Lake Qaraoun Pollution Prevention Project

Expansion of the Wastewater Collection Networks (Anjar, Majdel Anjar & Qabb Elias) To Connect To Anjar El Marj Wastewater Treatment Plant – LOT 2

CONSTRUCTION SOCIAL AND ENVIRONMENTAL MANAGEMENT PLAN – CESMP

THE ARAB CONTRACTORS

Revision 0	08/05/2023

ABBREVIATIONS AND ACRONYMS

CDR	Council for Development and Reconstruction
CESMP	Construction Environmental and Social Management Plan
DGA	Directorate General of Antiquities
E&S	Environmental and Social
ESHS	Environmental, Social, Health, and Safety
ESMP	Environmental Social Management Plan
GBV	Gender-based Violence
GRM	Grievance Redress Mechanism
HSE	Health, Safety, Environment
OHS Plan	Occupational Health, Safety Plan
LAP	Land Acquisition Plan
LQPPP	Lake Qaraoun Pollution Prevention Project
MSDS	Material Safety Data Sheet
MoE	Ministry of Environment
TMP	Traffic Management Plan
WB	World Bank

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1. INTRODUCTION

1.1. General Information

The Lake Qaraoun Pollution Prevention Project (LQPPP) funded by the World Bank (WB) and implemented by the Council for Development and Reconstruction (CDR), aims at reducing the quantity of untreated municipal sewage discharged into the Litani River, and at improving pollution management around Lake Qaraoun. On February 8, 2023, CDR awarded The Arab Contractors the execution of construction works under sub-component 1.2 of the project: Expansion of the Sewerage Network to Connect to Anjar WWTP – Lot 2 works in the towns of Chtaura, Taalabaya, and Jdita in Bekaa, Lebanon.

Table 1 below lists the Environmental and Social regulatory instruments (linked documents) related to the project and published on CDR.

Table 1: Project Environmental and Social Documents

Document Title	Link	Date
Environmental and Social Management Framework (ESMF)	2015-01-29-Qaraoun-ESMF_issued-for-distribution.pdf.aspx (cdr.gov.lb)	29/01/2015
Resettlement Policy Framework (RFP)	2015-01-29-Qaraoun-RPF_issued-for-distribution.pdf.aspx (cdr.gov.lb)	29/01/2015
El Marj Wastewater System Land Acquisition Plan (LAP)	LAP-Report_El-Marj-Wastewater-System.pdf.aspx (cdr.gov.lb)	08/10/2019
Environmental and Social Management Plan (ESMP)	ESMP-Report-El-Marj-WW-System_for-Submission_Clean-version__20201124.pdf.aspx (cdr.gov.lb)	24/11/2020
ESMP Addendum (wastewater network and treatment plant)	El-Marj-Wastewater-System-Addednum-No-2-to-ESMP.PDF.aspx (cdr.gov.lb)	16/09/2021

According to contractual requirements, The Arab Contractors prepared a Construction Environmental and Social Management Plan (CESMP), the current document, to be approved by the Supervising Engineer SU YAPI, the CDR, and the WB prior to the commencement of the works.

1.2. CESMP Objectives

The purpose of the CESMP is to describe the processes and the mitigation measures that will be implemented by the Contractor, The Arab Contractors, during the construction phase according to what is stated in Chapters 6 and 8 of the ESMP report for the allocated lot in order to reduce the environmental and social impacts of the project on the surrounding environment. The objectives of the CESMP are:

1. To provide the factual details for compliance with environmental and social management requirements;

2. To ensure continuous compliance with legislative and other Government requirements and regulations;
3. To ensure continuous compliance with relevant national and/or international environmental, social, health and safety and WB policies;
4. To specify roles and responsibilities of (The Arab Contractors) personnel regarding environmental and social issues related to the project;
5. To create a Grievance Redress Mechanism (GRM) for the surrounding local communities and workers;
6. To identify the main adverse environmental and social impacts that can result from the work and implement measures to mitigate or avoid such impacts;
7. To specify reporting, training, auditing and other procedures required to ensure appropriate site environmental and social management;
8. To specify non-conformance and corrective action procedures to ensure best available environmental and social management.

1.3. Structure of the CESMP

The CESMP is structured as follows:

- Project Description: provides information on the project location, duration, site facilities, staff, and an overview of the main construction activities, machinery and materials that will be used.
- Environmental and Social Management: summarizes the Contractors' policy statement, the roles and responsibilities of the project team in implementing the CESMP, as well as details the management system adopted by the Contractor to raise awareness on the management plans and illustrates the emergency and communication means.
- Environmental and Social Management Plan: details the impacts of the project activities, the measures that will be taken by the Contractor to mitigate the environmental and social impacts previously identified as well as identifies the parameters to be monitored by the Contractor to ensure the proper implementation of the mitigation measures identified.
- Forms: includes the forms to be filled as part of the reporting process
- Appendix: includes maps, and documents as referenced in the main report.

