementation plans to preserve the environment, and following up its implementation in cooperation with the competent administrative authorities.
3. With regard to this project, EEAA is responsible for reviewing and approving environmental and social impact assessment studies.

Environmental impact assessment is also defined as "the study and analysis of the environmental feasibility of proposed projects, the construction or activities of which may affect the safety of the environment." For any project, one of three categories of environmental/social assessment are considered, which represent different levels of detail depending on the nature of the project and the environmental and social settings of its impact area. In accordance with the Guidelines for the Principles and Procedures of the Egyptian Environmental Affairs Agency for Environmental and Social Impact Assessment Studies, published by the Ministry of State for the Environment in October 2010, the current project is categorized into a category "Environmental and Social Assessment Studies – Category C" which is a preparation of a complete environmental and social impact assessment study including a public consultation session.

The Environmental Management Unit at the governorate and district level is responsible for the environmental performance of all projects and facilities within the boundaries of the governorate. Environmental management units have been established at the governorate, city or district levels, which are responsible for environmental protection within the boundaries of the governorate and are charged with environmental planning and follow-up of operational activities. The Unit shall be responsible for the following:

1. Follow up the environmental performance of projects in the governorate during the construction and operation phases to ensure that the project complies with national laws and regulations in addition to the mitigation procedures mentioned in the approval of the environmental and social impact assessment.
2. Investigate any environmental complaint against projects in the governorate.
3. The Environmental Department is administratively conservative but technically subordinate to the Environmental Affairs Agency.
4. The governorate has a solid waste management unit at the governorate and district levels, and the responsibility of these units is to supervise solid waste management contracts.

The competent administrative authorities are responsible for issuing building and operating licenses for projects, and the environmental and social impact assessment study is one of the requirements for the license, and the competent administrative authorities are responsible for receiving the study and reviewing the data contained therein regarding the site and its suitability to the nature of the project and its commitment to the ministerial decision on the activity, and to ensure that the activity does not conflict with neighboring activities, and then the administrative authority sends the study to the Environmental Affairs Agency for review. The administrative body is responsible for dealing with the project sponsors and is tasked with the following:

1. Provide technical support to project sponsors
2. Ensure that the project site is approved
3. Receive environmental and social impact assessment studies and send them to the Environmental Affairs Agency
4. Follow up the implementation of environmental and social impact requirements through field visits during the construction phase and before the operating license.

After submitting the Environmental and Social Impact Assessment Study for review, EEAA can request amendments to the study within a period of 30 days, including additional mitigation measures, before issuing the final approval of the report. The company applying for the project can file an appeal within 30 days of obtaining the decision of the Environmental Affairs Agency. Once the environmental and social impact assessment (ESIA) is approved, the environmental and social monitoring plan presented in the report is an integral part of the project, and the project-based company is committed to implementing this plan, according to the extent to which it intervenes in the construction and operation phases.

In addition to the 1994 Law and the amendment annexed to it by Law 9 of 2009, there are several laws and legislation related to the proposed project, as follows:

1. Law 102/1983, Nature Reserves.
2. Law No. 48 of 1982 on the Protection of the Nile River, Watercourses and Groundwaters
3. Law No. 38 of 1967 on Public Health as amended by Law No. 31 of 1976
4. Law 12/2003, Book V on the Organization of Workers.
5. Decree No. 458 of 2007 on the quality of drinking water issued by the Ministry of Health.

6. Decree No. 44 of 2000 on the disbursement of liquid waste issued by the Ministry of Housing.
7. Decree No. 192 of 2001 on Hazardous Good Waste issued by the Ministry of Health.
8. Law No. 93/1962 on the disposal of industrial wastewater and effluents.
9. Public Hygiene Law No. 38 of 1967.

In addition to the laws related to the project, there are guidelines related to the activities of the project, which are as follows:

1. Guide to the Application of Environmental Management Systems in Seaports.
2. A guideline for the prevention of pollution caused by ships.

In 2010, the Environmental Affairs Agency issued guidelines for the prevention of pollution from ships within the framework of the Environment Law 4/1994 and its various amendments, in addition to the international conventions signed by the Arab Republic of Egypt with the aim of integrating the environmental dimension in the management of maritime transport and activating environmental management methods to improve the actual performance of all daily and periodic activities carried out in the field of maritime transport and also to avoid negative environmental effects that may result from failure to take into account the environmental dimension in those activities.

### 2.1.2 Air Quality

In accordance with the provisions of Articles 34 to 40, 42, 43 and 47 repeated of Law 4/1994 as amended by Law 9/2009 and Article 42 and Annex No. 5 and 6 of the Executive Regulations amended by Resolution No. 1095/2011, 710/2012, 964/2015, 618/2016 and 1963/2017, the company owning the project must ensure that emissions of outdoor air pollutants and flue emissions from power generation units and engines in the project area do not exceed the maximum permissible limits as shown in the following tables.

In accordance with Article 36 of the Executive Bylaws as amended by Law 710 of 2012, machinery, engines or equipment that produce exhaust or emit heavy smoke or disturbing sound exceeding the limits set by the Executive Regulations of the Environment Law and set out in the following tables may not be used. Without prejudice to the provisions of the Traffic Law No. 66 of 1973, judicial officers of the Environment and Water Bodies Police may suspend the operation or operation of machinery, engines or vehicles and withdraw their licenses until the reasons for the violation are removed.

Table2 Air quality surrounding micrograms/g3 (Annex 5 of the Executive Bylaws of Resolution No. 710 of 2012)

| Contaminant | Area Location | Maximum emission (µg/m3 of exhaust) | | | |
|---|---|---|---|---|---|
| | | 1 year | 24 hours | 8 hours | 1 hour |
| Sulfur dioxide | urban<br>industrial | 50<br>60 | 125<br>150 | | 300<br>350 |
| Carbon monoxide (CO) | urban<br>industrial | -<br>- | -<br>- | 10 (mg/$^{m3}$) | 30 (mg/$^{m3}$) |
| Nitrogen dioxide ($NO_2$) | urban<br>industrial | 60<br>80 | 150<br>150 | -<br>- | 300<br>300 |
| Ozone ($O_3$) | urban<br>industrial | -<br>- | -<br>- | 120<br>120 | 180<br>180 |

| Contaminant | Area Location | Maximum emission (µg/m3 of exhaust) | | | |
|---|---|---|---|---|---|
| | | 1 year | 24 hours | 8 hours | 1 hour |
| Total Suspended Particles (TSP) | urban<br>industrial | 125<br>125 | 230<br>230 | -<br>- | -<br>- |
| Atmospheric Aerosol Particulates ($PM_{10}$) | urban<br>industrial | 70<br>70 | 150<br>150 | -<br>- | -<br>- |
| Inhalable particles less than 2.5 µm ($PM_{2.5}$) | urban<br>industrial | 50<br>50 | 80<br>80 | -<br>- | -<br>- |
| Lead (Pb) | urban<br>industrial | 0.5<br>1.0 | -<br>- | -<br>- | -<br>- |
| Ammonia ($NH_3$) | urban<br>industrial | -<br>- | 120<br>120 | -<br>- | -<br>- |

Other limits include the permissible limits for emissions of pollutants into the air from various sources detailed in Annex 6 of the Executive Regulations as amended by Resolution No. 1095/2011, 710/2012 and 964/2015. The limits relevant to the scope of the current project are the limits of pollutants resulting from emissions from power generation units and vehicles.

Table3 Power by diesel engines

| Fuel Type | Maximum emission (µg/m3 of exhaust) | | | |
|---|---|---|---|---|
| | Nitrogen oxide | Sulfur dioxide | Carbon monoxide | Total suspended particles |
| Natural gas | 600 | 100 | 150 | 50 |
| Diesel | 600 | 400 | 250 | 100 |

1. Reference conditions (at 15% oxygen, temperature 273 K and one atmospheric pressure)

Table4 Maximum permissible emissions from gasoline-powered vehicles

| Pollutants | From 2010 onwards | | From 2003 to 2009 | | Pre-2003 | |
|---|---|---|---|---|---|---|
| | CO% | HC (ppm) | CO% | HC (ppm) | CO% | HC (ppm) |
| **Permissible limits** | 1.2 | 200 | 1.5 | 300 | 4 | 600 |

Table5 Maximum allowable emissions from diesel vehicles

| Year of Manufacture (Model) | From 2003 and onwards | Pre-2003 |
|---|---|---|
| Density K ($m^{-1}$) | 2.65 | 2.8 |
| Opacity% | 25 | 30 |

1. The measurement is carried out in accordance with international standard specifications (ISO - 11614).

Table 1 Permissible emission limits from asphalt mixing units

| Maximum Emissions (mg/m³) | | |
|---|---|---|
| **Total Volatile Organic Matter** | **Carbon Monoxide** | **Total Solid Particles** |
| 50 | 500 | 50 |

1. Reference conditions (at 13% oxygen, temperature 273 K and one atmospheric pressure)
2. The distance between the asphalt mixing unit and any residential block shall be at least 500 meters, considering the prevailing direction of the wind.

Table6 Permissible emission limits from power generation units and boilers

| Maximum Emissions (mg/m³) | | | | | | |
|---|---|---|---|---|---|---|
| **Type of fuel used** | **Mercury vapors** | **Lead (in solid particles)** | **Nitrogen oxides** | **Sulfur dioxide** | **Carbon monoxide** | **Total solid particles** |
| Natural gas | | | 500 | 150 | 100 | 50 |
| Diesel | | | 500 | 1300 | 250 | 100 |
| Gasoline | 1 | 2 | 500 | 1500 | 250 | 100 |

1. Reference conditions (at 4% oxygen, temperature 273 K and one atmospheric pressure)
2. The total number of heavy elements in emissions should not exceed 5 mg/m³
3. If any of the solid wastes not listed in the table are used for power generation, the concentration of dioxin and furan should not exceed 0.1 ng/m³.

Table 7 Maximum permissible exhaust emission limits from gasoline-powered vehicles

| | From 2010 onwards | | From 2003 to 2009 | | Pre-2003 | |
|---|---|---|---|---|---|---|
| **Pollutants** | **CO%** | **HC ppm** | **CO%** | **HC ppm** | **CO%** | **HC ppm** |
| **Maximum** | 1.2 | 200 | 1.5 | 300 | 4 | 600 |

1. Must be measured at idle speed from 600 to 900 rpm

### 2.1.3 Noise

Article 42 of the Environment Law stipulates the limits allowed during the construction and operation phases of the project where the levels of noise generated must not exceed those stipulated in Schedule 3 of Annex 7 of the Executive Regulations amended in 2012 when carrying out any work, especially the operation of equipment and devices and the use of alarms. The following table contains the maximum permissible noise level according to the type of area.

Table 8 Maximum noise level

| Area Type | Maximum permissible noise level [decibel dB] | |
|---|---|---|
| | Night from 10 pm – 7 am | Daytime from 7 am to 10 pm |
| Noise-sensitive areas | 40 | 50 |
| Residential suburbs with poor mobility and limited-service activities | 45 | 55 |
| Residential communities in towns with commercial activities | 50 | 60 |
| Residential complexes located on roads less than 12 meters wide including some workshops, commercial activities, administrative activities, recreational activities or amusement parks | 55 | 65 |
| Areas located on roads 12 meters wide and above, or industrial areas with light industries and some other activities | 60 | 70 |
| Industrial zone with heavy industries | 70 | 70 |

Table9 Maximum noise level within the working environment

| Type of place and activity | Maximum noise allowed (After 2014) |
|---|---|
| Workplace with 8-hour shift | 85 |
| Hospitals and medical clinics, public libraries, museums, post offices, courtrooms, mosques, and houses of worship | 45 |
| Administrative offices – workrooms for computer units or similar | 65 |
| Workrooms for activities that require routine mental concentration – Public yards for banks – Control rooms for industrial activities – Restaurants and cafeteria | 60 |

Table 10 Egypt's Limits for Workplace Noise Exposure

| Exposure period per day (Hours) | Noise Intensity[(Decibel) Aeq) dB)] |
|---|---|
| >90-95 | 4 |
| >95-100 | 2 |
| >100-105 | 1 |
| >105-110 | 0.5 |
| >110-115 | 0.25 |

Areas sensitive to noise exposure are: (schools - hospitals - libraries - public parks - villages and tourist resorts and rural areas).

In accordance with the requirements of the Environmental Affairs Agency, measurements are carried out in the surrounding environment and the preparation of reports in accordance with international specifications (ISO 1996 Parts 1 &2) or Egyptian Specification No. 2836 Parts I and II issued in this regard. Background noise levels are considered during the measurement procedure. The equivalent noise level (LAeq) is the average equivalent acoustic pressure at the measurement level (A) over a specified period of time and is expressed in decibels.

### 2.1.4 Thermal Stress

Annex No. 9 of the Executive Regulations includes periods of exposure of the worker to high thermal stress conditions during working hours per day.

Table11 Limits of thermal exposure (thermal impact) allowed in the working environment according to the working system

| Hourly work and rest system | Hard work | Average hardship work | Light work |
|---|---|---|---|
| Continuous work | 25 Celsius | 26.7 Celsius | 30 Celsius |
| 75% work, 25% comfort | 25.9 Celsius | 28 Celsius | 30.6 Celsius |
| 50% work, 50% comfort | 27.9 Celsius | 29.4 Celsius | 31.4 Celsius |
| 25% work, 75% comfort | 30.0 Celsius | 31.1 Celsius | 32.2 Celsius |

Table12 Work Description

| Description of physical activity | Work Description |
|---|---|
| 1- Light Work | (Simple body movement)<br>Administrative and office work - washing dishes and utensils - sewing - working on machines standing or sitting ... |
| 2- Average hardship work | (Medium body movement)<br>Sweeping - Cooking - Cleaning - Shoe Making - Using Jaws, Installation and Walking Tools - Gardening Works - Driving Cars - Driving Tractors and Harvesters ... |
| 3- Hard Work | (Violent body movement)<br>Canoeing – Blacksmithing – Plumbing – Horse riding – Running and playing ball – Climbing stairs quickly or with loads – Brisk walking with loads – Excavation and loading work – Climbing electricity towers – Milling – Manual work in the field – Construction work – Driving heavy equipment ... |

### 2.1.5 Solid and Hazardous Waste

Law No. 202 of 2020, which was issued to regulate the process of managing waste of all kinds in Egypt, and to define the roles and responsibilities of all actors. The law classifies waste, how to store and dispose of it, and how to differentiate between different types of waste such as municipal, demolition and construction, industrial, non-hazardous, agricultural, hazardous, mixed.

Article 37 of the Law, Articles 38 and 39 of the Executive Bylaws and Law No. 38 of 1967, as amended by No. 31 of 1976 for the collection, handling, and transportation of solid waste. The burning of garbage and solid waste is prohibited and those responsible for collecting, transporting, and disposing of garbage are prohibited from sorting or treating waste except in designated places away from residential, industrial, agricultural and waterways.

Article 29 to Article 32 of Law 4 of 1994 clarifies the conditions to be met in the handling and storage of hazardous materials as well as hazardous wastes. Article 33 of Law 4 of 1994 is concerned with setting precautions to be taken when handling and storing hazardous substances and in any case (gaseous, liquid, solid).

Some hazardous wastes may be generated due to the various activities of the proposed project including liquid and solid wastes. Hazardous wastes include used oils, lubricants, chemicals, batteries, oil filters used in engines, fluorescent light bulbs, paint materials, and empty barrels with chemical/oil residues. These wastes must be handled and transported by licensed companies. It is worth mentioning that these wastes are listed in the decision of the Ministry of Petroleum No. D1352 / 2007.

### 2.1.6 Drinking Water Quality

Resolution 458/2007 stipulates that the implementation of standards, environmental monitoring plans and periodic inspection shall be in accordance with the following tables:

#### 2.1.6.1 Natural properties

Table13 Maximum Allowable Natural Properties in Water

| Property | Maximum allowed |
|---|---|
| Color | Colorless |
| Bait | Acceptable |
| Smell | Absent |
| Turbidity | 1 Unit (NTU) |
| pH | 6.5: 8.5 |

#### 2.1.6.2 Inorganic Substances that have an Effect on Palatability and Household Uses

Table14 Maximum inorganic substances in drinking water

| Parameter | Maximum Allowable Limit (mg/L) |
|---|---|
| Dissolved Solids | 1000 |
| CaCO3 as (Total Hardness) | 500 |
| CaCO3 as (Calcium Hardness) | 350 |
| CaCO3 as (Magnesium Hardness) | 150 |
| Sulfides (SO4) | 250 |
| Chlorides (Cl) | 250 |
| Iron (Fe) | 0.3 |
| Magnesium (Mn) | 0.4 |
| Copper (Cu) | 2 |
| Zinc (Zn) | 3 |
| Sodium (Na) | 200 |
| Aluminum (Al) | 0.2 |

#### 2.1.6.3 Chemicals with an Impact on Public Health

##### 2.1.6.3.1 Inorganic Substances

Table 2 Maximum Limit of Inorganic Chemicals in Drinking Water

| Parameter | Maximum Allowable Limit (mg/L) |
|---|---|
| Lead (Pb) | 0.01 |
| Mercury (Hg) | 0.001 |
| Arsenic (As) | 0.01 |
| Cyanide (Cn) | 0.05 |
| Cadmium (Cd) | 0.003 |
| Selenium (Se) | 0.01 |
| Chromium (Cr) | 0.05 |
| Ammonia as (NH3) | 0.5 |
| Nitrates as (NO3) | 45 |
| Nitrites as (NO2) | 0.2 |
| Fluorides (F) | 0.8 |
| Antimony (Sb) | 0.02 |
| Barium (Bp) | 0.7 |
| Boron (B) | 0.5 |
| Nickel (Ni) | 0.02 |
| Molybdenum (Mo) | 0.07 |

#### 2.1.6.3.2 Organic Matter

Table15 Maximum Organic Chemicals in Drinking Water

| Parameter | Maximum Allowable (mg/L) |
|---|---|
| Alachlor | 0.02 |
| Aldicarb | 0.01 |
| Aldrin and dieldrin | 0.00003 |
| Atrazine | 0.002 |
| Bentazone | 0.03 |
| Carbofuran | 0.007 |
| Chlordane | 0.0002 |
| Chlortoluron | 0.03 |
| D.D.T | 0.001 |
| 1,2 Dibromo 3- chloropropane (DBCP) | 0.001 |
| 2,4- Dichlorophenoxyacetic acid (2,4 D) | 0.03 |
| 1,2Dichloropropa (1,2-DCP) | 0.02 |
| (1,3-DCP) 1,3 - Di chloropropene | 0.02 |
| Hexachlorobenzene | 0.001 |
| Isoproturon | 0.009 |
| Lindane | 0.002 |
| Methylchlorophenoxyacetic acid (MCPA) | 0.002 |
| Methoxychlor | 0.02 |
| Metolachlor | 0.01 |
| Molinate | 0.006 |
| Pendimethalin | 0.02 |
| Pentachlorophenol | 0.009 |
| Permethrin | 0.02 |
| Propanil | 0.02 |
| Pyriproxyfen | 0.3 |
| Simazine | 0.002 |
| Trifluralin | 0.02 |
| 2,4- DB | 0.09 |
| 2,4- Dichloroprop | 0.1 |
| Fenoprop | 0.009 |
| Mecoprop | 0.01 |
| 2,4,5-T | 0.009 |
| Monochloramine | 3 |
| Chlorine | 5 |
| Bromate | 0.01 |
| Chlorite | 0.7 |
| 2,4,6- Trichlorophenol | 0.2 |
| Trihalomethanes | 0.1 |
| Dichloroacetate | 0.05 |
| Trichloroacetate | 0.1 |
| Trichloroacetaldehyde | 0.01 |
| Dichloroacetonitrile | 0.02 |

| | |
|---|---|
| Dibromoacetonitrile | 0.07 |
| Trichloroacetonitrile | 0.001 |
| Carbon tetrachloride | 0.004 |
| Dichloromethane | 0.02 |
| 1,2 Dichloroethane | 0.03 |
| 1,1,1 Trichloroethane | 0.07 |
| Chloride Vinyl | 0.0003 |
| 1,1 Dichloroethene | 0.03 |
| 1,2 Dichloroethene | 0.05 |
| Tetrachloroethene | 0.04 |
| Toluene | 0.7 |
| Benzene | 0.01 |
| Benzo[a]pyrene | 0.0007 |
| Monochlorobenzene | 0.3 |
| 1,2 Dichlorobenzene | 1 |
| 1,4 Dichlorobenzene | 0.3 |
| Trichlorobenzenes (Total) | 0.02 |
| Di (2-ethylehexyle) adipate | 0.08 |
| Di (2-ethylehexyle) phthalate | 0.008 |
| Crylamide | 0.0005 |
| Epichlorohydrin | 0.0004 |
| Hexachlorobutadiene | 0.0006 |
| Edetic acid (EDTA) | 0.6 |
| Triacetic Nitril | 0.2 |
| Endrin | 0.0006 |
| Chlorate | 0.7 |
| Bromoform | 0.1 |
| Chloroform | 0.3 |
| Chloralhydrate | 0.01 |
| Dimethoate | 0.006 |
| Formaldehyde | 0.9 |
| Cyanogen Chloride | 0.007 |
| Tributyltin Oxide | 0.002 |
| Phenol | 0.002 |
| Di-and Trichloramine | 0.005 |
| Xylenes | 0.5 |
| Ethylbenzene | 0.3 |
| Styrene | 0.02 |
| Bromodichloromethane | 0.06 |
| Trichloroethene | 0.02 |

#### 2.1.6.4 Microbiological Criteria

Table16 Maximum microbiological standards in drinking water

| Maximum allowed | Measurement Method | Type of examination |
|---|---|---|
| No more than 50 cells / 1 cm3 at 37 ° C for 24 hours<br>No more than 50 cells / 1 cm3 at 22 ° C for 48 hours | Poured plate method | Total Bacteria Count |
| 95% of samples examined during the year must be completely free of Total Coli form in 100 cm3 of the sample.<br>Also, none of the samples should contain more than 2 cells/100 cm3, provided that this is not repeated in successive samples from the same source | MF<br>Or<br>MPN | Pollution Evidence<br>Total Coli form |
| All samples must be free of typical colon basil | | Fecal colon bacteria (typical colon basil) |
| All samples must be free of the fecal microbe | | Fecal Bacteria |
| The proportion of micro cetin should not exceed a microgram / l and this analysis is carried out in the event of the appearance of sudden growth of blue-green algae or the presence of high numbers of them.<br>It should be completely free of protozoa and all pathogenic worm phases | | Biological Examination<br>Algae Samples<br>When examining water microscopically |

### 2.1.7 Radioactive Materials

Table17 Maximum Limit for Radioactive Materials in drinking water

| M | Type of examination | Maximum allowed |
|---|---|---|
| A | Derivatives of the alpha family (α) | 0.1 Pico Curry / l |
| B | Derivatives of the alpha family (β) | 10 Pico Curry / L |

### 2.1.8 Sanitation

It regulates Law 93/1962 and Ministerial Decree 44/2000 which stipulates the criteria for the examination of the quality of wastewater and the discharge of wastewater into public sewage. Article 10 of Ministerial Decision 44/2000 states that the current or proposed facility generating wastewater that does not meet the limits set out in Decree 44/2000, is required to conduct primary and/or secondary treatment (whichever is required) to ensure that the wastewater discharged conforms to the prescribed limits.

Article 11 states that if the competent authority considers that the wastewater discharged poses a danger to sewage networks or treatment plants, it has the right to request the owner or manager of the facility to treat the said hazardous substances before discharging them into public sewage networks; otherwise, the discharge permit shall be revoked.

Article 17 prohibits any entity that discharges wastewater into the public sewage network from diluting the concentration of industrial wastewater in any way as a partial or total substitute for the appropriate treatment necessary in relation to articles 7, 8 and 9 of Law No. 93 of 1962.

Table18 Maximum Allowable Limits in Wastewater

| Type of Examination | Allowable Limit |
|---|---|
| pH | 6 – 9.5 |
| Temperature(C) | 43 |
| BOD5 (mg/L) | 600 |
| COD (mg/L) | 1,100 |
| TSS (mg/L) | 800 |
| Oil and grease (mg/L) | 100 |
| Sulfates (mg/L) | 10 |
| Total Nitrogen (mg/L) | 100 |
| Total Phosphorus (mg/L) | 25 |
| Cyanide (mg/L) | 0.2 |
| Phenol (mg/L) | 0.05 |
| Solids that can be leveled after 10 minutes (cm3 / l) | 8 |
| Levelable solids after 30 minutes (cm3/L) | 15 |
| Total heavy metals (mg/L) | 5 |
| Hexavalent chromium (mg/L) | 0.5 |
| Cadmium (mg/L) | 0.2 |
| Lead (mg/L) | 1 |
| Mercury (mg/L) | 0.2 |
| Silver (mg/L) | 0.5 |
| Copper (mg/L) | 1.5 |
| Nickel (mg/L) | 1 |
| Arsenic (mg/L) l) | 2 |
| Tin (mg/L) | 2 |
| Boron (mg/L) | 1 |

Law 93/1962 regulates the use of primary treated wastewater for irrigation purposes, and Decree 44/2000 providing for wastewater inspection criteria as shown in the table below.

Table19 Maximum water parameters for agriculture

| Parameter | Maximum Allowed |
|---|---|
| Total coliforms per 100 ml | Unspecified |
| BOD5 (ppm) | 300 |
| COD (ppm) | 600 |
| Total dissolved solids (ppm) | 2500 |
| Total dissolved solids (ppm) | 350 |
| Nematodes (eggs / filter) | 5 |
| Sodium absorption (%) | 25 |
| L-chlorides (ppm) | 350 |
| Boron (ppm) | 5 |
| Lead (ppm) | 10 |
| Cadmium (ppm) | 0.05 |
| Manganese (ppm) | 0.2 |

### 2.1.9 Biodiversity

Agricultural Law 53/1966, as amended by Law 116/1983, was the main legislation protecting wildlife, especially birds, prior to the elaboration of Law 102/1983 on Reserves and Law 4/1994 on the Environment. Law 53/1966 and its implementing regulations continue to provide lists of legally protected wildlife species.

The main law protecting nature reserves is Law 102/1983. The law was created to allow the protection of private natural attractions, landscapes, natural habitats, and wildlife. Ministerial Decision No. 1067/1983 stipulates the appointment of the EEAA as an administrative body authorized to implement Law No. 102/1983.

Law 102/1983 (Article 1) states that natural protection is defined as: "Any area of coastal or inland land or waters characterized by natural flora, fauna and monuments of cultural, scientific, tourist or aesthetic value".

The law preserves these areas by prohibiting activities that are liable to harm certain nature reserves (Article 2), either within the reserve, or even within the surrounding area (Article 3).

Article 28 of Law 4/1994 and Article 23 of its Executive Regulations also prohibit hunting, shooting or hunting species of birds and wild animals specified in Annex 4 of Law 4/1994. The law also prohibits the destruction of nests or eggs of these birds.

This provision applies to nature reserve areas:

1. Nature reserves as defined in the decisions of the Presidency of the Council of Ministers issued in implementation of Law 102/1983.
2. The areas specified in the international conventions that Egypt has signed and ratified.
3. Any other areas determined by a decision of the competent authority in coordination with the Environmental Affairs Agency.

The protection granted to animal species listed in Annex 4 of Law 4/1994 extends to:

1. Animal species listed in Ministerial Decision No. 28/1967 of Article 117 of Law 53/1966 as amended by Law 116/1983.
2. Other animal species protected under international conventions to which Egypt is a party.

3. Any birds or others in respect of which a decision is issued by the Minister of Agriculture with the approval of the Environmental Affairs Agency.

At this stage, nature reserves are not expected to fall within the project's sphere of influence.

Article 22 of Law 4 of 1994 stipulates that a record shall be maintained to show the impact of the activity of the establishment on the environment, and Article 17 and Annex No. (3) of the Executive Bylaws shall clarify the data necessary to be recorded in this register. The contingency plan and the statement of hazardous substances are part of the environmental register as stated in Law 4/94 and the inspector must review the register.

### 2.1.10 Protection of the Aquatic Environment from Ship Pollutants

Article 60 of the Environment Law 4/1994 and its various amendments affirm the prohibition of the voluntary or indirect dumping or disposal of any harmful substances, wastes or residues directly or involuntarily from carriers of harmful liquid substances that may result in damage to the aquatic environment, public health, or other legitimate uses of the sea.

Article 48 of the Executive Bylaws of Law 9/2009, which includes amendments to the Environment Law, stipulates that the aim of protecting the water environment from pollution is to achieve the following purposes:

1. Protecting the beaches and ports of the Arab Republic of Egypt from the dangers of pollution by collecting its images and forms
2. Protect the territorial sea area, the exclusive economic zone, and its living and non-living natural resources by preventing, reducing, and controlling pollution of any source.
3. Protection of natural resources in the economic zone and the continental shelf.
4. Compensation for damages caused to any medical or legal person as a result of pollution of the aquatic environment and the Minister of Environment shall be responsible in coordination with the Minister of Maritime Transport and the competent administrative authorities referred to in paragraph 38 of Article 1 of this Law to achieve the purposes referred to each in his own right.

Article 49 states that all ships, whatever their nationality, are prohibited from discharging or dumping oil or oil blends into the territorial sea or the exclusive economic zone of the Arab Republic of Egypt.

As for warships or auxiliary naval vessels belonging to the Arab Republic of Egypt or other ships owned or operated by the State or public bodies and used in non-commercial government service and which are not subject to the provisions of the International Convention for the Prevention of Pollution from Ships, such ships shall take precautions to prevent pollution of the territorial sea or the exclusive economic zone of the Arab Republic of Egypt.

Article 50 is devoted to confirming the prohibition of dumping oil mixtures and pollutants into the sea for ships registered with the Arab Republic of Egypt.

Article 51 obliges foreign oil tankers frequenting Egyptian ports to implement all the requirements of Rule 13 of Annex 1 of the Convention and its amendments and excludes oil tankers used on limited flights from these requirements.

In accordance with Rule No. 13C of the Convention and amendments as well as oil tankers transiting the Suez Canal that do not have to dump any contaminated ballast water.

Article 53 stipulates that representatives of the competent administrative authority or judicial officers have the right to order the master or administrator of the ship to take adequate measures to protect against the effects of pollution in the event of an accident to one of the ships carrying the oil that results in or is feared by pollution of the territorial sea or the exclusive economic zone of the Arab Republic of Egypt.

Article 55 requires the owner and master of the vessel or any person responsible for it, and those responsible for the means of transport of oil located within the ports, the territorial sea or the exclusive economic zone of the Arab Republic of Egypt, as well as the companies engaged in the extraction of oil, shall immediately inform the competent administrative authorities of each oil leakage incident as soon as it occurs, indicating the circumstances of the accident, the type of leaking material, the measures taken to stop or reduce the leakage, and other data provided for. In the Convention and the implementing regulations of this Law, in all cases, the competent administrative authorities shall inform the Environmental Affairs Agency of all the information referred to as soon as it occurs.

Article 56 emphasizes the importance of equipping all shipping ports and ports intended to receive oil tankers and ship repair docks with the necessary equipment sufficient to receive unclean balance water and water left over from the washing of tanks of oil tankers or other ships. Ports must be equipped with the necessary and sufficient tools and vessels to receive waste, waste, oil sediment and oil mix from ships moored in the port. It is not permissible to authorize any ship or tanker to carry out the work of shipping and unloading until after referring to the competent administrative authority to receive it and direct it to the places of disposal of waste and unclean balance water.

Article 57 stipulates the importance of the competent ministers specifying the type of pollution reduction devices and equipment with which ships registered in the Arab Republic of Egypt or offshore platforms erected in the water environment must be equipped. Foreign ships using Egyptian ports or sailing through their own maritime zone must be equipped with pollution reduction equipment in accordance with the Convention on the Prevention of Sea Pollution and its annexes.

Article 58 requires every owner or master of a ship registered in the Arab Republic of Egypt as well as the ships of the countries that have acceded to the Convention to keep a register of oil in the ship in which all operations related to oil are recorded in the manner indicated in the Convention, in particular the following operations:

1. Carry out loading, delivery, or other oil load transportation processes with the type of oil.
2. Drainage of oil or oil blend in order to ensure the safety of the vessel or its cargo or save lives with the type of oil.
3. Oil leakage or oil mixture as a result of a collision or accident with the indication of the percentage of oil and the volume of leakage.
4. Unclean balance water drainage or tank washing.
5. Disposal of contaminated waste and dumping of centennial water containing oils that have accumulated in the machinery space outside the ship while it is in the port.

The implementing regulation specifies how to register oil discharge processes or oil blends for offshore platforms erected in the water environment.

Article 59 requires oil tankers registered in the Arab Republic of Egypt with a total tonnage of 2,000 tons or more, as well as other oil transport devices and vessels with a total tonnage of 150 tons or more operating in the territorial sea or exclusive economic zone of the Arab Republic of Egypt to submit to the competent administrative authority in accordance with the controls issued by a decision of the Minister of Maritime Transport in agreement with the Minister of Petroleum and the Minister of Environment, a certificate of financial guarantee in the form of insurance or bond. Refund or other warranty. The certificate of warranty must be presented upon the entry of the carrier into the territorial sea and must be valid and cover all damages and damages estimated by the competent administrative authority. For ships registered in the States that are signatories to the International Convention on Civil Liability for Oil Pollution Incidents, this certificate shall be issued by the competent authority of the State in which the vessel is registered.

Articles 62-63 of the Environment Law 4/1994 and its various amendments are concerned with pollution by harmful substances. Article 62 stipulates the importance of tankers carrying harmful liquid substances being provided with the cargo record in accordance with the Convention in which the master or the shipwright is responsible for all operations as indicated in the Convention. Article 63 stipulates that representatives of the competent administrative authority or judicial officers shall have the right to order the master or administrator of the ship to take the necessary measures to minimize the effects of pollution in the event of an accident involving a ship carrying harmful substances that fears contamination of the territorial sea or the exclusive zone of the Arab Republic of Egypt in any form, and ships carrying harmful substances are prohibited from dumping waste and contaminated materials in the continental shelf and the exclusive economic zone of the Arab Republic of Egypt.

Articles 66-68 of the Environment Law 4/1994 and its various amendments are concerned with pollution by sewage and garbage waste. Article 66 prohibits ships and offshore platforms from discharging contaminated sewage within the territorial sea and the exclusive economic zone of the Arab Republic of Egypt and requires its disposal in accordance with the standards and procedures determined by the implementing regulations of the Environmental Law. Article 67 prohibits all ships and offshore platforms engaged in the exploration and exploitation of natural and mineral resources in the water environment of the Arab Republic of Egypt, as well as ships using Egyptian ports, from dumping garbage or waste in the territorial sea or the exclusive economic zone of the Arab Republic of Egypt, and ships must deliver garbage in the facilities for receiving waste or in places determined by the competent administrative authorities for a certain fee issued by a decision of the competent administrative authorities. Article 68 requires that all shipping and unloading ports, ports intended for the reception of ships and repair docks for fixed or floating ships be equipped with the necessary and sufficient preparations to receive contaminated drainage water and ships' waste from garbage.

Articles 62-63 of the Environment Law 4/1994 and its various amendments are concerned with pollution by harmful substances. Article 62 stipulates the importance of tankers carrying harmful liquid substances being provided with the cargo record in accordance with the Convention in which the master or the shipwright is responsible for all operations as indicated in the Convention. Article 63 stipulates that representatives of the competent administrative authority or judicial officers shall have the right to order the master or administrator of the ship to take the necessary measures to minimize the effects of pollution in the event of an accident involving a ship carrying harmful substances that fears contamination of the territorial sea or the exclusive zone of the Arab Republic of Egypt in any form, and ships carrying harmful substances are prohibited from dumping waste and contaminated materials in the continental shelf and the exclusive economic zone of the Arab Republic of Egypt.

Articles 66-68 of the Environment Law 4/1994 and its various amendments are concerned with pollution by sewage and garbage waste. Article 66 prohibits ships and offshore platforms from discharging contaminated

sewage within the territorial sea and the exclusive economic zone of the Arab Republic of Egypt and requires its disposal in accordance with the standards and procedures determined by the implementing regulations of the Environmental Law. Article 67 prohibits all ships and offshore platforms engaged in the exploration and exploitation of natural and mineral resources in the water environment of the Arab Republic of Egypt, as well as ships using Egyptian ports, from dumping garbage or waste in the territorial sea or the exclusive economic zone of the Arab Republic of Egypt, and ships must deliver garbage in the facilities for receiving waste or in places determined by the competent administrative authorities for a certain fee issued by a decision of the competent administrative authorities. Article 68 requires that all shipping and unloading ports, ports intended for the reception of ships and repair docks for fixed or floating ships be equipped with the necessary and sufficient preparations to receive contaminated drainage water and ships' waste from garbage.

Articles 71-75 of the Environment Law 4/1994 and its various amendments are concerned with pollution from land-based sources. Article 71 stipulates that the specifications and standards to which industrial establishments authorized to discharge biodegradable pollutants shall be determined after they have been processed. The competent administrative authority specified in the Executive Bylaws of the Environment Law 4/1994 and its various amendments shall carry out periodic analysis in its laboratories of the treated effluent streams and notify the competent administrative authorities of the result of the analysis. In case of violation, the concerned person shall be given a period of one month to process the waste to conform to the specified specifications and standards. If the processing is not carried out within the period indicated or the analysis proves that the continuation of the disbursement would cause serious damage to the water environment, the disbursement shall be stopped by the administrative method and the license issued to the establishment shall be withdrawn without prejudice as per the penalties contained in this Law. The implementing regulation also specifies non-biodegradable pollutants that industrial establishments are prohibited from discharging into the aquatic environment. Article 72 affirms the responsibility of the management of the facility for violations committed by its employees that may harm the aquatic environment and imposes on them the penalties provided for in article 87 of the Environmental Law. Article 74 prohibits any action that would prejudice the natural route line of the beach or modify it into or retreat from the sea water except after the approval of the competent administrative authority to coordinate with the Environmental Affairs Authority. The implementing regulation of this Law shall regulate the procedures and conditions to be followed in this regard. Article 75 affirms the right of representatives of the competent administrative authorities, each in coordination with the Environmental Affairs Authority, to enter the exclusion zone mentioned in article 73 of this Law to see what is being done in it, and if it is found to them that works have been carried out or initiated in violation of the previous provisions, the violator shall be charged with returning the parameters to their origin and the work shall not be stopped administratively and the thing shall be returned to its origin at the expense of the cause in solidarity and the value shall be obtained by means of administrative detention.

Articles 76-77 of the Environment Law 4/1994 and its various amendments are concerned with the international certificates required by the Arab Republic of Egypt to be issued to ships registered with it. Article 76 obliges ships holding the nationality of the Arab Republic of Egypt to obtain from the Ports and Lighthouses Authority the International Certificate for the Prevention of Pollution by Oil or the International Certificate for the Prevention of Pollution Resulting from the Carrying of Liquid Bulk Substances. The issuance of the two certificates shall be in accordance with the terms and conditions set forth in the Agreement and the validity period of the certificate shall not exceed five years from the date of its issuance. Article 77 requires ships that regularly transport oil from or to an Egyptian port or from the means of transport of oil within:

1. The territorial sea or exclusive economic zone of the Arab Republic of Egypt bearing the flag of a State acceding to the Convention
2. To be in possession of the International Certificate for the Prevention of Pollution by Oil and to have this certificate valid in accordance with the Convention.
3. Ships to which the provision of the first paragraph of this article applies and which bear the flag of a State not party to the Convention shall be determined.

The competent administrative authorities are the certificate of prevention of pollution with oil, which is granted by the Department of Ports and Lighthouses before being licensed to transport oil on a regular basis from one of the Egyptian ports or from one of the means of transporting oil within the exclusive economic zone.

### 2.1.11 Environmental and Social Impact Assessment Guidelines for the Environmental Affairs Agency, Regarding Community Consultation

All stakeholders in the project subject community are invited to consult with important information about the project to the attendees. Detailed information on the scope of the community and methodological consultation, and related documentation work, is provided in paragraph 6.4.3 of the EEAA Environmental and Social Impact Assessment Guidelines.

1. Paragraph 6.4.3.1, Scope of public consultation
2. Paragraph 6.4.3.2, Methodology for Public Consultation
3. Paragraph 6.4.3.3, Documentation of the results of the consultation
4. Paragraph 7, Requirements, and scope of the results of the environmental impact assessment

### 2.1.12 Nature of Work

Many laws and decisions deal with the provisions of occupational health and safety in the work area, in addition to articles 43-45 of Law 4/1994, which determines air quality, noise and heat stress, and provides protection measures for workers. These laws apply to staff who will be involved in construction activities.

Law No. 12/2003 on Labor and Manpower Safety and Book V on Occupational Safety and Health and Ensuring the Efficiency of the Work Environment this law deals with the extent to which protective equipment is provided to workers and firefighting/emergency response plans. Furthermore, the following laws and decrees should be considered:

1. Resolution No. 126/2003 amending Resolution No. 75/1993 establishing procedures and forms for reporting work accidents, injuries, deaths and diseases.
2. Decision No. 211/2003 amending Decision No. 55/1983 specifying the conditions and precautions necessary for the provision of occupational safety and health measures in the workplace,
3. Resolution No. 134/2003 amending Resolution No. 116/1991 specifying the types of institutions that are committed to establishing relevant occupational health and safety organs and committees and training institutions.
4. Law No. 79/1975 as amended by Law No. 25/1977 on Social (and Health) Insurance
5. Law on Social Insurance and Pensions No. 135/2010.

The following describes the requirements to be met in the (place) environment of work as defined by national regulations and legislation.

#### 2.1.12.1 Noise

Annex 7 of the implementing regulations amended in 2012 provides for permissible limits on sound intensity and safe exposure times to noise which must be under observation by operators of the working environment (place) under the proposed project.

Table 20 Noise levels allowed within different activity sites

| Type of place and activity | | Maximum allowable noise level [Decibel (Aeq) dB] |
|---|---|---|
| Workplaces (workshops, factories) and the like are rosy up to 8 hours. (For establishments licensed starting in 2014) | | 85 |
| Administrative offices – workrooms for computer units or the like | | 65 |
| Hospitals and medical clinics, public libraries, museums, post offices, courtrooms, mosques, and places of worship. | | 45 |
| Universities, schools, nurseries, institutes, and other similar institutions | Inside the classroom | 40 |
| | Playgrounds and courtyards of educational buildings | 55 |
| Residential buildings, hotels, and other similar institutions | Inside living rooms | 50 |
| | Inside the bedrooms | 35 |

For Article 1, the exposure period is halved if the noise level rises by 3 dB for not affecting the sense of hearing while wearing appropriate earplugs.

The noise level should not exceed 135 dB(A) at any moment during the working period.

The noise level within working areas and closed areas is measured using LAeq in accordance with international specifications (part 1 and 2) ISO 9612 / ISO 1996 or Egyptian specifications No. 2836 Part 1 and 2 and No. 5525 in this regard.

The equivalent noise level (LAeq) is the average acoustic pressure at the measurement level (A) over a specified period of time, measured in decibels.

| Peak noise intensity level [dB(A)] $L_{cPeak}$ | 115 | 120 | 125 | 130 | 135 |
|---|---|---|---|---|---|
| Number of strikes allowed during working hours | 30000 | 10000 | 3000 | 1000 | 300 |

Exposure to intermittent noise will depend on the level of noise intensity shown in the previous table (number of strokes in shift).

Hammer blows are considered intermittent if they are 1 second between blows or more. If the duration is less than 1 second, the strikes are considered continuous, and the noise level must correspond to Schedule 1 in Annex 7 of the Implementing Regulations.

#### 2.1.12.2 Hazardous Chemicals and Wastes in the Workplace

The employer or his delegate shall be obliged to provide identification cards for chemical materials used or produced within the establishment in Arabic, provided that they are placed in a file in a visible place in the establishment in such a way as to facilitate access to them, provided that these cards include the following:

1. The name of the chemical, scientific and commercial material and the name, address and number of the manufacturer and distributor of this material.
2. Any dangerous components contained in the chemical substance, as well as the safe concentration of this substance, which can be exposed to it for 8 hours a day without damage.
3. Possible health risks to humans due to exposure to a higher concentration than the safe concentration of this substance, as well as the way in which the substance is absorbed whether through the skin, breathing, swallowing.... , as well as human organs targeted by this substance.
4. First aid procedures to be followed in case of injury from this substance.
5. How can this material ignite, as well as the extinguishing materials to be used to extinguish these fires (in the case of flammable materials).
6. How to prevent accidents and injuries expected to occur in the event of a leak or spillage of this substance on the ground or the emission of large quantities of its vapors to the working atmosphere as well as how to contain this leakage and healthy ways to clean the workplace while following all safety precautions.
7. Information on how to handle the material and how to store it correct storage.
8. Safety tasks for personal protection to be used when handling the substance to prevent injury.
9. Chemical physico-properties of a material such as: (color, state, smell, solubility in water, vapor pressure, boiling point, freezing point, density...)
10. How the substance becomes hazardous as a result of its interaction with other substances, and how stable the material is as well as the substances that are not compatible with it and are required to be kept away from it.
11. The degree of toxicity of the substance and the results of the tests carried out to determine this.
12. The impact of matter on the environment and the environmental life around it such as aquatic organisms, plants, animals, and birds, as well as the duration of the material's survival retaining its degree of danger.
13. Information on safe and correct ways to dispose of the substance.
14. Information on the precautions to be taken when transporting this substance by various means of transport.
15. Information on the degree of gravity of the substance is classified according to the specifications and requirements of international organizations.
16. Any other information about the material.

### 2.1.13 Land-Use Plans

The Suez Canal Free Economical Zone has jurisdiction of the land development across the banks of the Suez Canal and the east side on which the SCCT project lies on. There are future plans to build an East Port Said (EP) industrial zone with a land footprint of 63 square Kilometers in addition to building neighboring ports on the east side of the Suez Canal.


Illustration 2 Location of EP Industrial Zone

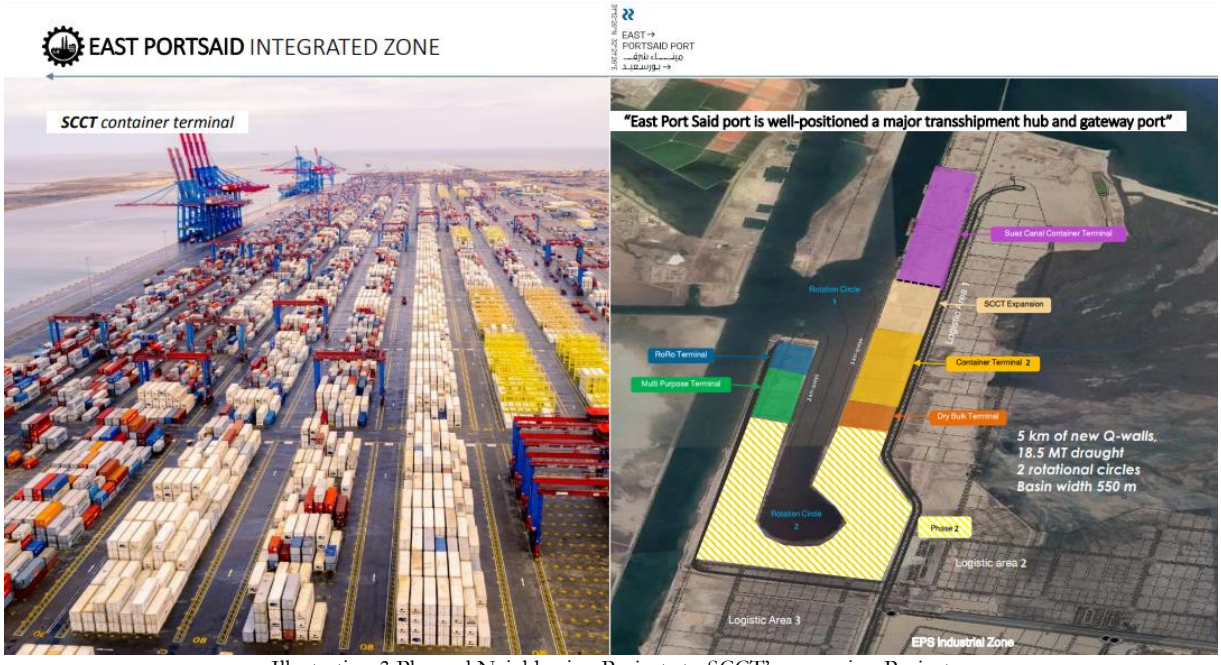


Illustration 3 Planned Neighboring Projects to SCCT's expansion Project

### 2.1.14 Other Relevant Laws

1. Law No. 117 of 1983 and Law No. 86 of 1956 on the Protection of Antiquities.
2. Agricultural Law No. 53/1966, as amended by Law No. 116/1983, the main legislation for the protection of wildlife, especially birds.
3. Law No. 102/1983 on Reserves.
4. Traffic Law No. 66/1973, as amended by Law No. 121/2008.
5. Law No. 572 of 1954 Determining the Categories of Fees for Ports, Lighthouses, Piers, and Wires, as amended by Law No. 67 of 1955.
6. Law No. 1 of 1996 on Specialized Ports and its amendments by Law No. 10 of 2017.

