

## Chapter 6 Environmental Management Plan

DIP will develop Environmental Management Plan prior to the construction and operation that will ensure compliance with the environmental action plan for items such as mitigation and monitoring. In addition the EMP will be designed to ensure compliance with the applicable treaties and protocols pertaining to the Mediterranean Sea that Egypt is a party to.

### **Dredging Management Plan:**

DIP will develop a comprehensive dredging-materials management plan. This plan will comply with the environmental action plan and will be in accordance to the regulations of the World Bank and IFC regulation. The dredging programme will minimize impacts on environmental resources that result from:

- Change in water quality and circulation, including depletions in dissolved oxygen levels.
- Resuspension of toxic contaminants from existing sediment deposits.
- Contaminants uptake by and accumulation in fish and shellfish.
- Increased turbidity causing decreased photosynthesis activity.
- Disposal of dredged materials.

The following items will be addressed:

- Physical and chemical analyses of sediments will be performed prior to disturbance, and a plan developed to minimize sediment resuspension in environmentally sensitive areas.
- The characterization will include a vertical and horizontal profile of contaminant distribution- to define homogeneity and locate prominent hot spots, evaluation of sediment behavior using dredging equipment and disposal options, and an analysis of potential impacts on human health and the environment.
- Disposal options will be evaluated and an option selected that minimize the impacts to sensitive habitats and aquatic or terrestrial ecosystems,
- The increase turbidity at the dredge site through the use of less intrusive dredging procedures, silt curtains and the timing of the dredging activity to coincide with low flow.
- Turbidity will be monitored and maintained at concentration below 200 mg/l (IFC Guideline) will be restricted during critical spawn-and- set periods for shellfish as appropriated.
- Land disposal of dredged materials will be conducted in a manner that will minimize impacts on existing terrestrial ecosystem, underlying groundwater, surface runoff and land use..
- Mitigation of long term impacts will also be addressed. Dredging management will include appropriate selection of dredging equipment, dredging method, and final disposal. Maintenance dredging, in coordination with DPA, will also ensure that long term impacts are mitigated to acceptable levels. Mitigation of coastline impacts (such as accretion and

erosion), though not anticipated, that are discovered during project implementation will also be addressed.

- The disposal of dredged materials will comply with the World Bank/IFC/VROM Guidelines/Standards. Stabilization of contaminated sediments will ensure compliance with the World Bank/IFC/VROM Guidelines/Standards.

### **Environmental Action Plan (EAP):**

An EAP that summaries the key requirements as detailed in the mitigation section of this EIA report has been developed. The summary is provided at the end of this chapter in a table form that defines the impacts, proposal mitigation and responsible parties.

### **Spill Contingency Plan:**

Fuel storage and oil spills are of main concerns for the development. The Law addresses the problem of marine pollution by requiring the following factors to be addressed:

The new terminal management will put together a spill response plan that addresses these issues. This response plan must be in coordination with the EEAA regulations. In particular spill response means that equipment for containment and cleanup of the spill must be available on site, to ensure a rapid response to any incident that might occur.

In finalizing the detailed design of the terminal, it is recommended that fiberglass reinforced plastic or double walled, coated steel tanks are specified for the storage and dispensing of marine fuels at the site if incorporated into the terminal. Steel tanks must be fitted with cathodic protection to retard corrosion. Reclamation of tank vent fumes is also required to mitigate air pollution. The dispensers of the fuelling station should be located to provide convenient access to the vessels being served and also located to maximize the ability to control any spill or ship fire that may occur at the dispensers.

Care must be taken in designing the fuel piping system between the storage tanks and the dispensers. Regulations typically require check valves and automatic shut off devices to prevent fuel escape in the event of pipeline or dispenser failure.

Safe materials with thermal expansion joints, to withstand the heat in the area (during summer) must be taken into account in the design of the fuel lines running along the piping system.

Chemical and detergents to combat oil spillage must be used only with great care and understanding. The manual or mechanical method is still the most appropriate in the majority of circumstances. Some mechanical appliances for tackling petrol spillage and contamination are helpful. One that is effective is the Self-Leveling Unit for Removing Pollution (SLURP) 11.8,9. This is an oil skimmer for inland and sheltered waters, like ports. It is the size of a large suitcase and weighing 28 kg, it floats and can be used with any onshore tank and self-priming pump. Such devices should be available on the port site for fast deployment in the event of a spill, together with absorbent booms and pads. All

such equipment must be regularly checked and maintained to ensure that it is in good working order.