2. PROJECT DESCRIPTION

2.1. Project Location and Activities

The Expansion of the Sewerage Network to Connect to Anjar WWTP – Lot 2 will include the construction of 129 km of sewer lines (87 km main lines and 42 km lateral lines) and the rehabilitation of 31 km of existing sewer networks in the towns of Taalabaya, Chtaura, and Jdita. The project duration is 16 months. Table 2 below presents the distribution of the sewer lines by type, size, length and location.

Table 2: Distribution of sewer lines by type, size, length and location

Type	Diameter (mm)	Total Length (linear meters)	Length (linear meters)				
			Main Lines	Taalabaya network	Chtaura network	Jdita network	Lateral Lines
UPVC	200	42,240					42,240
	250-300	62,900	14,610	25,040	5,070	18,180	
Concrete	400-600	8,830		7,240		1,590	
	500	1,250		1,250			
	700-800	13,520	13,520				
Total Length		128,740 ~ 129 km					

All sewer lines will be constructed in the public domain. The works will be in paved main roads connecting the towns and in internal roads in urbanized areas. Some works will be in dirt roads in the public domain of the Litani River. A map of the sewer lines on satellite imagery is attached to Appendix 1. Moreover, the main construction activities are site clearance, excavation, micro tunneling, backfilling, pipe works, concrete works, plastering, waterproofing, metal works, testing and commissioning, and road reinstatement.

2.2. Equipment and Machinery

The machinery used mainly include nine excavators, 20 trucks, nine bobcats, rollers, plate compactor, asphalt cutter, and generators. Appendix 2 provides a comprehensive list of the type and number of machinery that will be used throughout the project.

2.3. Labor Force

The labor force needed to implement the project constitutes of 40% skilled laborers and 60% unskilled laborers. The construction work will be carried out by 143 workers divided into 13 crews. The workers are Lebanese, Syrian and Palestinian who will be from the local communities or from nearby areas. There will be no laborers' camp since the workers will live within a commuting distance to the project area. Figure 1 below presents the organizational chart of the team deployed on the project.

Table 3: Estimated Labor Force per Occupation

Type	Estimated Labor Force
Site Engineer	6
Safety Officer	1
ES Specialist	1
Foreman	10
Flagman	8
Chief Surveyor	1
Surveyor Assistant	3
Operators	75
Skilled Workers	15
Semi-skilled Workers	15
Laborers	50

2.4. Site Facilities

The site facility will be located on Lot number 153 in Makse within a fenced area of 5,700 sqm. It is the same location as Lot 1-site facilities. It includes site offices for the contractor and the Supervision Engineer, a storage area for construction materials (the materials to be used on site will be mostly sourced from the project area in the Bekaa, as listed within table 4), a workshop area, and a parking space for construction vehicles and equipment. Appendix 3 presents detailed layout plans of the site facilities.

Table 4: Materials used

Material	Quantity	Supplier
UPVC pipes (250 - 300 mm)	82,150 m	Ulpi and Haykal-plast
Concrete pipes (400-800 mm)	22,350 m	Beton Bekaa
Precast concrete manholes and cast in situ	2,950 manholes and 3030 chambers	Beton Bekaa
Ready mix concrete for pipes encasement	15,000 m^3	Ready mix suppliers in The project's area
Borrow material for backfilling of trenches	110,000 m^3	Approved borrow pits in the project's area
Sub-base and aggregate base course material for reinstatement of asphalt trenches	42,000 m^3	Crushed material from local crushers in the Bekaa area
Asphalt material for reinstatement	25,000 Ton	Asphalt suppliers in the project's area

In addition to the abovementioned material, several construction chemicals will be stored on site (at the yard) such as Engine oil, hydraulic oil, automatic transmission fluid, and grease will be used for machinery maintenance purposes. The storage area will be equipped to store the chemicals where segregation and bonding will take place as illustrated within the management plans below.

Moreover, the site facilities are surrounded by cultivated and uncultivated agricultural land where olive trees are mainly grown. To the South-West of the lot, there are two schools separated by a fence, for both the elementary and middle level students, i.e. for students aged 5 to 14 years, the schools operate up until 2 pm. The total number of students per shift is around 250, and the majority are Syrian refugees. - refer to the social management plan for the measures to be taken to decrease the interaction between the workers and school children.

No hospitals are found within Makse area, however a dispensary has been already established and is awaiting the issuance of the operational license in order to operate. A list of nearby hospitals is attached within appendix 4.

Electricity will be sourced from a private generator of capacity 20KVA. A 50-m^3 diesel tank will be used for fuel storage. Domestic water for daily usage in site offices will be sourced from local water suppliers while drinking water will be sourced from a private service provider (Tannourine), which is common in Lebanon. Domestic wastes from site offices will be segregated at source in different color-coded waste bins, to be later collected via the adopted domestic waste collection practices in Zahle. As for the wastewater from the toilets in the site offices, it will be connected to the sewage network in Makse - Letter is attached within appendix 5. The pictures in **Figure 2** below present the project's site facilities and their surroundings.