## 2.2 Relevant International Convention and Treaties

Table21 Multilateral Environmental Conventions

| **Multilateral Environmental Conventions** |
|---|
| **Biodiversity and natural resources** |
| International Plant Protection Convention |
| Agreement on the Establishment of a Commission for the Control of Desert Locusts in the Near East |
| Convention on Wetlands of International Importance, Especially as Waterfowl Home (RAMSAR) |
| Convention concerning the Protection of the World Cultural and Natural Heritage |
| Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) |
| Convention on the Conservation of Migratory Species of Wild Animals |
| Protocol to Amend the Convention on Wetlands of International Importance, especially as a Habitat for Waterfowl |
| Convention on Biological Diversity (CBD) |
| Convention Establishing the Organization for the Protection of Plants in the Lower East |
| United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, particularly in Africa |
| Protocol on Particularly Protected Areas and Biodiversity in the Mediterranean Sea |
| African Convention on the Conservation of Nature and Natural Resources (Revised) |
| International Tropical Timber Convention |

| **Multilateral Environmental Conventions** |
|---|
| **Hazardous Substances and Chemicals** |
| Convention on the Prevention and Control of Occupational Hazards Arising from Carcinogenic Substances and Agents |
| Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction |
| Protocol for the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and Their Disposal |
| Convention on the Prohibition of Military Use or Any Hostile Use of Environmental Modification Techniques |
| Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal |
| Bamako Convention on the Prohibition of Imports into Africa and Control of Transboundary Movement and Management of Hazardous Wastes within Africa |
| to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal |
| Stockholm Convention on Persistent Organic Pollutants (POPs) |
| **Atmosphere and air pollution** |
| Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies |
| Vienna Convention for the Protection of the Ozone Layer |
| Montreal Protocol on Substances that Deplete the Ozone Layer |
| (London) Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer |
| United Nations Framework Convention on Climate Change |
| (Copenhagen) Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer |
| Kyoto Protocol |
| Paris Agreement under the United Nations Framework Convention on Climate Change |

| **Multilateral Environmental Conventions** |
|---|
| **Health and safety of workers** |
| ILO Core Labor Standards |
| Convention on the Protection of Workers against Ionizing Radiation |
| Convention on the Protection of Workers from Occupational Hazards in the Working Environment Due to Air Pollution, Noise and Vibration |
| Occupational Safety and Health Agreement |

## 2.3 IFI Guidelines and Best Practices

### 2.3.1 IFC Performance Standards

To manage the social and environmental risks and impacts of IFC projects, the IFC has developed a number of environmental and social Performance Standards. The IFC PS and the accompanying Guidance Notes are applicable to this Project. IFC PS indicate that the party responsible for implementing and operating the project must comply with the applicable national laws, including those laws implementing host country obligations under international law. The project operator is also required to meet the requirements of the standards throughout the life of an investment by IFC or other relevant financial institution. These are as follows:

Table 22 IFC Performance Standards (PS)

| IFC Performance Standards (PS) | Description of Performance Standard | Triggered (Y/N) |
|---|---|---|
| **PS 1** | Assessment and Management of Environmental and Social Risks and Impacts | Y |
| **PS 2** | Labor and Working Conditions | Y |
| **PS 3** | Resource Efficiency and Pollution Prevention | Y |
| **PS 4** | Community Health, Safety and Security | Y |
| **PS 5** | Land Acquisition and Involuntary Resettlement | N |
| **PS 6** | Biodiversity Conservation and Sustainable Management of Living Natural Resources | Y |
| **PS 7** | Indigenous Peoples | N |
| **PS 8** | Cultural Heritage | N |

Other supporting documents include IFC's:

- Guidance Notes, which are companion documents to the Performance Standards and provide additional guidance to clients (and IFC staff) in fulfilling their roles and responsibilities under the standards.
- Environment, Health & Safety (EHS) Guidelines, which are technical guidance informing those parts of the new policy structure related to environmental, health and safety issues.
- Environmental, Health, And Safety Guidelines for Ports, Harbors, and Terminals, 2017

Table 23 Applicability of IFC's PS

| IFC PS | Title of the PS | Description | Justification/Remarks |
|---|---|---|---|
| **Performance Standard 1** | Assessment and Management of Environmental and Social Risks and Impacts | – To identify and evaluate environmental and social risks and impacts of the project.<br>– To adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimize, and, where residual impacts remain, compensate/offset for risks and impacts to workers, Affected Communities, and the environment.<br>– To promote improved environmental and social performance of clients through the effective use of management systems.<br>– To ensure that grievances from Affected Communities and external communications from other stakeholders are responded to and managed appropriately.<br>– To promote and provide means for adequate engagement with Affected Communities throughout the project cycle on issues that could potentially affect them and to ensure that relevant environmental and social information is disclosed and disseminated. | PS1 is triggered for the project because the activities involve environmental and social risks and impacts, which PS1 aims at identifying and mitigating |
| **Performance Standard 2** | Labor and Working Conditions | – To promote the fair treatment, non-discrimination, and equal opportunity of workers.<br>– To establish, maintain, and improve the worker-management relationship.<br>– To promote compliance with national employment and labor laws.<br>– To protect workers, including vulnerable categories of workers such as children, migrant workers, workers engaged by third parties, and workers in the client's supply chain.<br>– To promote safe and healthy working conditions, and the health of workers.<br>– To avoid the use of forced labor. | PS 2 is triggered for the project because it ensures that proper labor and working conditions are enforced in the throughout the project, including contractors and third-party subcontractors |

| IFC PS | Title of the PS | Description | Justification/Remarks |
|---|---|---|---|
| **Performance Standard 3** | Resource Efficiency and Pollution Prevention | – To avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities.<br>– To promote more sustainable use of resources, including energy and water.<br>– To reduce project-related GHG emissions. | PS3 is triggered for the project given the possibility of negative impacts of pollution arising from project activities on communities and the environment. |
| **Performance Standard 4** | Community Health, Safety and Security | – To anticipate and avoid adverse impacts on the health and safety of the Affected Community during the project life from both routine and non-routine circumstances.<br>– To ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the Affected Communities. | |
| **Performance Standard 5** | Land Acquisition and Involuntary Resettlement | – To avoid, and when avoidance is not possible, minimize displacement by exploring alternative project designs.<br>– To avoid forced eviction.<br>– To anticipate and avoid, or where avoidance is not possible, minimize adverse social and economic impacts from land acquisition or restrictions on land use by (i) providing compensation for loss of assets at replacement cost and (ii) ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected.<br>– To improve, or restore, the livelihoods and standards of living of displaced persons.<br>– To improve living conditions among physically displaced persons through the provision of adequate housing with security of tenure at resettlement sites. | PS5 is not triggered for the project because the project's scope will not include land acquisition. |

| IFC PS | Title of the PS | Description | Justification/Remarks |
|---|---|---|---|
| **Performance Standard 6** | Biodiversity Conservation and Sustainable Management of Living Natural Resources | – To protect and conserve biodiversity.<br>– To maintain the benefits from ecosystem services.<br>– To promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs and development priorities. | PS6 is triggered since a number of biodiversity values were found along the proposed route. |
| **Performance Standard 7** | Indigenous Peoples | – To ensure that the development process fosters full respect for the human rights, dignity, aspirations, culture, and natural resource-based livelihoods of Indigenous Peoples.<br>– To anticipate and avoid adverse impacts of projects on communities of Indigenous Peoples, or when avoidance is not possible, to minimize and/or compensate for such impacts.<br>– To promote sustainable development benefits and opportunities for Indigenous Peoples in a culturally appropriate manner.<br>– To establish and maintain an ongoing relationship based on Informed Consultation and Participation (ICP) with the Indigenous Peoples affected by a project throughout the project's life-cycle.<br>– To ensure the Free, Prior, and Informed Consent (FPIC) of the Affected Communities of Indigenous Peoples when the circumstances described in this Performance Standard are present.<br>– To respect and preserve the culture, knowledge, and practices of Indigenous Peoples. | PS 7 (Indigenous Peoples) is not considered to be applicable to this Project. The Indigenous World 2020 Report (IWGIA, 2020) states that Egypt is not classified as a country with indigenous people. |
| **Performance Standard 8** | Cultural Heritage | – To protect cultural heritage from the adverse impacts of project activities and support its preservation.<br>– To promote the equitable sharing of benefits from the use of cultural heritage. | PS 8 is not triggered as cultural heritage sites (both registered and unregistered) have not been identified at the site's proposed location. |

### 2.3.2 Gap Analysis Between Egyptian and IFI Environmental and Social Standards

Table 24 Gap Analysis Between Egyptian and IFI Environmental and Social Standards

| IFC PS | National (Egyptian) Laws | Requirement |
|---|---|---|
| PS 1: Assessment and Management of Environmental and Social Risks and Impacts | – Law No. 4 of 1994 Amended by Law No. 9 of 2009 (Environment Law) and its amended Articles of Association amended by Resolution 1095 of 2011, Decree No. 710 of 2012, Decision of the Prime Minister No. 964 of 2015 and Decree No. 618 and 1963 of 2017<br>– Public cleanliness law 38/1967 amended by law 31/1976 and its executive regulations<br>– Law no. 159 for the year 1953 regulates the cleanliness of fields, roads and streets as well as organization of collection and transport of waste.<br>– Laws 106/1976 and 101/1996 allow local governments to include the management of construction and demolition waste in the permits required for construction activities<br>– Law 202/2020 regarding solid waste management.<br>– Law 140/ 1956 regarding occupation of public roads<br>– Law 84/ 1968 regarding public roads<br>– Law 93/1962 on Wastewater disposal into the drainage systems<br>– Law 48/1982 on protection of Nile River Water and Egypt waterways from pollution | – Discrepancies in air quality, water quality and noise limits between the national laws and WB standards<br>– Not addressing all social risks and impacts, including: (ii) temporary labor influx, and (iii) risk of gender-based violence.<br>– Objectives related to avoiding impacts do not fall disproportionately on the disadvantaged or vulnerable, and they are not disadvantaged in sharing development benefits and opportunities resulting from the project.<br>– The lack of a specific role for the official in charge of social aspects |
| PS 2: Labor and Working Conditions | – Articles 43 - 45 of Law No. 4/1994 and articles 44 - 47 of its modified Executive Regulations by Decrees No. 1095/2011 and 710/2012<br>– Labor Law No. 12/2003 | – The Egyptian labor law does not include clear articles that guarantee application to all project workers including fulltime, part-time, contracted workers, primary supply workers, community workers, temporary, seasonal and migrant workers,<br>– Egyptian Labor Law does not include an obligation to provide workers with |

| IFC PS | National (Egyptian) Laws | Requirement |
|---|---|---|
| | | facilities appropriate to the circumstances of their work, including access to canteens, hygiene facilities, and appropriate areas for rest. In addition to quality of accommodation, if needed.<br>– The IFIs standards stipulates number of requirements related to labor safety, welfare and working conditions. The most common gap between the Egyptian labor law and those requirements are that the latter did not set clear provisions for GRM of labor nor the work-related facilities to be offered for labor. The law assumed equitable treatment for labor without classifying the various types of labor. |
| PS 3: Resource Efficiency and Pollution Prevention | – Law No. 4 of 1994 Amended by Law No. 9 of 2009 (Environment Law) and its amended Articles of Association amended by Resolution 1095 of 2011, Decree No. 710 of 2012, Decision of the Prime Minister No. 964 of 2015 and Decree No. 618 and 1963 of 2017<br>– Law 93/1962 on Wastewater disposal into the drainage systems<br>– Law 48/1982 on protection of Nile River Water and Egypt waterways from pollution<br>– Ambient Air limits in Law 4/1994 which includes limitation on some emissions.<br>– The provisions related to solid waste in Law No. 9 of 2009 regarding environmental protection and its implementing regulations issued by Prime Minister Decree No. 338 of 1995<br>– The provisions relating to solid waste in Law No. 48 of 1982 regarding the protection of the Nile River and waterways from pollution. | – No legislation indicating the need to avoid, minimize and manage project related GHG emissions |

| IFC PS | National (Egyptian) Laws | Requirement |
|---|---|---|
| | – Law No. 140 of 1956 regarding public road works.<br>– Law No. 84 of 1968 regarding public roads.<br>– Public cleanliness law 38/1967 amended by law 31/1976 and its executive regulations<br>– Law no. 159 for the year 1953 regulates the cleanliness of fields, roads and streets as well as organization of collection and transport of waste.<br>– Laws 106/1976 and 101/1996 allow local governments to include the management of construction and demolition waste in the permits required for construction activities<br>– The provisions related to solid waste in Law No. 9 of 2009 regarding environmental protection and its implementing regulations issued by Prime Minister Decree No. 338 of 1995 | |
| PS 4: Community Health, Safety and Security | – Law no. 94/2003, Protection of communities Human Rights Laws | |
| PS 5: Land Acquisition and Involuntary Resettlement | – Egyptian Constitution has preserved the right of private property, Egyptian Constitution (1971, amended in year 1980) and Egyptian Constitution (2014, articles 33 and 35)<br>– Egyptian Civil code 131/1948, Articles 802-805 for private ownership right<br>– Law No. 10 of year 1990 and its amendments by law No. 24 for the year of 2018, and law No. 1 for the year 2015 for property expropriation for public benefit | – The cut-off date: The WB identifies a cut-off date in order to prevent people influx to the project area. The Egyptian laws does not set a cut-off date, particularly if the impacts are related to agricultural lands that might experience changes in crops and tenancy.<br>– Monitoring and Evaluation: Monitoring or evaluation measures are not stipulated in Egyptian regulation.<br>– 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 |

| IFC PS | National (Egyptian) Laws | Requirement |
|---|---|---|
| | | 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. Previous Egyptian experiences show that the full replacement (aiding is not covered) principle as stated by ESS5 has not been realized by the affected group.<br>– Income restoration (livelihoods): Egyptian law does not discuss compensation for loss of income, only land and assets. |
| PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources | – According to "Guidelines of Principles and Procedures for Environmental Impact Assessment", Biological environment: This includes the ecology of the project site and a brief description for the ecology of the surrounding area. The ecology data includes fauna and flora whether terrestrial or marine at the area, according to the case.<br>– Article 28 of Law 4 of 1994 and 23 of its ERs forbid hunting, shooting or catching the types of birds and wild animals specified in Annex 4 of the Law. The articles also forbid damaging the nests or the eggs of these birds. The provisions of Article 23 of the ER shall apply in all nature reserve areas and also in areas where animals and birds are threatened with extinction. Annex 4 of the ER defines the wild animals prohibited from being hunted, killed or captured. | – Precautionary hierarchy is not emphasized in the Egyptian Legislation.<br>– Detail aspects of Natural, Modified and Critical Habitat<br>– Biodiversity Action Plans |

| IFC PS | National (Egyptian) Laws | Requirement |
|---|---|---|
| | – As a general requirement, The EMP should identify feasible and cost-effective measures to reduce potentially significant adverse environmental and social impacts to acceptable levels. | |
| PS 8: Cultural Heritage | – Law No. 117 of 1983 Amended by Law No. 12 of 1991 for the Protection of Archaeological Areas and Cultural Heritage<br>– The Relevant International Treaties Signed by Egypt: Respect for cultural heritage and non-financing of projects that threaten the safety of sites with a high level of protection for reasons of cultural heritage, for example UNESCO World Heritage Sites | |
| Public disclosure requirements for clients are found in the proposed Performance Standards as an integral part of directives to engage in early and ongoing engagement with community that are affected by projects. | – EEAA ESIA guidelines related to the Public Consultation prior to the project construction and implementation | – There are no regulations on committing the project owner to conducting stakeholder engagement activities as well as 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<br>– There are no regulations on committing the project owner in establishing a grievance mechanism |

## 2.4 Applicable Air and Noise Based on Gap Analysis Between National and International Standards

The project is subject to relevant national and international requirements and standards. In cases where Egyptian requirements differ from those specified in international requirements, expected to the most stringent applies. The following tables outline the threshold limits of Egyptian and IFC relating ambient air quality, noise levels and vibration levels.

### 2.4.1 Ambient Air Quality

Table 25 Air Quality Limit Comparison and Applicable Air Quality Limits for Project

| Pollutant | Average Exposure Period | Egyptian Standards ($\mu g.m^{-3}$) | IFC | Applicable Limits for Project (Based on Most Stringent limits) ($\mu g.m^{-3}$) |
|---|---|---|---|---|
| Sulphur dioxide ($SO_2$) | 1 hour | 300 (Urban)<br>350 (Industrial) | N/A | |
| | 24 hours | 125 (Urban)<br>150 (industrial) | 125 (Interim target-1)<br>50 (Interim target-2)<br>20 (guideline) | 125 Lower assessment thresholds |
| | Annual | 50 (Urban)<br>60 (Industrial) | N/A | |
| Nitrogen dioxide ($NO_2$) | 1 hour | 300 (Urban)<br>300 (Industrial) | 200 (guideline) | 200 |
| | 24 hours | 150 (Urban)<br>150 (Industrial) | N/A | |
| | Annual | 60 (Urban)<br>80 (Industrial) | 40 (guideline) | 40 |
| Thoracic particles ($PM_{10}$) | 24 hours | 150 (Urban)<br>150 (Industrial) | 150 (Interim target-1)<br>100 (Interim target-2)<br>75 (Interim target-3)<br>50 (guideline) | 150 |
| | Annual | 70 (Urban)<br>70 (Industrial) | 70 (Interim target-1)<br>50 (Interim target-2)<br>30 (Interim target-3)<br>20 (guideline | 70 |
| Carbon monoxide (CO) | 1 hour | 30,000 (Urban and Industrial) | N/A | |
| | 8 hours | 10,000 (Urban and Industrial) | N/A | |
| Total Suspended Particles (TSP) | 24 hours | 230 (Urban and Industrial) | N/A | |
| | Annual | 125 (Urban and Industrial) | N/A | |
| $PM_{2.5}$ | 24 hours | 80 (Urban and Industrial) | 75 (Interim target-1)<br>50 (Interim target-2)<br>37.5 (Interim target-3)<br>25 (guideline) | 75 |

| Pollutant | Average Exposure Period | Egyptian Standards ($\mu g.m^{-3}$) | IFC | Applicable Limits for Project (Based on Most Stringent limits) ($\mu g.m^{-3}$) |
|---|---|---|---|---|
| | Annual | 50 (Urban and Industrial) | 35 (Interim target-1)<br>25 (Interim target-2)<br>15 (Interim target-3)<br>10 (guideline) | 35 |
| Ozone | 1-hour | 180 (Urban and Industrial) | N/A | |
| | 8-hour | 120 (Urban and Industrial) | 160 (Interim target-1)<br>100 (guideline) | 100 |

### 2.4.2 Ambient Noise

Table 26 Noise Limit Comparison and Applicable Noise Limits for Project

| Requirements of Egyptian Law 4 - 1994 | | | Requirements of IFC | | Applicable Standards | |
|---|---|---|---|---|---|---|
| Type of Area | DAY 7 a.m. to 10 p.m. | NIGHT 10 p.m. to 7 a.m. | DAY 7 a.m. to 10 p.m. | NIGHT 10 p.m. to 7 a.m. | DAY 7 a.m. to 10 p.m. | NIGHT 10 p.m. to 7 a.m. |
| Sensitive Areas to noise (schools- hospitals- public parks- rural areas) | 50 | 40 | | | 50 | 40 |
| Residential areas located adjacent to roads which width is less than 12m, and workshops or commercial or entertainments activities are found | 65 | 55 | 55 | 45 | 55 | 45 |

### 2.4.3 Noise Exposure in workplace environment

Table 27 Limits for Noise exposure in the Work Environment as per National and International

| Egyptian Law Permissible Noise Level | | | IFC Permissible noise levels | | |
|---|---|---|---|---|---|
| Type of place and activity | Maximum permissible equivalent noise level [dB(A)] | Exposure duration | Location/ Activity | Equivalent Level, $L_{Aeq}$, 8 hrs(dB) | Maximum LA max, fast |
| a) Workplaces (workshops and industries) with up to 8-hour shifts (licensed before 2014) | 90 | 8 | Heavy Industry (no demand for oral communication) | 85 dB(A) | 110 dB(A) |

| Egyptian Law Permissible Noise Level | | | IFC Permissible noise levels | | |
|---|---|---|---|---|---|
| **Type of place and activity** | **Maximum permissible equivalent noise level [dB(A)]** | **Exposure duration** | **Location/ Activity** | **Equivalent Level, $L_{Aeq}$, 8 hrs(dB)** | **Maximum LA max, fast** |
| b) Workplaces (workshops and industries) with up to 8-hour shifts (licensed since 2014) | 85 | 8 | Light industry (decreasing demand for oral communication) | 50-65 dB(A) | 110 dB(A) |

### 2.4.4 Vibration Exposure in Workplace Environment

Table 28 The threshold limits of exposure to vibration

| Daily exposure period ($m/s^2$) | National Labor Law | ACGIH |
|---|---|---|
| **4 hours and less than 8 hours** | 4 | 4 |
| **2 hours and less than 4 hours** | 6 | 6 |
| **An hour and less than 2 hours** | 8 | 8 |
| **less than an hour** | 12 | 12 |

## 2.5 Applicable discharge of liquid effluent into sewer system based on gap analysis between National and International Standards

The project is subject to relevant national and international requirements and standards. In cases where Egyptian requirements differ from those specified in international requirements, expected to the most stringent applies. The following tables outline the threshold limits of Egyptian and IFC related to wastewater discharge:

Table29 Limits for effluent wastewater discharge as per National and International standards

| Parameter | National Law Effluent Threshold | IFC Effluent Threshold |
|---|---|---|
| pH | 6 – 9.5 | 6-9 |
| BOD (mg/L) | 600 | 30 |
| COD (mg/L) | 1,100 | 125 |
| TSS (mg/L) | 800 | 50 |
| Oil and grease (mg/L) | 100 | 10 |
| Total Coliform Bacteria (Most Probable Number/100 ml) | N/A | 400 |
| Total Nitrogen (mg/L) | 100 | 10 |
| Total Phosphorus (mg/L) | 25 | 2 |

# 3 Project Description

## 3.1 Project Background

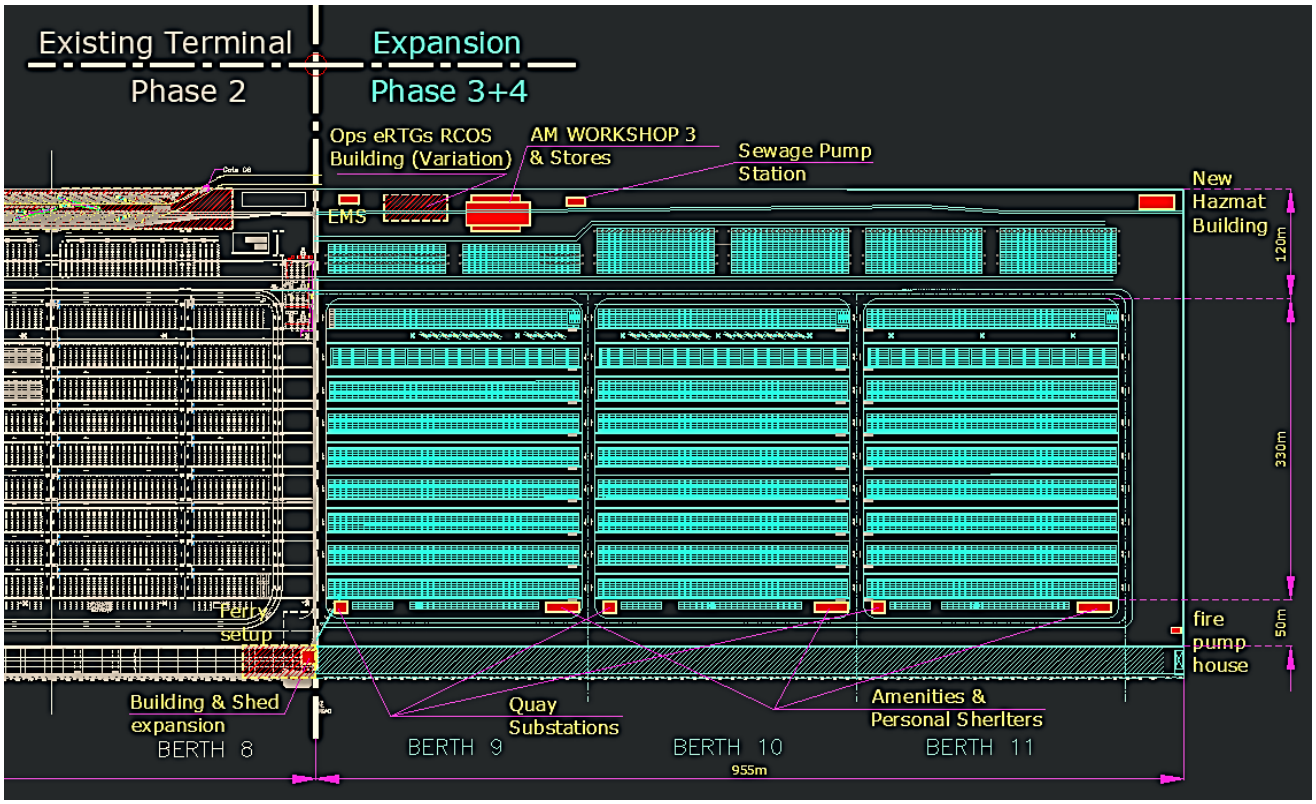


illustration 4 Project Engineering Drawing

SCCT and APM Terminals plan to expand and manage a new container terminal at the Suez Canal Port located in Port Said Governorate, Egypt. The project promises the third and fourth phases, where the second phase was opened and operated in 2013.

The project aims to expand the container terminal at the Suez Canal Port on an area of 477,500 m² with a 955 m pier inside.

The container terminal will be expanded with an operating capacity of 2.2 million twenty-foot equivalent units (Twenty-foot Equivalent Unit TEU). It will contain the necessary facilities to manage the terminal as warehouses, administrative offices... Etcetera. The project will contribute to attracting foreign investment to the Arab Republic of Egypt. The project will be the starting point for a range of opportunities for the company's direct investment in the Suez Canal port, through the handling of incoming and outgoing containers through the port, while taking advantage of the improved investment climate.

Below is a detailed statement of the different project companies.

### 3.1.1 Project Owner

SCCT Suez Canal Container Terminal Company is an Egyptian joint venture with local and foreign investors. The Dutch company, APM Terminals is the largest stakeholder with 55 percent of SCCT. It is considered one of the largest companies in the industry worldwide.

The remaining shares in SCCT are distributed as follows: 20 per cent owned by China's COSCO; 5 per cent are owned by the National Bank of Egypt and the remaining 9.7 per cent are owned by Egyptian private investors.

### 3.1.2 Terminal Operation and Management

APM Terminals is the independent terminal operation division of the Maersk Group, the parent company of the world's largest container line by capacity, Maersk Line. APM Terminals has 72 facilities in 69 countries around the world and more than 20,000 employees. It is headquartered in The Hague, Netherlands.

illustration 5 Company logo
AP Terminal

### 3.1.3 Project Location

SCCT and APM Terminals plan to expand and manage a new container terminal at the Suez Canal Port located in Port Said Governorate, Egypt. The following table shows the coordinates of the location of the container terminal followed by a satellite map of these coordinates of the project site.

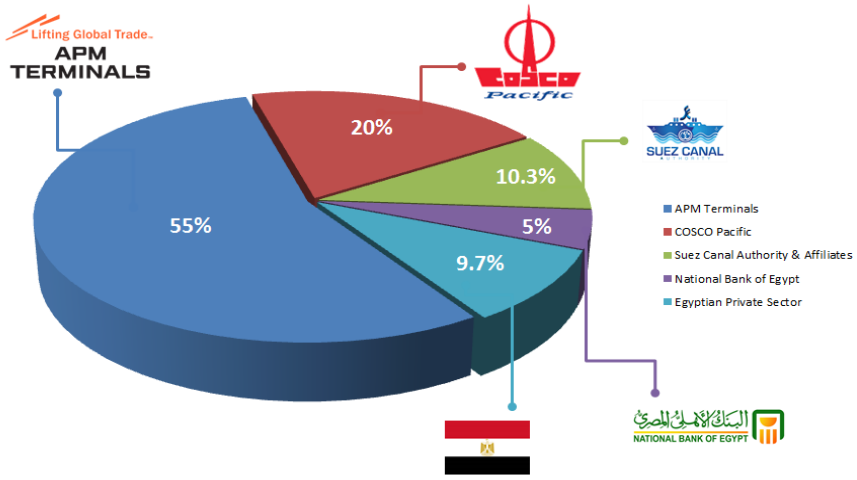


Illustration 6 Distribution of shares of shares for SCCT

| Point | Coordinates | |
|---|---|---|
| | Latitude N | Longitude E |
| 1 | 31°11'19.0"N | 32°20'58.0"E |
| 2 | 31°11'49.0"N | 32°21'06.0"E |
| 3 | 31°11'45.0"N | 32°21'26.0"E |
| 4 | 31°11'15.0"N | 32°21'19.0"E |


Illustration 7 coordinates of the project site

### 3.1.4 Proposed Land Condition

As of the present moment, the Egyptian government has built the quay of the pier and the fenders on the wall. The walls of the pier cover the scope of the proposed expansion (both phases 3 and 4) and extend beyond the Suez Canal port to unused land. The Egyptian government has also installed rails that will be used by the shore cranes. In order to protect the quay walls and the built rails, the Egyptian government paved a longitudinal section of about ten meters across the distance of the pavement walls in the ground to prevent internal corrosion or vandalism. The activities carried out by the Egyptian government can be seen in the figures below.

Illustration 9 Naval fenders for docking

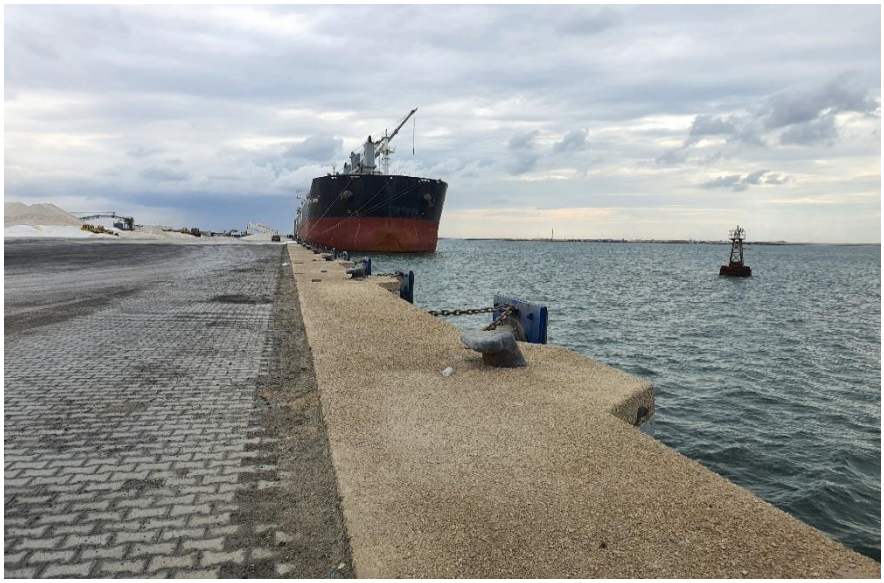

illustration 11 Columns and fenders for docking

illustration 10 Current Project Land

Unlike the paved section next to the pavement wall, the site is considered desolate with mud and sand being the only predominant material found on the upper layer with some water collection points where the ground is low in height.

Activities currently on site are loading ships with ash used to produce cement as well as salt that is also produced from the salt lakes behind the terminal. The process is considered small and informal with no large preparations required. So, when the project begins, these individuals will move to the next land.

## 3.2 Project Components

Phase 3 and 4 quay walls were built and shore crane rails were installed from the shore side on the reinforced concrete quay walls, however adjustments are required to achieve the continuous pavement line of the independent piers for Phase 3 and 4, as well as the ongoing courtyard operations between the expansion and the current terminal.

- Infrastructure required for electrical equipment
- IT Infrastructure
- Concrete structures, stacked and concrete foundations
- Improved land, heavy and medium pavements
- Sewer network, common services (pits, manholes, canals, etc.)
- Reefer plugs
- Leak container set
- Equipment wash and maintenance areas, if required
- Mechanical services include all networks:
    - Firefighting network for yards and buildings in accordance with the requirements of the Egyptian Civil Defense
    - Potable Water Network
    - Sewage Network
    - Refueling facilities Civil works including concrete and steel works, buried and cast pipes and fittings
    - Other facilities include but are not limited to pipes, storm water drainage, and manholes.

New buildings, workshops, gas station, charging station and hazardous container leakage control area.

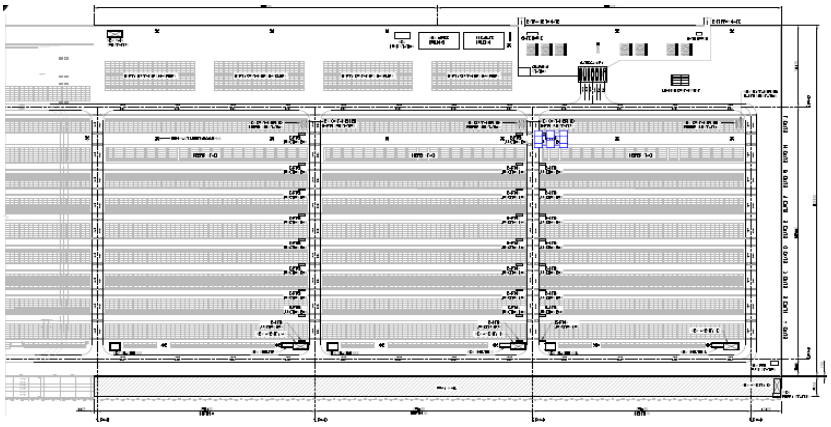

illustration 13 Drawing Engineering For the square Containers

## 3.3 Extension Project Layout

1. The terminal expansion plan consists of a total berth length of 955 meters as well as a total yard area of 47.75 hectares, which can be classified into three sub-zones:
    1. Area (1) east of the expansion yard (Depth of 120 m next to the eastern fence) which is expected to include:
        1. Empty containers stack blocks.
        2. New electrical base station.
        3. New workshop building.
        4. New hazardous material facility, leakage and scrap area.
        5. E-RTGs remote control building and service building.
        6. Gate operation building.
    2. Zone (2): 330 m deep next to the west of zone (1), dedicated to full and refrigerated container stacking blocks
    3. Zone (3): 50 m deep to the side of the pier (rear access area), will include several buildings:
        1. Electrical substations.
        2. Personal amenities and shelters.
        3. Fire pump house.
        4. Cold ironing station (if placed).

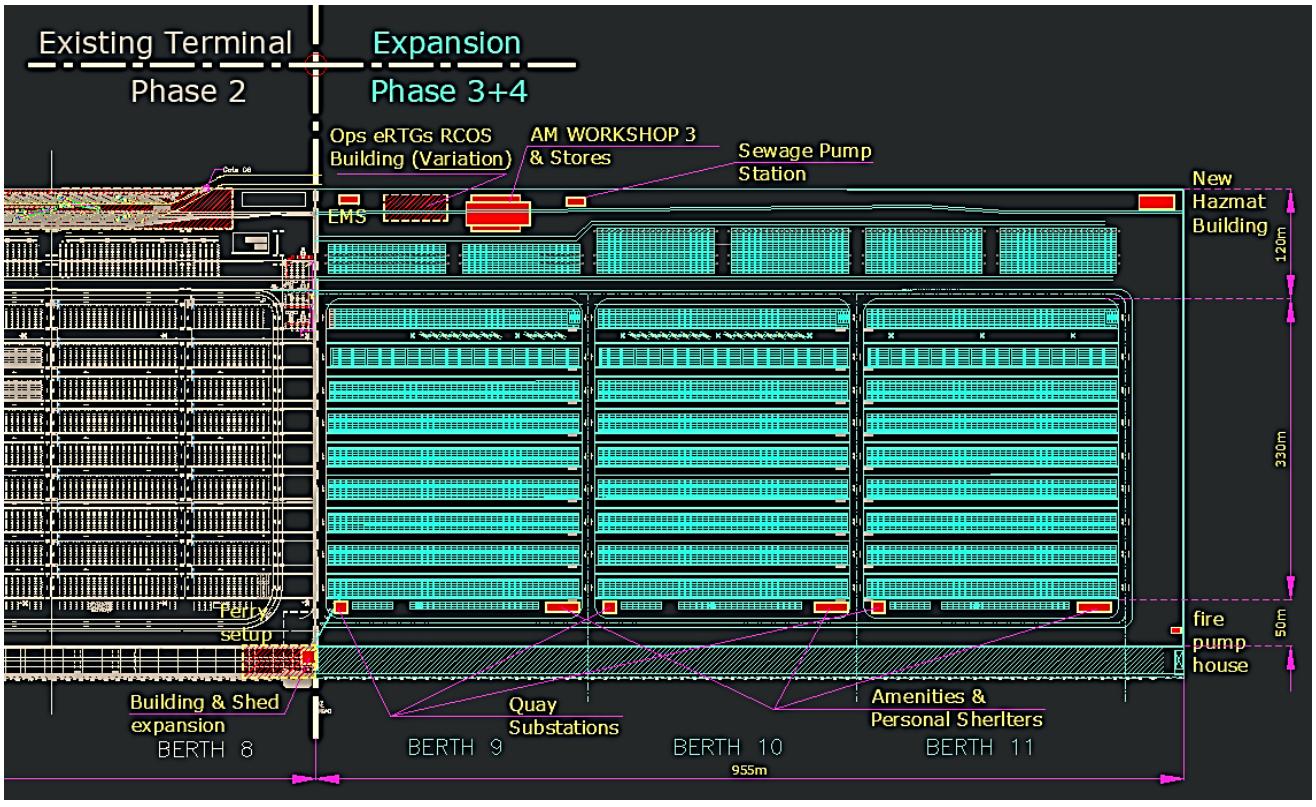


illustration 15 Project Engineering Drawing

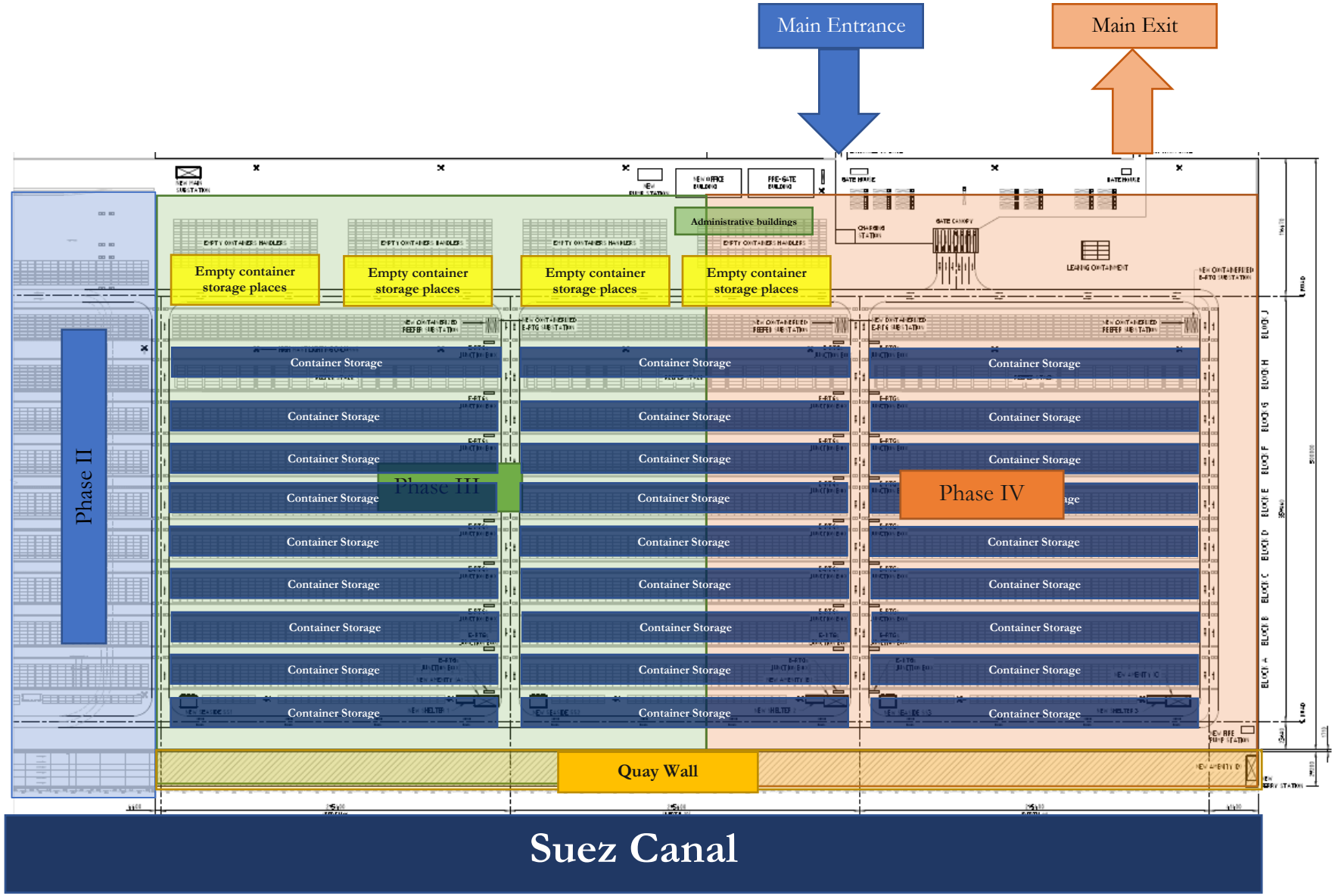


Illustration 16 Engineering drawing of the project

## 3.4 Construction Phase Activities

Construction activities that include the dredging of the seabed, the walls of the pier and the concrete floor of the project area are all built and implemented by the government and not within the SCCT range. Thus, the remaining construction activities will be classified as light constructions and are as follows:

1. Infrastructure required for electrical equipment
2. IT Infrastructure
3. Power supply and electricity distribution, which includes medium and low voltage networks and their substations.
4. Concrete structures and concrete foundations
5. Improved land, heavy and medium load pavements
6. IT network used for:
    a. For telecom
    b. Surveillance cameras
    c. Wireless connectivity
7. Sewage network, common services (manholes, canals, etc.)
8. Mechanical services include all networks:
    a. Firefighting network for yards and buildings in accordance with the requirements of the Egyptian Civil Defense
    b. Potable water network
    c. Sewage network
    d. Water network produced from human use
9. Refueling facilities civil works including concrete and steel works, buried cast pipes and fittings
10. New buildings, workshops, gas station and hazardous materials area.
11. Electrical Substations
12. Seawater pumping station
13. High masts for lighting
14. Refrigerated container racks
15. Fences, gates and access roads
16. Automatic and automated docking systems
17. Ship-to-ship energy (under study)
18. Other buildings
    a. Shelters
    b. Rest buildings
    c. Service buildings
    d. Administrative buildings
    e. Workshops
    f. Gate canopy and waiting area
    g. Expansion of the waiting area for external trucks
    h. New gate entrance building
    i. Expand the gateway area
    j. Refueling station and charging station
    k. Storage places
    l. Equipment washing area

### 3.4.1 Temporary Paving Removal

As of the current date, there is temporary interlock paving in place above the rails built on the quay walls, and these interlock pavers will be removed at the construction stage. As part of the government's previous work on the construction of the quay walls and dredging operations, the government has also installed the rails on which shore lifting cranes will be installed. Due to the nature of the site, the rails will be exposed to external environmental factors such as seawater that can corrode the bars and cause rust. In order to prevent damage to the installed rails, the rails were covered by interlock floors. The plan is to remove the interlock floors during the construction of the station yard pavement.

### 3.4.2 Existing Railway's Repair and Realignment

During the installation of the rails by the government, a mismatch occurred between the rails in phase 3 and phase 4 causing the rails to deviate from alignment, thus preventing the smooth movement of the shore cranes between the two stages that will act as a single entity. The rails will therefore be reset to be aligned to ensure safe and smooth operations of shore cranes.

### 3.4.3 Hydro- Demolition and Concrete Works

In order for the station to operate, some adjustments must be made to the internal sections of the quay walls on site. Hydro-demolition is used because it is effective and can be used to accurately remove concrete sections. Modifications will be made in order to remove some concrete sections and the space will be used to install rooms in the current quay walls.

These rooms will be used to install housing compartments for electrical equipment and conduits for shore cranes. Therefore, the next step will be to process and upgrade these rooms to be able to house the necessary equipment.

### 3.4.4 Yard Construction

A container terminal pier consists of one or more layers typically of materials placed so that it supports and facilitates container handling and storage by port container handling equipment above the natural or improved subclass on which the port is built. In this regard, container terminal docks are similar in nature to highway docks or aircraft piers.

In the project, a pier area of about 480,000 m2 will be built in order to allow the operation of the project. The details and sequence of the construction of the pier are detailed below:

#### 3.4.4.1 Site Setup

In this step, the site will be cleared of all existing structures, demolition waste, vegetation, rocks, rocks, or any objects that will hinder the construction process of the project. Equipment such as cranes or bulldozers can be used to prepare the site.

#### 3.4.4.2 Soil Treatment

The overall strength and performance of the berth depends not only on its design (including mix design and structural design) but also on the bearing capacity of the ground soil. Thus, anything that can be done to increase the endurance (or structural support) of the undercoat soil is likely to lead to improved pavement bearing capacity and thus the pavement strength and performance. In addition, a larger structural capacity of the substrate can lead to thinner (but not very thin) and more economical paving structures. Finally, the final sub-level must meet the elevations, steps and slopes specified in the contract plans .

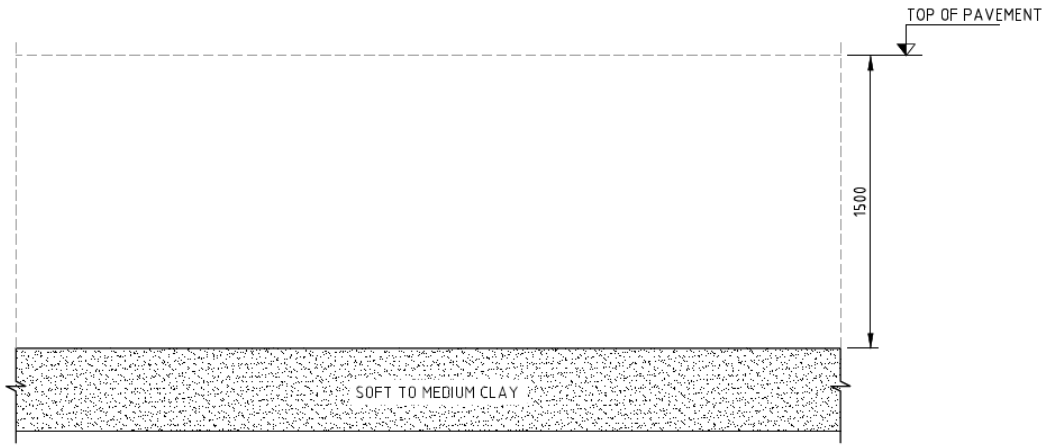


Illustration 17 Original soil treatment

#### 3.4.4.2.1 Floor Cladding Laying

Geotextiles are large plates that preserve the soil of the earth. It is mostly used for filtration and separation in road constructions as it protects against the migration of small pebbles and sand pools. Geotextiles are mainly thin and strong membranous tissue that are used to strengthen the soil and prevent damage. Geotextiles are mostly used in road construction, especially to bridge gaps between roads to improve soil structure. Geotextiles make poor soils more useful to use and therefore easier to build in difficult places as well. Geotextiles are ideal materials used in construction and infrastructure such as roads, buildings, dams, and many others. It improves stability and reduces the process of wind and water erosion. It helps prevent soil erosion but allows water to drain. Floor fabrics made of synthetic or natural fibers associated with thin soil cuttings. It improves soil properties such as friction or movement restriction, supporting loads and changes in the level of failure tolerance.

#### 3.4.4.2.2 Soil Filling

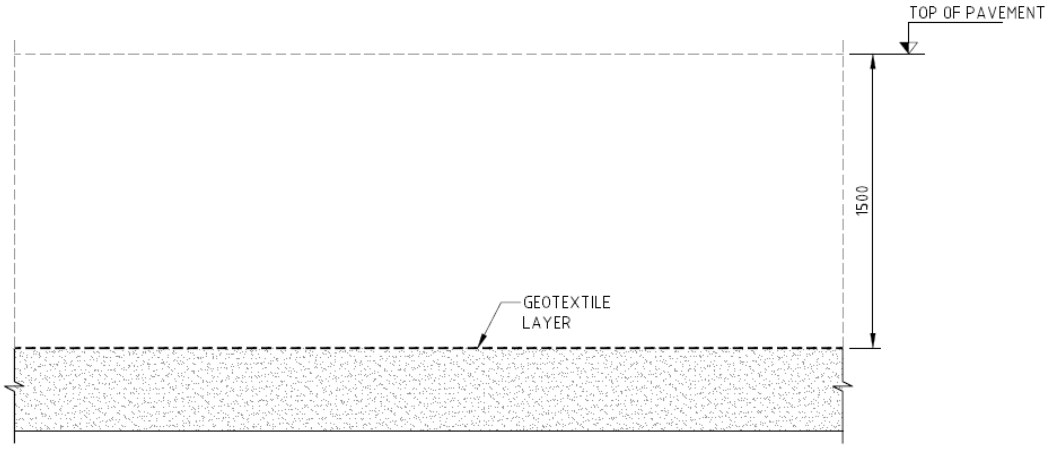


illustration 18 parturition layer Taxis floor (Geotextile)

Backfilling occurs after digging and placing the Geotextile, when the soil is compacted back into the trench or foundation. It is used to help protect foundations, roads, corridors, and other structures using a mixture of soil, rocks and stones.