Spill prevention and response capability must be provided. When installed above ground, storage tanks for petroleum, a bund wall must surround diesel and gas oil. This bund wall must enclose an impermeable containment space large enough to contain the full capacity of the tank if a leak should occur. In addition to fuel system design, operational housekeeping in accordance with international standards is important. Dispensing pumps should be ready for any fuel spills at the dispenser. Dispensing hoses should be properly handled and drained to prevent nozzle spillage.

Contacts should also be established with local spill clean-up contractors to assure an immediate response in the event of a spill. Smoking should be prohibited around the fuel dispensing areas and fuel supply pipelines. Adequate and appropriate fire protection should be provided. Similar precautions must be made for any areas where boat and engine maintenance is undertaken.

Waste oil recovery and disposal has to be required at the new terminal. A storage tank, 10 to 20 cubic meters should be provided for use by Port customers or service personnel. The tanks are often above ground and positioned within a concrete or steel containment vault. The containment vault should have a capacity greater than the tank volume. Waste liquid disposal tanks must be regularly emptied, and the area around the tanks kept clean to prevent local ground contamination. The waste liquid disposal area should be clearly marked to indicate its purpose and any rules governing the use of facility.

### **Sewage and Municipal Solid Waste**

Discharge of sewage and solid waste from ships and operational boats and users of the terminal should be according to the following main conditions stated by the Law:

- Ships and Ports should have valid international certificates for marine pollution prevention from sanitary wastewater.
- Operational boats should be equipped with sewage treatment units
- Operational boats are not allowed to discharge treated sewage within four miles from shore
- Operational boats are not allowed to discharge raw sewage within twelve miles from shore
- In any case Operational boats shall discharge wastewater from storage tanks intermittently when sailing at a minimum velocity of 4 knots/hour
- The procedure of wastewater drainage should not result in appearance of any solid floating bodies in the regional and federal water, and should not cause color disturbance of the water.
- If the municipal wastewater is mixed with wastewater that has to be treated, it is essential to treat the wastewater before discharge.
- Authorities responsible for the port facilities shall ensure the availability of facilities for disposal of municipal solid and liquid wastewater, and they should keep them in good working condition, and perform periodical cleaning and disinfecting.

- The Authorities shall also ensure proper transport and disposal of the previously collected waste, preventing leaks and odor generation, and implementing rules and guidelines for law No. 38 for the Year 1967.
- The quality of wastewater effluent generated from various facilities and the quality of wastewater effluent from treatment plants are also addressed in Law no. 48/Year 1992 and Law no. 93/ 1962.

### **Leveling, Excavation and Dredging**

All materials resulting from excavation or dredging must be stored in a protected area from wind and regularly sprinkled with water until reused or properly disposed in the designated dumping sites. Using offshore dredgers (suction or cutter/suction dredgers) shall reduce the sediment dispersal in the water column resulting from the excavation of the new port and disposing of the slurry inland in settling tanks. Surrounding the new port site with geotextile curtains is necessary to protect the close-by marine ecosystem. Controls to prevent barges or land site overflow of dredged sediments must also be in place. The disposal of waste during construction should be brought to a landfill, which is carefully selected where the wastes are deposited in a carefully controlled manner and then covered with acceptably clean soils.

Some dredged material may be suitable for beach nourishment, providing "pre-worked" sediment which is comprised of a narrow size fraction. The general suitability of dredged material can only be determined during the dredging activity.

### **New Terminal Area**

The structure of the new terminal basin can lead to new habitats for desirable, but also for undesirable species. It is important to provide a clear water environment inside the basin. Increases in turbidity should be a matter of concern and checks shall be regularly carried out, and preventative measures to reduce turbidity undertaken in the event of any increase being noted. This may include the need to stop work. Construction materials must be chosen with regards to the sensitivity of the local marine environment and only materials approved for use in such areas must be used. Preservatives would be of particular concern and in particular the use of pressure impregnated creosote piles (which are not anticipated) and other components for marine structures shall be prohibited. If monitoring indicates levels above international standards, silt curtains should be used to contain sediment during the construction period.

Any concrete construction work shall be undertaken with care to avoid spills to the sea. Deck works could be finished without interference to the water.