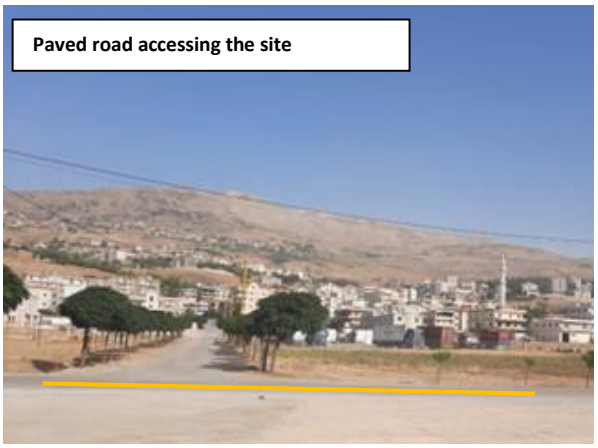
The site is accessible by a 6-m wide paved road. The yard behind the offices is accessible by a 4-m dirt road. Land use surrounding the Makse site offices and yard is presented in **Figure 1.** The site is located at almost mid distance from all project activities.

Figure 1: Land use surrounding the yard (Adapted from Google Earth)

2.5. Project Schedule

Project Schedule will be attached within appendix 6.

Figure 2: Site facilities and surrounding



3. ENVIRONMENTAL AND SOCIAL MANAGEMENT

3.1. Policy Statement

The Arab Contractors is committed to the principles of environmental protection, social responsibility, and health and safety responsiveness. It will manage the construction program in a manner that protects the ecosystem as well as the public health.

The below policy demonstrates The Arab Contractors' commitment and dedication to minimize the environmental impacts of its operations and continually improve its environmental performance within a framework of sustainable development:

- Effectively manage significant environmental impacts, monitor progress and review environmental performance against objectives and targets on a regular basis;
- Comply with the relevant and applicable environmental legislation, contractual and other necessary requirements that are related to project activities;
- Drive continual improvement and meet the requirements that are set within the ISO 14001 environmental management system standard as a part of the integrated business management system;
- Ensure that the company's policy, objectives and achievements are communicated to all of its employees. In addition, The Arab Contractors strives to educate and train its employees to ensure competence in environmental management;
- Prevent pollution and harm to the environment and cultural heritage, minimize the emissions to land, air and water and, reduce wherever possible the use of raw materials, supplies and energy;
- Ethically procure and responsibly deliver its services, products and activities in a manner that best balances the economic, environmental and social needs of the community;
- Engage with the relevant stakeholders and the surrounding community to achieve shared and lasting outcomes.

The policy has been endorsed by The Arab Contractors Executive Committee and is reviewed periodically. All employees are required to commit to its implementation. The current CESMP is based on The Arab Contractors' commitment to proper Environmental, Social, Health, and Safety (ESHS) management.

3.2. Environmental and Social Management System

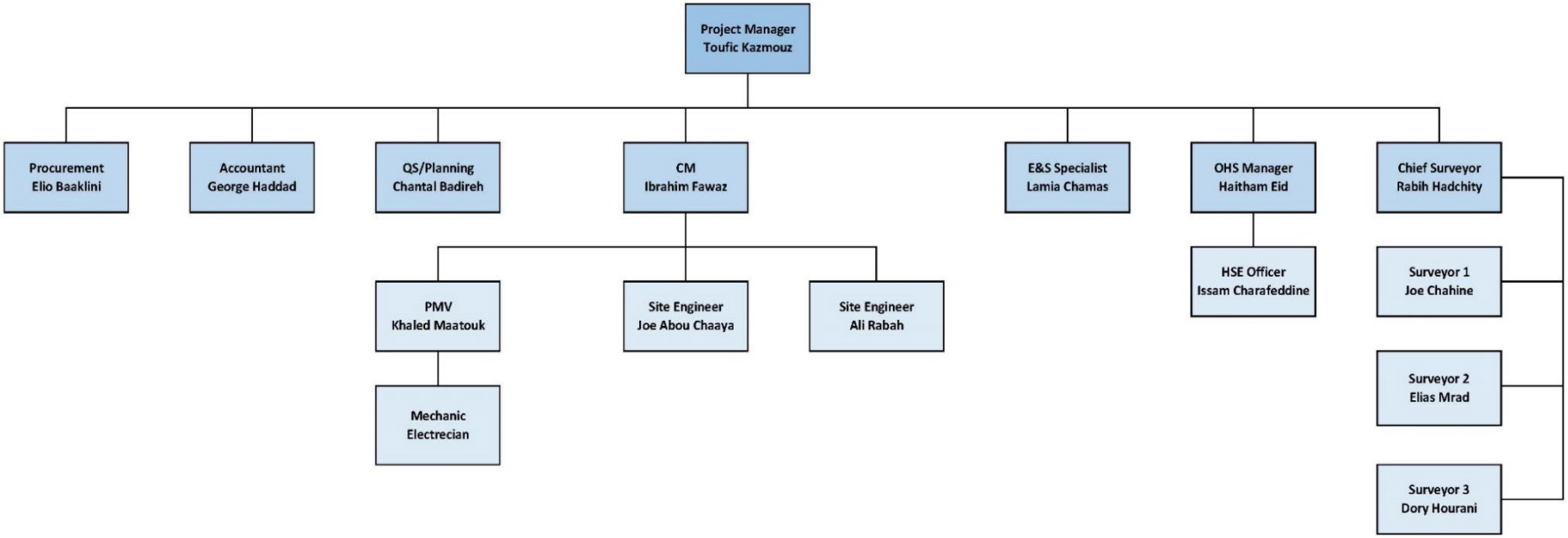
An effective Environmental and Social Management System is essential to ensure that environmental and social impacts are properly identified, assessed, and managed throughout the project lifecycle. This starts at the highest levels of the organization, the below section reflects the team structure and the roles and responsibilities in the implementation of the CEMSP. As per the policy statement, the contractor commits to ESHS matters, and establish a sound ES culture among his employees. This will be demonstrated through prioritizing ESHS matters in meetings, evaluate the ESHS aspects, implement mitigation and monitor their efficiency as well as continuously review the procedures to ensure continual improvement.