#### 3.4.4.2.3 Soil Refill

Backfilling in layers is one of the most important steps. It is important to do this at intervals to allow the soil to compact properly. These layers are referred to as 'elevators'. The number of inches filled per layer depends on the requirements of the project (soil or the type of structure being backfilled). After compacting the layers, it is important to check that layer level is equal to the surrounding ground before placing the next layer.

#### 3.4.4.2.4 Compaction

There are six different methods used to compress materials. Some are more suitable for soil while others are used to compress non-soil materials such as asphalt. With fusion, water must be placed on each surface continuously with each elevator and the method is chosen based on the type of soil.

1. Constant - a large amount of pressure is slowly applied to the soil and then released.
2. Effect - a large lump is dropped on the soil to apply pressure
3. Vibration - a mechanically driven plate or hammer is frequently used to apply stress
4. Rotation - the soil is subjected to circular motion while the pressure is maintained in one direction.

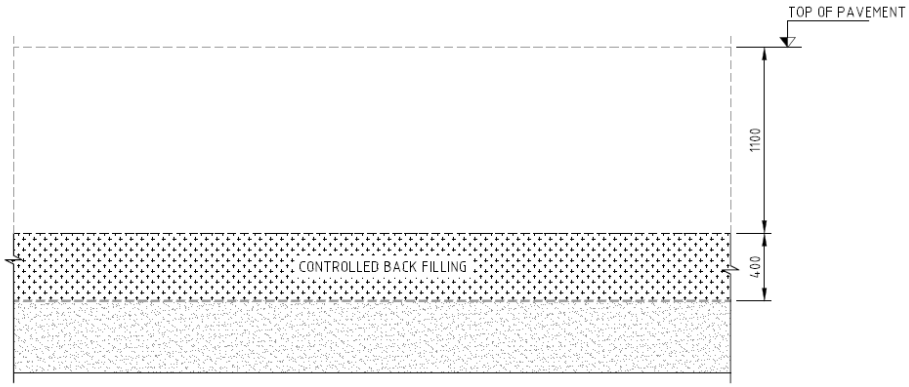


Illustration 19 Placement and Integration of Backfilling Soil Fillers (400 mm)

### 3.4.4.3 First Layer Placement

The geotextile grid is defined as a synthetic earth material consisting of continuous parallel groups of tensile ribs with openings of sufficient size to allow beating of the surrounding soil, stone, or any other geotechnical material. Geogrids provide reinforcement, stability, and even filtration when used with aggregate fillings of appropriate size. Made of polymers such as polypropylene or polyester.

Geogrids are deployed for three core applications:

1. Construction of fixed worktops on soft ground conditions
2. Improved pavement service life
3. Reduce the structural cross section of both paved and unpaved roads for a certain service life.

Geogrids have also been shown to significantly improve the pavement's susceptibility to environmental cracking common when building on top of over-wide ground soil. Geogrids work by entanglement with granular material or soil placed on top of it. Open openings allow the geographic grid to confine the material inside, increasing the shear strength of the upper granular filler.

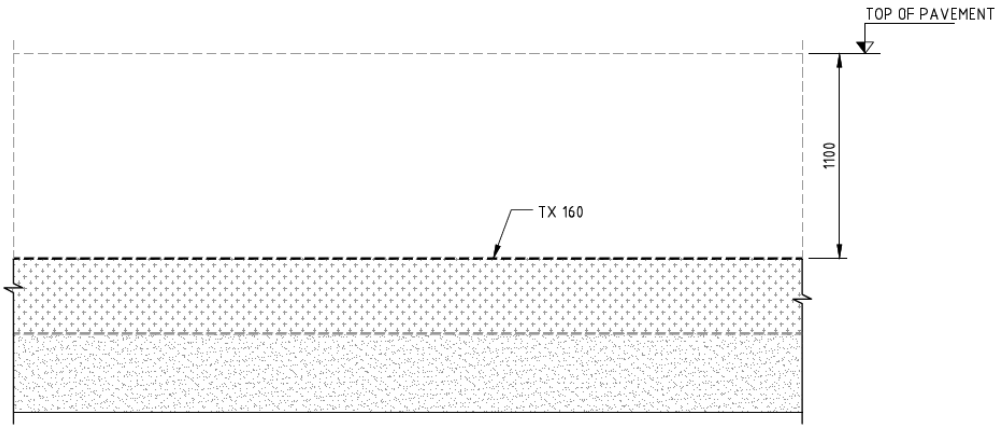


Illustration 20 Laying of the first layer of the TX160 (Geogrid)

### 3.4.4.4 Second Layer

The first step is to place a backfill material with a thickness of 250 mm as described in the part, but the backfill can be compressed into two layers.

The second step is to place the second Geogrid and then compact the top layer to be executed.

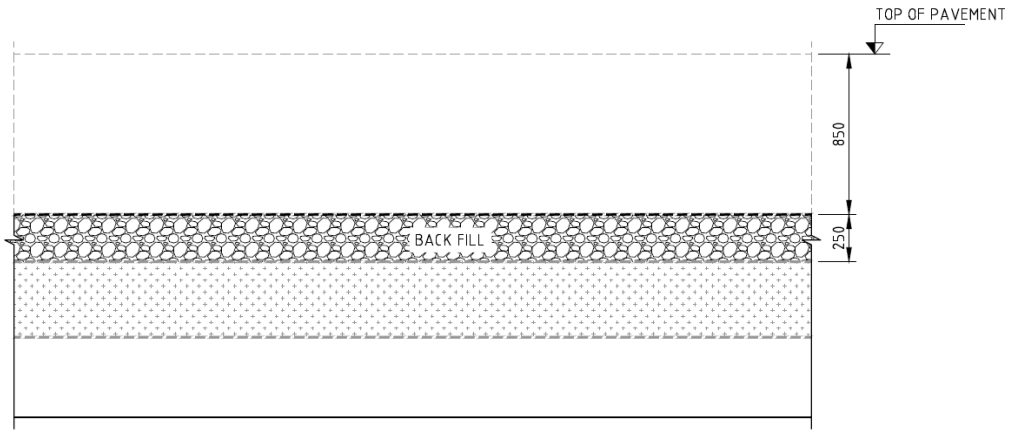


Illustration 21 backfill and placement of a second layer of Geogrid

### 3.4.4.5 Third Layer

The first step is to place a backfill material with a thickness of 250 mm as described in the part, but the backfill can be compacted into two layers.

The second step is to place a third Geogrid network and then compact the top layer to be executed.

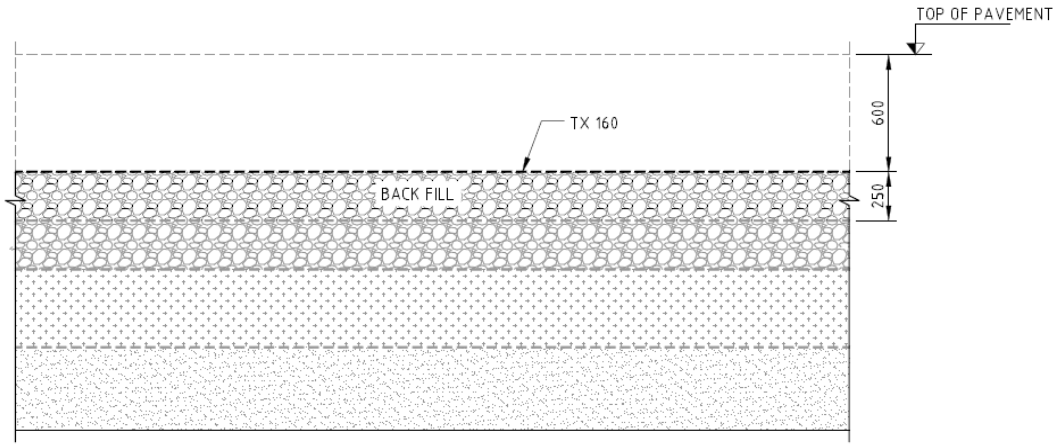


Illustration 22 backfill and placement of a third layer of Geogrid

### 3.4.4.6 Fourth Layer

The first step is to place a 250 mm thick backfill material as described at the top, but the backfill can be compressed into two layers.

The second step is to place the fourth Geogrid grid and then compact the top layer.

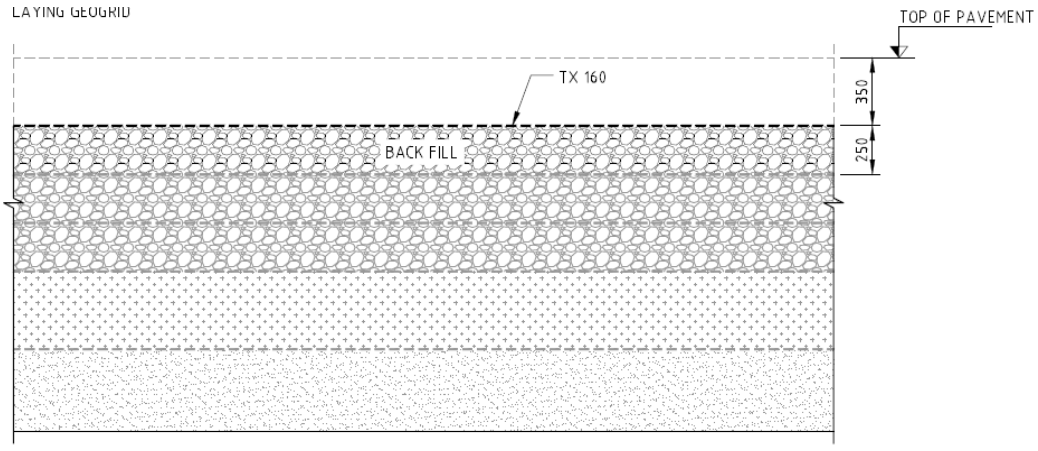


Illustration 23 backfill and placement of a fourth layer of

### 3.4.4.7 Soil Filling

Putting the soil filled in the excavation pit as it was done in the pre-section. Filling and merging can be in two equal stages.

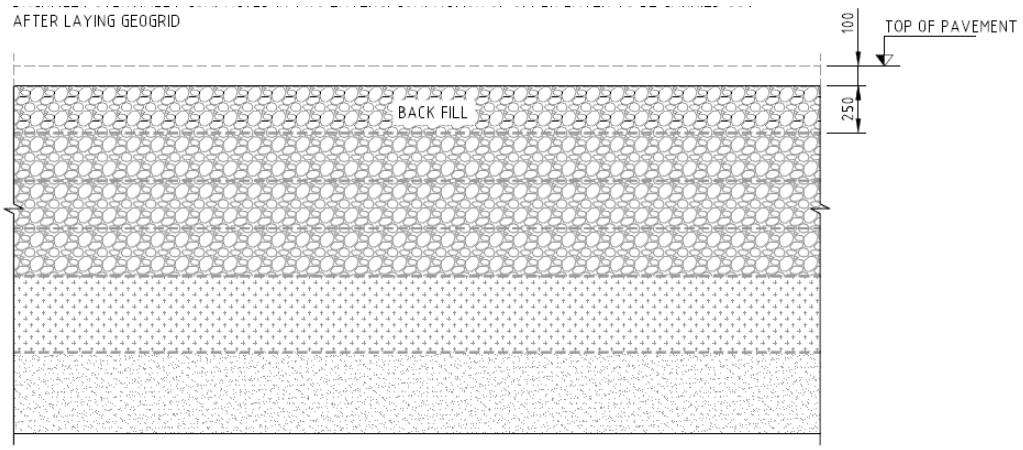


illustration 24 parturition و

### 3.4.4.8 Sand Backfill

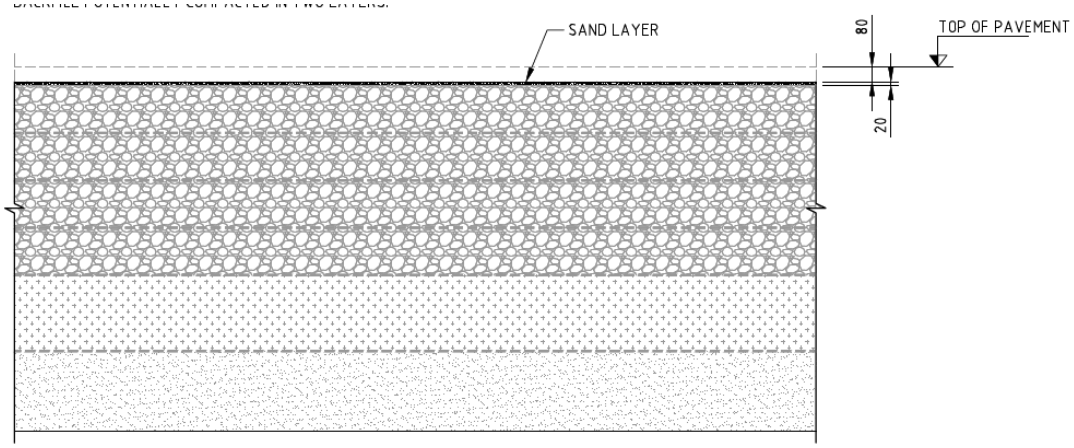


Illustration 25 sand-backfill mode (20 mm)

### 3.4.4.9 Interlock Paving

The following steps cover how to install the interlock pavement.

1. Ensure that mechanical, electrical, and plumbing works, if any, are completed in the paving area.
2. Ensure that the work of edge restraints and others such as manhole covers is completed before paving works.
3. Care must be taken to avoid pedestrian movement before laying blocks.
4. Paving blocks are laid flat above the smooth surface of the sand layer with a forward movement. Paving begins either at an angle of 90 degrees or inside the field using a predefined string to guide the straightening of the paving according to the approved pattern. Each paving should be firmly placed on its neighbor so that it fits closely into each other.
5. Care must be taken that the separations between the blocks are no more than 3 mm.

6. When the blocks do not fit the limitations of the edges and other holes, the gaps are filled using the cut blocks. Blocks are cut using a mechanical separator of blocks.
7. After laying 20 square meters or more in an extended shape, a light layer of sand should be brushed over the filled area.
8. The plate compressor is passed over the paved area to start the entanglement process using 0.2 to 0.4 of the compressor plate area. At least two passes must be made to vibrate the plate in each direction, i.e., at 90 degrees to each other. Vibration should continue so that no additional compression of the sand layer appears.
9. The fine dry sand with a particle size of 0.3 mm is then greased above the paving and other passages are made to vibrate the board in each direction so that the sand is not absorbed into the joints.
10. The vibrator of the plate near 1 m should not pass to a temporarily unrestrained edge during pressing.
11. Paving should not be left unpressed overnight except for the 1-meter-long strip at the temporarily unrestrained edge, which must be covered and protected from rain.
12. Cleaning should be followed to remove excess sand and damaged pieces. The inspection request will be submitted to the company's quality control representative for approval.

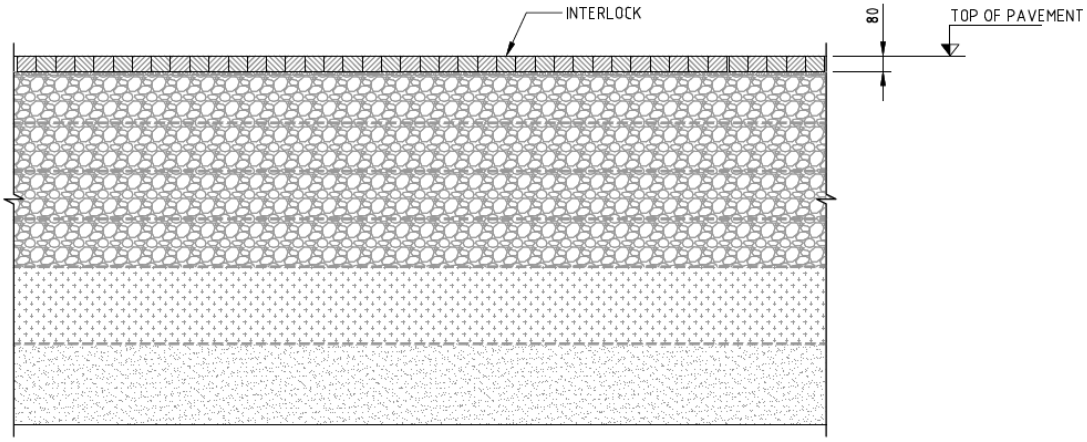


illustration 26 Placing pave Interlock (80 mm)

### 3.4.5 Facilities Construction

#### 3.4.5.1 Under Yard Facilities

##### 3.4.5.1.1 Scanning/Setup

1. Marking the plot according to the area of the drilling site is carried out with coordinates coupled with a permanent mark or steel pins (12 mm) will be used. Steel rods with safety cover are used to secure the given points on the cross section and along the longitudinal direction.
2. The contractor provides survey log drawings as it has been built including underground facilities and a manhole located near the work once completed.
3. The surveyor will re-examine to make sure that the final levels are acceptable. Any discrepancy in levels will cause a work notice to be issued, and the work is corrected as required. During the laying of the pipes, if the alignment deviates within the permissible limit, the inspection hole will be adjusted so that all lines are in the center of the inspection as well as the level of reflection according to it.

##### 3.4.5.1.2 Drilling

Drilling levels will be carefully inspected/checked and recorded by the surveyor before commissioning to ensure that the level of composition of the manhole and manholes that is about 130 mm under the slab is achieved (allowing for a thickness of 75 mm and 50 mm of concrete under the base membrane and waterproofing or even the required depth).

##### 3.4.5.1.3 Pipe Laying

1. Written inspection requests will be submitted to the engineer/inspector for approval of the different stages of work.
2. The drawings must be reviewed by the engineer and sent to the site responsible for laying the pipes. Pipes will be laid according to the manufacturer's instructions and according to the specifications of the project.
3. The filler material with a thickness of 150 mm as directed by the engineer is spread and leveled to the slope of the pipe at a depth of 2.0 cm above the inverted level.
4. Pipes are stacked in a granular layer and surrounded by aggregates no larger than 10 mm in sizes and then included in the approved geotextile trench lining material.
5. For the safe preparation of pipelines, the troubled pipes will be lowered and placed from the downstream side to the upstream direction.
6. The pipes will be inspected for line and level jointly by the contractor's and consultant's surveyors respectively.
7. Each pipe connection is surrounded by PVC-certified packaging tape. The side mattress is carefully placed by means of the crane and the side discharge line, resulting in the material being centrally discharged.
8. After that, the material surrounding the pipe will be carefully placed in two layers at the level of 30 cm. Above the crown of the pipe and its compression. The overlap of geotextile sheets will be 30 cm.
9. Selected materials previously dug from the trench will be used to backfill the trench in 150 mm layers, carefully pressed by hand hammers, up to a level of 600 mm above the pipe crown.
10. Water testing must be carried out according to the specifications of the project.
11. When the laying of the pipes is not in progress, the ends of the pipes will be closed by wooden plugs
12. Backfilling will continue in layers, compressed into the lower parts by mechanical plate compressors and in the upper parts by manually operated cylindrical rollers.
13. The deviation test will be carried out immediately after the completion of the backfill activity.

#### 3.4.5.1.4 Establishment

1. Upon receipt of the engineer's approval for the forming, ordinary concrete is poured to a depth of 50 mm, and the comb is finished at a height of 55 mm under the inverted inspection hole. Prior approval will be requested from the production schedule of the manholes.
2. The waterproofing membrane (5 mm) that is applied by the torch will be installed according to the manufacturer's instructions. The membrane will be covered by a 50 mm screen.
3. The precast base is set on the line and level followed by the columns,
4. The cover and frame will be installed as specified on the line and level according to the approved details.
5. Upon completion of the leveling, the rebar of the base unit must be cut, bent, and installed in the yard in accordance with the approved executive drawings as well as the approved rail bending tables.
6. After the steel cage mold is installed in the opening, the casting process is completed.
7. Proper processing of the ready-made item will be observed.
8. It will then be moved to the site and raised above the screen with the help of a crane. The installation of the frame and lid should be according to specifications.

#### 3.4.5.1.5 Manholes

##### 3.4.5.1.5.1 Plain Concrete

1. The site engineer will make sure that a particular area/site is ready to proceed with concrete operations on site. A scan will be performed to mark the coordinates and levels.
2. Using GPS on the Total Station tool, all the coordinates of building an opening for the concrete element or structure are marked with permanent markings as shown in the approved drawing layout.
3. For plain concrete, plain concrete will be laid according to the approved design mix and thickness and as shown in the approved drawings above the final level compacted according to the approved drawing locations. plain concrete will be protected using primer and membranes approved for waterproofing according to the approved materials. The application will be in accordance with the manufacturer's recommendation.
4. The plain concrete is then put in place, and the workers will deploy it with shovels. The plain concrete is then leveled and compressed by rubbing with straight aluminum edge rods, and the top of the plain concrete will be finished with steel buoys to provide a suitable surface for the membrane applied to the torch. The treatment is carried out by pouring water or treatment agents, covered with a hessian cloth.
5. Waterproofing of the slab is carried out after the processing period has ended.

##### 3.4.5.1.5.2 Precast Manholes Installation

1. The survey team should determine the true coordinates and height of the precast concrete manhole before placing it.
2. The ready-made installation must be inspected and checked after and height before placing the precast concrete inspection hole, and the installation must follow the manufacturer's instructions unless otherwise stated in the approved store fee.
3. The crane must lift precast elements from the trailer directly to its final location and coordinates already determined by a competent surveyor.
4. Installation of the inspection room ring:
    1. Make sure the joints are clean and free of foreign objects before installing the next inspection room ring unit (column). Two strips of bitumen-based flexible sealant should be placed 20 × 25 before installation. This should be repeated with more annular units until the room is built to the desired height.

5. Once completed, the alignment and correctness of the height of each precast concrete opening installed/newly laid is verified. Correct alignment must be ensured before releasing the base of the manhole from the crane.
6. After all devices have been placed, verified, inspected, and confirmed, all lifting devices must be removed. Lifting devices must be removed and patched to fit into the inner face of the inspection hole after installation is complete.
7. After carrying out the installation of the column, a precast cover plate must be installed.
8. Place the precast external manhole cover tile (reducer slab) on top of the last part of the precast manhole wall.
9. If the prefabricated casting shaft is equipped with the background, all HDPE pipe fittings must be installed and must be presented for inspection and approval. The concrete box will be built to complete the packaging.

#### 3.4.5.1.5.3 Finishing

The inner concrete surface of the manholes must be fixed against any uneven surfaces.

#### 3.4.5.1.5.4 Covers

Iron cover frames are placed on precast concrete rings/blocks placed above the edge of the opening of the cover panels. After the correct installation of the lid frame, the mortar is placed around the precast rings and frame in the dimensions indicated in the approved executive diagrams, and finally, a hole cover will be installed.

The height of the manhole cover, frame and basic manholes should be in accordance with the approved shop scheme.

#### 3.4.5.1.5.5 Access Ladder

The installation of the GRP ladder will be certified and will be provided by the authorized experienced manufacturer and will be intentionally performed to suit the depth of each installation as shown in the approved store drawing Furthermore, the installation must be in line with the manufacturer's manual for installation.

#### 3.4.5.1.6 Soil Refilling

1. The compartment/base slab must not be backfilled until all the required inspections have been carried out and until the engineer verifies that the works have been completed in accordance with the approved executive drawings and in accordance with the project specifications.
2. After the approval of the supervising consultant, backfilling begins after the installation of the inspection hole. A small equipment shaft is used for compression to avoid damage to the membrane of the column tank, such as a tamping machine, as needed.
3. A backfill pressure test (FDT) will be performed to obtain at least 95% of the maximum density of the material. The test must be performed in each layer.
4. Manholes will be marked to control the thickness of the compressed layers.
5. Backfilling should continue uniformly around the shaft to ensure stability

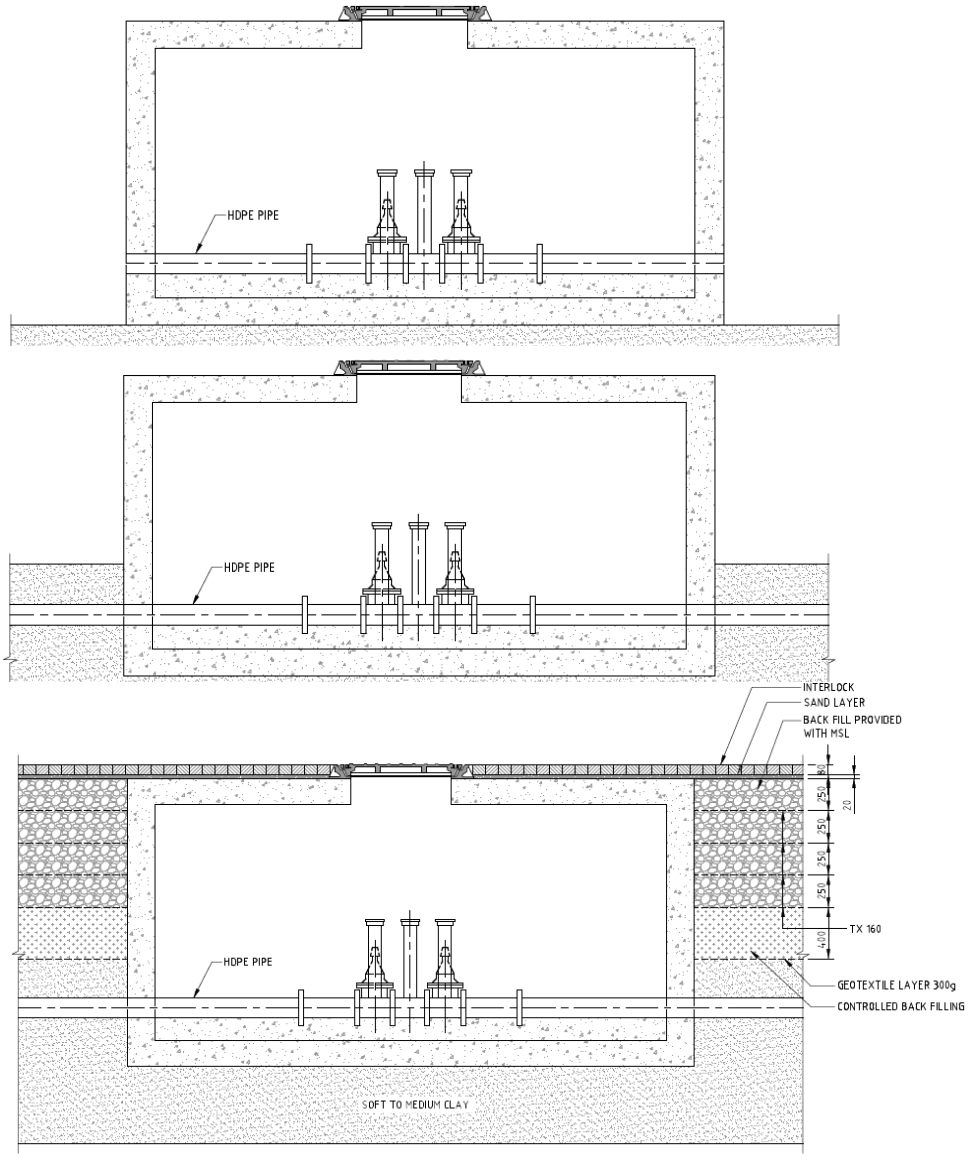


Illustration 27 Construction of facilities under the pavement

### 3.4.5.2 Paving Confined Facilities

For facilities located between the layers of the pier, the same procedures will follow in case of soil digging, stability, and pressure. All of the previous steps will be performed through the layers as discussed before up to the first two layers of backfill above the sub-top.

Must be measured utilities to help that will be placed accurately and must be fully understood the pressure and strength of the soil required to cope with utilities and loading in order to prepare the soil according to the steps mentioned earlier.

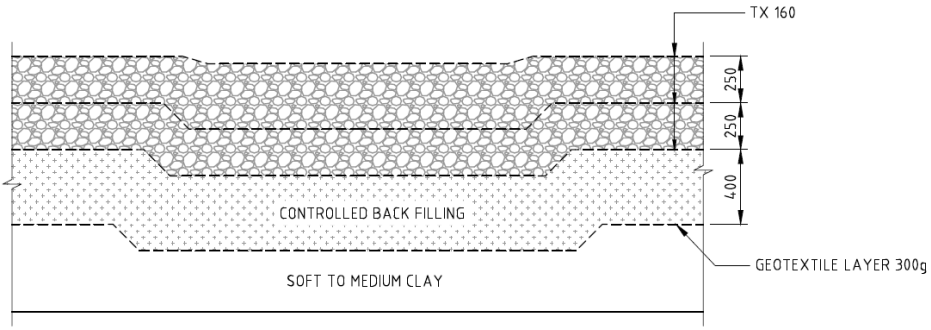


illustration 28 Preparation of the lower soil for the placement of utilities

After measuring the facilities, the contractor will ensure that the available space is sufficient to place the utility with sufficient authorization from all sides to allow workers to continue operations after the tool is placed.

It was also discussed in the construction of checkroom In the previous section, it will be built utilities outside the installation area through precast concrete pouring techniques and then it will be moved and installed in its dedicated opening.

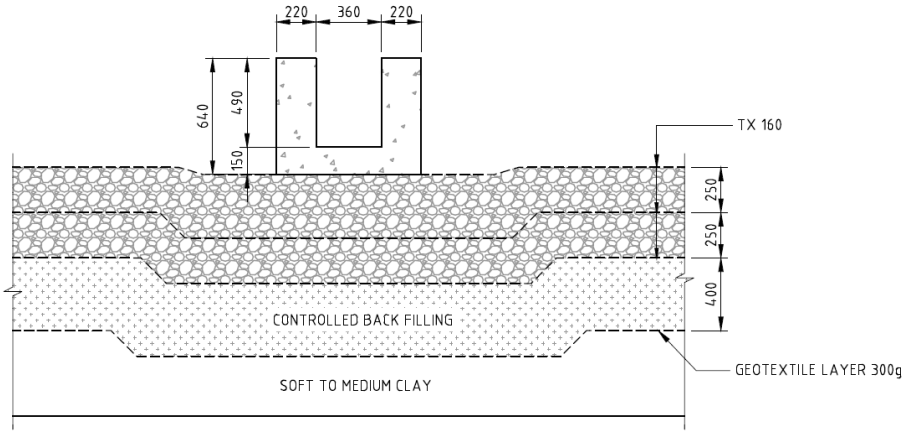


illustration 29 Placing the facilities on the surface of the prepared sand

After placing the utility on the soil and making sure that it is flat and in the right location with the help of the survey team, the backfilling procedure can be started. As described in the previous section, the backfill will begin with geotextile layers between them with pressure after each layer to ensure that there are no voids in the soil and can handle all the loads carried from the interlocking pier.

The backfilling is done around the installed utility. Extreme care must be taken not to damage or move the utility by using manual backfilling at the beginning of the process and when it is near the utility, then mechanical backfilling can continue when sufficient layers are laid.

The upper layers of the interlocking pavements are placed around the utility that will have an exposed part above the final layer of the interlocking pavement. The final layer of the installed interlocking pavement must be flowing with the attachment surface in order to prevent water from infiltrating the soil or the entry of any foreign bodies into the clean, compacted soil layers.

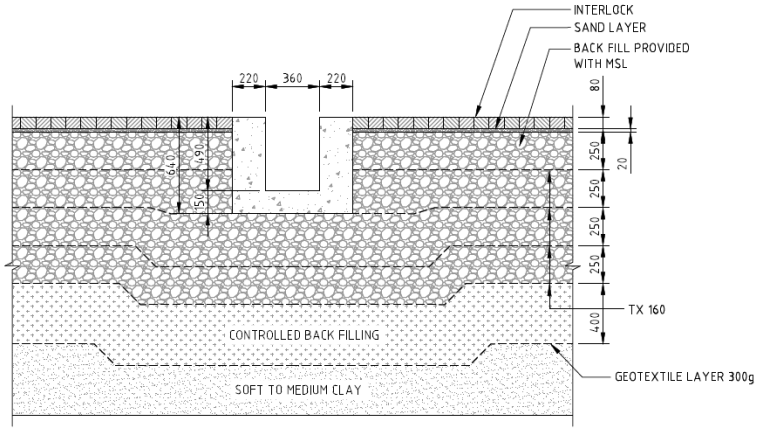


illustration 30 Backfilling and paving with elbow presence

It must be ensured that the compaction is always carried out in layers and even the last layer. On the edge of the utilities, specifically at the edge where the tool intersects with the final layer of the pavement, the geotextile layer must be installed to ensure that the utilities will be installed in place with the berth installed.

After installing the final layer of the pavement and using sand to fill in any voids, the contractor must ensure that the facilities are flat with the pavement surface and still in the correct position.

## 3.5 Operational Phase Activities

The main activities are container handling, storage and then delivery.

### 3.5.1 Introduction

The most common operations at the terminal are loading/unloading from the vessel by crane، and internal transportation by yard tractors to the storage yard، and loading/unloading containers in the yard, and caching in the yard before loading containers on trucks. All these processes, as well as the equipment involved, need to be monitored and managed in the most automated way possible[1]


illustration 31 The second phase of the current station

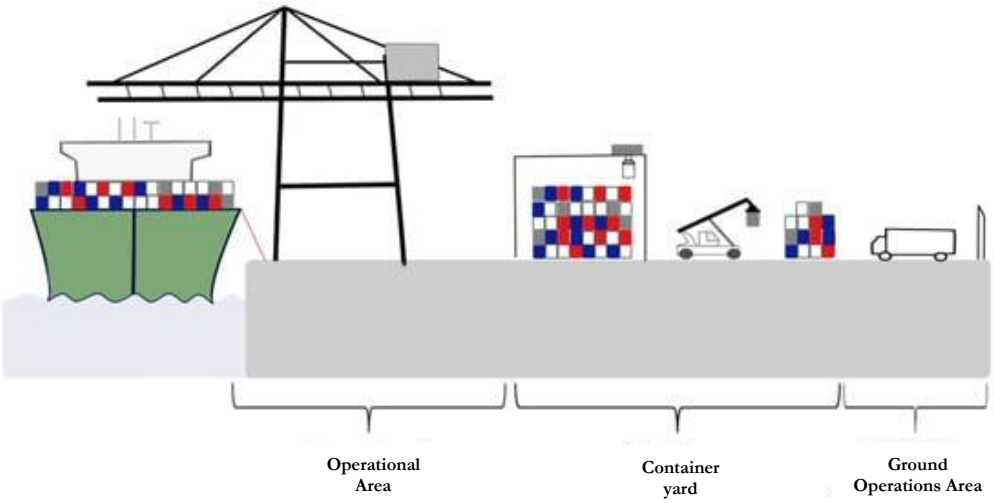


Illustration 32 Operational process of the project

[1] https://www.mdpi.com/2071-1050/11/6/1648/htm

### 3.5.2 Export Terminal Facilities

During the export process, the containers are first entered into the basic storage areas, where the vehicle and the shipment data itself are recorded. The next step is to store the container in the yard and as technology advances, there is an option to use the optimal location to store the container that will be suitable for its size, type of cargo and date of dispatch. During this procedure, forklifts, cranes, transport vehicles and trucks are used.

When the vessel carrying the containers arrives at port, the container is transported to the vessel site by cranes or transport vehicles. Specialized cranes are then used to lift the container to the ship with a specific methodology to ensure that the vessel is not always inserted on the side and balanced. After loading the ship, it will then sail to its next destination with the loaded cargo.

### 3.5.3 Import Terminal Facilities

For the import process, the same method is used for export, however it is done in the opposite way. The first step is for the ship to arrive at the port and unload the containers from the ship with specialized cranes in a systematic and planned way to ensure that the vessel is always balanced. The next step is to record the information of each container entering the yard with its size, destination, type of load and capacity. The containers are then transported to storage by cranes or transport vehicles to storage areas. The last step is where the transfer is made and the containers mover to outside the yard and then sent to the addressee.

### 3.5.4 Gate Activities

#### 3.5.4.1 Warehouse

At the gate, there will be a warehouse that accepts incoming goods to be exported, in the warehouse the inspection will be carried out. The inspection will be carried out by the competent customs team.


illustration 33 Warehouse

#### 3.5.4.2 Portal

The portal will include two main activities, receipt of import and transferring of export containers and goods. On the import side, the gateway will accept full containers (DI) and empty containers (MTY - DM). In addition, for export, the gateway will receive all export containers (RE) and empty containers (MTY - DM).

#### 3.5.4.3 Portal Operations

The portal process includes:

1. Sealing Export Units
2. Weighing goods through 3 weighing bridges (VGM - verified gross mass)
3. International Maritime Organization (IMO) labels will be repaired when export containers are needed.
4. Separation of the empty containers
5. The possibility of replacing containers before release upon the customer's request

On average, the waiting time of the truck is 30 minutes and the rotation time of the truck is 24 minutes. At the gate, there will be a team present 24 hours a day to answer all technical inquiries and logistical questions.


Illustration 34 Portal

#### 3.5.4.4 Goods' Loading

During this loading phase, for export containers. The loafing can be through using a forklift or by manual labor. Forklift loading can have a rate of up to 30 containers per day while manual loading can have a rate of 5 containers per day.

illustration 35 Loading of goods

#### 3.5.4.5 Ship Container Loading

It is a procedure for loading containers into a cargo vessel. It's not just about stuffing items so that the space is filled. It is a process in which items are carefully loaded or unloaded for a smooth shipping service. The containers in which the items are loaded or unloaded are supposed to be very balanced. So that the crossing becomes easier and more convenient for dockers. Also, a certain type of layout is carried out before loading the containers to ensure balance is guaranteed for the vessel being loaded.

### 3.5.5 Shipping Activities

Shipping activities will include:

1. Container fixation and additional fixation which is done by professionally trained personnel for all shipping activities


Illustration 36 immobilization Container

2. Container body repair (patching) done using the best available materials for patching and repairing of containers.

illustration 37 Container body repair

3. Clip-Off GENSET (Refrigerated Container Electric Generator) where a dedicated forklift will install generators with trained workers

illustration 38 Refrigerated container generator

4. Import stripping and cargo surveying, which includes unloading containers and conducting an inspection survey to ensure that there are no damages.


illustration 39 Survey and Stripping of Goods

5. Cargo Processing and Separation of pallets


illustration 40 Cargo handling and pallet separation

### 3.5.6 Reefer Containers

1. The Suez Canal Container Terminal has become a major center for monitoring and repair services for either heavy machinery repair of the MTY reefers or minor repairs of the full reefers.
2. An experienced reefer team is available around the clock, and all technical functions and possible visual damage to both the box and the machines are checked according to the manufacturers' standard specifications and specific PTI procedures.
3. Full reefer container setup/status monitoring and notification discrepancies are sent on time.
4. Maintain full cooled energy supply during the reefer's stay at SCCT.

### 3.5.7 Reefer Container Activities

1. Transportation and movement of the reefer container until it is connected to electrical power. On average, the maximum time for the disconnection time is 15 minutes.

illustration 41 Reefer Power Supply

2. Reefer container setup modifications. When a there is an error with the settings of the reefer, the problem is reported immediately and on average and corrective action is taken within 30 minutes of receiving the report to perform setting modifications.

illustration 42 Settings Modifications for Reefers

3. Refrigerant Monitoring: Suez Canal Container Terminal uses the latest technology to monitor reefer containers using the REFCON system

illustration 43 Reefer container monitoring

4. Pre-flight inspection: The reefer container is physically inspected to induction the refrigerated body and machinery in order to fix any malfunctions.

illustration 44 Reefer Container Inspection

### 3.5.8 Ship Oil Spill Correction

The following process outlines the steps and procedures required in order to correct the oil spill on the ship and repair the ship:

1. Preparing to start work
    1. Check for traffic hazards and follow SCCT traffic rules and implemented risk plan
    2. Make sure there is proper lighting and that there is proper protective equipment for workers
    3. Disconnect the funnel in question and wait 2-3 hours to allow the funnel to cool down and start no work without testing the heat of the funnel through the use of a thermal camera
    4. Test the emissions and oxygen in the air to make sure there are no hazardous or toxic emissions in the air, and if there are harmful emissions, use gas masks.

2. Repair work
    1. Repair work can be carried out at heights using cranes
    2. Repair work can include
        1. Milling work
        2. Electric welding works
        3. Painting works
        4. Hand tools works

### 3.5.9 Periodic Maintenance

Terminal sea-ports are exposed to some of the harshest operating environments on the planet. Planned and reactive maintenance of these resources requires operational understanding to ensure they can achieve their intended function.

It is therefore necessary to regularly maintain all existing assets in the terminal such as equipment, tools and all infrastructure elements which will result in all the benefits mentioned below:

1. Reduce maintenance costs
2. Reduce production costs
3. Increase maintenance productivity
4. Help improve maintenance practices
5. Support for compliance with applicable regulations
6. Reduce equipment failures
7. Reduce downtime

## 3.6 Operation Phase Equipment

### 3.6.1 Main Equipment

| Equipment Name | Equipment Image |
|---|---|
| STS Cranes |  Illustration 45 STS Cranes |
| RTGs |   Illustration 46 RTGs |

| Equipment Name | Equipment Image |
|---|---|
| eRTGs |  Illustration 47 eRTGs |
| Reach Stackers |  Illustration 48 Reach Stackers |
| Empty Handlers |  Illustration 49 Empty Handlers |

| Equipment Name | Equipment Image |
|---|---|
| Truck Tractor (TT) |  Illustration 50 Truck Tractor (TT) |
| Truck Trailer (TR) |  Illustration 51 Truck Trailer (TR) |
| Bomb Carts & Flatbed Trailers |  |

| Equipment Name | Equipment Image |
|---|---|
| |  <br>Illustration 52 Trailers |
| Over Height Spreader |  <br>Illustration 53 Over Height Spreader |
| Forklift 3T |  <br>Illustration 54 Forklift 3T |

| Equipment Name | Equipment Image |
|---|---|
| Forklift 5T |  Illustration 55 Forklift 5T |
| Forklift 16T |  Illustration 56 Forklift 16T |
| STS Spare Spreaders |  Illustration 57 STS Spare Spreaders |
| eRTG Spare spreaders |  Illustration 58eRTG Spare spreaders |

#### 3.6.1.1 Other Equipment

Table 30 Other Equipment

| Equipment Name | Equipment Image |
|---|---|
| Pinning Stations |  Illustration 59 Pinning Stations |
| Lashing Cages |   Illustration 60 Lashing Cages |
| Pinning Stations |  Illustration 61 Pinning Stations |

| Equipment Name | Equipment Image |
|---|---|
| Lowbed Trailers |  Illustration 62 Low Trailers |
| Spreader Trailers |   Illustration 63 Spreader Trailers |
| Maintenance Platform |  Illustration 64 Maintenance Platform |
| Pickups |  Illustration 65 Pick Ups |

| Equipment Name | Equipment Image |
|---|---|
| Vans |  Illustration 66 Vans |
| Buses |  Illustration 67 Buses |
| Workshop Equipment & Tools |  Illustration 68 Workshop Equipment & Tools |

| Equipment Name | Equipment Image |
|---|---|
| Oil spillage control equipment |  Illustration 69 Oil Spillage Control Equipment |
| Safety equipment |  Illustration 70 Low Trailers |

## 3.7 Resource Consumption

### 3.7.1.1 Construction Phase

#### 3.7.1.1.1 Water

During the construction phase, the water used in the construction will be purchased through a local vendor who will use water tanks to fetch the necessary water to the site. As for drinking water during the construction phase that will be used for drinking and daily use in offices and for labor, bottled water will be brought.

1. The average water demand for construction in the duration of the project is: 17,000 cubic meters per month
2. The average demand for drinking water in the duration of the project is: 900 cubic meters per month

#### 3.7.1.1.2 Sanitation

Wastewater from construction purposes will be collected in concrete trenches. This water will then be transported by the local guardian to the nearest wastewater treatment plant.

As for the municipal wastewater generated by manpower, the wastewater will be collected in concrete tanks and then transported by a local agent to the nearest wastewater treatment plant.

The closest wastewater treatment plant to the project area is the Port Fouad wastewater treatment plant. The station is about 2.4 kilometers away, but it is located across the Suez Canal.

- Average wastewater produced from construction use for the duration of the construction of the project: 14,500 cubic meters per month
- Average wastewater produced from the workforce for the duration of the construction of the project: 765 cubic meters per month

#### 3.7.1.1.3 Energy

During the construction phase, generators will be used to power all electrical tools and machinery used in construction.

#### 3.7.1.1.4 Fuel

Diesel fuel will be used to power generators that will be used to power tools used in construction, such as welding tools. In addition, diesel will be used to power transport vehicles and excavators.
There are two stations close to the gas stations, one of which is the Mobil Petrol Station located across the


Illustration 71 locations of nearby gas stations

Suez Canal, which is 5.3 km from the expansion project. The other station is the SCCT refueling station which is in operation and is located 2.2 kilometers away and is located on the same side of the Suez Canal.

The fuel will be stored in fuel tanks, where a concrete and iron structure will be created at the work site away from any human activities, residential buildings etc. to maintain health and community safety. Occupational health and safety rules will also be observed when transporting, storing, or transporting fuel.

The expected amount of fuel consumption during the construction phase of this project is as follows:

- Amount of diesel: 0.45 million liters per month
- Gasoline quantity: 42,000 liters per month

#### 3.7.1.2 During the Operational Phase

##### 3.7.1.2.1 Water

In the operational phase of the project, water will be used for drinking and for cleaning equipment. The location of the project is connected to the water pipes, so the water consumption will be through the water network.

The average daily demand for water use is expected to be as follows: Safe drinking water of about 150 $m^3$/day and a maximum of 50 $m^3$/hr for the required demand

##### 3.7.1.2.2 Sanitation

During the operation of the project, the project site will be connected to the sewage network, thus the wastewater produced by the employees working in the project will be disposed of in the municipal wastewater network which will then transport it to the nearest wastewater treatment plant.

The expected daily production of wastewater is:190 cubic meters per day

##### 3.7.1.2.3 Fuel

Trucks and transport vehicles will be used to transport containers in the container terminal yard during the operation of the project. These trucks and transport vehicles will be powered by diesel, and therefore fuel will be needed in the operational phase of the project. As discussed before, there is a gas station nearby in the first phase of the project which can be used to save fuel.

##### 3.7.1.2.4 Electricity

Electricity will be used for lighting, operating equipment, tools, cranes, ventilation and maintenance tools.

The expected amount of electricity consumption during the operation phase of this project is 32MVA to suit the operation needs. When considering the possibility of introducing ship-to-shore power service, an additional demand of 12MVMA is needed (44MVA will be required in total)

## 3.8 Hazardous Materials Storage

### 3.8.1 Construction Phase

Hazardous materials stored at sites will include paints, oils, solvents, fuel and other materials that may be used for construction purposes. A temporary hazardous material storage room and/or container will be constructed at the site and have the following features as a minimum:

- Impermeable hard standing surfaces fitted with capture drains
- Restricted access
- Ventilation
- Spill kit
- Fire extinguisher
- Compartmentalized
- Labels
- Secondary containment
- Arabic and English MSDS

### 3.8.2 Operation Phase

Hazardous materials stored at sites will include chemicals, biological agents, cleaning agents, gas cylinders including oil, colorants and other materials that may be used for the different activities. A hazardous material storage room will be constructed within the building and have the following features as a minimum:

- Impermeable hard standing surfaces fitted with capture drains
- Restricted access
- Ventilation
- Spill kit
- Fire extinguisher
- Compartmentalized
- Labels
- Secondary containment
- Arabic and English MSDS

## 3.9 Waste Generation

### 3.9.1 Construction Phase

The waste generated during the construction phase is expected to consist of rubble and inappropriate rotten materials generated during ground clearance works, inert building materials such as metal parts, unused concrete rubble, and non-hazardous general waste. Hazardous wastes generated during this phase may consist of empty containers of paint, oil, chemicals, contaminated soil, and fluorescent lights.

The contractor will be required to establish waste storage areas at each of the project sites. The storage area will be divided into non-hazardous and hazardous waste with proper separation between the two. Construction waste is transported off-site by a licensed contractor. The waste contractor must ensure that construction waste is disposed of in a licensed landfill/landfill.

Large colorful waste containers will be installed in the waste storage area according to the following scheme:

1. Hazardous waste: colored red.
2. Non-hazardous (domestic) waste: colored yellow.
3. Metal waste: colored blue.
4. Food waste: Colored white.

The storage area for hazardous wastes is established in accordance with the requirements stipulated in Law 4/1994 with minimum requirements as follows:

#### 3.9.1.1 Site

1. It must be a secure site with limited access.
2. They should be away from storage areas, especially those for hazardous chemicals, from drinking water sources and any residential areas.
3. There must be access to loading, unloading and emergency response.
4. There must be electrical energy, including emergency power supply.
5. There should be a water supply for cleaning and firefighting.

#### 3.9.1.2 Planning

External storage is recommended for easy access, handling, safety and cost considerations. Storage indoors is vital to protect stored waste from extreme heat or for other considerations. Storage space should be allocated to contain all types of hazardous waste produced by the project. It should state that:

1. Access from at least two sides to respond to fires and other emergencies.
2. Adequate separation of incompatible waste, safe transportation of waste containers using mechanical equipment, and adequate access for inspection.
3. Recognizable or reactive waste (solid or liquid) must be stored at least 15 meters from the line of the property.