After long term monitoring, and taking into account the small quantities of sediment transport, the best compensatory measure consists of transporting a few loads of sand from time to time from the north side of the Marina to the south side, placing and grading the transported sand in areas if erosion becomes apparent. This simple maintenance task can be carried out off-season and using simple lorry and back-cater equipment available for hire locally. However, erosion is not foreseen as a problem in this site for the rocky shores discussed earlier.

### **Benthic Marine Communities**

The overall master plan of the new terminal development indicates the scale of the proposed development and potential effects on marine

communities from land based construction...Monitoring programme will be implemented in associated with DPA This measure would create a relatively rich area of benthos, a potential fishermen attraction, and DIP would also be seen to be attempting to balance the limited impacts caused during construction of new terminal with positive environmental action. The area should be monitored at intervals of two months to assess development / deterioration of the new areas.

### **Recommendations for Construction Activities and Infra-structure Facilities**

The review of practices at local construction and operating site activities of similar developments during site visits suggests the following recommendations:

- 1- Supervision on contractor activities must be centralized. Strict regulations have to be set in site and imposed on all contractors or sub-contractors. It will be DIP and the contractor's responsibility to provide the site, from the first beginning, with portable sewage treatment units and to be located in designated areas for workers.
- 2- In the initial phase it should be assured that sewage would not be dumped in to the sea. DIP will connect temporary utility such as sewers to the existing DPA infrastructure.
- 3- The amount of solid waste generated by the users will be connected with local services and disposed of the accordance with local regulations.
- 4- It is also important to recycle certain waste materials and provide for their timely collection, as planned. The following materials should be considered for recycling: paper products, cans, bottles and vegetarian waste.
- 5- The allocation of workers camps will be on-site .Minimum disturbance to the surroundings will be achieved by allocating them at a distance apart from existing residential areas. Adequate utilities such as water, sanitation, and electric supplies and providing safe fire fighting precautions will be via existing DPA Means of proper disposal of generated wastewater and solid waste should be provided at the site as septic tanks and periodical solid waste collection.
- 6- Increase in vehicles movement due to construction activities is within the capacity of the used roads, but congestion may still occur from time to time, measures to prevent this will be included, this could include alternate temporary roads, adequate off road parking for delivery vehicles etc.
- 7- Potable water quality will be connected to existing DPA system which is monitored by the local authority
- 8- Encouraging solid waste sorting and separation at the origin (glass, plastics, cardboard and paper, organic waste, and metals).
- 9- Storage of fuels and lubricants shall be practiced through the used of barrels, these waste material are to be stored and recycled through oil' companies managing oil residue to even, local contamination with oil at the site. Storage of chemicals and other hazardous materials should be practiced in controlled and adequately ventilated stores. Chemical wastes, such as discarded batteries, oil filters, gas oil filters, should be collected properly. Contact should be established with a contractor to ensure that environmental sound discharge and processing will be established.
- 10- Bottom paint scraping will be performed
- 11- Noise control will include mufflers for all equipment during construction or operation.
- 12- Removal of any floating debris from the terminal basin. Because of the regular winds in the area, most floating debris will tend to collect around the

edges of the terminal basin, therefore will be easily recuperated from the quay-sides.

- 13- Checking the correct operation of all service points, lights, etc.
- 14- Maintaining cleanliness on the quay-sides .

#### **General Maintenance Requirements:**

General maintenance checks will need to be carried out on a regular basis on the following items:

quay walls-spillings- joints, fenders, connections, access adding gangways  
Moorings - buoys and chains, Navigation buoys - flash lights and chains, Service manholes along quay side - keep free of sand and other debris.

The suggested frequency of checks is monthly on items easily visible. Items such as chains, under water quay walls etc. less easily accessible can be checked in more detail annually out of season.

#### **Special Environmental Precautions:**

Bearing in mind the proximity of benthic communities and marine fauna and flora, certain essential precautions must be taken against accidental pollution. The principal element should take the form of a floating (inflatable) boom, which can quickly be installed across the entrance of the terminal basin in case of fuel spillage. As a secondary measure, additional booms may be needed to isolate specific areas. Additional provisions may be adopted as some are already practiced in the current development. These include power saving systems for the rooms, the use of low power consumption bulbs for walkway illumination, storage tank capabilities for freshwater conservations, etc. This new terminal will be one of the largest ports in Damietta Port and if properly managed and constructed it will provide a good example of how controls can minimize the potential for adverse environmental impacts.