3.3. Roles and Responsibilities

The implementation of the CESMP and the acquisition of all necessary permits, consents, and authorizations from relevant authorities prior to construction works will be the responsibility of the Contractor. Additionally, the Contractor will ensure that all sub-contractors involved comply with the CESMP.

3.3.1. Team Structure

Figure 3: Organizational Chart



3.3.2. CESMP Implementation Responsibility

During the project, and based on the organizational chart presented in Figure 1, the roles and responsibilities of ESHS will be distributed as explained below.

Project Manager:

- The project manager acts as the primary contact person to coordinate with the Supervising Engineer, the CDR, the municipalities and other public agencies as needed.
- He will ensure the proper implementation of all aspects of the CESMP as part of the project progress and quality. This includes the procurement of all needed authorizations and approvals particularly for site facility setup, proper Grievance Redress Mechanism (GRM) setup and accessibility, domestic and construction waste disposal, material sourcing, and traffic rerouting.
- He will hold regular meetings with the Environmental and Social (E&S) specialist and the Safety Officer to discuss ESHS issues and take necessary actions to address any non-compliance issues in a timely manner, as needed.
- He will also oversee and approve the monthly reports that include updates on CESMP implementation.
- He will ensure a safe working environment for the project team. This will include overseeing:
    - The workers' GRM and resolving any issues in coordination with the E&S Specialist;
    - The implementation of the Health and Safety Plan, including workers' training sessions as scheduled by the Safety Officer.

E&S Specialist:

- The E&S Specialist is responsible for the supervision of all environmental and social aspects and protection measures during construction activities, thus ensuring the proper implementation of the management and monitoring plans.
- S/he will provide the necessary environmental and social induction for all employees and workers involved in the construction activities, including training on environmental and social mitigation and monitored measures outlined in the CESMP, the risk of gender-based violence, child labor and tensions with local communities, and the process to submit a complaint through workers' GRM.
- S/he will ensure that all the project team is aware of the Code of Conduct content and each employee has signed it and where records are kept.
- S/he will conduct regular site inspections, document it with dated photos and observations with the suggested corrective actions (if any), and share it with the consultant's E&S Expert.
- S/he will ensure the proper implementation and accessibility of the project's GRM, resolve, document, and report on any complaints received in a timely manner.
- S/he will support the project manager in coordinating and communicating with the municipality and local community, as needed, especially at the onset of the project.
- S/he will provide advice on environmental and social aspects during the construction phase and provide any necessary update of the CESMP or any corrective actions, if required.

- S/he will prepare the environmental and social report in the monthly reports.

Safety Manager:

- S/he will ensure proper implementation of the OHS plan.
- S/he will provide ongoing safety to reduce the frequency and severity of accidental losses.
- S/he will ensure the existence and awareness of a suitable and relevant health and safety policies.
- Provision of emergency procedures, safety signs, relevant protective clothing and equipment, and incident reporting to the relevant authorities.
- S/he will develop the Occupational Health, Safety (OHS) plan by identifying all potential hazards and detailing the necessary safety measures and procedures. This includes an emergency response and incident reporting procedure.
- S/he will carry out safety inspections, monitoring activities and recording effectiveness.
- S/he will conduct toolbox talks and training sessions.
- S/he will oversee the permit-to-work.
- S/he will conduct investigations of all accidents and near-misses.
- S/he will respond to employees' safety concerns.
- S/he will responsible for handling the tasks and ensuring a safe environment is created in accordance with the PM.