#### 3.9.1.3 Security

The storage area should be:

1. Be secured by a wall or fence 3 meters long and have locked gates. The lock keys must be properly marked and kept in a secure office. A duplicate or master key must be available in case of emergency.
2. At least two access gates: one for normal use, the other for emergencies.
3. You have someone responsible for the security of the storage area.
4. Be controlled: Only trained staff can enter the hazardous waste storage area.
5. Have a restricted area mark: hazardous waste storage area.
6. Be well lit for security at night.
7. Be designed to accommodate temporary spill containment and equipment to respond to spill situations.

#### 3.9.1.4 Packaging and Labeling

Stickers must appear in Arabic:

1. Clear signs or symbols indicating the dangerous nature of the contents.
2. The contents of the container like active substances, concentrations.
3. The original source of waste.
4. Total and net weights.
5. The date of filling the container and the date of waste generation.
6. The name of the person responsible for filling the container and its contacts.
7. A safe storage method and a warning against mixing with other reactive materials or wastes.
8. Personal protective equipment necessary for handling.
9. The best way to deal with emergencies (leakage, spillage, fire... etc.)
10. Special precautions for opening and unloading.

The engineering, procurement and construction contractor must ensure that all hazardous waste is transported to a landfill licensed by a licensed contractor (i.e., obtaining approval from the Environmental Affairs Agency to transport hazardous waste within the governorate where the site is located). The carrier must provide waste data to the contractor for each transfer, which will be made available. The contractor will maintain a register of hazardous waste in accordance with Law 4/1994. The municipality transports and disposes of non-hazardous waste in a licensed landfill and/or landfill.

### 3.9.2 Operation Phase

The activities of the operational phase will generate both non-hazardous wastes (office waste, general commercial waste and organic waste produced as food residues) and hazardous wastes (empty chemicals, oil, paint, colorants, containers, batteries, miscellaneous containers, paint cans, solvent containers, nebulizers, adhesives, lubricants, and maintenance containers, etc.). Non-hazardous waste will be collected in containers for disposal by a licensed contractor to a licensed local waste disposal facility. Hazardous wastes will be stored in the designated hazardous waste storage area, designed in accordance with the requirements of Law 4/1994 (in accordance with Article 5.6.8). It will follow the provisions set out in Section 5.7.5 regarding the disposal of hazardous and non-hazardous wastes. A register of hazardous wastes will be maintained in accordance with Act No. 4/1994. It is estimated that this phase of the project will generate 1,750 tons per year of solid waste and 300 tons per year of hazardous waste.

## 3.10 Proactive Measures by SCCT to Enhance Environmental Performance

The Suez Canal Container Terminal company has ensured actions are taken during the construction and operational phases of the project which will enhance and maximize the environmental performance of the terminal yard.

### 3.10.1 Construction Phase

In the construction phase, SCCT will ensure that the contractors employed follow the ESMP and ESMoP prescribed in Section 9 in order to mitigate the negative environmental impacts which arise from the construction activities. In addition, SCCT will carefully select contractors who are fully experienced in terminal yard construction with a proven environmental track record in similar project in scale and location to ensure that the construction work performed is done in line with the environmental national and international regulations and laws. This will be done in adjacency will close monitoring and SCCT projects team who will be on site and follow up with the contractor through comprehensive site visits and inspections.

### 3.10.2 Operational Phase

APM Terminals, the operational and management company responsible for all of SCCT's operations has pledged to being an entity with net zero greenhouses gas emissions by 2050, as of the current date, APM Terminals is expected to bring forward the Zero greenhouse gas emission target to 2040, a decade ahead of its initial 2050 ambition. A 70% reduction in absolute (total) emissions has been set as an interim milestone for the period 2020-2030. This is the most ambitious target set by any terminal operator to date. This commitment builds upon the company's existing strategic approach to decarbonization and recent investment in a full suite of solutions to reduce its carbon footprint. It will also contribute to a broader target set by parent company A.P. Moller - Maersk to achieve net zero greenhouse gas emissions in 2040 across all business entities.

APM Terminals has developed a decarbonization roadmap, with a range of focus areas. Theses include: reduction of fuel and electricity consumption, improving electricity sourcing and changing the type of electricity utilized, utilize more renewable energy solutions when available, focusing on utilizing alternative fuels and reduce the direct emission through transition towards emission free fuels.

The roadmap also includes require developing green energy alternatives in locations where such options are currently not available. APM Terminals considers itself to be as a trusted infrastructure partner rather than just moving boxes, and will work with local and national governmental partners to enable the development of necessary infrastructure that will benefit a wide spectrum of partners and entities who pursue the path for green energy and/or fuel alternatives, thus, will not only drive the local climate agenda, but also create jobs and new business opportunities. APM Terminals aims to also initiate a dialogue with main energy providers

to source for alternative fuels in locations where that is currently not possible as well as engage with the main equipment producers to develop equipment compatible with the requirements for alternative fuel.

While considering more environmentally enhancing options APM Terminals is still being competitive in today's market as they consider their customer whose most important requirement is that transport solutions are competitive, reliable, and offer an increasingly low environmental impact. Through pilot programs already run by APM Terminals, such as the Green Gothenburg Gateway, and careful analysis, the company is confident that sustainable solutions also support all of these requirements

In the intermodal area between landside logistics and ocean freight, through these new targets, APM Terminals will be ideally positioned to offer its shipping line customers, freight forwarders, and cargo owners an unparalleled opportunity to decarbonize their logistics chains on an end-to-end basis.

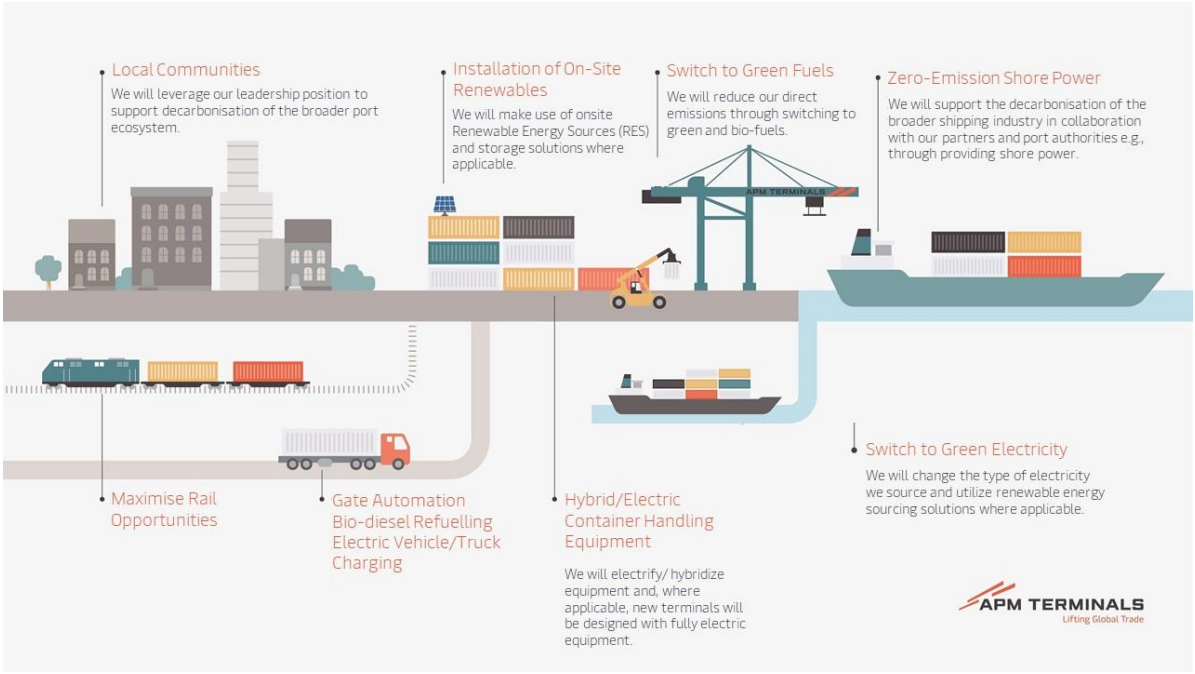


Illustration 72 APM Terminals' Decarbonization Plan

## 3.11 Project Timeline

The project implementation work will begin after obtaining the approval of the Environmental Affairs Agency.

The project construction works are expected to require about: 24 months for the first phase and 21 months for the second phase.

The period of operation of the container terminal depends on many factors (the state of the cargo transport market etc...) But the container terminal is expected to operate for 50 years with studies supporting the possibility of its ability to operate for 100 years.

The following describes the timeline for the implementation of the container terminal

| Duration | Activity |
|---|---|
| 1 Month | Contractor movement and site preparation |
| **The first stage of construction** | |
| 23 Months | Courtyard Development Works + Marine Works + Substations and Infrastructure Facilities + Surface Buildings and Facilities |
| **Second Phase of Construction** | |
| 21 Months | Yard development works + infrastructure facilities + buildings and surface facilities |

# 4 Description of the Surrounding Environment and Social Conditions

## 4.1 Area of Influence

### 4.1.1 Direct Area of Influence

It must be considered that the Suez Canal Container Terminal expansion project is located in the East of the Suez Canal with no adjacent residential areas or any industrial areas. It must be noted that the nearest area of interest at least 3 kilometers away is the El-Malaha Lake, which has partially dried up and is only used for some fish farms that are only semi operational and on the far eastern side of the lake which is the furthest point away from the expansion project's site. In addition, the project is self-contained with the only external movements being done by trailers transporting containers in and out of the terminal yard and ships importing and exporting containers.

The SCCT's expansion project is neighbored on the northern border by the existing SCCT terminal yard (Phase 1 and 2) which the expansion project is for. There are no plans to build an external or satellite facility to serve the expansion project or the existing terminal yard.

The nearest sensitive receptor to be considered is the Suez Canal which the terminal yard directly lies on its East bank. The elevation of the Gulf of Suez with the connection to the Red Sea and the Mediterranean Sea were designed to have the same elevation, thus the water current movement is dictated by the wind direction. For the case of Port Said, the prevalent wind direction is North-Northwest, thus making the downstream being the Mediterranean Sea and the upstream being the Suez Canal water body. This will eliminate the need to expand the area of influence to include any receptors upstream of the water current.

Due to the reasons mentioned earlier, the area of influence was considered a radius of 2.5 kilometer around the station yard.


Illustration 74 Direct Influence Zone


Illustration 75 Water Current Direction

### 4.1.2 Indirect Area of Influence

As the labor, workers, and employees of the SCCT's expansion project are mainly from the Port Said area and will have the benefit of employment at the terminal yard in the construction and operational phases, the residential areas will be included in the influence zones of the project's scope. In addition, the Port Said will enjoy economical benefits during the construction phase through construction needs of the project which will require purchasing of goods, materials, equipment, and machinery, thus, rejuvenating the economic markets of Port Said.

In addition, the operation of the SCCT's expansion project will also revitalize the economic sector in Port Said due to the investment opportunities that will occur in East Port Said during the operation of the terminal yard. SCCT's expansion project will make local and foreign investors interested in exploring the East Port Said area as it will be a viable area for investment and the newly operational terminal yard will allow for ease of transportation of equipment, machinery, and materials to the new investment locations. These investment opportunities, which will be brought on by the operation of SCCT's terminal yard will enhance the economical markets of Port Said as they serve to accommodate the new investments and work in hand with them.

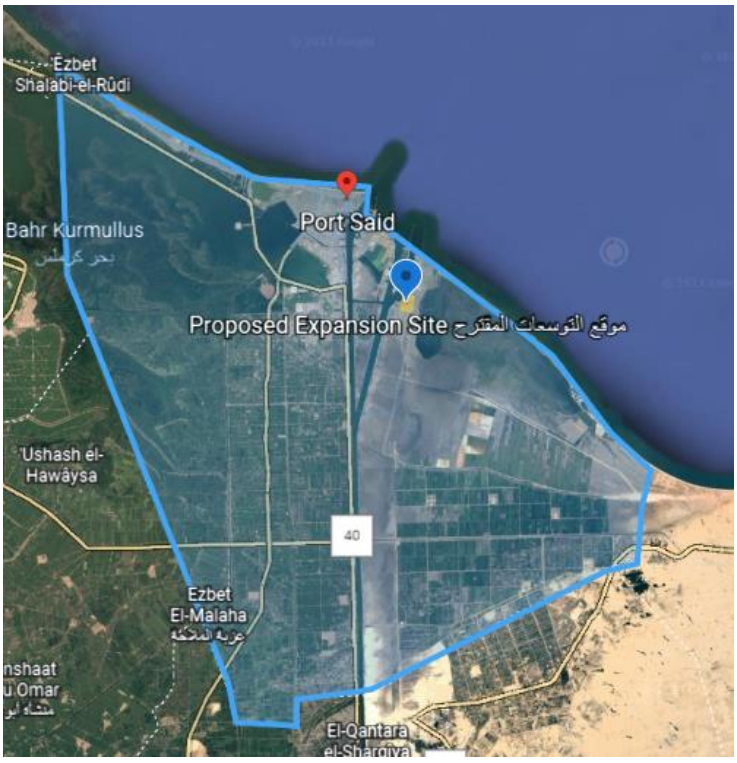


Illustration 76 Indirect Influence Zone

However, in order to conduct a conclusive and large-scale study, the description covered all the basic environmental and social components located within and outside the designated area of influence.

After research and studies of environmental and social baselines, the most vital and most important areas have been further studied with attention to impacts, mitigation measures and monitoring plans being explored in the upcoming sections in Section 5 (Environmental and Social Impacts), Section 7 (Mitigation Plans) and Section 8 (Environmental and Social Monitoring Plan).

## 4.2 Environmental Description

### 4.2.1 Location and Administrative Characteristics of the Project Area

The expansion project of the container terminal yard is located in East Port Said Port. The city of Port Said is the administrative capital of Port Said Governorate, which includes with it the city of Port Fouad. Port Said is one of the richest governorates in fisheries and famous for its European architecture and tourist attractions, and it has also witnessed many achievements in the agricultural and economic fields, including the opening of Port Said tunnels, which connect it to the east of Suez Canal passing under the Suez Canal, which contributes

to the ease of connection to the road network. It also includes Port Said Port, which is one of the most important seaports in Egypt.

The city of Port Said is located in a privileged location in the northeast of the Arab Republic of Egypt where it presides over the northern entrance to the Suez Canal. The city overlooks the Mediterranean Sea to the north, the city of Port Fouad to the east, and the governorate of Ismailia to the south, and Port Said is bordered to the west by three governorates: Damietta Governorate in the northwest, Dakahlia Governorate to the west, and Sharqiyah Governorate to the southwest. Port Said Governorate is located on the Mediterranean coast at a latitude (18 ° 32 ° N) and longitude (15 ° 45 ° E) and has a total area of approximately 1345 km$^2$ (approximately 320 thousand acres) while the area of the separate city of Port Said is about 845 km$^2$. Climate characteristics

The city of Port Said is characterized by a Mediterranean climate that tends to be moderate all year round and is characterized by hot and dry summers and humid, mild and rainy winters.

#### 4.2.1.1 Temperature

Port Said is characterized by a mild climate as shown in the figure below, where the red line filled with "Average Daily Maximum" shows the average maximum temperatures for each month for Port Said Governorate, while the Blue Line filled with "Average Daily Minimum" shows the average minimum temperature. From this figure we can see that the lowest average minimum temperature in winter reaches 8 ° C and the highest average maximum temperature in summer reaches 35 ° C. The figure shown is the result of the use of simulated models of temperature measurements over 30 years showing the average maximum temperature between 20-35 °C during the year, and the average minimum temperature between 8-22 °C during the year.[2]

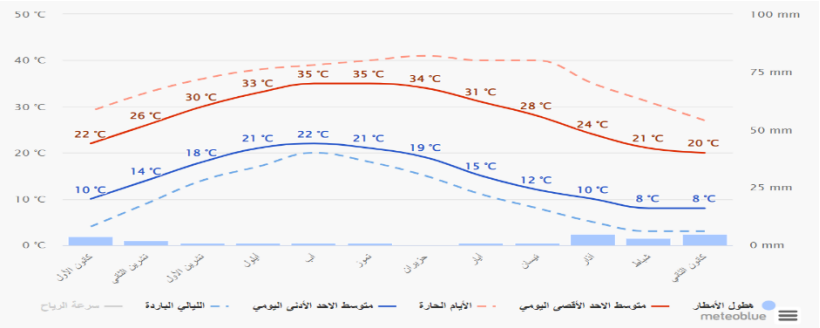


Illustration 79 Average Monthly Temperatures in Port Said

[2] www.meteoblue.com

#### 4.2.1.2 Humidity

Port Said Governorate is a coastal governorate overlooking the Mediterranean Sea, where the presence of water phenomena such as fog is observed, especially in spring and early summer. The relative humidity of Port Said Governorate ranges between 70.5% - 73.5% as shown in the attached table below, which was extracted by calculating the average relative humidity by day and relative humidity at night for each month. The average relative humidity of Port Said last year is also shown, where the relative humidity ranges between about 60%-75%.[3]

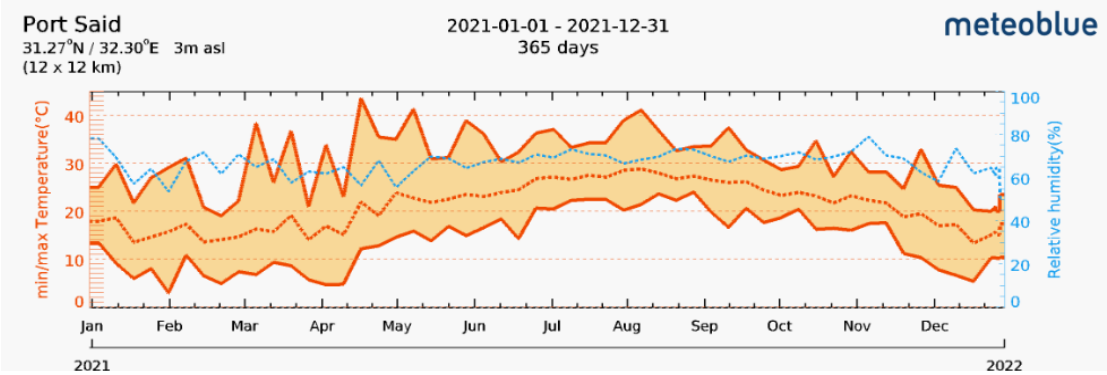


Illustration 80 Average Monthly Relative Humidity of Port Said Governorate

Table 31 Average Monthly Relative Humidity of Port Said Governorate

| Month | Jan | Feb | March | April | May | June | July | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Monthly Relative humidity % | 73.5 | 70.5 | 71.5 | 72.5 | 71.5 | 72 | 73 | 72.5 | 71 | 71.5 | 70.5 | 73 |

#### 4.2.1.3 Clouds and Rain

Port Said has a partly cloudy climate most of the year, while the clear weather occupies about 91 days a year and the climate are sunny by more than 25% in most months. The cloudy weather increases, especially in winter between November and March, and prevails on about 21 days a year, of which 5 days are in January, which is equivalent to about 17% of the days of the month as shown in the figure below.

As for rainfall, the climate is divided into two seasons: dry and rainy. It is noted that the rainiest months are in winter, with an average rainfall ranging from 5-16 mm, reaching its peak in January, while rainfall is less and may be absent in the summer between June and September. The average monthly rainfall in Port Said Governorate is shown in the following table.[4].

Table 32 Monthly Average rainfall in Port-Said

| Month | Jan | Feb | March | April | May | June | July | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rainfall in mm | 16 | 12 | 10 | 5 | 4 | 1 | 0 | 0 | 0 | 3 | 7 | 11 |

[3] weatherbase.com
[4] www.meteoblue.com

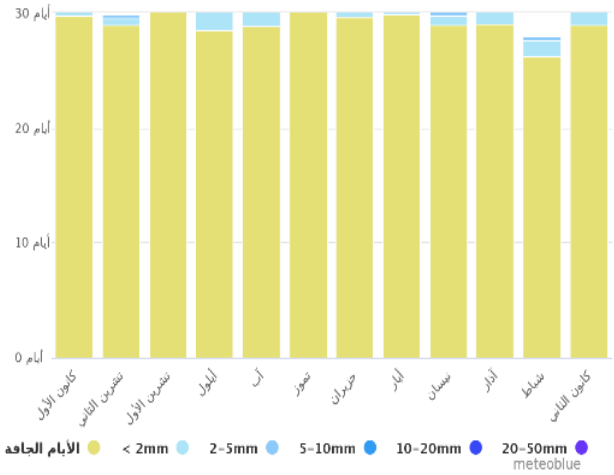


Illustration 85 Wind Direction in Port Said Governorate

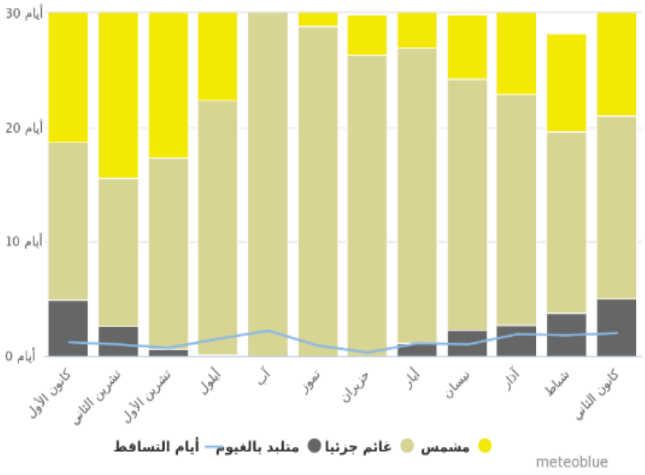


Illustration 84 Wind Direction in Port Said Governorate

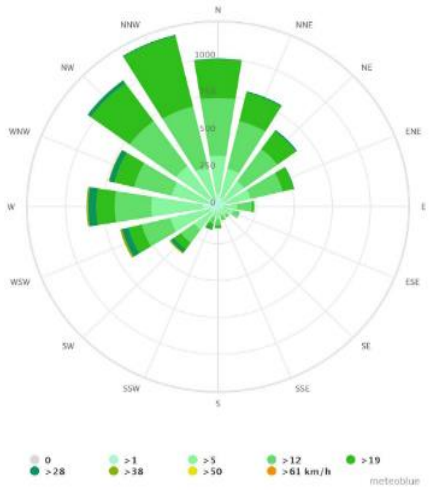


Illustration 83 Wind Direction in Port Said Governorate

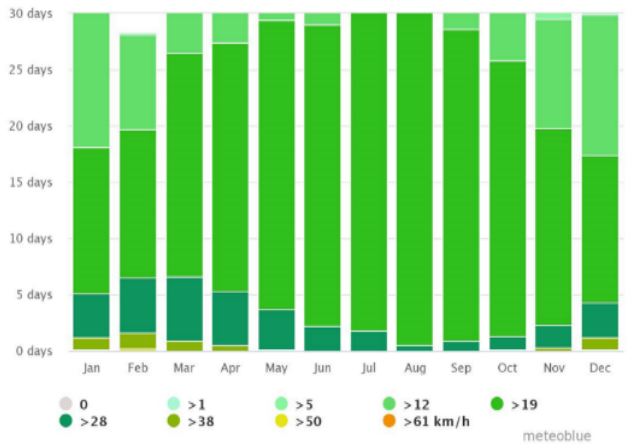


Illustration 86 Wind Speed in Port Said

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | |

### 4.2.2 Geological and Geomorphological Situation[56]

The area is topographically characterized by being a flat land with a level ranging from half a meter to a meter above sea level as part of the coastal sandy strip. The area is also characterized by the absence of any topographic manifestations of topography and tendencies and the southern region is covered by parts of Lake Manzala. The area is also cut off by the Port Said-Damietta Road to the north and the International Ring Road to the south and west. In general, the topsoil in Port Said consists of four categories of sediments. Nile silt is mainly found in the northern sector around Port Said and part of the cities of Port Fouad. The salt crust was located near Lake Mazalah to the northeastern sector. Wadi and Playa deposits are distributed as sand bars along the southeastern parts and the west coast.

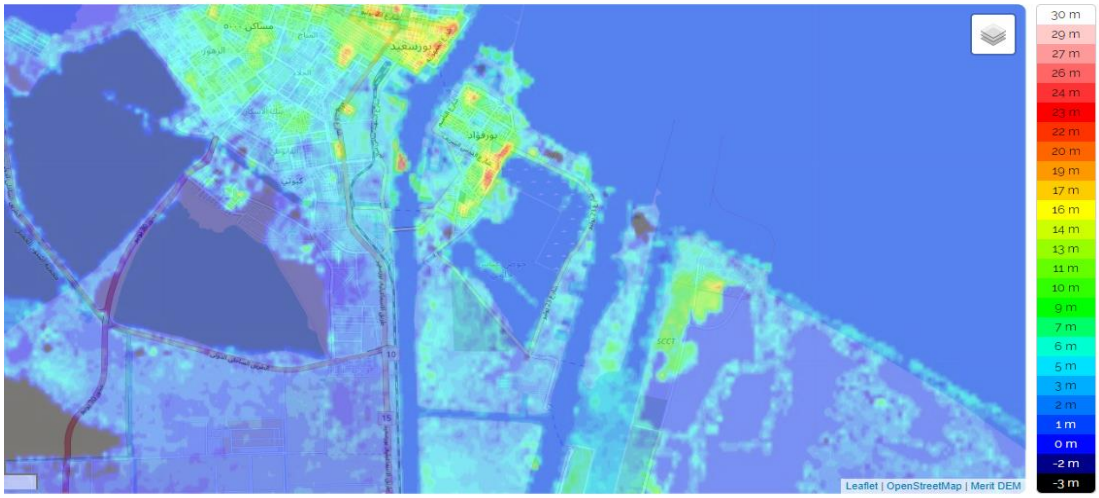


Illustration 87 Illustration of the topography of Port Said Governorate

The geology of Port Said consists of thick layers of sand and gravel at its base (the formation of the Pleistocene dead immersion) topped with coastal sand and sediment resulting from the flooding of the Nile (the formation of the Holocene Belkas). The tectonic evolution of plates in the Eastern Mediterranean plays an important role in the formation of the Nile Delta region. It is bordered by the northern margin of the African Plate, which stretches from the subduction zone adjacent to the Cretan and Cypriot arches to the Red Sea where it drifted away from the Arabian Plate.

The Nile Delta has been affected by small earthquakes along existing small faults. The Pelosium line crack is the main structural feature along the study area, heading from NE to SW and bordering the eastern part of Port Said City. The implications of the Belosiac error system on the current landing rates in Port Said are largely unknown although there may be a potential contribution from this error.

From a geological point of view, Port Said is part of the Tina Plain which consists of very soft to solid clay that extends to depths exceeding 50 meters. This clay soil is affected by salt leakage from Amusement Park, which occupies about 30% of the area of the clay plain.

The plain of Tina is classified into two zones separated by the Peace Canal. Northern plain and southern delta plain. The width of the northern strip plain increases from 1 km in the east to 12.5 km in the west. It has an

[5] https://www.researchgate.net/publication/320059024_Geotechnical_Characterization_of_Port-Said_Clay
[6] https://www.researchgate.net/publication/315656847_Mapping_of_Soil_Geochemistry_in_Port_Said_Governorate_Egypt_Utilizing_GIS_and_Remote_Sensing_Techniques

insignificant lake in the northern part with a concave coastal composition with a length of about 39 km and an area of 818 km2. The southern part of the plain consists of muddy delta deposits. It also consists of a sandy plain plate unit that occupies a narrow area to the east and southeast of a Salt Lake. The salinity of the soil in the region varies from slightly saline to high saline.

Plain clay Tina dark gray color، its origin is related to the ancient tributary (Pelusiac branch) of the Nile River sediments during the Holocene period. The Pelusiac branch ceased to exist since the tenth century AD, and the digging of the Suez Canal in the nineteenth century dried up the Tina plain. In addition، the soil dug from the Suez Canal formed pieces of the plain from the side of the lake. Accordingly, a layer of salt spread widely in the Tina Plain, especially in the Mahalla area. Tina Bay was formed because of the seafront and Nile waters at the time of the Pharaohs, 1000 BC. The bypass of the sea and its slope formed huge deposits of clay and salty silt.

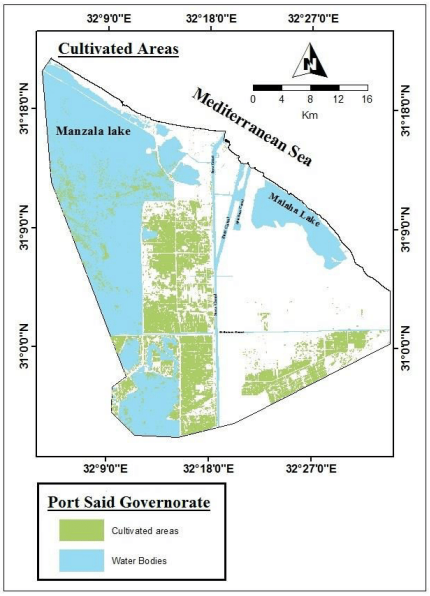


Illustration 90 Distribution of cultivated areas in Port Said governorate.

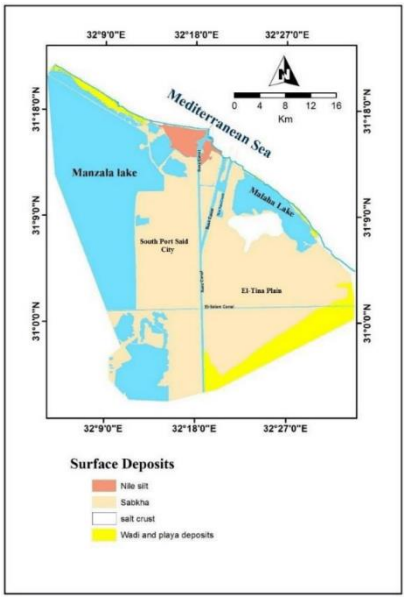


Illustration 88 Distribution of topsoil deposits in Port Said Governorate

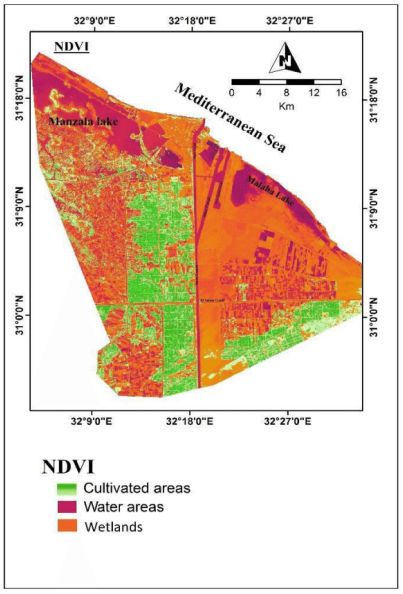


Illustration 89 Map of the Natural Plant Difference Index (NDVI) for Port Said region.

Subsurface conditions in the Tina plain consist of successive layers of filling, sand, silt and clay. The main deposits of Port Said clay are considered to be represented by the lower clay. The groundwater level was faced at depths between 1.3 and 4.3 meters near the project area.

The calcium distribution map shows that high concentration values are recorded at two locations in the eastern part of Port Said, near a Salt Lake. In general, calcium can be supplied in several ways. Gypsum may be the main source of calcium when the pH of the soil is high. Other sources of calcium include calcium nitrate (CA(NO3)2), which contains 18-19.5% of CA as well as calcium chloride which contains about 42% of Ca.

Sulphates (SO4) are measured in meq/l, ranging from 20 to 380 meq/l. High sulphate ions are distributed in the soil south of Port Said along the intersection of the Suez Canal with the Peace Canal. It has no significant effect on the soil other than contributing to the total salt content (TDS). In most cases, high-sulfate soils contain gypsum metal, which can be easily melted. Gypsum may be found in the soil as mixed granules or as thin layers.

Soil salinity is a global problem, particularly in widely irrigated areas with poor drainage or areas where depleted water is reused for irrigation. Soil salinity is usually assessed by measuring the electrical conductivity of the soil (EC) in a saturated paste extracted from the soil. High saline soils are distributed along the Suez Canal and southwest of the Port Said region. TDS for soil ranged from 40,000 to 280,000 meq/l. The TDS level is considered very high, which exceeds the salinity of Mediterranean waters.

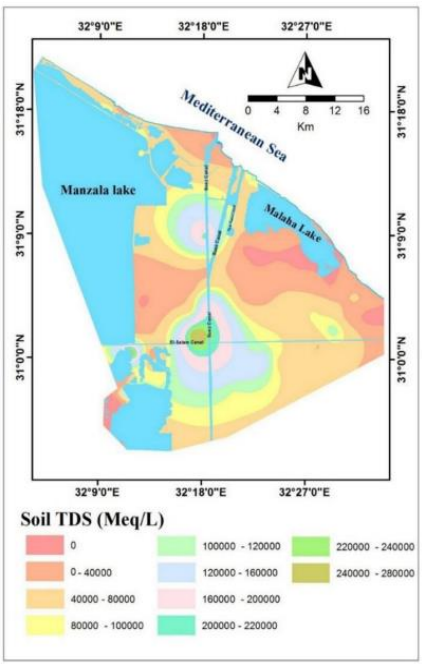


Illustration 92 map of the distribution of total dissolved salts (TDS) of the soil in Port Said governorate.

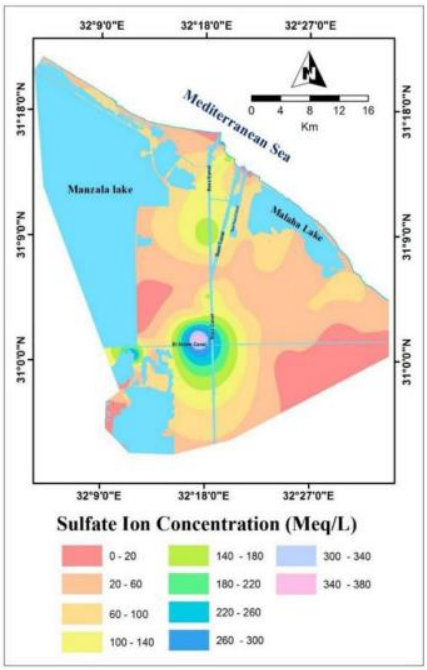


Illustration 93 maps of the distribution of sulfate in the soil of Port Said governorate.

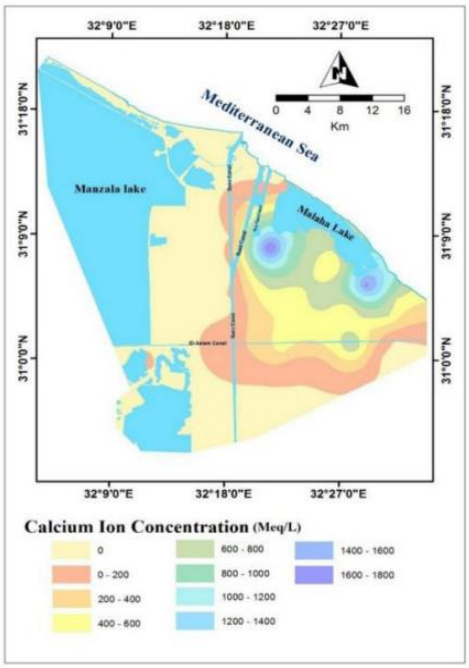


Illustration 91 Map of Calcium Distribution in Port Said Governorate Soil

In general, the main sources of soil soluble salts are primary and local mineral rock weathering, residual fossil salts, atmospheric deposition, salt irrigation and wastewater, saline groundwater, seawater intrusion, inorganic and organic fertilizer additives, sludge and wastewater effluents, and brine from natural salt deposits, brine from oil, gas, and mining fields.

A common perception of a change in the inhabitant sea level is that it will rise, sinking down low-lying coastal areas. Global sea-level rise will eventually affect the canal, requiring the imposition of sea locks to avoid inundation. While the low part of the Suez Canal Corridor is considered part of the ancient Nile Delta, the delta in its destructive phase (erosion) is now receding and tilting northeast towards the entrance/exit in Port Said and Fouad.

In addition to the delta subsidence and erosion, a second noteworthy macro problem is the possibility of seismic tremors along the shear fracture zone between Suez, Cairo, and Alexandria. Well-documented twenty-first century earthquakes occurred there on June 29, 2000, July 7, 2005, and October 30, 2007. Cracks, shear areas and swarms of lines that are part of the tectonic pattern in northeastern Egypt contribute to seismic hazards that can negatively affect the integrity of the canal. The earthquakes that hit the eastern Mediterranean in the past caused tsunamis on the Egyptian coast, so don't hesitate to assume more ripples as a cause of tsunamis hitting the training docks and navigational canal of the Suez Canal approaches in Port Said-Port Fouad.

Although Egypt does not fall within any of the known and globally defined earthquake belts, as it is about 700 km from the nearest earthquake belt, which is the axis of extreme seismic dangers that passes through the island of Cyprus and the northern Mediterranean Sea and which is in fact the site of the slide of the African plate under the Eurasian plate, but to say that Egypt is seismically safe may harm it, as Egypt is exposed to earthquakes that occur at the borders of the plates and pass through the Gulf of Aqaba and in the middle of the Red Sea, is not The magnitude of earthquakes occurring at those sites is not destructive either because of the weakness of the seismic tremor or because there are no facilities within the scope of their impact.

From reading the seismic history of Egypt, it is clear that light to moderate earthquakes have occurred in the Delta regions, the Mediterranean coast, the entrance to the Gulf of Suez, the Gulf of Aqaba and the Aswan region. The South Sinai region (Gulf of Aqaba region) is one of the most vulnerable areas to earthquakes, because of its presence at the border of the Great Falaq, which extends from central East Africa to the Red Sea and the Gulf of Aqaba to the Anatolian Mountains in Turkey, which moves on the sides of the Arab tablet and the African tablet, and this area was affected by an earthquake in 1995 that led to some damage to the port of Nuweiba and the area of Al-Arish and reached the port of Port Said, as well as the area of the plain of Tina which represents the northern tip of the delta. The delta is bordered to the south by the Balouzi Falaq – located within areas likely to be exposed to mild seismic tremors.


Illustration 94 Generalized Regional Tectonic Structure of the Suez Canal

The image above shows the generalized regional tectonic setting of the Suez Canal, which shows some of the main tectonic elements. The Pelosium Line, which operated mostly as a transcurrent rift, is located about 60 kilometers off the coast of Israel and crosses the Suez Canal south of Port Said, passing along the southeastern flanks of the Nile Delta and into the Western Desert of Egypt. Some of the major faults on land and sea, as well as major elevator axes and coastal hinge lines, are referred to as features that contribute to tectonic instability.

### 4.2.3 Water Sources

The governorate has a range of multiple and different water resources, including the Salam Canal - Sarhan - Al-Tina and the Sheikh Jaber Canal, which supplies the governorate with irrigation water, as well as the Port Said Canal for drinking water, which supplies the governorate with drinking water. The province is characterized by its location on the non-fresh lake of Manzala, through which activities are practiced.

#### 4.2.3.1 Surface Water Resources

One of the most important surface water resources in the governorate is El Salam Canal - Sarhan - Al-Tina and Sheikh Jaber Canal, which supplies the governorate with irrigation water and starts the outlet of the Peace Canal from the Damietta branch in front of the dam and Huwais Damietta and then the canal extends east in the direction of Lake Manzla and then south until it receives the water of the Cypress Bank, then goes east until the water of the Hadous Mara drain meets the southern edges of Lake Manzala, and then goes east until it crosses the bottom of the Suez Canal through Sahara to transport water to the east of the Suez Canal to reach To Wadi Al-Arish and this part is called the Sheikh Jaber Canal.

##### 4.2.3.1.1 Suez Canal[78]


Illustration 95 Suez Canal

The Suez Canal stretches between the port of Port Said on the Mediterranean Sea in the north and the port of Suez on the Gulf of Suez in the south, where the nature of the soil in this area varies from clay soils in the north to rocky soils in the south. In Port Said and the surrounding areas of silt and mud deposition over the coming millennia with the waters of the Nile and through the Damietta branch. This clay composition of the soil extends to the city of Qantara, 40 km south of Port Said where silt mixes with sand. The soil in the middle sector of the canal in the area between the arch and sulfur consists of a mixture of soft and coarse sand. While the soil in the southern sector consists of layers of sand rocks and calcareous rocks.

The Suez Canal is located at sea level and the water level changes slightly. The tide in the north is about 65 cm high and this causes sea currents between the Mediterranean Sea and the Crocodile Lake. The tide in the south is about 1.9 meters high and this causes sea currents between the Gulf of Suez and the bitter lakes.

The sides of the canal are covered with stone bags and iron curtains whose design varies according to the nature of the area in order to protect it from collapse due to the pressure from the waves arising from the passage of ships through the canal.

Lace candles extend along both sides of the canal at the rate of a ligament candle every 125 meters for an emergency ship ligament. There are also kilometer markings along the canal to help ships locate themselves in the navigational galaxy. The navigational route of the canal is determined by a tool equipped with a radar reflector and night lighting. The lateral slope of the cross section of the channel varies depending on the nature of the soil with the ratio being 4:1 in the north and 3:1 in the south.

[7] https://www.suezcanal.gov.eg/
[8] https://www.worldatlas.com/

#### 4.2.3.1.2 Mediterranean

Port Said Governorate overlooks the Mediterranean Sea, and its shore extends for more than 55 km from its border with North Sinai Governorate in the east to its border with Damietta Governorate in the west and the Mediterranean Sea meets the waters of Lake Manzla through Bogazi Gemayel, which helps to exchange water between the sea and the lake during tidal operations and the northern coasts of the country in general and the coasts of the Delta in particular are exposed to erosion and sedimentation operations within the system of natural coastal operations, which work to balance the shore line and redistribute sediments Coastal equilibrium. Hydrographic factors affecting coastal areas include sea currents, tidal currents and wave energy.

#### 4.2.3.1.3 El Salam Canal

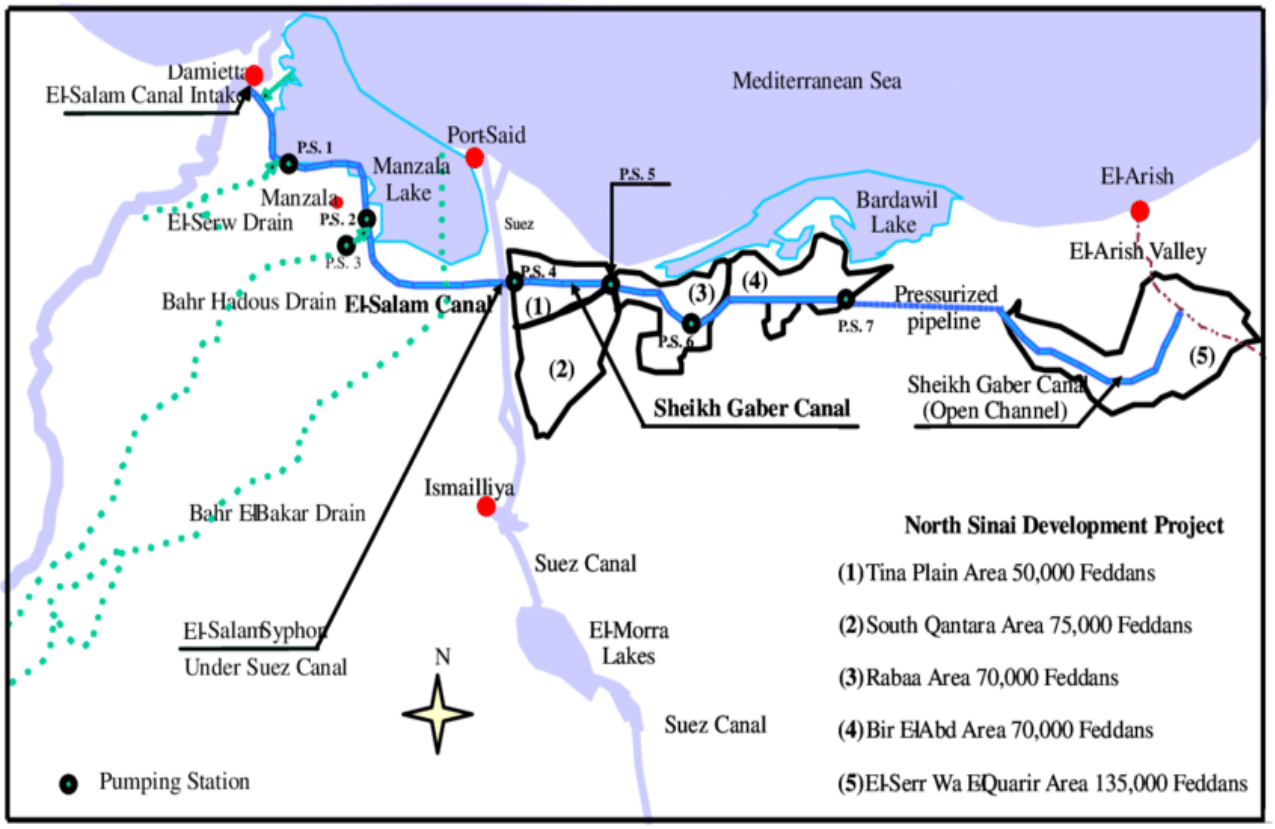


Illustration 96 Paths of the El Salam Canal

It is one of the irrigation projects to construct a canal to transfer the Nile water to new lands in Egypt. The project contributes to the addition of about 620,000 acres to the agricultural area irrigated with Nile water after mixing it with agricultural drainage water in a ratio of 1:1 and extends its canal of peace and its branches with a length of 262 km.

The project is supposed to include three phases, until the project stopped in 2010, the first phase was implemented, and work stopped at the second phase claiming that the third phase will need significant funding to extend water to the secret and bottles in central Sinai, where 140,000 acres of the most fertile soil in the world, and where 24 sub-canals were scheduled to reach there.

#### 4.2.3.1.4 Malaha Lake[9]

Malaha Lake is a highly saline lake, located in the northwestern part of the Sinai Peninsula, between the latitude of 31, 7 degrees, 31 degrees and 15 degrees and longitudes of 32 degrees, 20 degrees, 32 degrees and 30 degrees. It is a triangular shaped body of water, stretching 14 km south along the Suez Canal and 30 km east along the coastline of the Mediterranean Sea. The surface area decreased from 33 thousand to 21,000 acres after the 1976 conflict as a result of the construction of a road between Rummaneh and 19 kilometers on the Suez Canal.

In 1984 the new lake was rebuilt east of the old navigation with an area of 10,000 acres which was recently reduced to 5,500 acres to establish the free zone east of the Suez Canal. The depth of water in the lake varies from 30 to 120 cm; of which the deepest parts are in the central region. The navigation lake consists of two shallow, highly saline lakes, the size and shape of which are variable. They reach the maximum size during the winter and become almost dry in the summer. The lakes are connected to the Mediterranean Sea via the Citadel Caucasus (East Lake) and Bogaz Malaha (West Lake). The two lakes are separated from the Mediterranean Sea by a sand band strip ranging in width from 100 to 500 meters. There is no flow of fresh water in the lake.

The lake has a large variation in temperature, ranging from 55.9°C in winter to 74.9°C in summer. The water temperature varies between 12°C in winter and 34°C in summer. Differences in the physical and chemical parameters of the water of the navigation lake are mainly related to shallow and shelter conditions, water exchange rate, salt deposition, and evaporation.

Malaha Lake plays an important role as a fishing area for many species of commercial fish that are not contaminated by Port Said fishing and as a nursery area for the events of many marine fish. It serves as a habitat for migratory birds. Malaha Lake is one of the most important wetlands in Egypt for waterfowl and contains the largest density and number of winter waterfowl and their reproduction in the country.

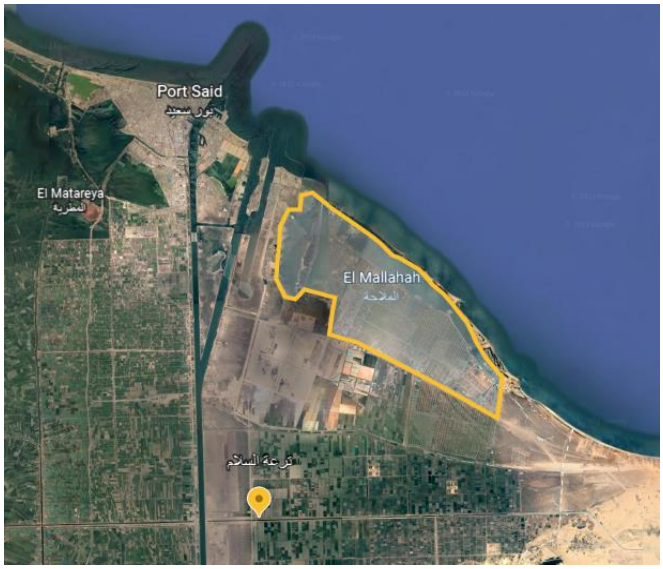


Illustration 97 El Malaha Lake

[9] Change Detection in The Water Bodies of Lake Malaha, East PortSaid, Egypt, using RS/GIS

#### 4.2.3.1.5 Lake Manzla

Along the northern coast of the Nile Delta stretches a series of lakes (Manzla, Burullus, Idku and Marimut). All lakes except Mariout are directly connected to the Mediterranean Sea. Most of them have an elongated shape that is in line with the direction of the coast.