#### **Monitoring Program, Record Keeping and Reporting**

General operation and management of the new terminal on a daily basis, one of the principal operation and management issues in the terminal will be the continuous monitoring of allocated and vacant berths. The continuous monitoring and maintaining of all services in proper working order and the cleanliness of the port in general. Before commencing operation of the new terminal, DIP will establish an operation plan setting out exactly how it will be administered and operated, defining the rules and regulations to be adhered to by users and defining protocols to handle emergency situations.

Monitoring of the following parameters will commence prior to construction activity starting and should continue after it has finished.

1. Monitoring the shoreline around the new terminal. This activity will be coordinate with th DPA and will take place before construction, after construction, six months after construction, and annually afterwards.
2. The terminal basin should be re-surveyed within 24 months following the start of operations to determine the rate of sedimentation and based on this survey, a long-term maintenance plan can be coordinate with DPA.
3. Water quality in the new terminal basin and the sea (Oxygen, Suspended Solids, Phosphates, Nitrates, Biological Oxygen Demand, and Chlorophyll a), should be monitored immediately after construction and if testing reveals in

- excess of international standers, every three months thereafter.
4. Measurements of sources of noise not to exceed the standards in the executive regulation of Law 4/94. This is particularly important during construction, any source found to be operating above the required standards should be closed down and not restarted until repairs are made to allow standards to be met or a replacement found
  5. Weekly monitoring of sediment plume entering the water from the terminal construction. The same advantage point should be used each week and photographs taken to establish the extent and direction of any plume.
  6. The new terminal management should also keep records of a) fuel analyses to demonstrate that the sulphur content of the fuel used is at or below the specified levels mentioned in Law no. 4/94 and to demonstrate equipment is operating within manufacturer's specifications.
    - b) Significant environmental matters, including monitoring data, water quality, shoreline changes, accidents and occupational illnesses, and spills, fires and other emergencies.

The following table summaries the monitoring programme required for the new container terminal during the construction and operation phases

Table 6.1 Monitoring Program

<b>Phase</b>	<b>What</b>	<b>Where</b>	<b>How</b>	<b>When</b>	<b>Why</b>	<b>Responsibility</b>
<b>CONSTRUCTION</b>	Total Suspended Sediments	Turning Circle(TC), and Port Basin(PB)	Visual test by expert technician Lab analysis	Daily	TSS must not exceed 50 mg/l (WB guidelines)	DIP/Contractor
	Water Quality	Turning Circle, and Port Basin	In situ Measurements	Bi-weekly	BOD, Nutrients, trace metals and TPH should not exceed the WB Guidelines and EEAA	DIP/Contractor. In case of high levels, coordination with DPA is needed
	Sediment Quality	2 points, Turning Circle and Access channel	Two samples ate the TC and AC, Lab analysis	Monthly	Heavy metals and TPH, Levels should not exceed WB/VROM Guidelines.	DIP/Contractor. In case of high levels, coordination with DPA is needed
	Noise	Construction area and surroundings	Portable noise/sound meters	Daily (Day and night)	Noise level must not exceed 70 dB according to WB guidelines	DIP/Contractor. In case of high levels, coordination with DPA is needed
	PM <sub>10</sub> TPM in Air Ambient Air Quality	Construction area and surroundings	Field Measurements	Weekly	Ambient Air,PM <sub>10</sub> and TPM not to exceed the World Bank's "Pollution Prevention an Abatement Guieline"	DIP/Cotractor
	Sediment	New container terminal Basin	Sampling and lab analysis (one point and a reference point)	Annually	Heavy metals and TPH - Levels should not exceed WB/VROM Guidelines.	DIP in coordination with DPA
	Sea Water	Two points, at the new basin and a reference point	Field Measurements	Seasonally	BOD, Nutrients, trace metals and TPH should not exceed the WB Guidelines and/or EEAA	DIP in coordination with DPA
<b>Operation</b>	Ambient Air	One point	Field Measurements	Monthly	Ambient Air,PM <sub>10</sub> and TPM not to exceed the World Bank's "Pollution Prevention an Abatement Guieline"	DIP in coordination with DPA
	Noise	2 points	In situ measurements	Daily (Night and Day)	Noise level must not exceed 70 dB according to WB guidelines	DIP in in coordination with DPA