Safety Officer:

- The Safety Officer will be responsible for the safety of workers and the construction site in relation to road and pedestrian safety.
- S/he will ensure the effective implementation of all health, and safety measures on site at all times during the construction period. This includes the coordination with hospitals in the project area in case of emergencies, use of Personal Protective Equipment, and the availability of first-aid kits on construction sites and in site offices.
- S/he will prepare road safety plans and support the project manager in coordinating with the municipalities to ensure their proper implementation.
- S/he, as an expert, will provide inductions for all site personnel involved in the project and the necessary trainings for the project team.
- Assign and train personnel on each site to act as safety supervisors and coordinate with them on a daily basis to ensure the implementation of the OHS plan
- Give special attention to housekeeping and ensure that the site is maintained clean and tidy
- S/he will conduct regular site inspections, document it with dated photos and observations with the suggested corrective actions (if any), and share it with the consultant's E&S Expert
- S/he will be the contact person to react in case of any accident or emergency based on the emergency response and incident reporting procedure.

- S/he will supervise site activities on a daily basis and address any safety non-compliance issues in a timely manner. This includes safety signboards and fencing.

S/he will monitor and report on the OHS plan on a daily basis to the project manager and in the project monthly reports.

Site Engineers:

- The Site Engineers should be aware of the requirements of the CESMP and OHS plans, following training by the E&S Specialist and the Safety Officer. Accordingly, they will guide the workers to conform.
- They will communicate and highlight any issues (tensions, complaints from workers or local community, worker misconduct, etc.) to the E&S Specialist, Safety Officer, and Project Manager, as needed.
- They will maintain proper housekeeping on site.

In case of any sub-contractors at any stage of the project, they will have to comply with all the project requirements and sign the code of conduct.

3.4. Communication and Reporting

3.4.1. Internal Communication and Reporting

The team members will have monthly meetings with the project manager to discuss all results of the site inspections, incidents, non-conformities, resource allocation for CESMP implementation, community engagement and addressing any concerns or complaints, and other necessary topics.

The Contractor will ensure that all relevant information related to the ESHS matters (such as GRM, GBV, Code of Conduct) as well as relevant site matters (such as waste management, incident reporting) is communicated to all employees through various means such as inductions, toolbox talks and trainings. Moreover, the Contractor will submit to the Consultant, on monthly basis, all of the findings related to that matter, as well as report on the signed CoC, mitigation measures set on site, monitoring conducted, incidents/accidents, awareness sessions, main findings for the month and GRM log. These monthly reports will be communicated to the CDR through the consultant; it is to be noted that incidents are to be immediately reported as mentioned in section 3.6.3.

3.4.2. Coordination with External Public Entities

The Project Manager as well as the E&S Specialist are responsible to liaise with the related external entities other than the Project Proponents, namely the Ministry of Environment, Ministry of Agriculture, Ministry of Energy and Water, Directorate General of Antiquities at the Ministry of Culture, and the Traffic Department at the Internal Security Forces. Coordination topics for each of the stakeholders above are listed in the below table.

Table 5 - Coordination Topics with Public External Entities

Public External Entity	Coordination Themes
Ministry of Environment	Ultimate disposal of all waste streams
Directorate General of Antiquities at the Ministry of Culture	In the event of chance of findings
Department at the Internal Security Forces	Traffic and roads diversion management
Municipalities (Taalbaya, Jdetita, Chtura, Taanayel, Saadnayel)	Community concerns, coordination of construction activities, waste management Works Schedule Grievance Redress Mechanism (GRM) availability to nearby communities

3.5. Environmental Training and Awareness

3.5.1. Induction

All personnel working onsite[1] will be required to attend an environmental, social, health and safety induction prior to starting work on the site. The induction training will be delivered by the *HSE department (Health, Safety, Environment and Social Personnel)* **prior** to commencement of any onsite works. E&S Specialist will be responsible to deliver the Environmental and Social part and OHS related topic will be delivered through the Health and Safety Personnel. Key elements which will be covered by the HSE induction training include (but not limited to):

- Purpose, objectives and content of the CESMP.
- Code of conduct.
- Gender based violence.
- Grievance redress mechanism.
- The outline of the operation/site/location;
- The individual's immediate line manager and any other key personnel;
- Any site-specific risks, for example in relation to access, transport, site contamination, hazardous substances;
- Control measures on the site, including any site rules, any permit-to-work systems, security arrangements and if necessary.
- Emergency procedures, including fire precautions, the action to take in the event of a fire, escape routes, assembly points, responsible people and the safe use of any fire-fighting equipment;

[1] All contractor and subcontractor employees and any other person constantly present onsite must undergo the induction training by the experts.

- Arrangements for first aid and for reporting accidents and other incidents;
- Information about the individual's responsibilities.
- Site rules.
- Sanitation.
- Safe Distancing.

An induction register will be kept up to date with details of the staff inductions. Induction data will be given to the Engineer on a monthly basis as a part of the monthly report. Refer to section 5 for the induction form.