Lake Manzla is the largest lake, located in the northeastern quarter of the Nile Delta. It is located between the Mediterranean Sea, the Suez Canal and the Damietta branch. The length of the lake is 47 km from northwest to southeast، and its width is 30 km. It narrows in the center to only 17 km. There are a large number of islands in the lake (1022). It covers 31.370 acres and accounts for 9% of the lake area. Some islands stretch from the northeast to the southwest and consist of clay. Any island of Kom Gold and Ibn Salam Island. Other islands stretch from northwest to southeast. These islands are described as rods of sand. Such as Tannis, watermelon, Diab and wood-burning carrots. Halophyte herbs grow on the shores of these islands, but their interiors are arid. Along the southern shore of the lake there are a number of bays and lakes. Some of them are connected to the lake, either directly or by narrow straits. Around the lake, especially in the east and southeast. The beautiful Ashtom is the main strait that connects Lake Manzil to the Mediterranean Sea. In addition, many other openings that connect the lake to the sea. There are many entrances in the southern coast of Lake Manzla into which large amounts of water flow into the lake such as the drains of Shrro, Jamaliya, Hadous, Ramses, Bahr Al-Baqar and others.

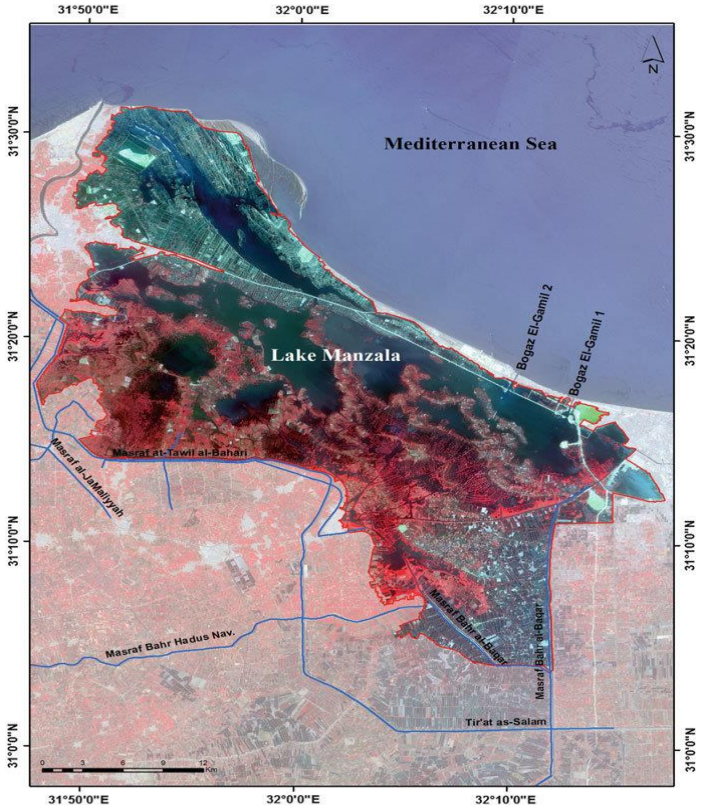


Illustration 98 Lake Manzla

The area of Lake Manzala declined by about 50% during the early 1990s, due to agricultural reclamation activities. Lake Manzala is economically one of the most important lakes in the north of the delta in Egypt for fishing activity, as the lake was supplied to the Egyptian people about 50% of the total Egyptian fishery. The contribution was reduced to 30% of the total catch of Egyptian fish. Moreover, to the north of the lake, there

is Ashtom al-Jamil area which is considered a protected area as it is located entirely within the lake and has an area of about 175 km$^2$. This area was created to protect many migratory and resident species of birds, fish, natural plants and some historical sites scattered throughout the lake. Therefore, there is a proposal to expand this protected area to include more important parts of Lake Manzala.

#### 4.2.3.2 Groundwater Resources

The Nile Delta aquifer is among the largest in the world with a total capacity of 500 Bm3. About 20% of the groundwater comes from conventional water resources with total extraction from Egypt's Nile Delta aquifer estimated at 7 billion cubic meters (BCM) in 2016. The annual extraction of groundwater from the Nile aquifer system is estimated at about 4.6 billion cubic meters. The Nile Delta aquifer has been affected by water leakage, especially in coastal areas, due to the combined effects of sea-level rise caused by climate change and over-extraction of groundwater for reclamation development projects. Groundwater overexploitation has also occurred in the Nile Delta, where an increasingly rapidly growing population relies on groundwater extraction to meet domestic water needs.

The shallow aquifers of Port Said consist of three types of aquifers: the unconfined aquifer of gravel Pleistocene sand, the semi-Holocene fluorometric aquifer, and the local Holocene-perched aquifer. The first type of aquifer distinguishes the southern tributaries of the Port Said Canal and contains freshwater quality ranging from 870 to 1800 mg/L. The second type of aquifer occupies the central and northern (low) channel ports. Dates and the South Port Said area respectively) are of salty water quality. Its salt contents range from 3000 to 8700 mg / l. Areas of the central and northern sectors are characterized by water saturation and swamps, which has significantly affected the water quality of the canal during the low winter season. The latter aquifer occupies local areas along the southern canal and helps establish local waterlogged sites along this area and has a salty water content. Groundwater resources use Pleistocene in part as drinking water along with surface water supplies in some water treatment plants. Groundwater resources use Pleistocene in part as drinking water along with surface water supplies in some water treatment plants.

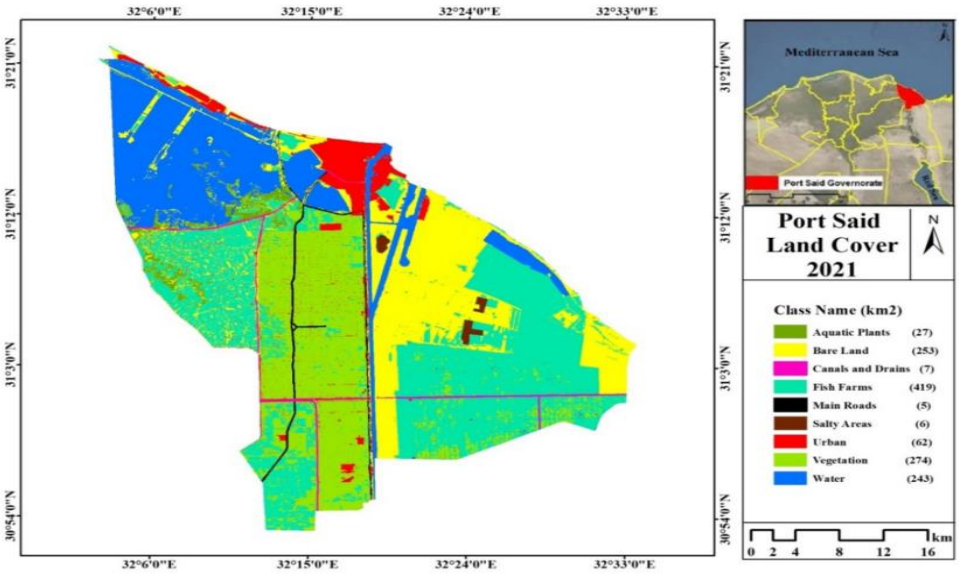


Illustration 99 Map of the Land Cover of Port Said Governorate

### 4.2.4 Flora and Fauna

#### 4.2.4.1 Fish[10]

Port Said is characterized by its location on many water sources, and therefore the diversity of fish types available, the most famous of which are:

Table 3 Types of fish found in the water bodies of Port Said Governorate[11]

| Fish can live in a wide range of salinity but near the sea | Fish that can live in fresh and saltwater | Fish that live in a wide range of salinity | Fish living in a narrow range of salinity |
|---|---|---|---|
| Dennis | Authentic mullet | Tilapia green (spar) | Indigo tilapia |
| Sardines | Tobara | Gran | Galilean tilapia |
| - | Hanshan (water snake) | Sniper | Balthy Orya |
| - | - | Points | Catfish |
| - | - | - | Beyaz's cortex. |

##### 4.2.4.1.1 Fisheries in the Suez Canal and the Mediterranean Sea

The migration of Lesbassi or Dalussiyah is the migration that occurred to some marine flora and fauna from the Red Sea to the Mediterranean Sea and vice versa through the Suez Canal after its excavation in 1869, and the fish were among the groups that migrated from the Red Sea to the Eastern Mediterranean and settled there, and succeeded in reaching some areas in the West, since throughout history, the bitter lakes of the Suez Canal have served as an excessively saline barrier, hindering the movements of marine species between the Red Sea and the Mediterranean, But over time, human activities and the gradual expansion of the canal have mitigated the salinity of those lakes and eroded that natural barrier, facilitating the settlement of more than 400 non-endemic marine species in the Mediterranean, including more than 100 species of marine fish coming from the Red Sea. The most famous of these types are:

- Mullet
  - This type of fish is abundant in the Mediterranean Sea and has many famous names such as mullet, cambot, gran, tobara and jaabob and is available in medium-depth waters, i.e., between three to six meters from the sea level, and this type of fish is available at many times of the year, but it disappears with winter and very cold weather as well as with summer and very hot weather.
- Bream

[10] The update of immigrant Red Sea fish of Egyptian Mediterranean waters during (2013-2021)
[11] https://www.eeaa.gov.eg

- A very famous fish in the Mediterranean Sea and has a high nutritional value due to its mineral salts, various and useful vitamins and more calcium and phosphorus. Dennis is abundantly available in the period from October to the end of the year.

- Seabass
  - This fish is distinguished by its large size and is highly available due to its very characteristic taste. The color of this fish tends to be silver and there are those who have a white body color and may reach a size of more than 10 kilograms, it is available on the coasts of Egypt and Libya in abundance and it is possible that the presence of bass will increase in the months of September, October, November and December.
- Siganus
  - Siganus or as they are called "botato" are a fish that was once famous in the Red Sea but after digging the Suez Canal it has crossed into the Mediterranean Sea to adapt widely to it and become one of the most famous fish in the Mediterranean.
- Solemnity
  - The reverence is characterized by delicious, tender and fatty flesh and is the same as what is called in the Gulf countries grouper and may reach the size of one continent to weigh 50 kilograms.
- Lot
  - Lot fish is one of the most available fish in the Mediterranean Sea and with its abundance its price is suitable for many families, and it is caught by some fishermen and is small in size from the Mediterranean and placed in fish farms to be completed and sold with large weights. It is characterized by a high nutritional value of proteins, phosphorus and calcium.
- Sardines
  - Sardines have a large presence in the Mediterranean Sea and are of the origins of the famous herring fish and the name of sardine's dates back to the island of Sardinia, Italy, and although sardines in the Mediterranean Sea are famous for their small size, they are of high nutritional value. The fish is distinguished by its continuous living near the surface of the water and is easy to catch for many fishermen.
- Tuna
  - A fish that is abundantly available in the Mediterranean Sea, especially on the European coasts, and this fish may be characterized by its large size and distinctive taste.

#### 4.2.4.1.2 Fisheries in Lake Manzla

The economic importance of Lake Manzla includes the production of fish, fishermen, fishing boats and services associated with fishing operations. Fish production fell from 59.6 thousand tons (14.6% of Egypt's total fish production) during 1995 to 42.3 thousand tons (3.4%) during 2016. It was also noted that fish production fluctuated to an average of 63.7 thousand metric tons. During the period from 1995 to 2005 it remained relatively stable with 53.1 thousand metric tons recorded during the period from 2006 to 2016. However, the total production of fish obtained from this lake was estimated at 81.4 thousand metric tons during 2013. This increase can be attributed to increases in the number of fishing boats, fishing effort and improved fishing nets.

Changes in the water system have led to reduced salinity and increased covered vegetation cover throughout the lake, and these factors have led to changes in the composition of fish species, as marine species have declined as highly economically valuable. While freshwater species have increased, it can be seen that eel production decreased from 783 metric tons during 1995 to 9 metric tons during 2016. Seabass and bream

species fell from 190 and 289 metric tons respectively during 1995 to zero. Production during 2016. Tilapia production also fell from 35.5 thousand metric tons to 19 thousand metric tons in the same period.

#### 4.2.4.2 Plants

The water surface of Lake Manzla is characterized by a multi-species vegetation cover in most areas and many of these plants use the inhabitants residing within the islands of Lake Manzla as well as being a natural food for fish and birds in the region as well as being a natural environment for the construction and reproduction of bird nests. These plants include:

##### 4.2.4.2.1 Phragmites australis:

It is used as food for livestock, as fuel after drying, and making barns dwellings on those islands. The fish in the lake also build their nests in the water below the plant. This plant covers about 40% of the lake area.

##### 4.2.4.2.2 Salicornia fruticosa:

It is a natural plant that spreads throughout the lake and is characterized by its ability to withstand high salinity. Its uses include:

1. Natural food for fish and birds. ·
2. Build bird nests through it in dry areas. ·
3. Residents use it as fuel after it is dried. ·

This plant covers about 40% of the lake area.

##### 4.2.4.2.3 Juncus arabicus:

It is a plant used in the manufacture of mats and brooms and can also be used as fuel by citizens residing within the region. It covers about 5% of the lake's area.

##### 4.2.4.2.4 Tamarix nilotica:

They are short trees with thick stems and are found on the sides of the waterways within the lake and have several uses, including:

1. Manufacture of furniture for the inhabitants of the islands.
2. Manufacturing hands of drilling and farming tools.
3. A gum-like substance is extracted from it that has some medicinal benefits.

##### 4.2.4.2.5 Typha domingensis:

It is one of the plants that germinate accompanying the Hajjana plant and has several uses including: the manufacture of cups, the trellis of barns, fuel, the construction of dams and incisors after a mixture with silt.

##### 4.2.4.2.6 Eichhornia Crassipes Water Hyacinth (Nile rose):

This plant is widespread in the areas of the estuaries of drains and is used by fishermen to collect fish under its concentrations due to the warmth and tranquility of these areas, which encourages fish to attract under this plant. However, it has great harms, for example:

1. Obstruction of navigation by the route of means of transport within the lake. ·
2. Consumption of large amounts of water. ·
3. Blocking sunlight from reaching submersible plants makes it difficult for photosynthesis of those plants.

#### 4.2.4.2.7 Atriplix halimus (spinach rum):

It is an herbaceous plant that grows around the lake and within the islands and is used for grazing. There are also some spontaneous grasses on the islands scattered in the lake that are used as portulaca purslane pastures, Cynodont dactiglon grass, Cpperus SP. For cattle like Saad with some trees planted inside the islands. Chenopodium Zerbih, oleracea Casuarina equisetifolia and Casuarina Eucalyptus Sp. like eucalyptus.

### 4.2.4.3 Fowls

The "Guide to Important Bird Areas in Egypt" identified thirty-four sites as important areas for birds in Egypt and includes a range of basic environment for birds including: wetlands, high-rise mountains, desert valleys, beach surfaces and sea islands. The map below shows the 34 locations:

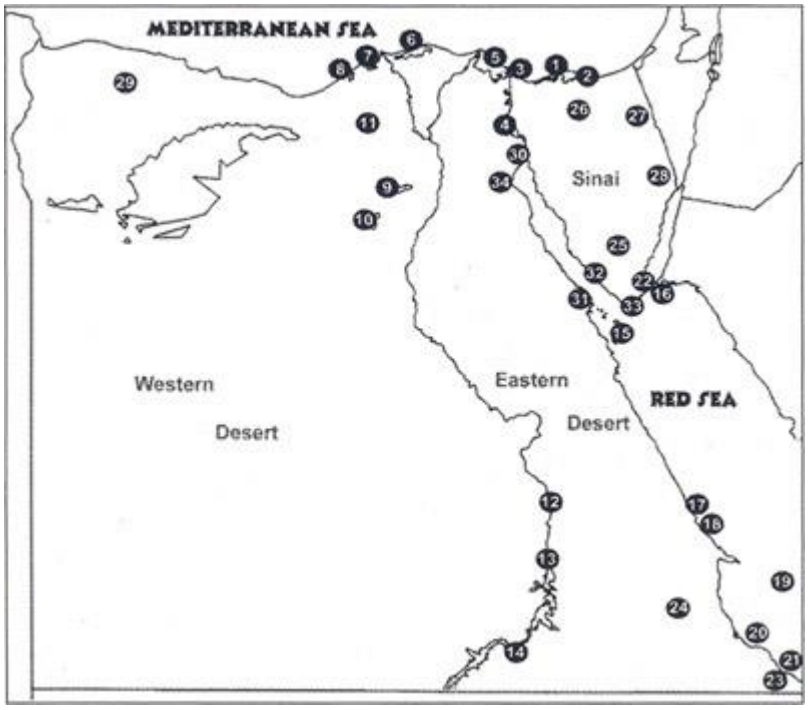


Illustration 100 Map of places of important birds

#### 4.2.4.3.1 Al-Malaha

Al- Malaha was formerly the eastern extension of Lake Manzla, which was cut off from it when the Suez Canal was built in the 1800s, and further diminished by the construction of the Port Said bypass in the 1980s. Today, navigation consists of two shallow over-salty lakes, the size and shape of which are variable. They reach their maximum size during the winter and become almost dry in the summer. The lakes are connected to the Mediterranean Sea via Ghazi al-Qalla (East Lake) and Navigation (West Lake). To the south and east is located the Tina Plain, a wide, barren land studded with salt, is surrounded by its southern edges by large salt marshes dominated by nitric shrubs. The lakes are separated from the Mediterranean Sea by a sand band strip between 100 and 500 meters wide, which in many areas is covered with dense halophytes. Navigation supports fisheries of modest production. The catch in 1977 was 631 tons. The lake is manipulated to maximize fish production.

Despite its fairly small size, El-Malaha is one of Egypt's most important wetlands for waterfowl, possessing some of the largest densities and numbers of winter waterfowl and breeding in the country. In the winter of 1989/90, a total of 52,700 waterfowls were counted, and in the winter of 1994, 6,500 birds, Phoenicopterus ruber birds were counted in the East Lake alone. The site's relative isolation from human activity, and its

highly productive habitats, make it attractive to many breeding waterfowl species. In the spring of 1990, a large breeding colony of Larus genei was found there (about 5700 nests). Phoenicopterus ruber is known to reproduce as well, but the numbers and success of reproduction vary from year to year, and in some years no reproduction attempt is made. In 1986, about 750 to 1000 adults were counted with 350 to 400 chicks. Reproduction was also carried out in 1993 and 1994. Sterna albifrons and Sterna hirundo also bred in smaller numbers, and Sterna hirundo are the only known breeding area for this latter species in Egypt.

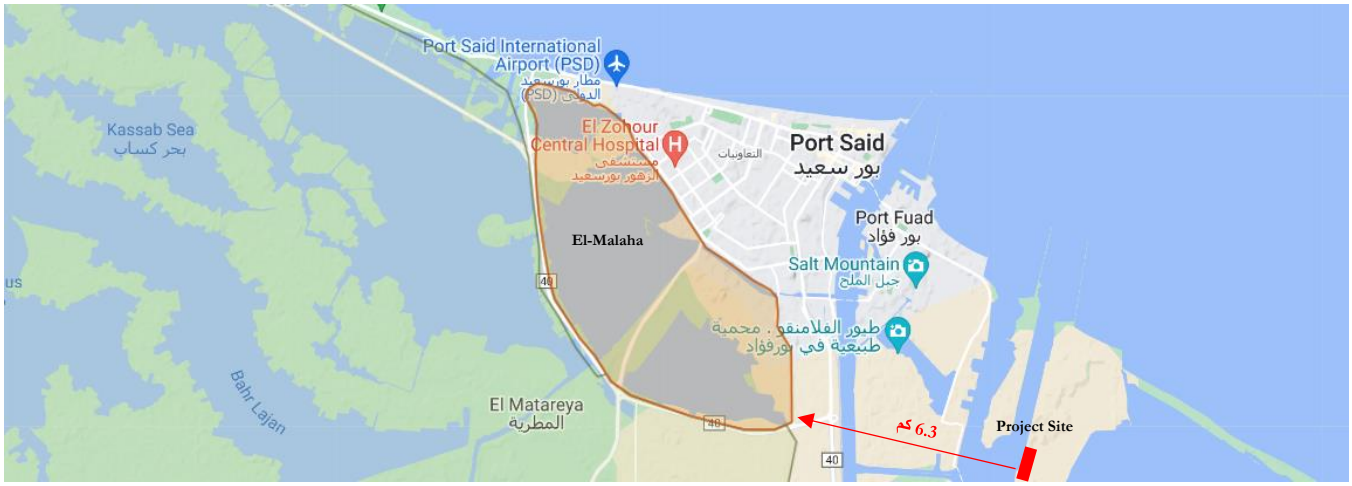


Illustration 101 El Malaha Location (Important Bird Area)

#### 4.2.4.3.2 Lake Bardawil

Lake Bardwell is a shallow lake (50-300 cm deep) that is very salty and occupies most of the Mediterranean coast in Sinai. It is separated from the sea by a sandy strip between 100 m wide and 1 km. The shore of the lake consists mainly of barren sand with salt marshes and scattered mud plains. The bottom of the sandy lake is covered with scattered patches of rupee algae. Originally, Bardawil was connected to the sea via a small natural entrance in its easternmost (Bogaz and Zranik) and is usually only submerged in sea water during the winter when storms break the unstable area. Sandy. During the summer, most of the lake was isolated from the sea and the water evaporated, leaving behind large swathes of sabkha. Many man-made entrances have been dug along the sand band strip since 1905 in an attempt to allow the lake to be permanently flooded. Maintain appropriate salinity levels for the development of fish resources. Today there are two man-made inputs (Bogaz I, II), which are constantly blocked by sedimentation. Bardawil is a source of important local fisheries, producing more than 2,500 tons per year (No. 1987), mostly from high-value saltwater fish Sparus auratus and Mugil sp., employing about 3,000 fishermen. Fishing was suspended between January and May to allow fish stocks to recover.

Lake Bardawil is of medium importance for winter waterfowl. A total of 26,968 aquatic birds were counted in the winter of 1989/90 (a proportion of them were calculated within the boundaries of the Zranik Reserve). Only Phalacrocorax carbo and Phoenicopterus ruber winter in large numbers. It is estimated that there were up to 30,000 of the previous species in Bardawil in the winter of 1993. The importance of Bardawil as a stopping site has not been thoroughly investigated, but there are indications that at least part of the massive numbers of migrants passing through the Zaratites, especially in the fall, are using some of the habitats available in the lake. The diversity of breeding species is very low. However, two of the six species known for their reproduction are found in the immediate vicinity of the lake, Sterna albifrons and Charadrius alexandrines, in internationally significant numbers.

Reptiles: The Mediterranean shore of the lake is of potential importance for nesting two sea turtles, Carita Carita (English) and Chelonia Mydas (English). The islands and dunes adjacent to the lake represent some of the last remaining habitats where there may still be very small groups of the turtle Testudo kleinmanni.

Mammals: Vulpes zerda (DD) still inhabits neighboring sand dunes with low density.


Illustration 102 El Bardwell Lake (Important Bird Area)

#### 4.2.4.3.3 Lake Manzla

Lake Manzla, the largest wetland in the Mediterranean Sea and the most productive for fisheries, is located in the northeastern corner of the Nile Delta. The house is generally rectangular in shape, about 60 km long and 40 km wide, and has an average depth of 1.3 m. separated from the Mediterranean Sea by a sand strip through which it connects to the sea by three canals (Bogaz). The salinity of the lake varies greatly. While it is low near drainage and canal flows in the south to the west, it is elevated in the far northwest. Saline conditions prevail over most of the rest of the lake. More than 1,000 islands of different sizes are scattered throughout the lake.

The three main habitats are reed swamps, salt marshes and sandy areas. The reed swamps of Phragmites and Typha, with associated submerged aquatic plants (such as Potamogeton and Najas), are found widely in the less saline parts of the lake in the south and west and on the edge of many islands. The salt marshes of Juncus and Halocnemum occur on the northern (coastal) edges of lakes and some islands. Many plant communities occupy sandy formations, for example coastal dunes. Open water and mud plains are also important habitats for birds. Large areas in the northwest of the lake were converted into fish farms, while the southern part of the site (south of 31 ° 10 ° N) was divided into large plots and depleted, in preparation for conversion to agricultural use.

A total of 3.7 cubic kilometers of fresh water (mostly from agricultural drainage) annually flows into Lake Manzla from nine main drains and canals. The most important of these are Farskoor, Cypress, Pagos, Abu Jarida and Bahr al-Baqar. Of all the drains that flow into Lake Manzla, the Bahr Al-Baqar drain is the most polluted. It carries a mix of treated and untreated wastewater originating from Cairo and contributes greatly

to the deterioration of the lake's water quality. Beautiful Bogaz is the main link between the lake and the Mediterranean Sea. Many other less important sea links have recently been expanded.

Manzla is by far considered the most important wetland for winter waterfowl in Egypt. It housed a total of

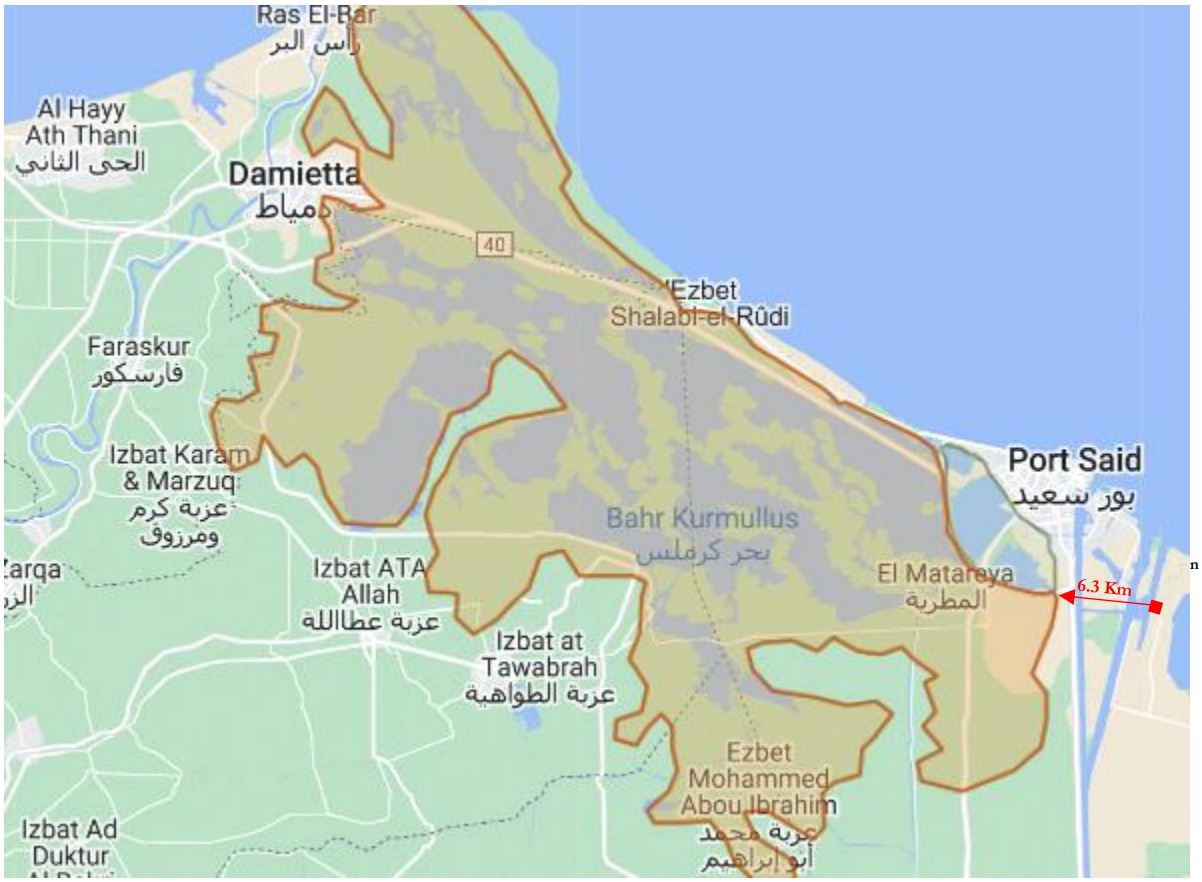


Illustration 103 Location of Lake Manzla (Important Bird Area)

233,901 aquatic birds in the winter of 1989/90. This represents about 40% of the total waterfowl counted throughout Egypt's wetlands that winter. This included the world's largest concentrations for winter Larus minutus and Chlidonias hybridus. There were also as many as 36,180 in the spring of 1990. This indicates the great importance of wetlands for transit migrant populations. Especially Recurvirostra avosetta And Calidris minuta, Calidris alpine, and Philomachus pugnax. No similar numbers are available for the fall semester. But the lake is likely to be just as important that season. The status is also important for the reproduction of waterfowl and wetland species. It is known that about 35 species breeds, including Ixobrychus minutus, Egretta egret, Ardeola ralloides, Porphyrio porphyrio, Sterna Albifrons, Charadrius alexandrinus, Vanellus spinosus, Glareola pratincola, Caprimulgus aegyptius, and Acrocele rudis.

### 4.2.5 Nature Reserves

To provide protection for natural resources and biodiversity and to maintain environmental balance, the idea of declaring the so-called nature reserves that reflect the beauty of nature as an element of natural resources emerged, and to preserve those resources, the Prime Minister issued Law No. 102 of 1983 on natural reserves and then Law No. 4 of 1994 on the protection of the environment was issued to be in support of the provisions of Law No. 102 of 1983.

A nature reserve is defined as any area of land or coastal or inland waters characterized by the living organisms of plants, animals, fish, or natural phenomena of cultural, scientific, tourist or aesthetic value and shall be determined by a decision of the Prime Minister upon the proposal of the Environmental Affairs Agency of the Council of Ministers.

#### 4.2.5.1 Beautiful Ashtom Reserve and Tenis Island[12]

The reserve is located in the northeastern part of Lake Manzla and has an area of 171 km2, and includes the reserve Bogaz Gemayel and Ashtom Gemayel as well as the archaeological hill of Tenis and is bordered by the roads of Port Said and Damietta, to the east by the Port Said Ismailia Road, to the south by the Sea of Bashtir inside Lake Manzla and to the west by the line inside Lake Manzla to the sea side of the crocodile passing through the Sea of Committees and the Sea of Carmels.

##### 4.2.5.1.1 Geological Importance

Through the excavations carried out by a sector of Islamic and Coptic antiquities in the Tenis region, it has been proved to be true what historians and travelers have reported about this important region, which played a major role in the political and economic history of Egypt for six centuries starting from the Arab conquest of Egypt in 20 AD until 624 AD when the city was destroyed and abandoned by order of Sultan King Muhammad Ibn Al-Adil Abu Bakr Ibn Ayyub, The excavation work revealed the traces of this city, which were represented by many of the foundations of buildings, waterways, water conservation tanks, and bays of the city's defenses, along with the remains of the decomposition of red bricks from which all buildings were built at the time.

##### 4.2.5.1.2 Botanical Significance

The Beautiful Ashtom Reserve contains a major habitat group, each of which is characterized by a number of distinct species. These habitats are salt sabkhas, sand formations, the subtraction of the lake, the islands within the lake, the shore, and the water of the lake. The total number of plants within the boundaries of the reserve is estimated at about 77 species, of which 23 are annual, 54 perennial and belong to 30 families. The plant species in the reserve show many images of morphological, anatomical, and environmental adaptation of growth and reproduction in these lands where the water content is high such as some anatomical qualities (the presence of large air voids in their tissues to store air dissolved in water where these plants use stored air when necessary).

##### 4.2.5.1.3 Animal Importance

The reserve is a habitat for rest, food and reproduction for all resident and migratory bird species, especially aquatic species, and recorded in the reserve 263 species of birds representing 52 genera and 27 families, waterfowl represents 42 species by 64% and terrestrial birds 24 species by 36%. Lake Manzla is one of the largest lakes producing fish with an annual production of 60,000 tons with 35% of the production of the northern lakes, which is estimated at 172,000 tons per year, produces 25,000 tons of freshwater and saltwater

[12] https://www.eeaa.gov.eg/portals/0/eeaaReports/N-protect/ashtom.pdf

fish from the reserve, and a number of species of mammals, reptiles and insects have been recorded in the land cover of the reserve.

#### 4.2.5.1.4 Cultural and Historical Significance

Lake Manzla is considered one of the relatively modern lakes that did not exist before the sixth century AD, as it was agricultural land of the most fertile land of Egypt ever, and after the earthquake that occurred in the late sixth century AD, the lands of that area declined, so the sea overwhelmed it and the water flooded it year after year until it flooded the whole area, including fields and villages, so only the high places to which water does not reach survived. Telnis Archaeological Monument is one of those remaining historical and archaeological monuments dating back to the Ayyubid period and is located in the southwestern direction of the city of Port Said and about 7 kilometers inside Lake Manzla on the route of the shipping line linking Port Said, Matariya and Dakahlia, and opposite it on the other side of the channel of Manzla Rounded Island. The area of Telness is estimated at 10 km2, it gradually rises from the shore of the lake until it ends in its center with a height of 5.4 meters from the surface of the lake, and on the hill, there are the remains of a city that was characterized by the popularity of various industries, especially the textile industry, the grinding of grains and the age of oils. Before the sinking of this area, it was irrigated by three branches of the Nile, namely the Pelosi branch. The Tanis and the Mandisi all of which poured into the Mediterranean Sea and the ruins of their openings are known as the Boges.

#### 4.2.5.1.5 Social Significance

Within the beautiful Ashtom Reserve and within the water surface of Lake Manzla are spread a number of islands with a population of up to 5,000 inhabitants, these inhabitants rely mainly on Lake Manzla as the main source of livelihood, the main craft of the population is fishing, some residents also raise cattle on some islands relying on natural plants. Lake Manzla is one of the largest lakes in Egypt producing fish, with an annual production of 60,000 tons, 35% of the production of northern lakes, which is estimated at 172,000 tons per year, and benefits about 250,000 fishermen, and the number of licensed boats in Lake Manzla is 6781, of which 4349 boats in Matariya 1750 in Damietta 682 in Port Said, The local center of Manzla is one of the largest local centers in Dakahlia Governorate and includes 3 local units, namely Al-Hawta, Al-Aziza, Basrat in addition to more than 40 affiliated villages.

#### 4.2.5.1.6 Birds in the Reserve

The reserve is a major stop for migratory birds in order to feed and get a rest during the long migration journey in autumn and spring. The beautiful Ashtom reserve is inhabited by a large variety of birds, some of which are threatened with extinction, such as vegetable ducks, blues, Shahraman birds, sultani chickens, ringed yammams, Alexandrian cats, spotted fisherman, and purple water chickens.

Other resident birds such as the Zinzod, the jungle shrine, the cumulus, the swans, the black-necked diver, the sea crow, the white and gray heron, the bulbul bird, the shrimp yimam as well as other birds such as the little Abu Fasada, the bomb, and the sea hook are also inhabited. The marine environment is replete with many species of mollusk and crustacean animals, as well as various types of fish.

#### 4.2.5.1.7 Fish in the Reserve

Lake Manzla is one of the most important sources of fish in the Arab Republic of Egypt, especially Port Said Governorate, and one of its most important economic fish, which live in fresh water (green tilapia and white tilapia) in addition to fish that live in salt water such as (Tobara and mullet).

#### 4.2.5.1.8 Plants in the Reserve

This reserve has several benefits in many areas, in the field of agriculture, wild plants represent a source of food, whether for birds, fish or animals within the reserve, and at the technical level, the genetic material inside wild plants is used to improve some strains of agricultural crops such as salt-resistant wheat and also to develop strains that resist diseases and thus reduce the use of pesticides that cause great harm to humans, animals and the environment in general. Azola plant is used in the fixation of nitrogen for the plant and this also leads to reducing the use of chemical fertilizers and in the field of medicine some wild plants are used in the production of drugs that help in the treatment of many diseases such as camel knee plant, which is characterized by being a repellent of intestinal worms called ascaris and also it is a powerful laxative as the wild bread plant is used in the treatment of intestinal catarrh and the treatment of anemia and it is also laxative and represents a


Illustration 104 The distance between the project and the beautiful Ashtom Reserve

treatment for sore throat, tonsils and the plant of bitterness enters In the treatment of stopping bleeding, which is also a diuretic and anthelmintic and is used in the treatment of uterine contractions and in the field of industry, most of the locals within the reserve use some types of plants such as the tan plant and the bus in manual industries such as mats, mashnas and baskets, as well as the bos plant enters into the construction of their dwellings and nests. Agricultural in the so-called biological treatment and there is on the borders of the reserve one of those plants that uses the plants of the bus, the Nile rose and the lentils of water in the treatment processes they perform.

### 4.2.6 Ambient Air and Noise Testing and Measurements

Field visits were made to the sites of the proposed project in order to collect the necessary data for the preparation of the study and to assess the environmental and social impacts of the project in accordance with the requirements of the Egyptian Environment Law No. 4/1994, amended by Law No. 9/2009 and Law 105 of 2015 and the recommendations of WHO. These include studying the existing environmental and social situation, including making air quality and noise levels measurements in place before starting the project. Of quality monitoring has been undertaken for the pollutants of primary concerns ($NO_2$, $SO_2$, CO, TSP and $PM_{10}$) in order to better characterize the ambient air quality, as part of the environmental measurements required. Where, 8 hours each parameter to be measured against Annex 5 of the Egyptian Environmental Law 4/1994 and its amendments, the measurements were conducted for Carbon monoxide (CO), Nitrogen dioxide ($NO_2$), Sulphur dioxide ($SO_2$), Total Suspended Particulates (TSP) and Particulate Matter ($PM_{10}$), for two specific locations, where the air quality complies with the national and international guideline.

#### 4.2.6.1 Measurement Objectives

The overall objectives of the baseline measurements are to:

- Assess baseline air quality in the ambient environment noise measurements and to verify compliance with relevant national and international guidelines;
- Identify any non-compliance issues, if any; and
- Provide general conclusions based on the analysis' results.

#### 4.2.6.2 Measurement Locations

The selection of the active air measurement locations was based on the prevailing wind direction, site topography, the future layout of the proposed project components and the location of the nearest sensitive receptors. Moreover, the selection was that illustrates the selection criteria for ambient air quality measurements, which based on National Legislation relating Population of agglomeration or zone.

The below table shows the GPS coordinates of the ambient air and noise levels measurement locations. The measurement locations are further illustrated in the table below:

Table 33 Coordinates of Measurement Locations

| Measurement Locations | N coordinates | E coordinates |
|---|---|---|
| Point 1 (P1) | 31°11'47.22"N | 32°21'06.62"E |
| Point 2 (P2) | 31° 11'16.63"N | 32°20'59.53"E |


Illustration 106 Aerial View of Suez Canal Container terminal (SCCT)-planned expansion, PortSaid East, Egypt

### 4.2.6.3 Measurement Results

#### 4.2.6.3.1 Ambient Air Quality

The following tables present the results for ambient air quality measurements conducted at the project site.

One-hour average results for 8 hours continuous measurements in 2 locations for all measured parameters

Table 34 8 hourly results (µg/m3) for location (P1)

| Time | NO | $NO_2$ | $NO_x$ | $SO_2$ | CO (mg/m$^3$) | $PM_{10}$ | TSP |
|---|---|---|---|---|---|---|---|
| **9:00** | 25.4 | 35.5 | 60.9 | 40.2 | 2.3 | 49.6 | 58.1 |
| **10:00** | 21.5 | 30.1 | 51.6 | 33.7 | 2.2 | | |
| **11:00** | 30.1 | 37.5 | 67.6 | 39.7 | 2.2 | | |
| **12:00** | 23.2 | 32.6 | 55.8 | 36 | 2.3 | | |
| **1:00** | 28.5 | 35.1 | 63.6 | 42 | 2.3 | | |
| **2:00** | 31.1 | 39.8 | 70.9 | 45.1 | 2.5 | | |
| **3:00** | 34.2 | 44.7 | 78.9 | 48.8 | 2.5 | | |
| **4:00** | 30.5 | 39.6 | 70.1 | 43.4 | 2.5 | | |
| **Average** | **28.06** | **36.86** | **64.92** | **41.11** | **2.35** | **----** | **----** |
| **Limit (µg/m$^3$) National** | | **150** | **150** | **150** | **10 (mg2.2/m3** | **150** | **230** |
| **Limit (µg/m$^3$) International** | **-----** | **200 -1hour** | **----** | **125** | **-------** | **150** | **---** |

Table 35 8 hourly results (µg/m3) for location (P2)

| Time | NO | $NO_2$ | $NO_x$ | $SO_2$ | CO ($mg/m^3$) | $PM_{10}$ | TSP |
|---|---|---|---|---|---|---|---|
| **5:00** | 31.8 | 43.3 | 75.1 | 52.8 | 2.6 | 51.1 | 59.3 |
| **6:00** | 36.5 | 42.3 | 79.6 | 51.1 | 2.6 | | |
| **7:00** | 39.4 | 49.4 | 88.8 | 54.8 | 2.5 | | |
| **8:00** | 33.4 | 41.6 | 75 | 53.4 | 2.5 | | |
| **9:00** | 27.9 | 36.5 | 64.4 | 43.1 | 2.3 | | |
| **10:00** | 30.3 | 37.3 | 67.6 | 46.5 | 2.3 | | |
| **11:00** | 26.1 | 33.1 | 59.2 | 40.2 | 2.2 | | |
| **12:00** | 20.9 | 28.1 | 49 | 34 | 2.2 | | |
| **Average** | **30.78** | **38.95** | **69.83** | **46.98** | **2.4** | **----** | **---** |
| **Limit ($\mu g/m^3$) National** | **150** | **150** | **150** | **150** | **10 (mg2.2/m3** | **150** | **230** |
| **Limit ($\mu g/m^3$) International** | **-----** | **200 -1hour** | **----** | **125** | **-------** | **150** | **---** |

#### 4.2.6.3.2 Ambient Noise Levels

The tables below present the results of 8-hour average ambient noise measurements and their corresponding national and international permissible limits.

Table 36 Environment Noise Levels Readings 8 hours average location (P1)

| Time | Sound Level Equivalent & Percentile Recordings in dBA for 24 Hours | Permissible Limits LAeq (dBA) National and International Industrial ambient noise | |
|---|---|---|---|
| | LAeq | During Day (7 am to 10 pm) | During Night (10 pm to 7 am) |
| 9:00 | 61.3 | 70 | 70 |
| 10:00 | 63.2 | | |
| 11:00 | 60.8 | | |
| 12:00 | 62.5 | | |
| 1:00 | 65.4 | | |
| 2:00 | 63.9 | | |
| 3:00 | 66.7 | | |
| 4:00 | 68.2 | | |
| **Average** | **64** | | |

Table 37 Environment Noise Levels Readings 8 hours average location (P2.)

| Time | Sound Level Equivalent & Percentile Recordings in dBA for 24 Hours | Permissible Limits LAeq (dBA) National and International Industrial ambient noise | |
|---|---|---|---|
| | LAeq | During Day (7 am to 10 pm) | During Night (10 pm to 7 am) |
| 5:00 | 67.3 | 70 | 70 |
| 6:00 | 65.9 | | |
| 7:00 | 63.8 | | |
| 8:00 | 66.7 | | |
| 9:00 | 68.9 | | |
| 10:00 | 62.7 | | |
| 11:00 | 67.6 | | |
| 12:00 | 61.8 | | |
| **Average** | **65.58** | | |

#### 4.2.6.4 Conclusion

Based on the environmental monitoring and measurements performed for the ambient air quality, noise levels, and vibration levels; the results showed compliance with all the national guidelines

## 4.3 Social Conditions Baseline

The social impact assessment was carried out through the collection of a set of secondary data and field visits to observe the participation of stakeholders in the project of establishing the Suez Canal container trading station from the port east of Port Said. Quantitative desktop analysis is conducted to obtain accurate and comprehensive data relevant to the area where the project is located.

The social impact assessment illustrates the social characterization of the project area in order to comprehensively delve into the social and economic characteristics of the societal boundaries in which the proposed project is located. The information will consist of the following:

1. Project Impact Area
2. Administrative Divisions
3. Demographic Characteristics
4. Health Services and Facilities
5. Economic and Professional Conditions
6. Cultural Heritage Sites

The project will be implemented in Port Said Governorate in Port Fouad City, on the eastern bank of the Suez Canal.

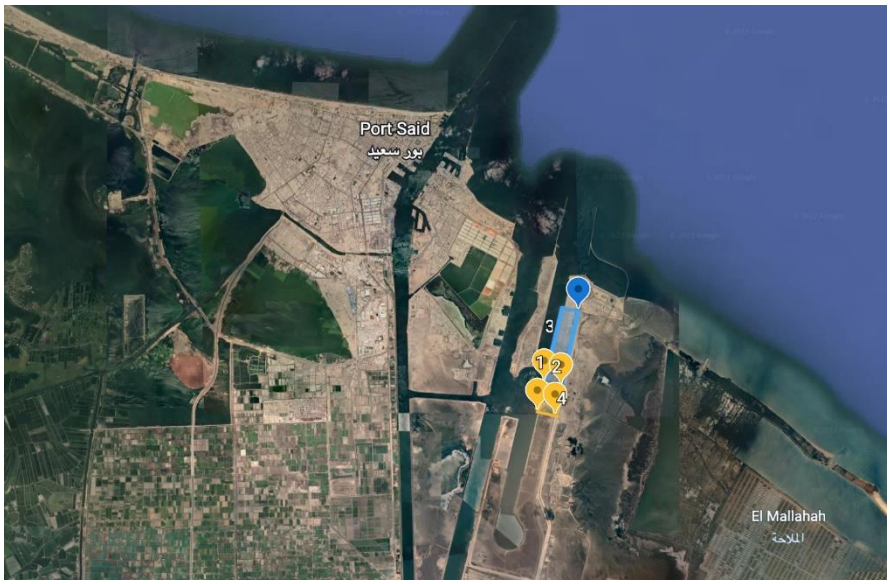


Illustration 107 Project Location

### 4.3.1 Project impact area

Port Said governorate is one of the governorates of the Arab Republic of Egypt located in the north of the country on the Mediterranean coast, with its capital in Port Said. The governorate also includes the city of Port Fouad, which represents the Asian part of this Afro-Asian governorate. Port Fouad was transformed from a neighborhood into a city in Port Said governorate under former Prime Minister M.Ahmed Nazeif decree number 651 of the year 2010.

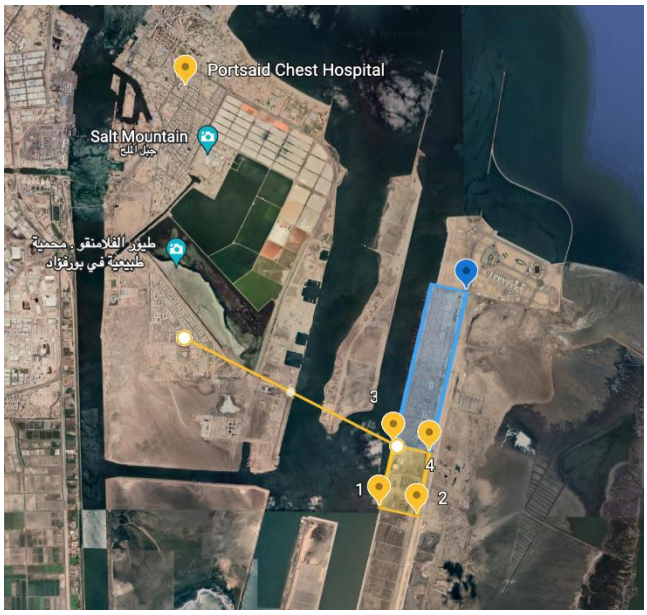


Illustration 108 Satellite map of the nearest residential area under construction from the site within 5 km

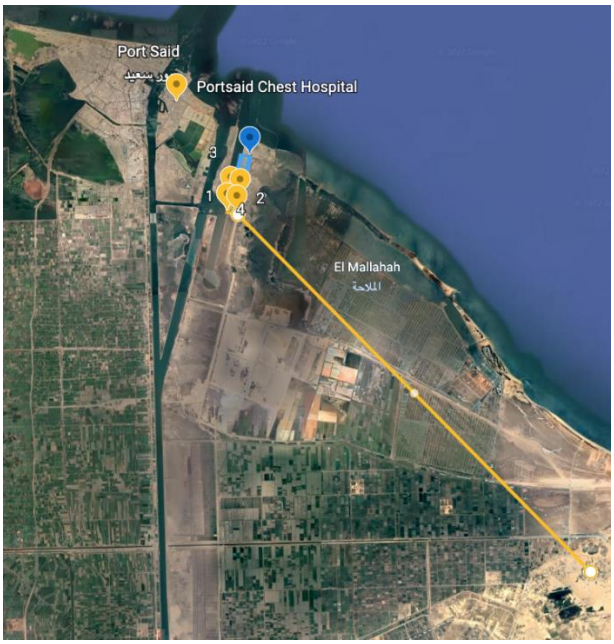


Illustration 109 Satellite map of the nearest village to the east (Ballouza village) from the site, 28 km away from which some workers come and SCCT carries out humanitarian missions.

### 4.3.2 Administrative divisions

Port Said is located in the north-east of Egypt, with a Mediterranean meeting point in the Suez Canal. Borders it north of the Mediterranean Sea, east of the city of Port Fouad, located in the Sinai Peninsula, south of Ismailia Governorate, and west of three governorates, namely Damietta Governorate (north-west), Daqahleya Governorate (west), Sharqeya Governorate (south-west).

Port Said Governorate is located on the Mediterranean coast at a projection circle ('18 o 32 (north and longitude)' 15 o 45 (east and the total area is approximately 1345 km 2 (approximately 320 thousand acres)) while Port Said City is a separate area of approximately 845 km 2. The provincial population is estimated to be approximately 788 thousand from the Central Agency for Public Mobilization and Statistics in October 2.22.

The inhabited area in Port Said Governorate is estimated to be about 1,320 km 2, representing about 98.1% of the total area of the governorate as a whole. The governorate is considered an urban governorate, with almost 100% urbanization rate.

After the 2010 separation of Port Fouad, Port Said is administratively divided into seven administrative districts:

1. Al-Zohour district
2. South District
3. Al-Dawahy district
4. West district
5. Al-Monakh District
6. East district
7. Al-Arab district


Illustration 110 Map of Port Said governorate district divisions

### 4.3.3 Demographic Characteristics

#### 4.3.3.1 Total Population

Data on demographics were extracted from the national census of the Central Agency for Public Mobilization and Statistics in 2017. However, data are available on estimates of the total population and gender distribution at the governorate level, which were found in Egypt in the number booklet published by the Central Agency for Public Mobilization and Statistics in 2022.

Port Said has a population of about 772,299 thousand with 0.8% of Egypt's population. The child support rate in Port Said is 40.8%, while the ratio is 3.55% nationally according to the 2017 census data. The proportion of the population below the poverty line in Port Said Governorate increased in 2018 compared to 2015 but remains one of the lowest in the Republic compared to all governorates.

Table 38 Demographic Characteristics

| Indicator | Unit | Port Said Governorate |
|---|---|---|
| Governorate Population Census for Egypt Population Census | % | 0.8 |
| Population growth rate | % | 0.8 |
| Average Household Size | Individuals | 3.9 |
| Female | Individuals | 364242 |
| Male | Individuals | 408057 |
| Birth rate | Live birth per 1000 individual | 14.5 |
| Mortality rate | 1 death per 1000 person | 6.8 |

Source: CAPMAS (Egypt in Figures 2020)

#### 4.3.3.2 Human Development

Table 39 Education Entities

| Scholar year 2019/2020 | Port Said Governorate |
|---|---|
| **Public Schools** | |
| Schools | 77 |
| Classes | 583 |
| Students | 21369 |
| Teachers | 1243 |

| Pre-Collegiate Education | |
|---|---|
| Schools | 472 |
| Classes | 4640 |
| Students | 179249 |
| **Collegiate Education (Port Said University)** | |
| Male students | 12597 |
| Female Students | 13064 |
| Total | 25661 |
| Total University Graduates (Port Said Public University) | 4742 |

Source: CAPMAS (Egypt in figures 2020)

There are no schools in the project area. The nearest schools in Port Fawad are in the same area as the nearest residential station.

#### 4.3.3.3 Economic and Professional Conditions

The total workforce in Port Said governorate (persons in the 15-65 age group) is 295,300 inhabitants. About 33.8% of them are female and the largest percentage of the workforce at all levels of Egypt's governorates for 2021. The unemployment rate is 25.2%, the second highest at the governorate level. The following data show the employment sector in Port Said governorate.

Table 40 Economic and Professional Conditions

| Indicator | Port Said Governorate |
|---|---|
| Total Workforce Estimate (Over 15 years) | 295300 |
| Female labor force ratio for total | 33.8 % |
| Unemployment Rate | 25.2% |
| Male unemployed workers for total unemployed persons | 11.3% |
| **Female unemployed workers for total unemployed persons** | **52.7%** |

#### 4.3.3.4 Health Facilities

There are many health facilities in Port Said governorate in ratio to the population and governorate's size. There's a clinic inside the Suez Canal container station and an ambulance car.

Table 41 Health Care Facilities

| Health Indicators and Facilities | Unit | Port Said Governorate |
|---|---|---|
| Number of Public Health Units with beds | Health unit | 7 |
| Number of Private Health Units with beds | Health unit | 11 |
| Number of Beds in Public Health Units | bed | 439 |
| Number of Beds in Private Health Units | Bed | 361 |
| Number of Patients in External Clinics | Person | 23051 |
| Family Planning Consciousness Rate | % | 58.5 |
| Number of Emergency units | For each unit | 23 |
| Average number of citizens using each unit | Persons/unit | 34 |

### 4.3.4 Cultural Heritage Sites:

There are many cultural sites of Port Said City being one of Egypt's oldest and most rich cities in history due to its strategic location and its influence from Egypt's colonial history. The most important and famous cultural heritage sites of Port Said are the following:

1. Port Said National Museum: The monuments at the confluence of the waters of the Suez Canal in the Mediterranean Sea are the first museum of its kind in the history of Egypt. They contain about 9,000 artefacts from different historical periods, from the Pharaonic era through the Greek and Roman era and the Coptic and Islamic era to the modern era.
2. Port Said War Museum: It contains paintings about the Battle of 1956 as well as some war pieces and military instruments for the wars of 1956-1967-1973.
3. Al-Nasr Museum of Modern Art: It features many works of art by Egypt's leading artists in various branches of plastic art.
4. Suez Canal Authority Museum in Port Said: It includes archaeological collections and paintings dating back to the drilling of the Suez Canal and the establishment of the Suez Canal Authority.
5. The base of the statue of de Lesseps: There is a stretch of Palestine Street at the entrance to the Suez Canal, where ships that come from all over the world pass, making them a tourist trail.
6. Suez Canal Authority building: characterized by the splendor and beauty of the design and its location overlooking the Suez Canal.
7. Old Port Said Lighthouse, established in 1869, is the world's first building of armed concrete.
8. The obelisk of martyrs is located in front of the governorate building and was established to commemorate the martyrs of Port Said in their battles.
9. The Abbasi Mosque, established in 1904 under Khadiwi Abbas Helmi II, is one of the governorate's Islamic monuments.

10. Roman Cathedral: Established in 1934 with part of Christ's Cross.
11. Eugenie Church: Established with the opening of the Suez Canal.

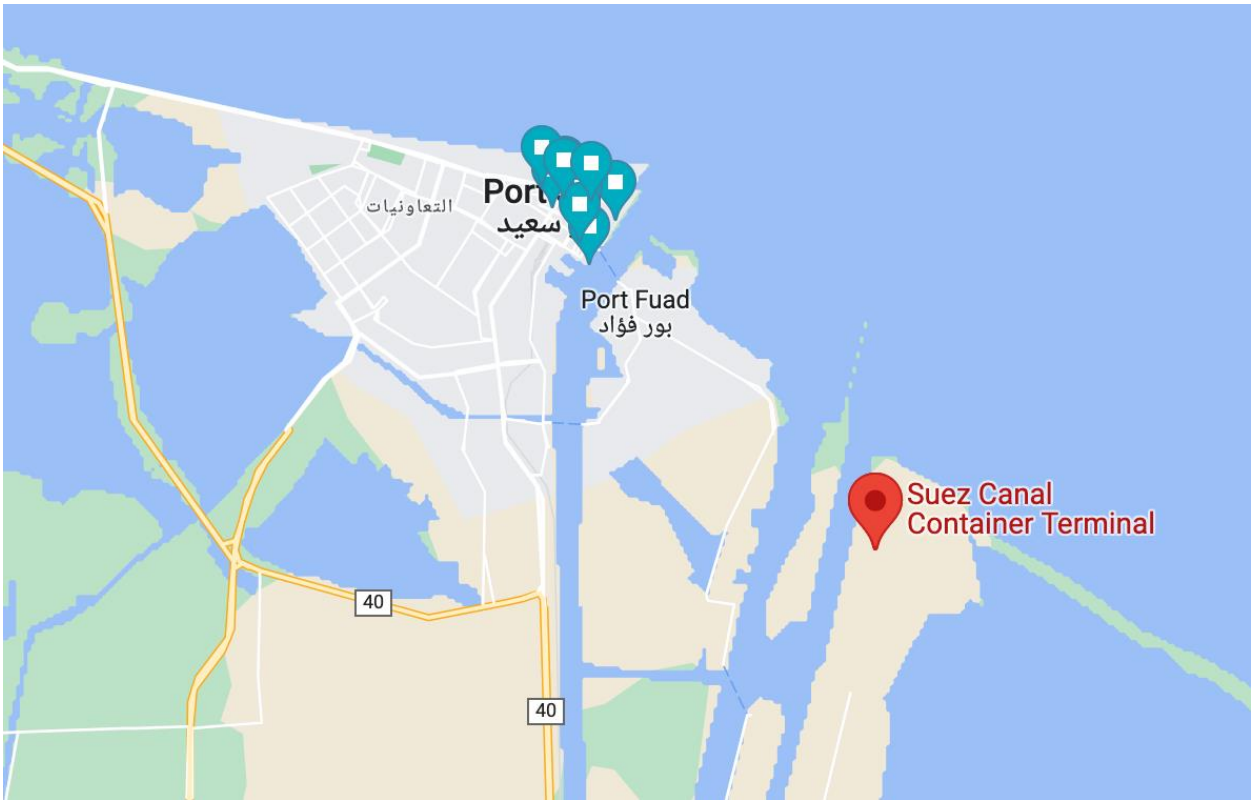


Illustration 111 Concentration of almost All Cultural Heritage Sites and its distance from the Project's Site (in red)

# 5 Environmental and Social Impacts

The study of the expected positive and negative effects of the proposed projects is one of the important and mandatory stages stipulated in the Law of the Protection of the Environment, which aims to establish the necessary measures and procedures to reduce / mitigate the negative effects of the project and increase the effects positivity. Therefore, the law obliges to conduct a study of the environmental and social impact during the planning phase and before the initiation of the implementation of the project, and the possible effects were studied during the operation of the project.

During both the construction and operation phases, the proposed project may have an impact on the various elements of the environment, which may be represented in air quality, noise loads, the type of coastline, traffic in addition to residential communities.

The evaluation method is used to identify the most important impacts resulting from the project, and the appropriate mitigation actions that will be applied to eliminate or reduce the negative impact of such impacts on the environment and the surrounding community as much as possible. A comprehensive analysis of environmental and social impacts is important for the formation of an effective management and monitoring plan which in turn minimizes negative impacts and maximizes positive impacts.

## 5.1 Environmental and Social Impact Assessment Methodology

The significance of the identified impacts will be a factor of two parameters: the basic impact index and the receptor sensitivity.

The basic impact index is a function of the following criteria.

A. **Magnitude:** describes the quantity of the resource (or receptor) potentially affected by the activity.
B. **Spatial Extent:** the geographical area over which the impact is experienced.
C. **Duration:** the length of time over which the impact will be experienced. An impact may be present only while an activity is active, or it could persist long after the activity has ceased, in which case the duration may be regarded as the time the receptor needs to recover from the effect.

Each potential impact will be evaluated by assigning a qualitative descriptor to each of the above criteria.

**Magnitude** is allocated one of the following categories:

- Very Low (1): A very small proportion of the receptor is affected.
- Low (2): A small proportion of the receptor is affected.
- Moderate (3): A moderate proportion of the receptor is affected.
- High (4): A large proportion of the receptor is affected.
- Very High (5): A very large proportion or all of the receptor is affected.

**Spatial Extent** is allocated one of the following categories:

- N (0): No effect.
- Very Low (1): Local scale impact in the immediate area of the activity.
- Low (2): Local impact in the study area.
- Moderate (3): Regional scale impact.
- High (4): National scale impact.

- **Very High (5):** Global scale impact.

**Duration** is described by one of the following categories:

- N (0): No effect.
- Very Low (1): Less than one month.
- Low (2): One to three months.
- Moderate (3): Three to six months.
- High (4): Greater than six months.
- Very High (5): Irreversible.

Accordingly, the relative importance of each criterion will be evaluated on a scale from zero to five as illustrated in the below table. When there is uncertainty about the criterion, the highest figure is assigned to minimize the possibility of underestimating an impact. The basic impact index is the weighted average of magnitude, spatial extent and duration. The magnitude's weight is twice that of spatial extent and duration.

Table 42 Basic Impact Index

| Basic Impact Index | N | VL | L | M | H | VH |
|---|---|---|---|---|---|---|
| **Magnitude** | 0 | 1 | 2 | 3 | 4 | 5 |
| **Spatial Extent** | 0 | 1 | 2 | 3 | 4 | 5 |
| **Duration** | 0 | 1 | 2 | 3 | 4 | 5 |

Receptor Categorization: is based on the relationship between the project activities and the present baseline environment (the receptor). It is assessed based on the vulnerability of the receptor, including the surrounding population and environment. To illustrate, if the effect of an impact on a receptor is more readily absorbed and easily mitigated, it is less sensitive. On the other hand, as an impact is more challenging to mitigate and cannot be absorbed by the population and/or environment it becomes more sensitive and requires a clear management plan.

The sensitivity of the receptor is assessed as:

- Low: High capacity to absorb/mitigate impact
- Medium: Limited capacity to absorb/mitigate impact
- High: No capacity to absorb/mitigate impact

Impact Significance: The final impact significance is the result of the combination of the Basic Impact Index and the Receptor Categorization, as shown in Table 1 2: The impact significance may be one of the following: Insignificant (IN), Minor (MI), Moderate (MO) or Major (MA).

Table 43 Impact Significance

| Receptor Categorization | Basic Impact Index | | | | | |
|---|---|---|---|---|---|---|
| | N | VL | L | M | H | VH |
| L | IN | IN | IN | MI | MO | MA |
| M | IN | IN | MI | MO | MA | MA |
| H | IN | MI | MO | MA | MA | MA |

If an impact is rated as Minor, Moderate or Major, then mitigation measures will be proposed to eliminate the impact or, when this is not possible, to reduce their significance ranking to Minor or Insignificant.

## 5.2 Positive Impacts

### 5.2.1 Positive Impacts During the Construction Phase

The implementation of the proposed project will create many positive environmental, social, and economic impacts during the construction phase which include:

#### 5.2.1.1 Providing Direct and Indirect Job Opportunities

The project is expected to create job opportunities during the construction phase, whether directly or indirectly, as the project is expected to create direct job opportunities ranging from jobs (engineers - administrators - accountants - supervisors - welders - electricians - workers - carpenters ... etc.).

If we look at the nature of the labor in the Port Said and Port Fouad region that attracts labor from different Egyptian governorates, we can observe a variety of employment patterns that are already operating in the existing port. Therefore, when the project starts, it is expected that there will be direct or indirect employment opportunities in various construction activities.

In order to maximize employment creation for the population in local communities, training of unskilled local workers is expected to be required. The efficiency of local workers is then raised, and they can be included in other construction activities in the future.

One of the activities to raise efficiency during the construction phase is to train Egyptian engineers and workers so that they can perform the various jobs required by the work in the operating activities.

The project is also expected to create indirect employment opportunities, through the benefit of transport owners from transporting workers to and from work sites.

#### 5.2.1.2 Economic and Commercial Popularity

During the construction phase, it is expected that the popularity of commercial activities in the project areas will be achieved, due to the need to provide various services to workers and contractors deployed at the project site such as foodstuffs, building materials, auxiliary materials, design and construction work supplies, installation, etc. Thus, café and restaurant owners and nearby shop owners are expected to benefit from the project's construction activities.

It is also expected that the passenger transport category will benefit from taxi drivers and microbuses operating in the region through the activities of transporting workers to and from the site.

Another direct benefit of the project is attracting foreign investment to the Arab Republic of Egypt.

The Arab Republic of Egypt is also expected to benefit from activities to raise the efficiency of Egyptian workers working in the field of port construction. This is one of the sustainable and influential benefits of the project that may allow Egypt to enter this field strongly.

In addition, the project is expected to lead to a number of commercial supplies to local traders, including suppliers of food commodities, and other contractors and drivers who will benefit from the project.

This will also increase state tax revenues from supply opportunities as well as from labor that can pay taxes to the state.

### 5.2.2 Operation Phase Positive Impacts

It is expected that the implementation of the proposed project will lead to several environmental, social, and economic benefits, for example, but not limited to, the proposed project will lead to:

1. Increasing the capabilities of the container terminal will contribute to the development of maritime trade traffic and put the Arab Republic of Egypt on the port map as a leader in container transport and handling in the region.
2. Assist in providing jobs for Egyptians and provide the necessary training by exchanging the best experiences in this field.
3. Provide direct employment opportunities during the period of employment for workers to carry out the various jobs and professions required by the work of the station (direct labor and loading and unloading labor), which improves the economic and social conditions of the number of families.
4. Popularity of commercial activities in the project areas during the operation phase, due to the need to provide services to workers and companies scattered in various project sites such as foodstuffs, auxiliary materials, etc.
5. Developing the maritime transport system and placing Egypt on the list of major countries in the transport and circulation of containers.
6. Pushing the wheel of foreign investment because of its advantages over the Egyptian economy.
7. The speed of meeting the various national requirements by means of the fastest means of transporting goods, which is maritime transport.
8. Increase training opportunities and keep abreast of modern developments in maritime transport technology and container trading.

## 5.3 Negative Impacts

### 5.3.1 Construction Phase Potential Negative Environmental Impacts

#### 5.3.1.1 Air Quality

Emissions of dust and suspended particles will be generated from the activities of preparing and paving the site of the container terminal and the modification of the pavement, and all facilities such as administrative offices and warehouses, etc. These activities will include site preparation activities, excavation and backfilling works, concrete processing works, as well as the movement of construction vehicles and the transportation of workers on the roads that can generate some dust. However, the presence of construction works on the East Bank will relatively limit its spread in residential areas as the residential areas are situated on the west bank across the canal.

Emissions will be generated from equipment to be used in site processing works which include drilling and backfilling equipment as well as emissions (exhaust) from vehicles/trucks used to transport workers, materials, and waste as well as gas emissions from power generators.

Due to the continuity of construction activities but with construction work on the project site on the East Bank, the impact significance on air quality is expected to be **Moderate.**

#### 5.3.1.2 Noise and Vibrations

The main sources of increasing the level of noise intensity and vibrations are the result of the operation of construction equipment and machinery such as excavators, cranes, loaders, power generators and the movement of transport trucks.

The negative impact will mainly affect the workers on site. If workers do not use personal protective equipment, they may be at risk of hearing loss.

Noise may be produced during the construction phase due to transportation equipment, the work of cement mixers and the investigation of prefabricated cement parts, as well as road and towing works for pipes, urban extensions, and iron machines that have been installed, as well as the movement of equipment, transport vehicles and cranes.

Due to the continuity of construction activities with different workplaces at the project site, the impact significance of noise and vibrations is **Moderate.**

#### 5.3.1.3 Thermal Stress

During the construction phase thermal stress may result in the construction periods as a result of welding works of pipelines and metal pipes.

The negative impact will mainly affect the workers on site. If workers do not use personal protective equipment, they may be at risk of accidents such as burning or vision loss.

Due to the continuity of welding activities with different workplaces at the project site but with limited affected groups (workers only) it is expected that the impact significance of thermal stress will be **Moderate**

#### 5.3.1.4 Surface Water

During the construction phase, the quality of coastal waters may be affected by construction work as a result of the terminal yard works during implementation, excavation, and backfilling.

Seawater is also likely to be at risk of contamination from transport vehicles, oil accidents, and spills of construction materials and waste such as concrete into the sea due to the work of marine equipment.

Seawater quality may also be severely affected in the case of improper disposal of solid and liquid, hazardous and non-hazardous project waste.

Since the construction works are on the terminal yard and not inside the sea, the impact significance on the surface water will be **Moderate**

#### 5.3.1.5 Fauna and Flora

Although the project is located in an urban area that lacks flora and fauna, the Mediterranean Sea is itself a watery environment rich in medical resources such as fish and sea organisms. This will oblige it to maintain its balance and not to disturb its balance of the environment.

The field visit to the project site explained that there are some simple plants such as some grasses and grasses for scattered and irregular at the site, and because there are no sources of fresh water, the neighborhood, animals, and plants are rare at the project site and there are different types around the project with any number of weeds or plants.

As for Port Said, it is generally characterized by its rich thickness of fish, as a number of species of cartilage fish and bone fish are found along the coasts of Port Said. Most of these species have an economic value as they are caught and sold in the fish market.

Construction activities on the station's pier may affect the marine environment due to leakage and spills on the pier that may be toxic to the fish revolution and marine vegetation.

As for important bird areas, the impact of the construction of the container terminal is not expected to be high because it is located at least 6 kilometers away and is not in the direct vehicle transport route that is used to transport equipment, materials, and workers.

Since there is very little biodiversity on land (flora and fauna), the project's distance from any important bird areas and the work being done on the seashore and at sea, the impact on biodiversity (flora and fauna) **Insignificant**

#### 5.3.1.6 Land Use, Landscaping, and Visuals Impact

Construction activities in the container terminal expansion project are not expected to affect the land uses on which the project site will be located since it is located in a currently unused location whose entire land belongs to the Egyptian government.

On the other hand, the construction will lead to some change in the current view of the project site (bank view and adjacent area in the sea) which is expected to continue during the period of construction activities, but since this area is already an area uninhabited affiliated with Egyptian Government access is only permitted with a permit, as these impacts are not expected to be of great importance.

Due to the site being a long distance away from any residential or industrial areas, the impact on land use, landscaping and visuals is considered to be of **Minor** Significance

#### 5.3.1.7 Soil and Groundwater

Construction activities may accelerate the process of sediment collection in stagnant water collected behind constructions such as a pier, which can lead to water pollution. Sediment also covers and affects habitats and may lead to a change in some soil properties.

In addition, potential soil contamination may occur as a result of spillage or leakage of chemicals during construction or as a result of poor storage of materials and residues generated by construction work.

Since there is a danger to the soil and groundwater from pollution caused by poor handling and improper storage of chemicals, the impact on soil and groundwater is considered to be of **Moderate significance**

#### 5.3.1.8 Nature Reserves

Project activities are not expected to affect any nature reserve, as the nearest reserve is Beautiful Ashtom Reserve and Tenis Island which is located about 21 km from the project site.

Due to the nearest nature reserve being away from the project site by a far distance, the impact on nature reserves is considered to be **Insignificant**.

#### 5.3.1.9 Hazardous and Non-Hazardous Waste Management

Some negative impacts may be generated as a result of improper and unsafe handling and disposal of waste resulting from project construction activities as impacts on soil and plant or animal life. Remnants of construction activities will include non-hazardous residues and some hazardous wastes. The residues are expected to consist of the following species:

Hazardous Waste:

1. Welding belts
2. Miscellaneous containers, paint cans, solvent containers, sprays, labels
3. Consumed oils resulting from the project

Non-Hazardous waste:

1. Soil (digging or surplus)
2. Packaging Materials
3. Damaged products (pipe, etc.)
4. wood packaging,
5. Geotextiles
6. Paving materials
7. Electrical cable surpluses
8. Concrete
9. Human waste: Resulting from the uses of on-site workers such as food and beverage residues and packaging waste.
10. Effluents: It is the water produced from construction works.

Due to the constant production of hazardous waste due to construction activities, the impact of improper and unsafe circulation and disposal of hazardous and non-hazardous wastes is considred to be

### 5.3.2 Construction Phase Potential Negative Social Impacts

#### 5.3.2.1 Occupational Health and Safety

Construction sites are considered to be one of the most hazardous places for employment, especially those general risks associated with construction sites and projections, which include gaffes and falls; Exposure to high heat and strong sunlight, transport of trucks and machinery, exposure to chemicals and other hazardous substances; Exposure to electric shock and burns and also exposure to high noise intensity levels.

Workers are expected to be affected by accidents that may occur at construction sites. which may occur as a result of neglect or failure to follow occupational safety and health rules. Many of the hired contractors do not comply with occupational safety and health rules at the workplace. However, contractors must have detailed occupational safety and health rules. They also have a detailed follow-up to safety procedures. When a group of workers gathers together, it is expected that there will be use of one toilet, and one means of subsistence as well. And if not done

Training on hygiene procedures and requirements may occur in various types of infections, including coronavirus and B virus. If personal hairdressers are used among more than one worker, another group of more serious diseases can be transmitted, including C virus.

In addition to workers' health in moving to and from the site, if employment is from Port Said Governorate, increasing the number of traders on the project from workers will increase the number of workers using the ferry, which may lead to danger in the event of a greater number of rides than permitted, thereby endangering the health and safety of passengers from workers, engineers or even visitors to the site.

Due to the high risk of incidents in consturction sites and work, the impact on OHS is considered to be

#### 5.3.2.2 Community Health and Safety

There are a range of societal health and safety impacts that result either from rising dust and noise from construction activities and may affect the health of residents in populated areas near the port. There may also be temporary inconvenience caused by the accumulation of excavation and human residues (leftovers) at construction sites and the generation of bad odors.

Community safety can also be affected by irrigated accidents resulting from traffic impacts, especially near areas where there is movement.

There are also a range of diseases that may be transmitted to the population from employment coming from

Due to the labor influx during construction and the high levels of noise and dust emissions, the impact on community health and safety is considered to be of **Major Significance significance**

outside the province, especially coronavirus, C virus and respiratory diseases.

#### 5.3.2.3 Existing Infrastructure

As already mentioned in the social conditions baseline, the project area will not intersect in any way with any of the existing infrastructure within the scope of the project's impact. However, the project will also rely on the municipality's electricity, as well as access to the municipal sewerage system, which may increase some

Due to the project's infrastructure aforementioned in the baseline conditions, impacts on existing infrastructure is considered to be of **Minor** significance

load on the municipal infrastructure. As for water, the project will take it from the nearest drinking water plant.

#### 5.3.2.4 Temporary Labor Migration

There is a different set of effects related to migrant employment and the influx of workers into work areas. These effects include but are not limited to:

1. Increased risk of unlawful behavior, crime and theft among workers
2. Increased burden on public service delivery (health care - water - drainage - electricity)
3. Gender-Based Violence (e.g. harassment against women)
4. Inflation of prices at the local level and increased pressure on homes and rents
5. Increased traffic and associated traffic accidents
6. Increased risk of infectious diseases and burden on local health services

As for increasing the burden on services, it is expected that workers will need food and beverages that are available on site and will not have a significant impact on them. There's a restaurant at the station. However, because SCCT has a detailed code of conduct as well as a sexual harassment policy, the impact of this risk is not significant.

Due to behavioral and health risks that could arise from incoming construction workers, the impacts of Temporary Labor influx is considered to be of **Moderate Significance**

#### 5.3.2.5 Child Labor

Child labor (under 18 years) is a common practice in the Arab Republic of Egypt. Especially because the worker is young and able to work but under 18 years of age. They receive low salaries and are not provided with insurance or treatment coverage and their requirements are limited. That problem must therefore be dealt with carefully in the Environmental and Social Management Plan (ESMP) and the contractor's contractual obligations included.

During the project's construction phase, there is a moderate risk of child labor due to the social and economic hardship exacerbated by the outbreak of war, especially the above-mentioned educational conditions in Yemen. The risk of child labor is moderate if SCCT employs an external contractor to build projects.

Due to the high practice of child labor in Egypt, the impact of Child Labor is considered to be **of Major Significance**

#### 5.3.2.6 Cultural Heritage

There are no concerns for cultural, archaeological, and historical heritage on the project site, as there is no element of archaeological or cultural value. However, if any archaeological sites are discovered during construction activities, appropriate procedures will be taken to report the site to the Egyptian Antiquities Authority and construction activities will be discontinued

Due to the lack of any cultural or historical sites near the project site, the impacts on Cultural Heritage are considered to be of **Minor Significance**

### 5.3.3 Operational Phase Potential Negative Environmental Impacts

#### 5.3.3.1 Air Quality

Container ships and various boats are potential sources of emissions of gas and smoke, especially nitrate dioxide and sulfur, during maneuvering and mooring operations, which can affect air quality at the container terminal site.

As for ground activities, gas and dust emissions are expected during operation from the movement of container trucks to and from the terminal, but significant air pollution is not expected to occur as in the construction phase as the work to be carried out is only the transport of containers from ships to docks by freight ships, cranes, transporting and handling containers from ships and to the pier.

The transport of some liquid and gaseous substances leads to the emissions of some fumes during the container washing phase, in addition to the possibility of some industrial activities creeping to the project site, which may lead to an increase in smoke and dust emissions and negatively affect the workers of the plant and the marine environment.

Due to the limited space and the use of automated equipment, the impact on Air Quality is considered to be of **Moderate** Significance

#### 5.3.3.2 Noise and Vibrations

Noise during the operating phase may be produced as a result of the docking and tying of ships, the laying of loading and unloading arms, the movements of the cranes, as well as the movement of container trucks.

It may also produce noise during the operation of water pumps on the pump platform (as in cases of fire suppression training), but it is expected to be within the limits legally allowed.

Also, automatic control reduces the likelihood of workers on the sidewalks being exposed to the intensity of noise, and the management of the application of the highest rates of safety, health and occupational safety and alert workers to the need to adhere to wearing earplugs to prevent noise hazards during various shifts.

Since the works of the plant have many electrical machines used, the impact of Noise and Vibrations will be of **Moderate** significance

#### 5.3.3.3 Thermal stress

During the operation phase, it is not expected that there will be an impact of thermal impact due to the lack of work that may result in this impacts in various locations on the terminal yard and fixed platforms on it.

In case of the need for welding activities in some maintenance work, workers will be warned to wear face masks and protective equipment and adhere to all occupational safety and health procedures.

Due to the limited welding activities and activities that may lead to thermal impact at the project site and the limited affected groups (workers only) it is expected that the thermal impact will be of **Minor** significance

#### 5.3.3.4 Surface Water

Seawater may be affected during the operation phase as a result of the presence of the terminal yard, which may lead to a change in the water quality

During the operation phase of the container terminal project, there will be a continuous but limited impact on the water quality of the yard area as a result of the continuous movement of container ships.

As a result of this continuous movement of various boats and vessels including maintenance boats and others, the increased quantitative risks of container handling and maritime transport activity such as the possibility of dumping ship waste and the unsafe and proper disposal of ship waste, oil, bilge water, ballast water and container residues into seawater.

In the event of the leakage of any oils, they spread on the surface by waves and air currents forming a thin layer of oil, and these oil stains may be deposited. Maintenance boats may also lead to contamination of seawater with various chemicals.

Residues of various materials, oil spills from trucks during shipping operations to and from the port and dust resulting from the movement of these trucks may also lead to water pollution. Container washing water may be contaminated with some dangerous chemicals.

Due to the close vicinity of the Suez Canal to the terminal yard and the continuous operations of unloading and loading, the potential impact will be of **Moderate** significance.

#### 5.3.3.5 Fauna and Flora

There are no sensitive animals or a path for immigrant or migrant animals in the proposed site location. The activities of the operational phase of the project are not expected to affect the terrestrial animal environment.

The diversion of oils, oil residues from container ships, container transport and storage equipment, and various residues may damage marine organisms and marine habitats near the project site. The resources on which marine organisms feed, including mastiffs, may be damaged, damaging the food resources of these organisms.

As for the MI Port Said, it is generally characterized by its rich thickness in fish. Most of these species have an economic value as they are caught and sold in the fish market. Therefore, the impact of the project is expected on marine organisms and fishermen. However, since the project site is not located in a permitted fishing area, the impact on fishermen's ability to fish will not be high.

On the other hand, spills, or leakage of container stored substances such as hazardous chemicals may lead to contamination of water and damage to fish and food resources of various marine organisms.

Thus, the impact of the project on the marine flora and fauna environment is considered of **Minor** Significance due to the lack of biodiversity in the project site and its vicinity.

#### 5.3.3.6 Land Use, Landscaping and Visual Impacts

Due to the implementation of the terminal yard, the container handling terminal, it will lead to a change in the shape of the shore and the uses of the land there so that the impact is permanent. But since the project is located in a location that is not currently used and whose entire territory is considered to be subordinate to the government Egyptian and entry is only permitted with a permit, the impact will be limited and insignificant.

Due to the location of the terminal yard being far from any residential communities and is in an area where future industrial structures are planned to be built, the potential impact is considered to be of **Minor** significance**.**

#### 5.3.3.7 Soil and Groundwater

The operation of the container terminal will affect the soil only in the event of sedimentation accidents or spills. And because of for the possibility of the occurrence of such incidents during container handling it is important to take that impact into account.

As for groundwater, it is leachate water leaking from the surrounding areas especially but as the ground is surrounded by silt that is impermeable which prevents water from leaking to great depths.

Due to the silt layer encompassing the terminal yard's foundation and it preventing the pollutants from seeping into the groundwater aquifers, and the spills being individual instances and not a continuous discharge, the potential impact significance is considered to be of **Moderate** significance**.**

#### 5.3.3.8 Nature Reserves

Project activities are not expected to affect any nature reserve, as the nearest reserve is Beautiful Ashtom Reserve and Tanis Island which is located about 21 km from the project site

Due to the nearest nature reserve being away from the project site by a far distance, the impact on nature reserves is considered to be **Insignificant**.

#### 5.3.3.9 Hazardous and Non-Hazardous Waste Management

Some negative impacts may be generated as a result of improper and unsafe handling and disposal of waste resulting from project operation activities. Waste from operating activities will include non-hazardous residues and some hazardous wastes. The residues are expected to consist of the following species:

1. Oils consumed/used in plant operations
2. Ship bottom oils and lubricants
3. Miscellaneous containers, paint cans, solvent containers, nebulizers, adhesives, lubricant containers, and maintenance
4. Solid Waste and Container Waste
5. Wastewater stuck with oil, bilge water and ballast water
6. Water from ship washing
7. Wastewater
8. Waste of ships that will dock at the station

Non-hazardous residues:

1. Packaging Materials
2. Damaged products
3. Timber
4. Food Leftovers
5. Waste of container terminal workers

The leakage and spillage of these residues may lead to contamination of water with oil, an increase in floating residues in the sea, and an increase in odors and unsanitary conditions in the plant and nearby water.

Due to the constant generation of hazardous and non-hazardous waste from the operational activities of the terminal yard, the impact significance is considered to be **Major.**

### 5.3.4 Operational Phase Potential Negative Social Impacts

#### 5.3.4.1 Occupational Health and Safety

With strict occupational safety and health rules it is unlikely that there will be significant effects on occupational health and safety. However, occupational health and safety rules and guides during employment must be available to workers and well trained and followed. Since SCCT also has safety seminars for visitors and workers, they also have an ambulance and clinic available to all employees of the station.

Although the nature of SCCT activities which include loading and unloading onto docked vessel they implement high standards of OHS and therefore, the impacts on Occupational Health and Safety are considered to be of **Moderate Significance**

#### 5.3.4.2 Community Health and Safety

The Suez Canal Container Trading Station in the region has long been known and no impacts on community health and safety have been observed, considering that the site is far from residential areas because it is on the eastern bank of the Canal. However, operational activities always have negative impacts on the surrounding community and can therefore be considered moderate.

Due to the lack of residential areas near the site, the impact on Community Health and Safety is considered to be of **Minor Significance**

#### 5.3.4.3 Temporary Labor Migration

As the station is by nature an attractive area for employment during the operating phase, the risks of labor flow mentioned in the previous section will also continue. Hence, the project must adopt clear criteria to reduce risks related to labor flow since most of the SCCT employment from Port Said governorate may have medium effects.

Due to the possibility of incoming workers from other governorates and provinces, the impacts resulting from Temporary Labor Migration are considered to be of **Moderate Significance**

#### 5.3.4.4 Cultural Heritage

There are no concerns for cultural, archaeological and historical heritage on the project site, as there is no element of archaeological or cultural value. However, if any archaeological sites are discovered during operating activities, appropriate procedures will be taken to report the site to the Egyptian Antiquities Authority and the operating activities will be discontinued.

Due to the lack of any cultural or historical sites near the site, the impacts on Cultural Heritage are considered to be of **Minor Significance**

#### 5.3.4.5 Fishermen's Income

There are no effects on fishermen because there is no fishing traffic on the eastern side of the canal.

Due to the prohibited fishing policy near the site, the impacts on Fishermen's Income are considered to be of **Minor Significance**

#### 5.3.4.6 Groups Most at Risk

The most at-risk groups are those who may suffer the most from the project's activities, as well as marginalized and vulnerable groups. There is a risk of accidents and injuries to workers during construction work, although the likelihood of injury is low as SCCT has strict health and safety procedures in place. The majority of workers adhere to occupational safety and health requirements.

SCCT also has a firefighting team that systematically and periodically holds trainings on procedures and interventions during emergencies. Some workers have received first aid training and there is equally and ambulance on site.

Table 44 Impact Assessment

| Receptor/ EHS Aspect | Duration[13] | Spatial[15] | Magnitude[16] | Basic Impact Index[17] | Receptor Categorization[18] | Impact Significance[19] |
|---|---|---|---|---|---|---|
| **Assessment of Impacts During the Construction Phase** | | | | | | |
| **Air Quality** | H | L | L | M | M | **MO** |
| **Noise and Vibration** | H | L | L | M | M | **MO** |
| **Thermal Stress** | H | VL | M | M | M | **MO** |
| **Surface Water** | H | L | M | M | M | **MO** |
| **Fauna and Flora** | H | L | VL | L | L | **IN** |
| **Land Use and Landscaping** | H | L | L | M | L | **MI** |
| **Soil and Groundwater** | H | L | M | M | M | **MO** |
| **Nature Reserves** | H | N | VL | L | L | **IN** |
| **Natural Disasters** | VL | M | H | M | H | **MA** |
| **Hazardous & Non-Hazardous Waste Management** | H | L | H | H | M | **MA** |
| **OHS** | H | L | M | H | H | **MA** |
| **Community Health and Safety** | H | L | M | H | H | **MA** |
| **Existing Infrastructure** | L | L | VL | L | L | **MI** |
| **Temporary Labor Mitigation** | H | L | M | M | M | **MO** |
| **Child labor** | H | L | H | H | H | **MA** |

[13] N=No Effect, VL=Very Low, L=Low, M=Moderate, H=High, VH=Very High
[15] N=No Effect, VL=Very Low, L=Low, M=Moderate, H=High, VH=Very High
[16] VL=Very Low, L=Low, M=Moderate, H=High, VH=Very High
[17] N=No Effect, VL=Very Low, L=Low, M=Moderate, H=High, VH=Very High
[18] L=Low, M=Medium, H=High
[19] IN=Insignificant, MI=Minor, MO=Moderate, MA=Major

| Receptor/ EHS Aspect | Duration[13] | Spatial[15] | Magnitude[16] | Basic Impact Index[17] | Receptor Categorization[18] | Impact Significance[19] |
|---|---|---|---|---|---|---|
| **Cultural Heritage** | L | L | L | L: | L | **MI** |
| **Assessment of Impacts during the Operation Phase** | | | | | | |
| **Air Quality** | H | L | L | M | M | **MO** |
| **Noise and Vibration** | H | L | L | M | M | **MO** |
| **Thermal Stress** | L | VL | L | L | M | **MI** |
| **Surface Water** | H | L | M | M | M | **MO** |
| **Fauna and Flora** | H | VL | L | M | L | **MI** |
| **Land Use and Landscaping** | H | L | L | M | L | **MI** |
| **Soil and Groundwater** | H | L | M | M | M | **MO** |
| **Nature Reserves** | H | N | VL | L | L | **IN** |
| **Natural Disasters** | VL | M | H | M | H | **MA** |
| **Hazardous & Non-Hazardous Waste Management** | H | L | H | H | M | **MA** |
| **OHS** | H | M | H | M | M | **MO** |
| **Community Health and Safety** | H | L | L | M | L | **MI** |
| **Temporary Labor Mitigation** | H | M | L | M | M | **MO** |
| **Cultural Heritage** | L | N | L | L | L | **MI** |
| **Fishermen's Income** | L | N | L | L | L | **MI** |
| **Groups Most at Risk** | H | L | M | M | M | **MO** |

## 5.4 Impacts of Natural Environment on the Project

### 5.4.1 Source of Impact

The proposed terminal yard project runs through a low seismic risk zone. According to published literature, SCCT's expansion project does not lie on any faults or areas with frequent seismic activity.

Seismic activity can pose potentially negative impacts on the time schedule of the construction activities in addition to possible injuries or fatalities to the workers. In the operational phase, such events may cause health hazards to the workers, community.

While seismic activities are unlikely and short-term, some impacts can be irreversible. Impact significance from seismic activities are therefore considered Major.

### 5.4.2 Mitigation Measure

It is necessary that Seismic Risk factors are taken into consideration and appropriate factor of safety/safety engineering criteria are incorporated in the design of the various components, including viaducts, stations, depot and metro catenary system to prevent failures due to earthquakes.

It is necessary that responsible employees and workers are trained to deal with such events and that such risks are incorporated in the contractor's emergency response plan.

### 5.4.3 Residual Impact

Minor, if mitigation measures are applied

### 5.4.4 Source of Flood Impacts

While Port Said's annual rainfall does not exceed 16 mm, the city has been subject to climate change concerns, rising sea levels and consequent flooding vulnerability.

In 2016, Port Said suffered from a disastrous flood impairing the entire city. Such events can have dire impacts on projects such as the one at hand.

Flood events can damage the overhead power supply lines causing secondary impacts on humans and biodiversity and posing serious life-threatening situations of electric shocks.

The impact of floods is short term and temporary in nature

The secondary impacts of floods are however, short term but could be irreversible.

### 5.4.5 Mitigation

The Project will be designed with an appropriate drainage system to protect the site against potential flooding.

- During Construction, the Contractor will build a site drainage system equipped to protect the site against potential flooding. This system will be built such that flood waters are rerouted away from the project area to the Suez Canal's water body.
- Plan arrangements for dewatering if necessary.
- Cover material by plastic sheets.
- Contractor will plan activities taking seasonal conditions into consideration, keeping all activities that could be affected outside the rainy season.
- Plan site such that storage locations are properly drained.

- While flooding is unlikely and short-term, some impacts can be irreversible.

The impacts of flooding on the site are Major.

### 5.4.6 Residual Impact

Minor, if mitigation measures are applied.

## 5.5 Cumulative Impact Assessment

### 5.5.1 Identifying Existing and Future Projects

The Cumulative Impact Assessment (CIA) is a crucial tool in the instance when the project's activities are running in adjacency with the activities of other future or present projects in the same area or near vicinity. Such an example is the construction of the grain terminal downstream of the Suez Canal which will go in line with the future expansions and developments that will be implemented on the East portion of the Suez Canal. The grain terminal's construction will next to the SCCT's expansion project and will produce emission, thus increasing the all-around impact on the ambient air quality which will be the product of utilizing construction heavy equipment, transport vehicles, and friable materials, thus, making the impact on air quality significant.

The SCCT's terminal yard expansion project is a stationary site that entails two phases, the construction and the operation. The construction activities will be through a hired contractor under the supervision of SCCT's projects' department. While APM Terminals will be responsible for the operation and management phase of the terminal yard upon finishing with the construction as discussed in the previous section. The construction phase is zoned and confined to the boundaries of the site and do not exceed or venture to the specified land's area. in accordance with the construction works, the operations of the terminal yard are confined to the land area prescribed to the project and no operations outside of the terminal yard are in the scope of SCCT's expansion project. Thus, the cumulative impacts can be recognized due to the project location and relatively conventional scope of construction and operation.

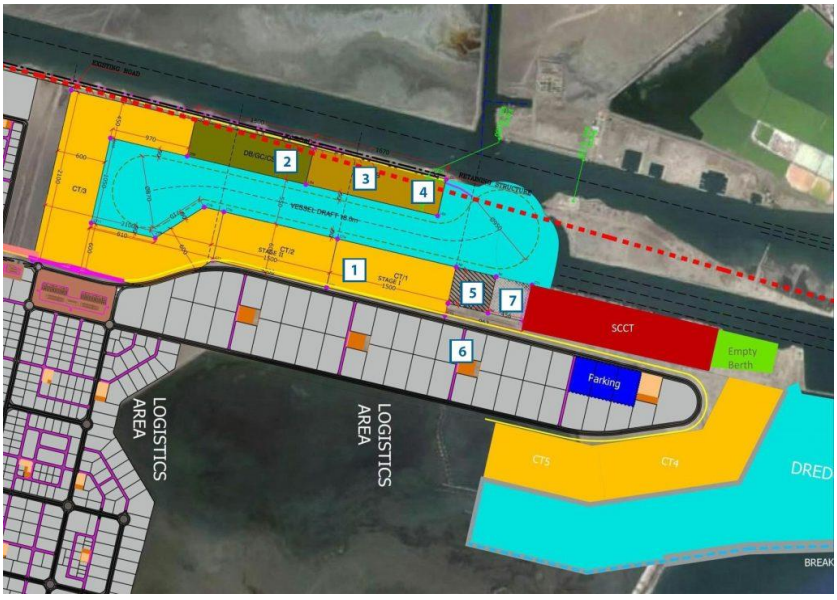


Illustration 112 Development Plans for East Port Said (East Bank of Suez Canal) by SCZone

The assessment will take into consideration the following projects and activities

- Grain Terminal
- Dedicated Container Terminal
- Port Reception Facility

The following table has been set so as to help in identifying what projects are important to be taken into consideration when during the cumulative impact assessment.

Table 45 Cumulative Impacts - Projects Identification

| Project/ Activity | Spatial AOI Overlap | Temporal Phase Overlap | Shared Receptors | Impacts | Scoped in/out |
|---|---|---|---|---|---|
| Dedicated Container Terminals | The Dedicated Container Terminals are aligned with the SCCT's expansion project with a distance away of approximately 1 kilometre | The project's signing was made between SCZONE and SKY Investment in November 2022, but details regarding the commencement of construction and operation is still undisclosed. It is expected that the operation phases will overlap due to the long lifecycle of these types of projects. | Access to the Suez Canal.<br><br>Other Terminals on the East of the Suez Canal. | Waste Generation<br><br>Surface Water<br><br>Soil and Groundwater | Scoped in because the close proximity of the project with SCCT's expansion project in addition to the expected overlap in operation periods. |

| Project/ Activity | Spatial AOI Overlap | Temporal Phase Overlap | Shared Receptors | Impacts | Scoped in/out |
|---|---|---|---|---|---|
| Grain Terminal | The Grain Terminal is the direct neighbour with the SCCT's expansion project on the southern border. | The project's signing was made between SCZONE and the two groups of Roots Commodities and Rosa Grains in September 2022, but details regarding the commencement of construction and operation is still undisclosed. It is expected that the operation phases will overlap due to the long lifecycle of these types of projects. | Access to the Suez Canal.<br><br>Other Terminals on the East of the Suez Canal. | Air Emissions<br><br>Noise<br><br>Waste Generation<br><br>Surface Water<br><br>Soil and Groundwater | Scoped in because the close proximity of the project with SCCT's expansion project in addition to the expected overlap in operation periods. |
| Port Reception Facility | The Port Reception Facility is opposite on the Sothern border with SCCT's expansion project in the island between the East and West banks of the Suez Canal with distance away of approximately 2 kilometres | The project's letter of intent was signed by SCZONE and ECOSLOPS in 2019, but details regarding the commencement of construction and operation is still undisclosed. It is expected that the operation phases will overlap due to the long lifecycle of these types of projects. | Access to the Suez Canal.<br><br>Other Terminals on the East of the Suez Canal. | Waste Generation<br><br>Surface Water<br><br>Soil and Groundwater | Scoped in because the close proximity of the project with SCCT's expansion project in addition to the expected overlap in operation periods. |

### 5.5.2 Description of the Identified Projects

#### 5.5.2.1 Dedicated Container Terminals


Illustration 113 First Phase of Dedicated Container Terminals

A consortium of Sky Investments alongside Reliance Logistics will establish a USD 65 Million multi-purpose terminal at East Port Said port under a contract signed with the Suez Canal Economic Zone in November of 2022. The companies will be responsible for the "design, construction, management, operation and maintenance" of the terminal, which will feature a 900-meter container berth.

SCZONE announced at COP27 multiple developments to expand the port's cargo activities, including the new deal with Sky Investment. Aligned with SCZONE's green port ambitions, the following measures are taken by the Consortium to contribute:

- Investing in electrical equipment instead of diesel-power equipment where possible
- Investing in energy efficient LED lighting on the terminal
- Investing in rooftop solar panels on warehouses and buildings
- Investing in waste separation, collection and recycling schemes
- Investing in noise emissions measuring systems and noise reduction schemes
- Investing in air quality measuring, closed warehouses, air ventilation systems, dust extraction machines and closed conveyor systems
- Investing in water quality, which focuses on minimizing water consumption at the terminal and implement measures against water pollution (i.e. from washing or oil leakages), and
- Investing in biodiversity and green space at the terminal.

#### 5.5.2.2 Grain Terminal

In August 2021, the Egyptian government signed a contract with Rosa Grain and Roots Commodities for the building of a bulk grain terminal in East Port Said with expected accumulated investments of 2.2 billion EGP.

The signing of the contract comes more than a year after a consortium comprising Emirati firm Rosa Grains and Roots submitted a bid to establish a logistics hub that includes a EGP 2.2 Billion bulk grain terminal. The first phase of the project is estimated at USD 200 Million with a focus on manufacturing grains and cereal. The terminal is forecast to handle from 1.5 million to 7.2 million tonnes of grains per year at East Port Said

The project, expected to create about 400 direct and indirect jobs, will be established over an area of 267,000 square metres (sqm) and at a length of 500 metres.

In addition, SCZONE made an agreement with a consortium comprising Roots Commodities and UAE's Rosa Grains for the establishment of eight factories in Port Said for packaging and wrapping of grains and value adding industries with a cost of EGP 800 Million. The project will be located in the logistic hinterland of the planned grain terminal in East Port Said Port. The planned factories will be situated on 500 square meters.