3.5.2. Toolbox Talks

Tool Box Talks will be hosted by the HSE department before commencement of the day's activities on the work site. The topics to be discussed are related to ESH matters, and their application in the performance of tasks. Bi-weekly toolbox meetings, detailing specific anomalies, lessons learned on incidents or specific ES topics will be organized for all people onsite. Attendance sheet must be signed by each attendee after the TBTs are done. (section 5).

3.5.3. Trainings

Periodic trainings will be held on site to cover various of topics presented in the below table. Training topics and who was involved, will be noted in a record and will be reported to the Engineer on a monthly basis. Refer to section 5 for the training sheet form. Some training topics *include and not limited to:*

- Use of spill prevention and clean-up kits.
- Chance of finding procedure.
- Emergency response procedures.
- First Aid training.
- Waste management.
- Labor rights.
- Gender Equality.
- Child Labor.
- GRM procedures.

3.6. Emergency Response and Incident Reporting

3.6.1. Emergency Response

This procedure describes the preparedness and response procedures for potential accidents and emergency situations that give rise to significant environmental impacts. The following activities/incidents could possibly lead to an environmental emergency:

- Spills
- Fire
- Refueling and transportation of hazardous material

General Procedure

- The HSE department shall identify the potential hazards and risk, take proactive steps to prevent emergency incidents, and complete tasks in preparation for emergencies.
- Emergency response shall be on a site-specific, depending upon specific working conditions. The Emergency Response Procedure will be prominently displayed at the site offices within the project sites.
- The HSE department shall familiarize and train their staff on the procedures described in the Emergency Response Plan.
- The HSE manager and involved staff shall identify the root causes and any preventive actions, report the accident by completing an Accident Report after each accident or emergency situation.
- The HSE department shall ensure emergency drill and periodic testing of the procedures are conducted where practical and maintain the emergency drill summary report.
- The HSE department together with other site Managers shall review the suitability, adequacy and effectiveness of the emergency plan after each accident or emergency situation and revise the emergency plan as necessary.
- The Emergency Responder (Issam Charafeddine) shall maintain documentation on emergency response and preparedness, and emergency incidents.

Assess the situation

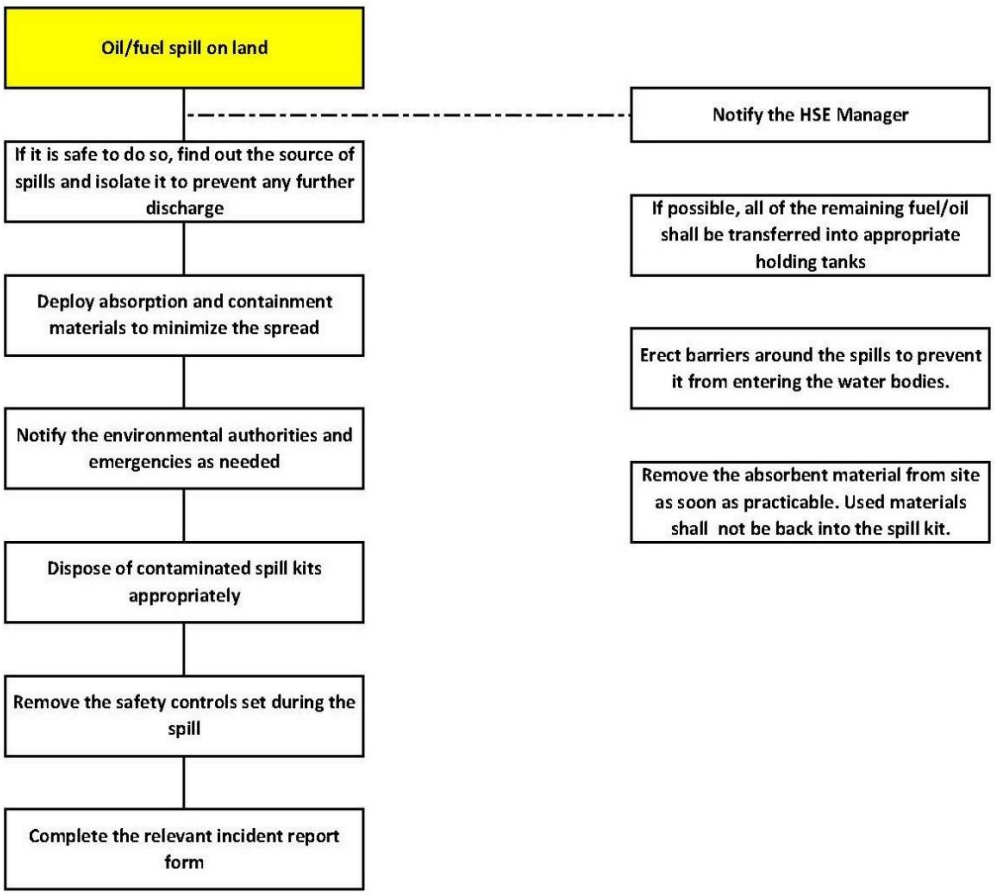
- Identify the products involved in the environmental emergency and verify the hazard nature using MSDS and implement safety procedures
- Isolate the source of the hazard, no person shall enter the affected site alone.