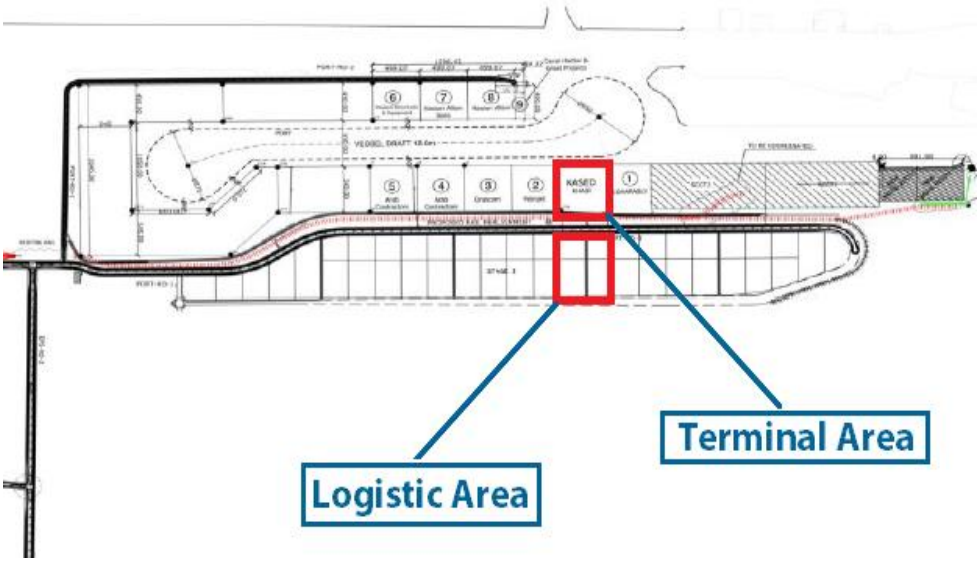


Illustration 114 Grain Terminal on the East Bank of the Suez Canal Neighboring SCCT's Expansion

#### 5.5.2.3 Port Reception Facility

Establishment of the proposed MARPOL Port Reception Facility follows a previous agreement reached between the parties in January last year for a detailed feasibility study on the unit. With the newly signed deal being a result of the positive outcomes of the feasibility study. As part of the deal, ECOSLOPS and SCZONE are expected to finalise the technical studies and develop a financial plan for the MARPOL Port Reception Facility in Port Saïd.

The project includes the deployment of a collection vessel as well as the construction of a reception and treatment facility on a 2 hectares land plot in the new port area in East Port Saïd. This agreement already includes the possibility for ECOSLOPS to also establish in Suez, at the South end of the Canal, according to the same principle. Once the volumes of collected and treated oil waste will be sufficient, an ECSLOPS' P2R micro-refinery unit may be deployed and operated for their valorization.

ECOSLOPS noted that the potential of recovering oil waste moving through the Suez Canal is estimated to be more than 40,000t per year. The estimate is based on data gained from 18,000 canal transits and 7,000 port calls.

The recovery potential of the oil waste transiting through the Suez Canal is estimated at more than 40,000 tons per year, on the basis of 18,000 canal transits and 7,000 port calls. This project aims to contribute to strengthening the competitiveness of the Suez Canal and of the Egyptian ports through the provision of a world-class and comprehensive collection, reception and treatment service and through delivery to shipowners of quality of service and traceability indispensable to the management of their oil wastes. This project benefits from the active support of the French government, through the granting of financial assistance to the study (FASEP).

### 5.5.3 Impacts

#### 5.5.3.1 Air Quality

Due to the construction of the Grain Terminal and the Dedicated Terminal Yard being in a very close proximity to the SCCT's expansion project and due to the nature of the land's topography being flat and open to the environment, the accumulation of the construction works can have an impact on the ambient air quality in the expansion project. The construction activities will include heavy equipment and tools in addition to earthing works and the movement and transport of friable materials that can be dispersed into the air and affect the quality of the ambient air quality during the SCCT's expansion project construction or operation.

As for the Port Reception Facility, it is across the Suez Canal and will constitute a far enough distance to ensure the dispersion of pollutants before reaching the project site and affecting the ambient air quality of the project's atmosphere.

In addition, there are no residential areas around the three facilities and the expansion project, thus constituting no impact on any sensitive residential receptor that can have a negative impact from deterioration of the ambient air quality.

#### 5.5.3.2 Noise

During the construction phases of the Grain Terminal, Dedicated Terminal Yard, and the Port Reception Facility, the noise produced will have varying impacts on SCCT's expansion project. The grain terminal will have the highest impact due to being the direct neighbour of the expansion project, however the impact of the noise level of the Grain Terminal are expected to be minor due to the limited construction activities. The limited construction activities are due to the current trend in silos construction being of either prefabricated and/ or precast components that are transported and to the site to be built in modules. Therefore, the Dedicated Terminal Yard and the Port Reception Facility are expected have little to no impact on SCCT's expansion project due to them being further away from the Grain Terminal and having more environmental buffers in between. In addition, the construction activities are temporary and will only last for a limited time, thus making the impacts, if found, very limited.

As for the operation phase for the Grain Terminal, Dedicated Terminal Yard, and the Port Reception Facility, the operational activities are mainly attributed to the movement of trucks, and transport vehicles which are bound by the Egyptian Law to not exceed the limit of the prescribed zone of work, thus eliminating the possibility of having a cumulative negative impact.

In addition, the lack of residential areas around any of the three facilities and the expansion project eliminated the possibility of affecting any residential communities in the vicinity of the projects.

#### 5.5.3.3 Waste Generation

Due to the nature of the construction and operational phases of the Grain Terminal, Dedicated Terminal Yard, and the Port Reception Facility, waste will be generated and will include hazardous, non-hazardous, liquid and solid waste. Different quantities of waste will be produced by the facilities and with different compositions. However, the impact of the waste generation can be mitigated during the construction phase through he utilization of waste disposal contractors who will collect and dispose of the waste in their allocated destinations in addition to hazardous waste being disposed of by a certified hazardous waste contract who will follow the approved hazardous waste management procedures in the collection, transport, and disposal of hazardous waste to either a landfill or direct them to a recycling facility.

#### 5.5.3.4 Surface Water

Due to the nature of the facilities and their direct portrayal on the Suez Canal bank, there is a probability of waste produced during the construction and operation finding a path to the Suez Canal open water. However, this probability can be reduced by building the storage areas for temporary waste and materials as far away as possible from the Suez Canal bank and ensuring that the stored materials are secured. In addition, continuous monitoring will alleviate the probability of waste accumulation on the bank. Concurrently, the Egyptian Law forbid ships or any types of vessels from disposing of waste onto any water bodies and does not permit the import of waste into any Egyptian ports, thus minimizing the probability of waste being disposed of into the Suez Canal.

#### 5.5.3.5 Soil and Groundwater

The three beforementioned projects and SCCT's expansion projects will have a probability of contributing to the pollution of the soil and groundwater due to leakage occurring from machinery, equipment, or vehicles in the construction phase due to the activities of construction and vehicle maintenance (in undesignated allocations) and operation. Although the leaks may happen, they are classified as point pollutants and not a steady stream of pollutant effluents, thus the cumulative impact can be classified as being minimal, especially with the consideration that the projects are built on relatively large pieces of land, thus lowering the chances of contamination accumulation and pollutant concentration increase. This is additionally true for when comparing the contamination concentration in comparison with the aquifers and groundwater table which will make the pollutant load pale in comparison with the present groundwater volume.

When considering the soil contamination, it must be considered that the projects do not lie on the same piece of land, thus the contamination will not be cumulative or compounded by different projects, thus lowering the severity of any leakage occurring.

# 6 Alternative Analysis

This chapter discusses the various possible alternatives, and they are as follows:

1. Alternative to "Do Not Execute Project"
2. Alternatives to the technology of building the terminal yard
3. Project Site Alternatives

Project alternatives were studied in accordance with EEAA regulations and explored as mentioned above. The methodology for exploring alternatives was developed through deductive reasoning, a thorough investigation was conducted to perform a comprehensive analysis of the use of the surrounding land and the benefits of the project on the economic and social spectrum of Port Said.

During the public consultation event (detailed in Section 9), the consultant presented project alternatives in a presentation to project stakeholders. As indicated in Section 9, there were no objections to the project site or the technology used in the construction of the yard in addition to the project gaining approval for its brought benefits to the economic and social parameters.

## 6.1 Alternative to "Not implementing the project"

The main objective of the proposed project is to increase the capabilities of the Suez Canal container terminal by establishing a container terminal, which will contribute to the development of maritime trade traffic, placing the Arab Republic of Egypt on the map of international ports and increasing foreign investments in Port Said governorate near the project site.

Due to the contemporary developments in the field of maritime transport, the subsequent development in the process of designing and establishing seaports, and the accompanying development in the movement of containers loaded with goods and petroleum materials to saturate the local market with the necessary products, as well as the recent development of the Arab Republic of Egypt in the infrastructure development, openness and increase in foreign investments and major national projects, all of this required its expansion of the An international container terminal in the Mediterranean to keep up with the requirements of local and international markets.

In view of the above, the failure to establish the proposed project at the moment will have direct negative consequences for the Egyptian economy in general, and the maritime transport sector and the handling of sea containers in particular due to the dependence of many national industries on materials and products transported through these containers. On the other hand, the Port Said Suez Canal container terminal is facing a real momentum from sea boats which requires finding an alternative to the establishment of a new container terminal relatively far from them.

On the other hand, not setting up a project will deprive many families of real job opportunities that can contribute to solving the problem of unemployment, whether it is through direct and indirect employment such as transport workers and various suppliers of this project. Also, the failure to complete the project will deprive the Egyptian economy of the income resulting from many promising investment opportunities, and the speed of meeting the various national requirements through the fastest means of transporting goods, namely maritime transport, and the failure to implement the project will deprive Egypt of training opportunities and keeping abreast of modern developments in maritime transport technology and container trading. The proposed project is in line with the objectives of the Egyptian state, Egypt's 2030 strategy, and sustainable development.

It is expected that the impacts of the establishment of this terminal will return positively to Egypt in all aspects of the development of the maritime transport sector, the training of skilled workers to operate this terminal electronically to keep pace with the developments of the maritime cargo transport market, and the provision of direct and indirect employment opportunities in the Egyptian labor market, especially near the project site, and will contribute entirely to the advancement of the national economy where the capacity of the terminal in container handling will reach more than two million containers.

Thus, the alternative of "non-implementation of the project" is unacceptable.

## 6.2 Alternatives to Construction Technology

### 6.2.1 Introduction

As discussed in the project description, the paving system for the port floor used is the interlock paving system that takes place after soil excavation, backfilling, geotextile addition, and multiple compaction procedures. The interlocking dock system is a good option because it can handle the heavy loads of the station's activities and will allow good drainage of rainwater, to which the port land is more susceptible.

However, other methods of paving the port land can be used to reduce cost and environmental impacts while allowing the terminal's operations to run uninterrupted.

### 6.2.2 Flexible and Solid Pavements

In general, two basic types of pavements; either a flexible concrete or more commonly used solid concrete, are created as a subsequent option and it is common that the port roads are also built with either of these. Although there are other subgroups of piers; a flexible pavement can be defined as a pavement consisting of a layer of cohesive soil, granular layers and one or two layers of bituminous (Asphalt) surfaces. On the other hand, solid pavements are made of a well-compacted granular layer / low-strength concrete layer (DLC) or both from covered soil and covered with ordinary or reinforced concrete slabs.

#### 6.2.2.1 Flexible Pavements

The structural capacity of flexible concrete is achieved by the joint work of different pavement layers, and therefore depends on their capacity, in turn. Flexible berths are designed in such a way that the pressure up to the substrate is minimal so that it does not exceed the bearing capacity of the ground soil. Thus, the type, thickness, and quality of the layers above the bottom layer vary depending on the strength of the soil that affects the cost of the paving structure. For this reason, port roads may require higher layer thickness and/or basic strengthening techniques.

#### 6.2.2.2 Solid Pavements

Solid pavements are so named because of the high bending capacity of the concrete slab, so the paving structure deviates very slightly under loading due to the high elasticity coefficient of the path of its surface.

The concrete slab is able to distribute the traffic load over a large area with a small depth which reduces the need for a number of layers to help reduce pressure.

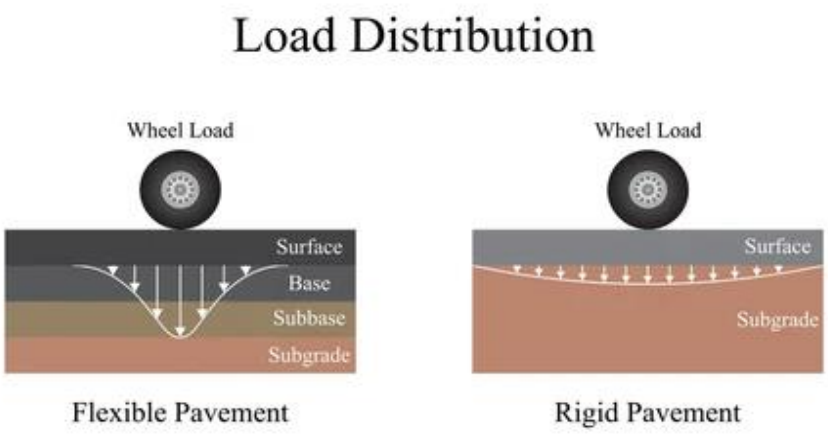


Illustration 117 Illustration of loads on the flexible pavement and steel pier (Source: Shutterstock)

### 6.2.3 Design Considerations and Strategy

The design of the pavement depends heavily on the conditions of the soil and the amount of traffic loads expected to be carried during its design life. Flexible berths in Egypt are designed based on the California (CBR) tolerance ratio of the undercoat soil and the expected number of cumulative axles (measured in one million standard axes) during the pavement design life or axle load spectrum to reach the cumulative damage factor (CDF) of solid berths. Pavements are usually designed for 15-20 years in the case of flexible pavements and 30-40 years in the case of solid pavements. The method of designing Egyptian roads allows Using conventional as well as stable materials and recycling appropriately in flexible paving layers then the thickness of each layer is calculated using the algorithm based on layer theory or reading from the molds.

Solid pavement thickness is calculated to overcome the expected damage up to the design age, usually for 30-40 years and the design of the thickness of the solid pavements is affected by the traffic load, the soil of the lower layer, humidity and differential temperature. First, the thickness of the solid pavements is designed for fatigue failure. The calculated thickness of the pavements is then examined for the decisive composition of load and temperature conditions.

### 6.2.4 Land Improvement

In ports, while roads are constructed over the tidal zone in swamps, they require a pre-soil subsoil investigation to design a suitable method of ground improvement before starting the construction of actual road paving. Geotechnical investigations are usually aimed at finding out the required information, which includes but is not limited to, the depth of fine clay, the distribution of grain volume, clay content, undyed shear strength, initial vacuum ratio, pressure index, uniformity coefficient, unit weight of sub-clay soil, etc.

Deep deposits of fine clay are found along the coastal areas and delta of the country where ports come from. In it, the alignment of roads passes through marine clay subsoils, and the establishment of traditional methods over soil sediments under marine clay soils may lead to breakdowns due to very low shear strength and very low subsoil permeability. Hence the provision of land improvement measures becomes essential to achieve the required endurance and acceptable macro and differential adjustments, especially in the case of flexible pavement. If the depth of the clay layer is moderate (up to 3 m), then it can be removed and replaced with

soil with good shear strength. But when the depth of the sensitive clay is larger, it becomes necessary to adopt ground improvement techniques to achieve the required endurance and the permissible total and differential adjustments. Accordingly, various methods of improving the land can be designed, that is, (1) the use of geotechnical reinforcement of the base under the road pavement and (2) the use of stone columns (granular material integrated into the site in long cylindrical wells).

### 6.2.5 Comparison of Flexible and Solid Pavement

Conceptually, when comparing a flexible and rigid alternative to the pavements, the same design life must be considered. In such cases, periodic maintenance adjustments during different stages of the pavements with a relatively shorter lifespan to extend its life for economic comparison are also followed by a total transportation cost approach. Flexible pavements and solid pavements can be compared using different criteria. Simple analysis uses only two parameters: the cost of construction and carbon footprints.

During the design and construction of the pier, it is very important to analyze the current situation with all the factors that have an impact on the future structure. First, it is necessary to consider the needs of users and the environment, which includes features of current terrain, weather conditions, operating conditions, and traffic load. Based on this, economic technical analysis can be carried out with the final selection of the appropriate paving structure. With large investments in port routes, cost economics must be treated as absolutely necessary and with an integrated approach.

From the ongoing discussions, it can be inferred that, for port roads, in general, solid paving is economically considered instead of flexible paving. This is most evident as port roads are created over the swampy tidal zone containing deposits of fine clay. The main supporting issues in this regard can be listed as follows:

The solid pavement carries a higher flexural force than the flexible pavement, that is, it carries bending and deformation without rupture under the wheel / axle load.

The flexible pavement load is transferred from grain to grain and because of this many failures occur such as cracking caused by fatigue, cracking, and thermal cracking. But in the solid pavement, there is no phenomenon of transporting the load of grain to grain, and therefore there are less failures, when properly designed and installed

The shelf life of a solid pavement is more than a flexible pavement at a low maintenance cost. Studies show that the cost of the life cycle of a flexible berth will be about 20% higher than a hard berth after 20 years.

The initial cost of a solid pavement is higher but when comparing the total cost of paving by the shelf life of a solid pavement it is more economical than a flexible pavement.

When the lower soil is of good quality and the traffic is not too heavy, flexible pavements can be more economical. But these aspects may only be useful during the design of secondary or third-party roads of lesser importance within the port road network.

In the case of areas where the subsoil is weak and/ or it is also difficult to maintain drainage conditions at the required level of performance, solid paving can be a good option.

The initial cost of a solid pavement (concrete pavement) is reduced by replacing cement with fly ash by a certain percentage, by proper design.

### 6.2.6 Advantages of Interlocking Pavement

The original technology proposed for paving the station land is the interlocking pier. As mentioned before, other technologies proposed as alternatives are the flexible asphalt pavement and the solid concrete pavement that has its benefits and disadvantages. So, in the next section, the advantages of the interlocking pavement are presented over other types of sidewalks.

#### 6.2.6.1 Sustainability

Compared to other paving materials, the paving of blocks is more environmentally sustainable due to its porous nature. This means that the paving will absorb rainwater and prevent it from gathering in the yard or corridor. The added benefit is that the surface area will have better drainage.

#### 6.2.6.2 Safety

Interlocking pavement is a very safe paving material for external applications. When the upper surface of the paving is greasy due to the passage of the car above it, it is very safe to walk and drive a vehicle above it, and it is also safe when the upper surface of the interlocking paving block is wet or in the monsoon season, there is no problem with walking or no tension to slide over it. Interlocking paving floors are slip-resistant and anti-slip.

#### 6.2.6.3 Durability

The interlocking paving is designed so that there are protrusions on the pavement wall. During installation, special grades and volumes of sand are sifted between the paving. When installed correctly they will not turn or sink. They can withstand walking on them and driving on them, without twisting. This makes interlocking flooring a very strong and durable surface material.

Based on the above advantages, it is clear that the chosen method of overlap is the best method because it provides a more economical solution. In addition, it is more environmentally friendly because it does not use concrete or asphalt that uses petroleum products or cement components that are produced through hard production with heavy burning.

## 6.3 Project Site Alternatives

From an environmental and social point of view, the best location to expand the container terminal is the solution that will reduce land-use change, impact on ecological nature, and intersect with residential areas and areas of a special nature such as religious buildings and historical areas. This strategy is in line with the Suez Canal Container Company's strategy to choose a location away from residential areas, and in locations with other infrastructure lines/cables to minimize disruptions in new locations.

The preferred location has been determined according to a number of procedures which include, for example:

1. **Study Area Identification:** Identify key features in the study area such as main roads, residential and commercial areas to help identify restrictions while choosing a location
2. **Resource maps:** Including main streets and water bodies (canals, drains, etc.) and railways and infrastructure (e.g., drinking water, sewage, and communication networks). Resource maps of the developed areas help to determine the best place in terms of infrastructure and thus to optimize the use of the land.

In addition, the choice of the expansion site of the Suez Canal Container Terminal considers some technical aspects which include:

1. Stay away from residential areas as much as possible.
2. The existence of appropriate routes for the passage of trucks and equipment to consider the crossing of roads in appropriate areas
3. Ease of implementation of construction work and accessibility of the implementation site
4. Proximity to existing water and electricity networks as much as possible
5. Avoiding existing buildings, cemeteries, houses of worship and historical sites

Based on these criteria, the proposed project site was selected for expansion of the container terminal as it features the following:

1. It is characterized by the security and tight security of the Egyptian Navy.
2. The project is located on the banks of the Suez Canal and is a major artery for ship traffic around the world
3. Facilitations provided for the project by the Egyptian government.

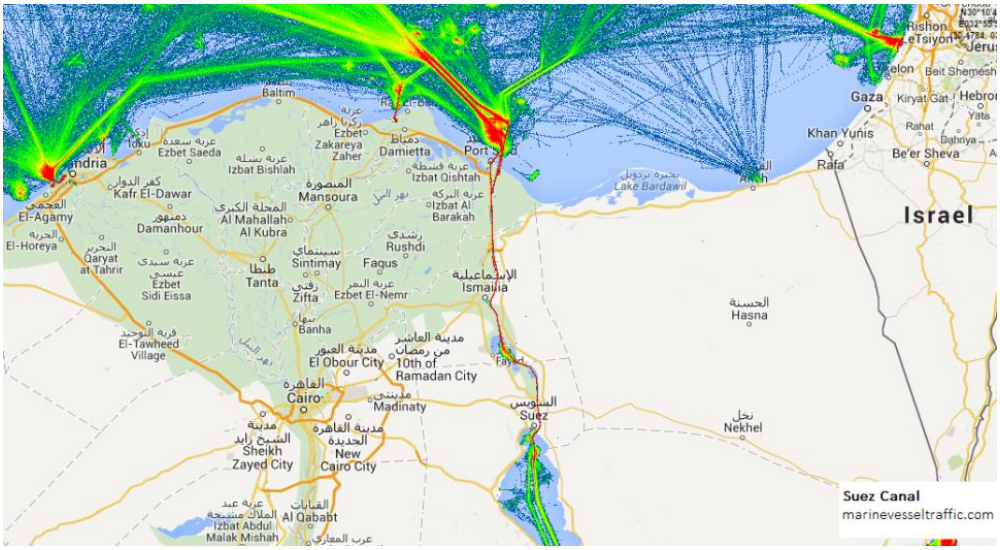


Illustration 118 Density of ship traffic in the Mediterranean Sea especially near the project site (Source: marinecesseltrafic.com)

Based on the above, there is no other suitable place for its expansion of a port with international specifications and depths that allow the establishment of a port for the handling and reception of giant container carriers other than the port of handling containers of the Suez Canal due to its uniqueness to the location and unique specifications.

The proposed location of the container terminal construction project will thus achieve environmental and social objectives, while at the same time being in line with the strategy of the Suez Canal Terminal Company which aims to select sites located near the already existing infrastructure and reduce friction with residential areas as much as possible.

# 7 Environmental and Social Management Plan (ESMP)

The environmental and social management plan (ESMP) proposes measures to reduce the negative impacts associated with the project, thus making it compliant with the national laws and regulations and with international guidelines and best practices. Monitoring plans will also be suggested and the parties responsible for implementing them will be identified.

The aim of the ESMP is to:

- Meet the national and international environmental and social guidelines.
- Ensure that the personnel employed by the client abide by the project's environmental and social regulations during both construction and operation phases.
- Provide a safe and healthy environment for both workers and surrounding communities during all phases of the project.

## 7.1 Environmental and Social Management Plan for the Construction and Operation Phases

Table 4 Construction Phase ESMP

| Receptor / EHS Aspect | Impact | Proposed Mitigation Actions | Residual Impact | Means of Supervision | Responsibility | | Estimated Cost |
|---|---|---|---|---|---|---|---|
| | | | | | Implementation | Supervision | |
| **Construction Phase** | | | | | | | |
| Air Quality | – The main impacts arise from the construction activities in the utilization of heavy equipment and transport vehicles and the construction of the terminal yard. | – Moisturize the surrounding areas of any soil works.<br>– Store the output of digging soil and sand in contained isolated areas or any excavated soil should be covered with a suitable covering material (such as polyethylene) to avoid soil dispersion.<br>– Cover vehicles transporting dispersible construction materials. | Insignificant | – Site inspection<br>– Review equipment maintenance records.<br>– Review the complaints reports | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | Within the contractor's cost |

| Receptor / EHS Aspect | Impact | Proposed Mitigation Actions | Residual Impact | Means of Supervision | Responsibility | | Estimated Cost |
|---|---|---|---|---|---|---|---|
| | | | | | Implementation | Supervision | |
| | | – Set a maximum speed of vehicles/trucks, especially on unpaved roads.<br>– Implementing companies are committed to using equipment and motor vehicles that have high efficiency.<br>– Use paved roads to access the site as much as possible.<br>– Reduce unnecessary trips. | | | | | |
| Noise and vibrations | – The impacts result from the operation of construction equipment and machinery such as excavators, cranes, loaders, power generators and the movement of transport trucks. | – Reduce the periods of exposure of workers to noise and vibrations so that they do not exceed the safety limits stipulated in environmental laws in addition to occupational safety and health standards.<br>– Placing restrictions on the movement of vehicles and trucks to prevent noise in the early morning and late evening periods.<br>– All machines and vehicles must be stopped if not in use.<br>– Maintenance of construction equipment and trucks/vehicles periodically and their proper operation during the construction phase. | Insignificant | – Site inspection<br>– Review equipment maintenance records.<br>– Review the complaints reports | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | Within the contractor's cost |

| Receptor / EHS Aspect | Impact | Proposed Mitigation Actions | Residual Impact | Means of Supervision | Responsibility | | Estimated Cost |
|---|---|---|---|---|---|---|---|
| | | | | | Implementation | Supervision | |
| | | – Encourage shutdown/stop of the engine during loading and unloading activities. | | | | | |
| Thermal Stress | – Thermal stress may result in the construction periods as a result of welding works of pipelines and metal pipes. | – Avoid direct exposure to high heat for a long time unless necessary.<br>– An appropriate distribution of rest shifts is in line with the duration of workers' exposure to heat. | Insignificant | – Site inspection<br>– Review the complaints reports | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | Within the contractor's cost |
| Surface Water | – During the construction phase, the quality of coastal waters may be affected by construction work as a result of the terminal yard works during implementation, excavation, and | – Proper and safe procedures will be followed for the storage of materials and equipment.<br>– Proper and safe procedures will be followed for the storage and disposal of waste resulting from construction activities.<br>– Commitment to remove all distortions – backfilling of pits – leveling of land that is not part of the permanent changes allocated | Minor | – Site inspection<br>– Review equipment maintenance records.<br>– Review the complaints reports | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | Within the contractor's cost |

| Receptor / EHS Aspect | Impact | Proposed Mitigation Actions | Residual Impact | Means of Supervision | Responsibility | | Estimated Cost |
|---|---|---|---|---|---|---|---|
| | | | | | Implementation | Supervision | |
| | backfilling in addition to spills from the construction activities. | to the project to prevent unexpected land movements and dispersions into the water.<br>– Commitment to change equipment oils off-site and in designated places (petrol stations).<br>– Proper and safe procedures will be followed to handle materials and respond quickly in case of leaks or spills.<br>– In case of oil spill on the coastal waters, an alert will be issued to the authorities to respond to the oil spills with the coordination of the SCZONE. | | | | | |
| Land Use and Landscaping | – Construction activities in the container terminal expansion project are not expected to affect the land uses on which the project site will be located since it is located in a currently unused location whose entire land | – The design of the plant and the project must consider how it blends into the surrounding environment. The colors of different installations must be considered to improve the image of the port and terminal from the outside.<br>– Allocate and use appropriate on-site temporary storage sites for generated waste. | Insignificant | – Review design plans<br>– Site inspection<br>– Review the complaints reports | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | Within the contractor's cost |

| Receptor / EHS Aspect | Impact | Proposed Mitigation Actions | Residual Impact | Means of Supervision | Responsibility | | Estimated Cost |
|---|---|---|---|---|---|---|---|
| | | | | | Implementation | Supervision | |
| | belongs to the Egyptian government. | | | | | | |
| Soil and Groundwater | – Potential contamination may occur as a result of spillage or leakage of chemicals during construction or as a result of poor storage of materials and residues generated by construction work. | – Proper and safe procedures will be followed for the storage of materials and equipment<br>– Proper and safe procedures will be followed to store and dispose of waste resulting from the activities of the plant (As per section 3.8)<br>– Commitment to change equipment and truck oils off-site and in designated places (petrol stations)<br>– Proper and safe procedures will be followed to handle materials and respond quickly in case of leaks or spills. | Minor | – Site inspection<br>– Review equipment maintenance records.<br>– Review the complaints reports | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | Within the contractor's cost |
| Natural Disasters Hazards | – Earthquakes and floods may interrupt construction activities, especially in the winter period where rainfall multiplies during peak periods. | – Consider weather conditions during construction work and stop work in periods of floods and nuclei.<br>– Develop a comprehensive contingency plan to act when unforeseen circumstances such as earthquakes and floods occur. | Moderate | – Site inspection<br>– Review of developed plans | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | Within the contractor's cost |

| Receptor / EHS Aspect | Impact | Proposed Mitigation Actions | Residual Impact | Means of Supervision | Responsibility | | Estimated Cost |
|---|---|---|---|---|---|---|---|
| | | | | | Implementation | Supervision | |
| | | – Train workers to follow the contingency plan and provide fake accident experiences. | | | | | |
| Hazardous and Non-Hazardous Waste Management | – Contamination of spills may result of improper and unsafe handling and disposal of waste resulting from project construction activities as impacts on soil and plant or animal life. Remnants of construction activities will include non-hazardous residues and some hazardous wastes. | **Generation of Non-Hazardous Waste**<br>– The contractor will apply to the local authorities for official permits to dispose of the generated construction waste before the construction work begins or sign with a certified waste disposal contractor for the removal, transport, and disposal of solid waste.<br>– The waste will be separated and temporarily stored securely in the designated waste storage areas in the construction site. It is recommended that the waste areas are within the boundaries of the site.<br>– Licensed and suitable trucks belonging to an authorized contractor be used to transport the quantities of waste generated by construction activities.<br>– It is forbidden to accumulate or store waste on the shores of the sea, and it is strictly forbidden to dispose of construction waste and various wastes in the sea. | Minor | – Terminal yard investigations<br>– Review waste register.<br>– Review the complaints reports. | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | Within the contractor's cost |

| Receptor / EHS Aspect | Impact | Proposed Mitigation Actions | Residual Impact | Means of Supervision | Responsibility | | Estimated Cost |
|---|---|---|---|---|---|---|---|
| | | | | | Implementation | Supervision | |
| | | – Ensure periodical removal of waste to avoid accumulation.<br>**Generation of Effluents**<br>– Effluent will be disposed of by scavenging vehicles and transported to wastewater treatment plants in the case of heavy rainfalls or rough seas.<br>– Connect all wastewater generating utilities (caravans, offices) to the municipal wastewater network or construct a septic tank which will be periodically emptied and disposed of in a wastewater treatment plant by a certified contractor.<br>**Generation of hazardous waste**<br>– Activities that require refueling, or lubrication, will take place off-site and in designated places (petrol stations) to avoid contaminating the soil, generating more hazardous waste. If these activities are necessary to be carried out within the site, they should be performed on an impermeable surface with the provision of leak prevention and spill absorption equipment at the site. | | | | | |

| Receptor / EHS Aspect | Impact | Proposed Mitigation Actions | Residual Impact | Means of Supervision | Responsibility | | Estimated Cost |
|---|---|---|---|---|---|---|---|
| | | | | | Implementation | Supervision | |
| | | – The chemical containers used will be collected and disposed of in a safely certified landfill for hazardous waste in coordination with local authorities.<br>– Hazardous effluents will be collected in dedicated barrels and disposed of by a licensed contractor. | | | | | |
| Operational Health and Safety | – Construction site incidents and risks are numerous.<br>– Construction sites are considered to be one of the most hazardous places for workers. Exposures to high noise levels, heavy machinery and chemicals and hazardous substances are incredibly high. | – The contractor is bound by occupational safety and health instructions in accordance with Egypt's Labor Code No. 12 of 2003.<br>– The contractor is also obliged to prepare a complete plan for occupational safety and health in line with SCCT's safety and health rules to adopt the most stringent procedures for occupational safety and health.<br>– Verification of workers' safety before recruitment by means of a health check or a health certificate to ensure protection against transmitted diseases, in particular the coronavirus and B virus;<br>– Workers' training in occupational safety and health procedures (workers mean any on-site | Minor | – Workers' Accidents log<br>– Monthly reports on HSE<br>– Check trainings log to make sure that the number of trained workers<br>– Site inspection and visit | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | Within the costs allocated to safety and health, especially protective equipment.<br>As for training, it is at the heart of the work of supervisors and engineers of the site and has no cost |

| Receptor / EHS Aspect | Impact | Proposed Mitigation Actions | Residual Impact | Means of Supervision | Responsibility | | Estimated Cost |
|---|---|---|---|---|---|---|---|
| | | | | | Implementation | Supervision | |
| | | contractor or SCCT workers). The training is designed to reflect each work task, meaning that there is training for welders different from drilling labor and so on. The training provided for employment consists of initial training and then specialized training according to the type of work, in addition to daily training, which is provided in the form of daily guidance for employment and related to the various tasks of work and how to achieve safety.<br>– Providing prevention and safety tasks according to the type of activity carried out. In general, there is a range of basic protective equipment such as safety shoes, gloves and face masks.... etc. Workers must also be obliged to use them.<br>– Maintaining workers' health from gas emissions and air pollutants resulting from drilling and car exhaust emissions by maintaining on-site equipment and vehicles in compliance with Environmental Law No. 4 of 1994 as amended by Law No. 9 of 2009. | | | | | |

| Receptor / EHS Aspect | Impact | Proposed Mitigation Actions | Residual Impact | Means of Supervision | Responsibility | | Estimated Cost |
|---|---|---|---|---|---|---|---|
| | | | | | Implementation | Supervision | |
| | | – Maintaining the health of workers from solid and dangerous waste by following good and practical methods of managing the waste well both when storing on site and during transportation and final disposal.<br>– The availability of the station's ambulance to intervene in the event of an accident at the site.<br>– Ensure the quality of the water provided to workers within the site, in particular the water bottled inside reservoirs or any other water.<br>Provision of adequate lighting for on-site staff at night (in the event of having to work at night). | | | | | |
| Community Health and Safety | - Community health and Safety are impacted mainly because of the rising dust and noise levels during construction but equally due to traffic impacts.<br>- Temporary labor influx especially contractor workers can also cause a risk for | – Since there is no residential area close to the station and the nearest residential area is Port Fouad City, we can confirm that the community risks are minimal in terms of the impacts of old employment from other areas. We can therefore propose the following actions:<br>– Generally speaking, good waste management standards, gas emission reduction standards and noise levels that may affect the | Insignificant | – Accident's log<br>– Check clinic log monthly for any diseases that could be transmitted<br>– Check community GRM log for any | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | Included in contractor's costs |

| Receptor / EHS Aspect | Impact | Proposed Mitigation Actions | Residual Impact | Means of Supervision | Responsibility | | Estimated Cost |
|---|---|---|---|---|---|---|---|
| | | | | | Implementation | Supervision | |
| | disease transmissions and GBV. | nearest populations must be adhered to.<br>– Checking workers' safety and conducting tests to detect workers in order to ensure the reduction of transmission of diseases, especially coronavirus, to the surrounding community.<br>– The need to adhere to all precautionary measures to curb the spread of the coronavirus at construction sites. All necessary measures must be taken in the event of suspected injury to an employee, including but not limited to:<br>– Provision of temperature measurement devices for workers at the site.<br>– Use disinfectants and sanitizer periodically.<br>Isolate people suspected of contracting the virus from the workplace. | | GBV incidents<br>– | | | |
| Temporary Labor Migration | - Increased risk of unlawful behavior, crime and theft among workers<br>- Increased burden on public service delivery | – In view of the importance of the impacts of labor migration on the project site, whether they are permanent contractor or employed workers, the following must be done to reduce such impacts: | Minor | – Community GRM<br>– Check accident's log | Contractor | Project's director of Health, safety and Environment Department of Suez Canal | Within the contractor's training cost. Outreach activities are conducted with each meeting of |

| Receptor / EHS Aspect | Impact | Proposed Mitigation Actions | Residual Impact | Means of Supervision | Responsibility | | Estimated Cost |
|---|---|---|---|---|---|---|---|
| | | | | | Implementation | Supervision | |
| | (health care - water - drainage - electricity)<br>- Gender-Based Violence (e.g. harassment against women)<br>- Inflation of prices at the local level and increased pressure on homes and rents<br>- Increased traffic and associated traffic accidents<br>- Increased risk of infectious diseases and burden on local health services<br>- The impact classification is Moderate. | – All personnel must be trained on the Code of Conduct in initial training and then in refresher and daily training.<br>– The code of conduct must be signed and adhered to by the subcontractor.<br>– Sensitize local people on the project's commitment to communities and mitigation measures through public consultation, focal and collective discussions<br>– Impose penalties on workers who violate the rules of conduct in accordance with the gravity of the error made. | | – Site inspection and visit | | Port Container Terminal Company | the contractor's company |
| Child Labor | - Child labor is a common phenomenon in construction sites due to the lack fo monitoring or supervision over contractors" practices. Child labor is cheaper and | – Include strict conditions in contractor contracting to reduce the employment of children under the age of 18<br>– Register the National Employment Number on a daily basis and follow up the absence of any children on the site. | Insignificant | – Check workers' data base monthly<br>– Site visit and inspection | Contractor | Project's director of Health, safety and Environment Department of Suez Canal Port Container Terminal Company | No Costs |

| Receptor / EHS Aspect | Impact | Proposed Mitigation Actions | Residual Impact | Means of Supervision | Responsibility | | Estimated Cost |
|---|---|---|---|---|---|---|---|
| | | | | | Implementation | Supervision | |
| | due to the high youth population in Egypt it is very common.<br>- The impact classification is Major. | – If a child is on site, the necessary penalties shall be imposed on the contractor. | | | | | |
| **Operation Phase** | | | | | | | |
| Air Quality | – Gas and dust emissions are expected during operation from the movement of container trucks to and from the terminal. In addition, transport of some liquid and gaseous substances leads to the emissions of some fumes during the container washing phase. | – In case of transportation of goods, the transportation vehicles and trucks must be covered.<br>– Installation of air purification filters on the exhaust outlet of shore cranes<br>– Set a maximum speed of vehicles/trucks on the roads.<br>– Use paved roads to reach the container terminal as much as possible.<br>– Validate ship engine performance documentation and certification to ensure compliance with combustion emissions specifications (including NOx, SOx, and PM), within the limits established by international regulations, and as noted in the EHS Guidelines for Shipping.<br>– Where possible, rely on the use of low sulfur fuel. | Insignificant | – Site inspection<br>– Review equipment maintenance records.<br>– Review the complaints reports | SCCT | Director of Health, Safety, and Environment Department of Suez Canal Port Container Terminal Company | Within SCCT's cost |

| Receptor / EHS Aspect | Impact | Proposed Mitigation Actions | Residual Impact | Means of Supervision | Responsibility | | Estimated Cost |
|---|---|---|---|---|---|---|---|
| | | | | | Implementation | Supervision | |
| | | − Trucks are periodically maintained and operated in an appropriate manner during the transport of containers to and from the terminal to ensure that exhaust emissions from diesel/gasoline engines comply with the limits set forth in the Environmental Law and the EHS guidelines of the World Bank in addition to using transport vehicles with engines that have high efficiency or electrical engines.<br>− Reduce unnecessary journeys of vehicles/trucks and stop machinery and equipment when not in use.<br>− Encourage engine shutdown/shutdown during loading and unloading activities in accordance with the IFC EHS guidelines.<br>− Implement a preventive program for on-site vehicles and equipment and immediate repair of exhaust emission vehicles.<br>− Upgrade land vehicles, where possible, with low emission vehicles, including use of alternative energy sources such as | | | | | |

| Receptor / EHS Aspect | Impact | Proposed Mitigation Actions | Residual Impact | Means of Supervision | Responsibility | | Estimated Cost |
|---|---|---|---|---|---|---|---|
| | | | | | Implementation | Supervision | |
| | | vehicle and equipment fleets powered by electricity or compressed natural gas as per the World Bank standards for ports. | | | | | |

- All machines and vehicles must be stopped if not in use.
- Maintenance of container and truck/vehicle transport equipment periodically and its proper operation during container transport operations to and from the terminal.
- Encourage shutdown/stop of the trailer trucks engine during loading and unloading activities.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Noise and Vibrations | – Noise during the operating phase may be produced as a result of the docking and tying of ships, the laying of loading and unloading arms, the movements of the cranes, as well as the movement of container trucks. | – All machines and vehicles must be stopped if not in use.<br>– Maintenance of container and truck/vehicle transport equipment periodically and its proper operation during container transport operations to and from the terminal.<br>– Encourage shutdown/stop of the trailer trucks engine during loading and unloading activities.<br>– Periodic maintenance of pump motors and pumps at the water pump platform to ensure that no noise is made from them. | Insignificant | – Terminal yard inspection<br>– Review equipment maintenance records.<br>– Review the complaints reports | SCCT | Director of Health, Safety, and Environment Department of Suez Canal Port Container Terminal Company | Within SCCT's cost |
| Thermal Stress | – The impact may arise from welding activities in some | – Avoid direct exposure to high heat for a long time unless necessary. | Insignificant | – Terminal yard inspection | SCCT | Director of Health, Safety, and Environment | Within SCCT's cost |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | maintenance work. | – An appropriate distribution of rest shifts is in line with the duration of workers' exposure to heat. | | – Review the complaints reports | | Department of Suez Canal Port Container Terminal Company | |
| Surface Water | – There will be a continuous but limited impact on the water quality of the yard area as a result of the continuous movement of container ships.<br>– | – Comply with the permissible limits in the EHS IFC guidelines.<br>– Oily waste and wastewater should be collected in barges, vehicles, or central collection systems and storage tanks According to IFC guidelines.<br>– Good selection of various loading and unloading equipment (cranes and others) and maintenance of container and truck transport equipment and operating them in an appropriate manner during the operation phase to ensure that seawater is not contaminated with oils, or various exhausts.<br>– The use of treatment chemicals and oil waste disposal vessels to prevent the spread of various oil leaks.<br>– Develop a comprehensive contingency plan to confront water pollution with the development of a system to monitor and follow up violations and accidents. | Minor | – Terminal yard inspection<br>– Review equipment maintenance records. | SCCT | Director of Health, Safety, and Environment Department of Suez Canal Port Container Terminal Company | Within SCCT's cost |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | – Consider that all units are connected to sewage collection tanks and are discharged at the nearest drainage point connected to the public sewage network.<br>– Covering and moistening raw materials storage places except for non-waterproof materials such as cement. | | | | | |
| Fauna and Flora | – The diversion of oils, oil residues from container ships, container transport and storage equipment, and various residues may damage marine organisms and marine habitats near the project site. | – Ensure that all container storage areas are not directly on the shoreline to prevent spills.<br>– Conduct periodical maintenance on shore cranes and all equipment that work on the banks of the terminal to ensure that there are no leaks.<br>– Limit the time that the containers will be stationary on the shore of the terminal to avoid any leaks or spills occurring from the container to spread into the ground or the water body. | Minor | – Terminal yard inspection<br>– Review equipment maintenance records. | SCCT | Director of Health, Safety, and Environment Department of Suez Canal Port Container Terminal Company | Within SCCT's cost |

– Allocate and use appropriate on-site temporary storage sites for generated waste.

– Proper and safe procedures will be followed for the storage of materials and equipment

- Proper and safe procedures will be followed to store and dispose of waste resulting from the activities of the plant.
- Commitment to change equipment and truck oils off-site and in designated places (petrol stations)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Land-Use and Landscaping | – The impact arises from the change in the shape of the banks and the uses of the land there so that the effect is permanent, however due to lack of activity in the project's area, the impact will be minimal. | – Allocate and use appropriate on-site temporary storage sites for generated waste.<br>– Allocate storage places for containers and goods away from nearby roads to avoid disturbing residents with flashlights and lighting. | Insignificant | – Terminal yard inspection | SCCT | Director of Health, Safety, and Environment Department of Suez Canal Port Container Terminal Company | Within SCCT's cost |
| Soil and Groundwater | – Contamination to the soil and groundwater will only occur in the event of sedimentation accidents or spills.<br>– The impact classification is **Minor.** | – Proper and safe procedures will be followed for the storage of materials and equipment<br>– Proper and safe procedures will be followed to store and dispose of waste resulting from the activities of the plant.<br>– Commitment to change equipment and truck oils off-site and in designated places (petrol stations)<br>– Proper and safe procedures will be followed to handle materials | Insignificant | – Terminal yard inspection<br>– Review equipment maintenance records. | SCCT | Director of Health, Safety, and Environment Department of Suez Canal Port Container Terminal Company | Within SCCT's cost |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | and respond quickly in case of leaks or spills. | | | | | |
| Natural Disasters Hazards | – Natural disasters such as earthquakes, and floods can damage the container terminal. A fire may occur or explosion in affected areas which may lead to serious injury or death. | – Considering weather conditions during the operation of the station and the suspension of work in periods of floods and nuclei.<br>– Develop a comprehensive contingency plan to act when unforeseen circumstances such as earthquakes and floods occur.<br>– Give the necessary instructions on identifying possible accidents and emergencies that may occur during the operation of the plant and how to respond to them to reduce the risks and impacts that may accompany these emergency situations. Employees will be provided with adequate training and simulation of the contingency plan and response to it. Emergency preparedness and response procedures include the following aspects:<br>– Emergency Management Overview<br>– Brief description of emergency levels<br>– Responsibilities of key employees<br>– Typical on-site emergency procedure | Moderate | – Terminal yard inspection<br>– Review of developed plans | SCCT | Director of Health, Safety, and Environment Department of Suez Canal Port Container Terminal Company | Within SCCT's cost |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | – Emergency Communications Plan<br>– The Director General of Safety, Health, and Environment at Suez Canal Container Terminal Company coordinates with all concerned departments to review and update the emergency plan at least once a year and provides all terminal sites with the appropriate and adequate tools and capabilities to cope with emergency situations. These tools include but are not limited to:<br>– Fire Fighting Equipment<br>– Firefighting systems and automatic safety control systems<br>– Personal Protective Equipment | | | | | |
| Hazardous and Non-Hazardous Waste | – Some negative impacts may be generated as a result of improper and unsafe handling and disposal of waste resulting from project operation activities. Waste from operating activities will include non- | **Generation of non-hazardous waste**<br>– Follow the existing solid waste management procedures of the Suez Canal Container Terminal Company. The current management system includes special parts for waste reduction, waste reuse and recycling, and waste separation with the aim of reducing the quantities that need to be disposed of off-site. | Minor | – Terminal yard investigations<br>– Review waste register.<br>– Review the complaints reports. | SCCT | Director of Health, Safety, and Environment Department of Suez Canal Port Container Terminal Company | Within SCCT's cost |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | hazardous residues and some hazardous wastes. | – The owner (Suez Canal Container Terminal Company) will apply to the local authorities for official permits to dispose of the generated plant operating waste before starting the commissioning work.<br>– The waste will be separated and temporarily stored securely in the designated waste storage areas in the vicinity of the plant site, where a temporary storage site will be allocated near the station site.<br>– Residues will be covered to avoid ambient air pollution by the spread of dust.<br>– Licensed and suitable trucks belonging to an authorized contractor (Municipal Solid Waste Transport Company) will be used to transport the quantities of waste resulting from the plant's activities.<br>– Waste disposal shipments will be recorded.<br>– Reuse container waste and non-hazardous raw materials and sell them to other projects.<br>– It is forbidden to accumulate or store waste on the shores of the sea and it is strictly forbidden to dispose of container residues and various wastes at sea. | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | − Waste will be collected daily and transported to agreed safe disposal sites using conveniently equipped trucks. The supervisor should make sure that this process takes place without risks or problems.<br>**Generation of Effluents**<br>− It is the water resulting from the washing water of various equipment, and others. This water will be disposed of by scavenging vehicles and transported to the municipal wastewater network.<br>− Generation of hazardous waste<br>− Activities that require refueling, or lubrication, will take place outside the station and in designated places (petrol stations) to avoid contaminating the soil, generating more hazardous waste. If these activities are necessary to be carried out within the plant, they must be performed on an impermeable surface with the provision of leakage prevention and spill absorption equipment at the plant.<br>− Provide a safety sheet for chemicals at the plant.<br>− The chemical vessels used will be collected and disposed of in a safely certified landfill for hazardous waste (such as the | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Nasiriyah landfill) in coordination with local authorities.<br>− Apply the company's policy to the companies that are generally using in the field of reducing waste as much as possible.<br>− Hazardous effluents will be collected in dedicated barrels and disposed of by a licensed contractor.<br>− As per the World Bank standards, hazardous materials storage and handling facilities should be constructed away from traffic zones and should include protective mechanisms (e.g., reinforced posts, concrete barriers, etc.) to protect storage areas from vehicle accidents. | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Occupational Health and Safety | – Container Terminals usually pose a high risk on workers' safety and health due to the use of heavy machinery and objects that cause a high risk of incidents.<br>– However, SCCT has a very elaborate and strictly implemented security plan on-site that reduces these risks greatly. | – As the station and SCCT have an integrated local and international contingency and accident plan, the actions to mitigate the risk of accidents to employees consist of:<br>– Training new workers on the plan and providing another ambulance in the new phase and training all first aid workers as it helps the injured until the arrival of the ambulance.<br>– All workers in the new stages must also be trained to reduce harassment and provide safe space to report such cases if they occur. Strict penalties must also be emphasized. | Minor | – Incidents' log inspection<br>– Monthly HSE report<br>– HSE Trainings log<br>– Monthly HSE meetings<br>– Clinic's Report<br>– -Site inspection | SCCT | Director of Health, Safety, and Environment Department of Suez Canal Port Container Terminal Company | Within Project's costs |
| Temporary Labor Mitigation | – The port expansion project is a very attractive area for employment and the risks of labor flow would continue onto the operation phase as well. | Since most employment is based on overseas recruitment companies, SCCT must implement all the measures proposed in the construction phase to reduce the impacts of temporary labor migration. | Minor | – Community GRM report<br>– -Incident's log<br>– Code of Conduct trainings report<br>– Clinic's log for transmitted disease | SCCT | Director of Health, Safety, and Environment Department of Suez Canal Port Container Terminal Company | Within project's costs |

# 8 Environmental and Social Monitoring Plan

## 8.1 Objectives of the environmental and social monitoring and follow-up plan

The objective of the environmental and social management, monitoring and follow-up plan is to identify actions to minimize or completely prevent potential negative impacts if possible and also to follow up on the application and adherence to mitigation actions. The Environmental and Social Management, Monitoring and Follow-up Plan defines the roles and responsibilities of the various parties involved in the implementation of these procedures or the follow-up of their implementation and compliance with them. This section also illustrates the assessment of the institutional potential and capacities for the implementation of the plan in question.