Halt or Control the Release

In the event of imminent danger, no action shall be taken but wait the emergency aid to arrive. If the site is approachable, personnel approaching the site shall be entering with the wind at his back. Moreover, they shall stop the operation and shut off any equipment present and safely contain or control the event with the appropriate equipment. If the situation is deemed safe to do so, elimination of the hazard source can be done. Moreover, any drains/sewer/ oil separators shall be covered.

In the event of release to atmosphere related emergencies, the material shall be assessed, and if it is safe to do so, the source of leak shall be turned off and moved to an outdoor area.

Figure 4: Flow Chart of Oil Spill Management



Notification and Contacts

If the environmental emergency causes an immediate threat to the health and safety of personnel or the public, or presents a risk of fire, the relevant authority and fire department will be contacted immediately as well as the mokhtar or municipality so that they are aware of the hazard. Moreover, coordination with external entities will take place as abovementioned.

Table 6 - Emergency Contact Information

Title	Name	Contact Number
Construction Manager	Joe Abou Chaaya	70 119 575
HSE Manager	Haitham Eid	70 769 697
E&S Specialist	Lamia Chamass	03 705 800
HSE Officer	Issam Charafeddine	03 770 986
Police (operation)	-	112
Fire department	-	175
Civil defense	-	125
Lebanese red cross	-	140

Zahle ISF	-	08 805 740
Khoury General Hospital	-	08 807 000
Hopital Libano Francais	-	08 810 120
Taanayel General Hospital	-	08 545 100
Al Maias Hospital	-	08 542 458

When to report

Report a spill if it:

- Causes harm or material discomfort to any person
- Injures or damages property or animal life
- Impairs the quality of natural environment air, water or land
- Causes adverse health effects
- Presents a safety risk
- Renders property, plant or animal life unfit for use of property
- Interferes with the normal conduct of business

Post Emergency

- Review and debrief
- Issue an incident report (shall contain the release location, source of the incident, quantity spilled and the reporting process)
- Update the response plan
- Clean the response equipment
- Determine if any other outside agencies should be notified of the incident
- Replenish response supplies (spill kits)

3.6.2. Contamination and Remediation

After any event of spills or emergencies, it is important to clean up and recover from the damage caused to limit the migration and spread of hazards. The recovery operation involves picking up cleaning and temporarily storing the spilled substance and any sorbents used (sorbents used to recover a hazardous material are considered hazardous waste). Wastes are to be stored in a safe location designed for storage of hazardous waste with an impervious base. Ensure all waste is stored in such a manner so as to reduce further spillage and/or impact to the environment, human health and safety. Clean-up materials and storage bags can be found in the spill kits.

3.6.3. Incident Reporting

i. <u>Incident Reporting</u>

In the event of an environmental or social incident, the incident will be reported to the *HSE department* and communicated to the upper management. It is the responsibility of each and every one on site to report for any incident to the direct site manager who will in turn forward it to the HSE department for proper action.

In the case of Environmental and/social incident the E&S expert should be informed, who shall inform the E&S expert of the consultant directly and prepare an incident report. The consultant's E&S expert will inform to CDR within 24 hours, CDR will report to WB. Serious incidents such as spills of hazardous material, including diesel, greater than two hundred liters (200L), fires, as well as unauthorized/unsupervised cutting of trees and hunting of animals, shall be immediately reported.

3.7. Social Aspects and Procedures

3.7.1. Grievance Redress Mechanism (GRM)

3.7.1.1. Community GRM

A community Grievance Redress Mechanism is an essential component of the CESMP since it will allow the local community to raise complaints, concerns, or suggestions related to the project. Grievances can relate to increased noise level and dust emissions, safety concerns, increased traffic, damaged infrastructure, or any other disturbance from project activities and/or project personnel.

1. When a complaint is registered, the project manager, E&S Specialist and Safety officer (if needed) will take the necessary measures to resolve the grievance within a maximum period of one week. It could happen that the local community expresses complaints directly to the site engineers. All complaints should be reported to the project manager and the E&S Specialist for documentation.
2. The E&S Specialist shall follow up with the aggrieved person and inform them about the process of addressing their issue. When the issue is resolved, a follow up call will also be made to ensure the aggrieved person is satisfied with the outcome.
3. The whole process will be documented and reported in the Contractor's monthly reports and reported on a weekly basis to the Supervision Consultant.
4. If the situation cannot be resolved within the specified period or if the aggrieved person is not satisfied with the outcome, the Contractor will communicate the issue to the CDR Project Management Unit through the Consultant. A meeting can be set up between the Contractor, Supervision Engineer and the CDR to discuss potential solutions and act in a timely manner.

The GRM log form is attached to section 5. It includes the date the grievance is raised, the aggrieved person contacts information, a description of the grievance, and the date of its resolution.