Where possible, a management, monitoring and environmental and social follow-up plan has been prepared to adapt to the various alternatives and areas that the company may face during implementation.

## 8.2 Institutional Framework for Implementation

The creation of environmental records of facilities, and the frequent review of this record is one of the main tasks of the Health, Safety and Environment Department of the contractor's company. The Director General of the Environmental Protection Department of the Contractor Company reviews the environmental record. The Health and Safety Department conducts audits on average twice a year, as well as sporadic and emergency inspections.

Routine monitoring activities include:

1. Inspect solid waste and scrap generated and determine methods of proper and safe disposal
2. Inspect the generation of effluents such as intensive hydrocarbon leakage or chemicals used, review the procedures for the disposal of hazardous wastes and ensure that they comply with the approved procedures mentioned below.
3. Use gas analyzers to measure the percentages of emissions generated (sulfur dioxide, carbon monoxide, methane and oxygen) in the outside air, and to identify possible leakage positions.
4. Noise level measurements.

Employees of the contractor's company in the Department of Environmental Studies should receive training in the field of environmental follow-up, environmental impact assessment of industrial facilities and environmental legislation.

## 8.3 Environmental and Social Monitoring and Follow-up Plan

The following tables include proposed mitigation actions for each impact, direct implementation responsibility and oversight responsibility as well as proposed monitoring methods, and the monitoring site during the construction and operation phases.

Table 5 and Social Monitoring and Follow-up Plan

| Impact | Monitoring Indicators | Responsibility of Monitoring | Frequency of Monitoring | Location of Monitoring | Methods of Monitoring | Estimated Cost of Monitoring |
|---|---|---|---|---|---|---|
| Air Quality | – Exhaust and gas emissions from trucks, equipment, storage and unloading machines<br>– Exhaust and gas emissions from container ships.<br>– Dust resulting from the movement and speed of vehicles at the station<br>– Efficient operation of equipment, machinery, and vehicles/trucks | – Suez Canal Container Terminal Company Inspection Department at Head Office | – Quarterly | – Suez Canal Port Container Terminal Company Headquarters<br>– Station Location | – Site Monitoring (Daily Field Visits)<br>– Monitor the speed and movement of vehicles/trucks<br>– Review periodic maintenance reports<br>– Review of the periodic monitoring and measurement report | – Operation management costs |
| Noise and Vibrations | – Sound intensity levels and periods of exposure<br>– Efficient operation of equipment, machinery and vehicles/trucks<br>– Noise levels from the movement of container ships | – Suez Canal Container Terminal Company Inspection Department at Head Office | – Quarterly | – Suez Canal Port Container Terminal Company Headquarters<br>– Station Location | – Site Monitoring (Daily Field Visits)<br>– Review periodic maintenance reports<br>– Review of the periodic monitoring and measurement report | – Operation management costs |

| Impact | Monitoring Indicators | Responsibility of Monitoring | Frequency of Monitoring | Location of Monitoring | Methods of Monitoring | Estimated Cost of Monitoring |
|---|---|---|---|---|---|---|
| Thermal Stress | – Temperatures of active workers in various activities.<br>– Work shifts and rest periods<br>– Periods of exposure of workers to the sun | – Suez Canal Container Terminal Company Inspection Department at Head Office | – Biweekly | – Suez Canal Port Container Terminal Company Headquarters<br>– Station Location | – Site Monitoring (Daily Field Visits)<br>– Review periodic maintenance reports<br>– Review of the periodic monitoring and measurement report | – Operation management costs |
| Surface Water | – Procedures for docking and maintenance of container ships.<br>– Procedures for storage and disposal of generated waste.<br>– The quality of seawater, the proportions of silt and the substances attached to it. | – Suez Canal Container Terminal Company Inspection Department at Head Office | – Monthly | – Suez Canal Port Container Terminal Company Headquarters<br>– Station Location | – Site Monitoring (Daily Field Visits)<br>– Review of equipment records and periodic maintenance<br>– Review the quantities of waste generated and waste disposal contracts on a daily basis | – Operation management costs |

| Impact | Monitoring Indicators | Responsibility of Monitoring | Frequency of Monitoring | Location of Monitoring | Methods of Monitoring | Estimated Cost of Monitoring |
|---|---|---|---|---|---|---|
| Fauna and Flora | – Movement of vehicles/trucks/container ships | – Suez Canal Container Terminal Company Inspection Department at Head Office | – Quarterly | – Suez Canal Port Container Terminal Company Headquarters<br>– Station Location | – Site Monitoring (Daily Field Visits) | – Operation management costs |
| Land Use and Landscaping | – Storage area locations of containers and temporary waste | – Suez Canal Container Terminal Company Inspection Department at Head Office | – Quarterly | – Suez Canal Port Container Terminal Company Headquarters<br>– Station Location | – Site Monitoring (Daily Field Visits) | – Operation management costs |
| Soil and Groundwater | – Record any spills or leaks and periodically analyze that data<br>– Methods of storage of materials and waste at the plant and the final disposal of waste | – Suez Canal Container Terminal Company Inspection Department at Head Office | – Monthly | – Suez Canal Port Container Terminal Company Headquarters<br>– Station Location | – Site Monitoring (Daily Field Visits)<br>– Review of spill/leakage accident logs<br>– Review the quantities of waste generated and waste disposal contracts on a daily basis<br>– Review the implementation | – Operation management costs |

| Impact | Monitoring Indicators | Responsibility of Monitoring | Frequency of Monitoring | Location of Monitoring | Methods of Monitoring | Estimated Cost of Monitoring |
|---|---|---|---|---|---|---|
| | | | | | of the plan to remove all distortions - backfilling of pits - leveling the land | |
| Natural Disasters Hazards | – The amount of rain and floods<br>– Unexpected accidents such as earthquakes<br>– Contingency Plan | – Suez Canal Container Terminal Company Inspection Department at Head Office | – Quarterly | – Suez Canal Port Container Terminal Company Headquarters<br>– Station Location | – Review weather reports<br>– Review reports of rain quantities.<br>– Site Monitoring (Daily Field Visits)<br>– Review the contingency plan and staff readiness to implement it<br>– Review staff training records on the contingency plan. | – Operation management costs |
| Hazardous and Non-Hazardous waste | – Use of dedicated storage sites at the plant site to store waste<br>– Separation of hazardous and non-hazardous waste elements on site<br>– Quantities and types of waste generated | – Suez Canal Container Terminal Company Inspection Department at Head Office | – Monthly | – Suez Canal Port Container Terminal Company Headquarters<br>– Station Location | – Site Monitoring (Daily Field Visits)<br>– Review records of the quantities and types of waste generated<br>– Review of off-site final disposal logs | – Operation management costs |

| Impact | Monitoring Indicators | Responsibility of Monitoring | Frequency of Monitoring | Location of Monitoring | Methods of Monitoring | Estimated Cost of Monitoring |
|---|---|---|---|---|---|---|
| | – Off-site residue transportation for final disposal<br>– Regular visual inspection of all waste storage collection and storage areas for evidence of accidental releases and to verify that wastes are properly labeled and stored.<br>– Inspection of vessels for leaks, drips or other indications of loss<br>– Identification of cracks, corrosion, or damage to tanks, protective equipment, or floors.<br>– Monitoring records for hazardous waste collected, stored, or shipped<br><br>Effluents:<br><br>– Procedures for the disposal of water resulting from the washing of vehicles and equipment. | | | | | |

| Impact | Monitoring Indicators | Responsibility of Monitoring | Frequency of Monitoring | Location of Monitoring | Methods of Monitoring | Estimated Cost of Monitoring |
|---|---|---|---|---|---|---|
| Occupational Health and safety | – Verification of the guides prepared for occupational safety and health<br>– Verification of availability of on-site PPE tasks<br>– Ensure that workers wear personal protection tasks according to the nature of their work<br>– Provision of first aid equipment on site<br>– Number, type and causes of accidents<br>– Number of workers trained in safety and health<br>– Monitoring the movement and speed of vehicles/trucks at the station<br>– Monitoring the efficient operation of equipment, machinery and vehicles/trucks<br>– Ensure the provision and safety of firefighting equipment | – Suez Canal Container Terminal Company Inspection Department at Head Office | – Monthly | – Head Office of Suez Canal Container Terminal<br>– Station Location | – Site Monitoring and Worker Performance Monitoring<br>– Audit of incident records<br>– Audit of workers' course records<br>– Review of periodic maintenance reports for equipment, machinery and vehicles/trucks<br>– Inspection of the efficiency of firefighting equipment | – Operation Management Costs |

| Impact | Monitoring Indicators | Responsibility of Monitoring | Frequency of Monitoring | Location of Monitoring | Methods of Monitoring | Estimated Cost of Monitoring |
|---|---|---|---|---|---|---|
| | – Verification of adequate on-site lighting, especially at night<br>– Verification of water availability of acceptable quality<br>– Verification of compliance with coronavirus protection measures | | | | | |
| Community Health and Safety | – Checking the availability of road safety procedures<br>– Checking Working Times<br>– Verification of environmental measurements and noise levels.... etc.<br>– Number of accidents resulting from operating activities<br>– Indicative signs in construction areas | – Suez Canal Container Terminal Company Inspection Department at Head Office | – Monthly | – Head Office of Suez Canal Container Terminal<br>– Station Location | – Through Safety Procedures<br>– Through the reports of the engineer responsible for accidents, especially on the roads<br>– Through measurement reports<br>– Audit of incident reports | – Operation Management Costs |
| Temporary Labor Migration | – Availability of Career Code of Conduct<br>– Number of workers trained in the Code | – Safety, Occupational Health and Environment Officer at Suez Canal Container Terminal | – Monthly | – Head Office of Suez Canal Container Terminal | - Through Safety Procedures<br>- Through the reports of the engineer | Operation Management Costs |

| Impact | Monitoring Indicators | Responsibility of Monitoring | Frequency of Monitoring | Location of Monitoring | Methods of Monitoring | Estimated Cost of Monitoring |
|---|---|---|---|---|---|---|
| | – Number of workers who broke the code of conduct<br>– Number and quality of disciplinary proceedings | | | – Station Location | responsible for accidents, especially on the roads<br>- Through measurement reports<br>- Audit of incident reports<br>By reviewing the Career Code of Conduct and Job Conduct Training Reports | |
| Child Labor | – Number of children monitored at the station | – Safety, Occupational Health and Environment Officer at Suez Canal Container Terminal | Monthly | Head Office of Suez Canal Container Terminal<br>Station Location | On-site employment records | Operation Management Costs |

# 9 Public Consultation and Stakeholder Engagement

This chapter describes the stakeholder engagement and consultation activities that have been undertaken in the current stage and which informed the ESIA preparation. It aims to focus on key stakeholder interactions and on the analysis of their outcomes.

## 9.1 Introduction

Stakeholder engagement is an integral part of ESIA good practice and is a statutory requirement of the national EIA legal framework in Egypt and within under good international practice IFIs requirements. The consultation program for the Project is based on informed consultation and participation in line with good international practice requirements with potentially affected people, and is designed to be both fair and inclusive.

Stakeholder consultation is an inclusive process for sharing information that enables stakeholders to understand the risks, impacts, and opportunities of a development or project, allowing them to express their views and articulate their perceptions towards it.

The stakeholder engagement activities were conducted with reference to IFIs standards such as EBRD PR10, IFC PS1, EIB's Standard 10, WB ESS10 and AIIB Standard 1. Throughout the various consultation and engagement activities, the work teams recorded the different reactions of the community and the governmental stakeholders towards the proposed project.

## 9.2 Consultation Objectives

**Objectives of various consultation activities are summarized as follows:**

- Define potential project stakeholders and suggest their possible project roles;
- Disseminate comprehensive information about the project to enable stakeholders to identify their concerns, needs, and recommendations;
- Listen to their comments, ideas and concerns and recording the same for follow up;
- Document stakeholder feedback and enhance the ESIA accordingly;
- Identify the most effective outreach channels that support continuous dialogue with the community;
- Avoid any misconceptions about the project and properly manage expectations;
- Discuss potential resettlement plans and impacts of involuntary resettlement.

As a result, the key principles of effective engagement that guide stakeholder consultations and SEP include:

- Ensuring that all interactions are free of intimidation or coercion.
- Providing meaningful information in a format and language that is understandable and tailored to the needs of the target stakeholder group(s).
- Being inclusive in the representation of views, i.e. including different ages, genders, and incorporating vulnerable and/or minority groups.
- Respecting local traditions in the decision-making processes.
- Information should be easily accessible for stakeholders and be culturally appropriate; to allow the effective participation of those identified as minorities, disadvantaged or vulnerable groups.

To ensure that appropriate project information on environmental and social risks and impacts is disclosed to stakeholders in a timely, understandable, accessible and appropriate manner and format.

## 9.3 Stakeholder Identification

The first step in the process of stakeholder engagement is stakeholder identification; that is, determining the various categories of project stakeholders, and their needs. According to the IFIs Standard, stakeholder refers to "individuals or groups who: (a) are affected or likely to be affected directly by the project (those will be categorized below under project- Primary stakeholders); and (b) those parties who have influence on the project and/or interested in the project, but are not necessarily directly impacted by the project (those will be categorized below under other Secondary stakeholders)". Most importantly, identifying stakeholder representatives is key to carrying out effective stakeholder engagement activities. These representatives do not only inform the project with their valuable information, but they also serve as a communication channel to disseminate information to large numbers of groups and receive feedback from them.

The following table includes the key stakeholders who will be playing a direct role in the project and is presenting their anticipated roles as well as their expected needs.

## 9.4 Stakeholder Consultation and Engagement During the ESIA Preparation

### 9.4.1 Consultation Methodology and Activities

In terms of methodology, the consultation activities were conducted through the following methods:

- Scoping Activities through Site Visit in October 2022.
- A public consultation session held in November 2022 with identified concerned authorities and project stakeholders.

The public consultation session was held on November 29, 2022 in Port Said Governorate. A number of stakeholders attended, and the number of participants was 42. This figure reflects those who have registered their names. The number of female participants was 16, while the number of male participants was 26.

The following activities were carried out:

- Send a fax to the Environmental Affairs Agency and the regional sub-offices in Port Said Governorate.
- Send a fax to invite the Director General of the Manpower Directorate.
- Send a fax to invite the Director General of the Directorate of Social Solidarity.
- Send a fax to invite the Director General of the National Population Council.
- Send a fax to invite the Chairman of the Suez Canal Authority.
- Send a fax to invite the soaring bird expert at the Environmental Affairs Agency.
- Send an invitation to the Chairman of the Board of Directors of the Sons of Egypt Association.
- Send emails and phone calls to invite NGOs and specialized academics.
- Send emails and phone calls to invite community members.

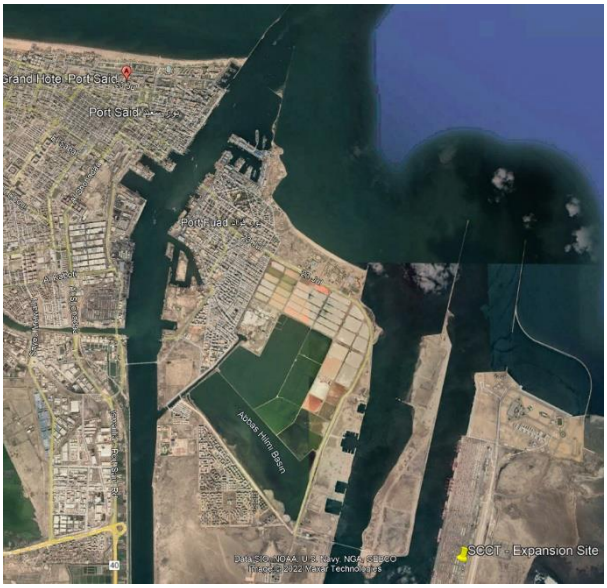


Illustration 119 Community consultation session location and project site

جلسة المشورة المجتمعية

لمناقشة دراسة تقييم التأثيرات البيئية والاجتماعية

لمشروع توسعات محطة تداول حاويات الخاصة بشركة قناة السويس

لتداول الحاويات على مدخل قناة السويس شرق بورسعيد

السيد / .....

الوظيفة/ .....

في إطار إعداد دراسة تقييم التأثيرات البيئية والاجتماعية لمشروع توسعات محطة تداول حاويات الخاصة بشركة قناة السويس لتداول الحاويات على مدخل قناة السويس شرق بورسعيد... يسعد محافظة بورسعيد و الهيئة الاقتصادية بالتعاون مع شركة إكوكنسرف (الإستشارى البيئي للمشروع) دعوة سيادتكم لحضور جلسة استماع عامة لعرض ومناقشة دراسة تقييم التأثيرات البيئية والاجتماعية للمشروع.

وذلك بمشيئة الله تعالى يوم الثلاثاء الموافق 29 نوفمبر في تمام الساعة الحادية عشر صباحا بمحافظة بورسعيد

ولمزيد من الاستفسارات يرجى الإتصال بالمكتب الاستشاري

تليفون: 2736-4818 (202) - 2735-9078 (202) فاكس: 2736-5397 (202)

بريد إلكتروني: genena@ecoconserv.com

موقع: www.ecoconserv.com

Illustration 120 printed invitations delivered to community members and various concerned

### 9.4.2 Participants in the Public Consultation

The social consultant targeted all concerned groups present in Port Said Governorate and enabled them to attend the activities of the public consultation sessions. The target groups were, as follows:

1. Government entities (governors, district employees, etc.)
2. Environment Sector
3. Directorate of Social Solidarity
4. Manpower Directorate
5. Governor's Office
6. National Population Council
7. Suez Canal Authority
8. Women Leaders
9. Non-governmental organizations and NGOs
10. Education Sector
11. Media
12. Clubs & Youth Centers
13. Representatives of universities and schools
14. Residents affected by the project
15. Community Population
16. NGOs

### 9.4.3 Main outputs of public consultation activities in Port Said

The total number of participants who attended the public consultation sessions in Port Said was 42. The number of female participants was 16 (38.1%), while the number of male participants was 26 people (61.9%).

Participants reflected many different sectors and groups. The table below shows the percentage distribution of the groups concerned on the basis of affiliation and sector, and the clear interest of both governmental and non-governmental organizations.

Table 6 Percentage distribution of concerned groups based on work and specialization

| Groups involved | Total |
|---|---|
| Directorate of Social Solidarity | 2.4% |
| EcoConServ | 9.5% |
| Egyptian Environmental Affairs Agency | 7.1% |
| Faculty of Engineering (AUC) | 2.4% |
| Freelancers | 4.8% |
| Manpower Directorate | 9.5% |
| Military | 2.4% |
| National Population Council | 4.8% |
| Paradise Company | 2.4% |
| Port Said Governorate | 7.1% |
| Suez Canal Container Terminal (SCCT) | 16.7% |
| *Abnaa Masr* Association for Community Development | 7.1% |

| Groups involved | Total |
|---|---|
| Suez Canal Economic Zone (SCZone) | 21.4% |
| Ministry of Manpower | 2.4% |
| **Total** | 100% |

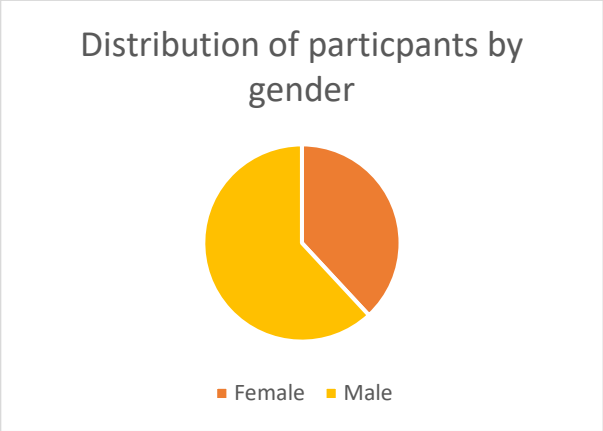


Illustration 121 Distribution of participants by gender

## 9.5 Main Results of Consultation Activities in Port Said Governorate

The session was opened by the social consultant Dr. Zainab Hafez

During the general consultation, the various objectives of the study and the objectives of the project were presented, the study showed the importance of the project for economic growth and social improvement of the local governorate and the national economy.

This was then followed by a project description, which was also explained by the consultant, to explain to the attendees the different components of the project, the scope of the project, its planning and location. This was done by listing the components, showing the project site map, the current state of the land, and showing a detailed layout of the project plan.

The consultant then explained the construction activities to show the progress of the main construction process. This workflow is explained in comprehensive detail and through illustrations that have been explained and divided into multiple steps. The consultant then presented the operational process to draw a picture of how the project works.

The consultant then presented the legislation and laws followed by the study in order to establish the study, including laws related to the environment and social aspects, in addition to the general guidelines issued by the Ministry of Environment for the activities of the project.

The consultant then explained the contents of the study and the structure on which the EIA presented would be based.

This was then followed by the consultant's presentation of the environmental impacts of the project in this section, the consultant explored the negative impacts of the project on the surrounding environment and how these negative impacts came about. In addition, the proposed mitigation measures to reduce the severity and severity of the impact.

This was done for both impacts in the construction and operation phases of the project and followed by a monitoring plan for the project in order to follow up the mitigation measures and analyze their effectiveness and implementation.

The social consultant presented the results of the social study and the importance of the social project and the return that will accrue to Port Said Governorate from this project.


Illustration 122 Representatives of the Suez Canal Container Transport Company and the Director General of the Environmental Administration Environmental Affairs Agency

Illustration 123 Session Attending Community

Illustration 124 Representatives of Abnaa Masr Association

Illustration 125 Opening speech by Dr. Rehab, Director General of Environmental Administration, Environmental Affairs Agency


Illustration 126 Environmental Consultant

Illustration 127 Representatives of the Economic Commission

Illustration 128 Director General of the Local Population Council

Illustration 129 EEAA Representatives

Illustration 130 Dr. Mahmoud Shawky Environmental External Auditor of the Economic Authority


Illustration 131 Captain Ali Asim

Illustration 132 Director of Safety and Environment Department for the Northern Sector Economic Authority

## 9.6 Stakeholder Consultation and Engagement during the ESIA preparation

Table 7 Summary of points raised during the public consultation session in Port Said

| Topic | Comments from Participants | Answers | Reflection of comments in the ESIA |
|---|---|---|---|
| Registration of workers in the Manpower Department | Ms. Lamia Mahmoud, Director of the Welfare Department at the Manpower Directorate, explained the need to set a condition in the contract between the company and the contractor to register workers in the irregular working department in the Manpower Directorate in Port Said, and this is in accordance with Ministerial Resolution 162 of 2019, and there is a special regulation for this matter and its implementation is very important | The social consultant responded and is that the company requires the contractor to insure the workers and the contractor follows three patterns in the insurance of the worker first insurance for occupational safety and health and this is total insurance on the number of workers not less than 25% of the number of existing workers because some workers are daily workers in addition to health insurance and this is imposed on all workers and this is also one of the terms of the contract between the contractor and the company and there Also social insurance, but some workers refuse so that they do not lose part of their salaries for their share in insurance, and in this case we try to encourage the worker and tell him all the advantages of social insurance | With reference to Part 7.2 (Proposed mitigation measures to reduce impacts on occupational health and safety) |
| Prevention of child labour | She added that the project construction site is risky, so it is inappropriate to work children in these sites, and there is an international convention that stipulates this and a national plan to combat child labour. | The consultant added that child labor is completely prohibited according to the environmental and social study plan and it is completely rejected to employ any child under 18 workers, and this matter is followed up by those responsible for the project. | With reference to Part 7.2.4 (Proposed mitigation actions to reduce child labor) |
| The importance of having an occupational safety and health officer at the construction site | Chemist Iman Massad, Director of the Safety Department at the Manpower Directorate, explained that most of the serious disasters that occur at the site occur as a result of the subcontractor does not have a | The social consultant replied that all subcontractors are obliged to follow the guidelines for occupational safety and health that will be prepared by the main contractor, which comply with Law 12 of 2003, and we do not provide the subcontractor with options, but we put guidelines for him to adhere to. The contractor has to follow up on the part of the project owner on an ongoing basis and there is a resident engineer to follow up on occupational safety and health | With reference to Part 7.2 (Proposed mitigation measures to reduce impacts on occupational health and safety) and Part 2.1 (Preamble to laws and regulations) |

| Topic | Comments from Participants | Answers | Reflection of comments in the ESIA |
|---|---|---|---|
| | safety officer at the site, adding that the safety officer has a very important role, as he is responsible for the safety of workers and his training before starting and during the project. | activities. Occupational safety and health falls under it a lot of different activities and trainings up to the beginning of the project and there are trainings for workers and monitoring and the number of the team responsible for occupational safety and health will be determined by the number of workers so that the number is sufficient to cover the number of workers<br>The social consultant replied, stressing that the Directorate of Manpower must have knowledge of the project and all the activities that will take place, and it must be a proactive measure, and we will recommend this matter in the study. | |
| Informing the Directorate of Manpower before the start of the project | Engineer Abeer, Director of the Occupational Safety and Health Office at the Directorate of Manpower, added, "The contractor must come to us 15 days before the start of the project and bring a copy of the contract and inform us of the start date of the project because we do not know about the project until the time of an accident, and the workers must be informed of the risks of the profession and get training because the worker later comes and complains that he did not know and did not get a prevention report. personality | The consultant added that each company must have a system with the names of the workers and the nature of their job and what trainings each worker must obtain and the mechanism for complaints, we must give the worker a sense of security being under the responsibility of a company that provides care for him and this feeling will create a greater ability for the worker to work and the desire to contribute to the project more effectively, and this is one of our general points in the study and She confirmed that there will be follow-ups on the implementation of this system | With reference to Part 7.2 (Proposed mitigation measures to reduce impacts on occupational health and safety) |

| Topic | Comments from Participants | Answers | Reflection of comments in the ESIA |
|---|---|---|---|
| Project Pros | We also hope to know the pros of the project, not just the negatives, and what benefit will accrue to Port Said Governorate from this project. | This project contains many positive impacts, but in the counseling sessions, we are trying to present the negative impacts and display how to contain and solve them, and one of the positives of the project is to provide job opportunities, most of which are confirmed to the people of Port Said and various supply opportunities, increasing the number of containers passing through the Suez Canal from 4 million containers to 6 million containers, and it will have a strong impact on the national economy of Egypt, and certainly there will be greater expansions and development of the sector to the fullest. | Reference to Part 1.2 (Project Profile) |
| Law 83 | Engineer Genina Mohamed Environmental Management Economic Authority said that Law 83 for economic zones was not mentioned in the explanation of the study and wants the law to be among the rest of the laws taken. | The consultant's answer is that this law already exists and will be taken with the rest of the laws | Reference to Part 2.1 (Preface to Laws and Legislations) |
| Noise and its impact on fish and fishing movement in the area | Ask Mr. Ahmed Hamed, Chairman of the Board of Directors of the Sons of Egypt Association, whether the noise that will occur as a result of construction will keep the fish away from the area and thus this will affect the work and livelihood of fishermen | The environmental consultant replied that there is no fishing in the Suez Canal, so the fishermen will not be affected by that, and also the lakes near the station are for salts, not fishing. | Reference to Part 5.3.3.5 (Potential negative environmental impacts of animals, birds and plants) |

| Topic | Comments from Participants | Answers | Reflection of comments in the ESIA |
|---|---|---|---|
| Hazardous Waste | He also asked about the ways of transporting hazardous waste, adding that we in Port Said are famous for the quality of fish, so if any water pollution occurs due to the dumping of waste, this will affect the fish negatively, and as a result, the livelihoods of fishermen are affected, and we as a charity help this category of society. | As for the waste, it is transported by a contractor licensed by the governorate to transport this waste, and there is a preview of the waste before it leaves the station and it is divided into waste that will be recycled, hazardous waste, non-hazardous waste, and non-hazardous waste that is divided into types of papers, metals or glass, and hazardous is delivered a declaration of the quantity out, the date of its exit, the date of its arrival and the place designated for it in cars designated for that<br>The social consultant added that the Egyptian law prohibits the import of any waste, whether hazardous or non-hazardous, and the ship cannot empty its waste in the station, but would like waste for the station and the site itself, and in this case there will be a designated and isolated place that has environmental specifications from the Environmental Law, in which these hazardous waste will be stored, and this place will have an insulating ground to prevent leakage, and this is done according to the waste management plan and when Transfer will be recorded quantity and specifications in a car designated for that and buried in the place of burial of hazardous waste and there is no intermediate station for waste transferred directly to the place designated for it, and we have in Egypt a limited number of places of transport of hazardous waste and the nearest place to Port Said is Nasriya in Alexandria, in addition to that there is a vision of the waste management site to know the route of the waste transport car and the date of arrival and all this in the follow-up activities of the study. | Reference to parts 5.3.1.10 and 5.3.3.10 (Potential negative environmental impacts of animals, birds and plants) |

| Topic | Comments from Participants | Answers | Reflection of comments in the ESIA |
|---|---|---|---|
| Provide job opportunities for the people of Port Said | Mr. Abdul Wanis Abdullah, Director of the Manpower Directorate, said that we are your partner in the part on educating workers about occupational safety and health, and also we have a vocational training center if the project needs trained workers, and also it is preferable to use the sons of Port Said to work on the project because the people of Port Said will save the cost of housing and transportation, and also avoid indirect errors resulting from lack of focus due to the lack of suitable housing to take a large share of Rest to work the next day and therefore disasters occur, so we have a database of workers ready to work in all disciplines needed by the project and if there are people from outside the province must provide them with adequate housing and be supervised and there are no shifts work more than 8 hours because the worker begins to lose his focus after this time and disasters occur as a result. | The consultant replied that most of the job opportunities will be in the people of Port Said. | Reference to Part 5.2.1.1 (Direct and indirect job creation) |

| Topic | Comments from Participants | Answers | Reflection of comments in the ESIA |
|---|---|---|---|
| Pavement endurance | She asks one of the attendees, did you take into account the loads that will increase in the future on this pavement and will he bear these loads? | The environmental consultant replied that this was taken into account when making the design for the sidewalk, and this sidewalk was designed to withstand very high loads, and there are 6 solutions in the sidewalk, and each replacement is strong by itself, and any technological development that can affect the sidewalk has been taken into account, and all components will be replaced before the end of their useful life. | Reference to part 3.5.4 (pavement construction) and 6.2.6 (advantages of interlocking pavements) |
| Clean Energy | One of the attendees from the Environmental Affairs Agency reported a proposal to recycle waste, this is within the strategic plan for climate change, and she also wishes to introduce new concepts such as clean energy in electricity such as solar energy, and we hope that in all upcoming studies there will be a reduction of fossil fuels and an optimal use of energy. | The environmental consultant replied that this will be taken into account in the upcoming studies | Reference to Part 3.7.1 (Basic equipment) which includes electrical equipment that will replace equipment that uses fuel |
| Effluents | One of the attendees of the EEAA asked about the water resulting from washing cars and equipment on site, changing oils or supplying fuel, and whether there is a place on the site dedicated to these tasks and how this contaminated water will be disposed of because it is considered hazardous waste. | The environmental consultant replied that in the first phase there are dedicated workshops with impermeable surfaces surrounded by drainage lines leading to a specific store dedicated and designed in accordance with environmental laws for liquid waste resulting from oil change and work on equipment and these liquids will be transported by a licensed contractor to the place of disposal of hazardous liquid waste. | Reference to Part 3.3 (Project Components) |

| Topic | Comments from Participants | Answers | Reflection of comments in the ESIA |
|---|---|---|---|
| Spill yard | You ask the director of the Environmental Safety Department, the northern sector of the economic authority, will the spill yard in the old station remain in place or will it be moved to the places of expansion or will it be increased | Officials from the Suez Canal Container Company replied that the spill yard in the old terminal will remain in place and will not be changed, and if a new spill yard is not made in the coming stages, the old one will be expanded. | Reference to Part 3.3 (Project Components) |
| | Dr. Mahmoud Shawky, an environmental consultant at the Economic Authority, added that the State of Singapore achieves a very large national income from trade, despite being a small country almost the size of Port Said Governorate, but in sound ways of trade that achieve a large income. What increases my reassurance is the existence of foreign control, and this will create a greater commitment, and there is also the control of the Economic Authority, and they have strict control over environmental compliance, and they carry out environmental inspections, make violations, and tell the Environmental Affairs Agency, and the matter reaches | | Reference to<br>- Part 3.3 (Project Components)<br>- Part 3.4 (Station Diagram)<br>- Part 3.6 (Operating Phase Activities)<br>- Part 7.1.9 and 7.3.10 (Proposed mitigation actions to reduce the negative impacts of generated waste) |

| Topic | Comments from Participants | Answers | Reflection of comments in the ESIA |
|---|---|---|---|
| | giving violations of great value, please coordinate well with the Suez Canal Company at the time of the study, the management process must be mentioned and information about containers, corridors and parking spaces so that there is no overcrowding in Roads and learn more about the movement within the station itself (change for printing - packaging and repacking - coding and numbering - treatment plant and industrial drainage - container maintenance) and the focus must be on the subject of the operation process and the environmental monitoring plan must show the measurements of equipment within the site, hazardous waste should not be left for a long time because it happened before that two containers were left in the port with carcinogens that were previously used in agriculture and then they were banned and it was It is forbidden to enter Egypt and it is forbidden to dispose of it, and the two containers remained in the port until foreign aid came and | | |

| Topic | Comments from Participants | Answers | Reflection of comments in the ESIA |
|---|---|---|---|
| | transferred it to incinerators dedicated to these materials, so hazardous waste should not be tolerated, and there are hazardous waste during operation, such as damaged goods that have no buyer, it must be mentioned how to dispose of them. Thank you very much for this effort | | |

# 10 Transportation Plan

## 10.1 Introduction

Due to the increase in capacity that will occur after the Suez Canal Container Terminal expansion project, there will be an increase in the traffic flow in and out of the terminal yard so it is important to study the current situation and traffic conditions to think about its capabilities and the implications of implementing the expansion project.

The project will increase from 4.5 TEUs to 6.7 TEUs, thus, constituting a percentage increase of about 33%. The increased capacity will translate into increased traffic flow for trucks and trailer trucks that will carry goods and containers for import through the terminal yard and take goods and containers out of the yard during export operations.

The below map showcases the main trade routes and roads that lead to Suez Canal Zone (Free Economical Zone) in which the SCCT lies in (East Port Said). As shown below, there is a route to Sinai through the Arish Road, a road to the other side of the Suez Canal and to the Mediterranean coast through the Port Said (PS) Tunnels, thus allowing for goods to have access to Domyattia and Alexandria ports. In addition, the 30th of June Axis, as illustrated in the upcoming section) provides a direct pathway to the more urban and industrial compounds around Cairo, 10th of Ramadan City, and Ismailia.

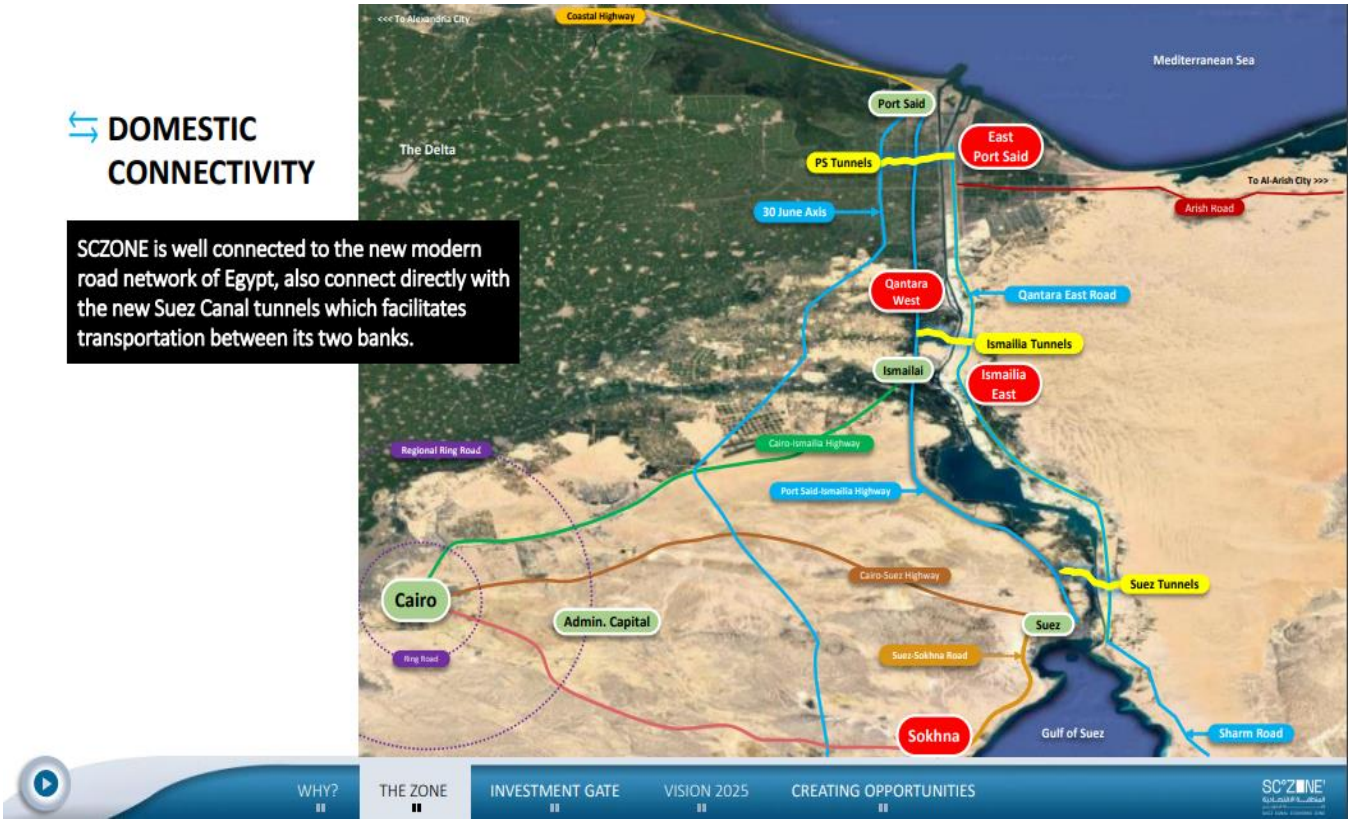


Illustration 133 Road connection of the SCCT's site to Cairo and other SCZONEs

## 10.2 Main roads

In order to study the impact of the expansion project, the main routes used to transport flowing and outgoing goods and containers were examined. The main methods are as mentioned below:

### 10.2.1 3rd of July Tunnels (Port Said Tunnels) and June 30th Axis:

### 10.2.2 July 3rd Tunnels (Port Said Tunnels):

Due to the allocation of the project on the eastern side of the Suez Canal, there will be movements through the Suez Canal in order to cross into Cairo and urban areas. The main movements of goods and containers will be west of the Suez Canal and into lands with industrial allocations and warehouses. Therefore, the main route to be taken will be through the July 3 tunnels as it provides an accessible and well-equipped route for the transport of goods and containers.

The tunnel consists of two car tunnels, one for those coming from Port Said and heading to Sinai and the other for those coming from the opposite direction. The aim of the tunnels is to connect Sinai and the east of the Canal with the valley and the Delta, facilitate the movement of people and goods to and from Sinai, and achieve the desired development of that area in parallel with the development in Sinai and the Canal Zone.

Construction of the 4-lane two-lane two-pipe road tunnel began in 2017. Its opening follows the opening of the Ismailia Tunnel earlier this year and the June 30th Corridor Road, a 10-lane highway with dedicated 2+2 lanes for trucks.

The benefits of the tunnels have already shown an improvement in the connectivity of cargo and containers to the terminal yard. The full export containers complete security checks, which include passing through one of six dedicated X-ray scanners and crossing the tunnel in about 40 minutes. This is a significant improvement over the traditional west-to-east ferry crossing. Empty containers take about 20 minutes. Further improvements are expected in transporting containers from eastern and western Egypt through the tunnels as the tunnel management gains experience.

The new Port Said tunnel has already helped reduce congestion at existing access points, providing more flexibility. The Ahmed Hamdi Tunnel was traditionally used for import shipments and a west-to-east ferry for export. In the past, these roads have experienced accidental congestion that has delayed truck response time. Faster access and reduced wait times will now significantly reduce trucking costs, thereby reducing costs for the Egyptian consumer supply chain when using SCCT.

The new 2.8 km Port Said tunnel has four passages with a width of 3.75 meters and a height limit of 4.6 meters, making it suitable for all types of dry, refrigerated, standard and high cube containers. The current working hours of the tunnel are between 0800 and 1800 hours until all operations are adjusted. Discussions are ongoing with the competent authorities regarding the operation of the night shift of the tunnel. This is important to support stations 24 hours a day, seven days a week.

The recent tunnel investments are part of the Egyptian government's broader Vision 2030, which focuses on creating jobs and a balanced market economy that can compete on the global stage.

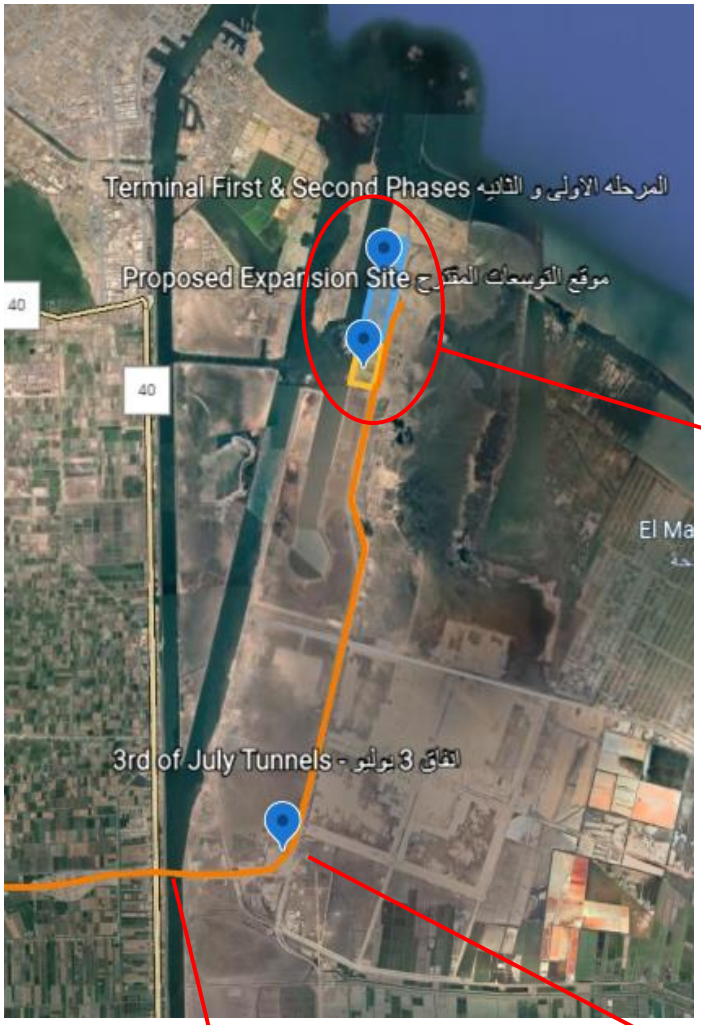


Illustration 137 Road leading to the 3rd of July Tunnel (Port Said Tunnel)


Illustration 137 Parking lot and project location

Illustration 137 3rd of July Tunnels (Port Said Tunnel)

Illustration 137 Parking trucks in the tunnels yard

#### 10.2.2.1 June 30 Road:

The June 30 Corridor is a 95 km long and 80-meter-wide highway with an investment cost of EGP 5.2 billion. It is considered the main axis of development of the Suez Canal area. It starts from the south of Port Said via the International Coastal Road Port Said - Damietta, and extends south to kilo 94 on the Cairo-Ismailia Desert Road.

It consists of two directions, each direction consists of 5 traffic lanes, 2 lanes for heavy transportation and 3 lanes for other vehicles. It also includes industrial works from Kilo 5 International Coastal Road to Kilo 94 Cairo / Ismailia Desert Road passing through the following main intersections: the road linking the South Port Said Tunnel - Shader Azzam Road (Al Salam Channel) - Kantara / Salhia Road - Alfardan / Salhiya Road - Road 36 Al-Harbi - Ismailia / Zagazig Agricultural Road (Ismailia Canal - Ismailia Railway /Zagazig).

It includes a number of industrial works and includes 6 vertical bridges on the axis, 14 main bridges in the direction of the axis, 24 tunnels for pedestrians and cars, 2 pedestrian tunnels, 400 solar lighting poles on the bridges, and 2 police points to secure the road.

The June 30 Corridor serves the development projects of the Suez Canal axis, accelerates development rates on both sides of the canal, and connects the ports of East and West Port Said, Damietta, Alexandria and El-Arish with the Gulf of Suez, while also linking Sinai and the Delta.


Illustration 139 June 30 Corridor (Red Line) leading to the July 3 Tunnels

Illustration 138 Photos of the June 30 Axis

## 10.3 Other Routes

### 10.3.1 East Port Said ferry and Al-Nasr bridge

In order to have a direct route to Port Said city, a ferry can be used in order to transport a small number of containers from the Suez Canal Container Terminal to Port Said City. This is done through the ferry port on the east bank of the Suez Canal where the container yard is located and the ferry is loaded with containers. The ferry moves from the small ferry port in SCCT to Port-Fouad ferry port and unloads the containers. The containers are then transported by trailers and trailer trucks to Port Said City via Nasr Bridge or via the east Port Said ferry.

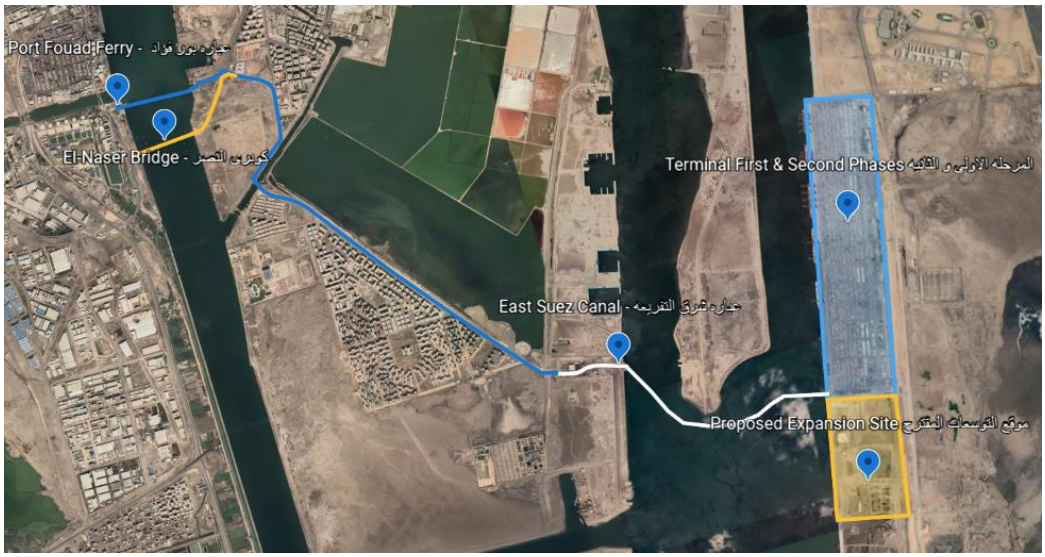


Illustration 140 Road to Port Fouad Ferry and El-Nasr Bridge

Illustration 142 Floating Victory Bridge

Illustration 142 Port Said ferry

# 11 Appendices

| | |
|---|---|
| Appendix No. (1) | Engineering drawings of the project |
| Appendix No. (2) | Accreditation of EcoConServ Environmental Solutions Company |
| Appendix No. (3) | Air Quality and Noise Levels Measurements Report |
| Appendix No. (4) | Phase (2) Approval from EEAA |
| Appendix No. (5) | Public Consultation List of Attendees |
| Appendix No. (6) | Public Consultation Agenda |

## 11.1 Engineering Drawings of the Project

## 11.2 EcoConServ Environmental Solutions Accreditation Certificate

## 11.3 Air Quality and Noise Levels Measurements Report

## 11.4 Phase (2) Approval from EEAA

## 11.5 Public Consultation List of Attendees

## 11.6 Public Consultation Agenda