The GRM information sheet (Please refer to Appendix 7) will display the CDR GRM email address and the CDR GRM telephone number. It will also display the phone number for the Contractor Project Manager and the consultant Supervision Engineer. The Contractor will ensure that the community GRM is accessible to all local communities impacted by the construction works through displaying the GRM information sheet on:

- Municipality bulletin boards (Jdita, Chtaura and Taalabaya municipalities);
- Mobile sign boards at each of the construction sites;
- Contractor and Consultant's office
- Project signboards.

Table 7: GRM Contact Numbers

Channel	Number	Reference
Phone	01 980 096 ext. 149	CDR
Email	grm.lqppp@cdr.gov.lb	
Phone	71784922	Consultant
Phone	70119575	Contractor

3.7.1.2. Workers' GRM

In order to ensure a safe and pleasant working environment for workers, The Arab Contractors will implement an internal mechanism, the workers' GRM, to receive and address complaints from the employees. A grievance can be related to any aspect of employment, such as workplace discrimination, safety concerns in the workplace, dissatisfaction about leave allocation or remuneration, and verbal or sexual harassment. The mechanism set in place will ensure that employees can express their grievances openly and anonymously with no impact on their jobs, and that the grievance will be resolved in a timely and confidential manner.

The E&S Specialist in coordination with the HSE personnel at the company will manage the workers' GRM in terms of registering a complaint, getting the needed information about an incident as necessary, following up until the issue is resolved, and documenting the process. Moreover, s/he will make the workers aware of the said mechanism during induction trainings.

The Contractor will implement and manage the workers' GRM as follows:

- Complaints should be submitted as soon as possible after an incident has occurred. The E&S Specialist may assist the complainant in completing a written statement or, in the event an employee cannot or does not want to provide information in writing, s/he will dictate the verbal complaint. It is possible that the workers would first complain to the site engineers. The E&S Specialist should also inquire about any complaints raised during weekly team meetings.
- Upon receiving a complaint, the E&S Specialist will initiate an investigation to get more information about the incident. This involves interviewing the complainant, the respondent and any witnesses to determine whether the alleged conduct occurred.
- If necessary, the complainant and the respondent will be separated during the course of the investigation, through either internal transfer or administrative leave.
- Upon conclusion of an investigation, the E&S Specialist will submit a written report of his or her findings to the company. If it is determined that a violation of policy or the code of conduct has occurred, the E&S Specialist will recommend appropriate disciplinary action.
- Senior management will review the investigative report and any statements submitted by the complainant or respondent, discuss results of the investigation with the E&S Specialist, HSE personnel in the company and other management staff as appropriate, and decide what action will be taken.
- Once a final decision is made by senior management, the HSE personnel will meet with the complainant and the respondent separately and notify them of the findings of the

investigation. If disciplinary action is to be taken, the respondent will be informed of the nature of the discipline.
- Action or decision regarding the grievance should be taken in a timely manner, within 3 to 10 working days.

Complaints related to Gender Based Violence (GBV), such as verbal or sexual harassment, will be dealt with a high level of confidentiality, and actions will be taken based on the code of conduct. External service providers, such as ABAAD, an accredited organization for gender equality, can be asked to support in case deemed necessary.

3.7.2. Gender Based Violence (GBV)

The Arab Contractors has zero tolerance to any act related to the GBV and Child Abuse/Exploitation (CEA). No employee is to commence the works on site if he/she was not inducted and fully aware of and sign the Code of Conduct. Any misconduct will lead to penalties and/or termination of employment. All employees will be encouraged to report any concerns or suspicions regarding acts of GBV or SEA or SH by a fellow worker, whether in the same contracting firm or not. Refer to Appendix 8 for the code of conduct.

3.8. COVID-19 Response and Prevention Procedures

In line with the national measures set by the Ministry of Public Health, COVID-19 prevention measures will be applied during project execution. The main underlying approaches to be followed are:

- Reduce access to site
- Reduce close contact between workers
- Increase overall level of hygiene on site
- Increase awareness of the workforce

Prior to work commencement, an orientation on COVID-19 should be provided to all workers, including description of the disease, symptoms, transmissibility, severity and the main prevention measures to be followed on site, public spaces as well as in their homes. Workers should be also informed on protocols to follow in case they or their family members get infected with the disease. Moreover, an investigation shall be filed and notification is to be made to all those in contact with the infected employee.

- During work execution, workers will be provided with reusable masks to be worn during the workday. Their body temperature will be taken at site entrance on a daily basis. Alcohol-based sanitizers will also be provided.
- Workers will be requested to strictly abide by the following practices:
    - Maintain a physical distance of 1.5m from each other as much as possible.
    - Wash their hands or clean them with a hand sanitizer regularly.
    - Avoid touching your eyes, nose and mouth with unwashed hands
    - When coughing or sneezing, the mouth should be covered with tissue and thrown into a closed bin immediately or sneeze into the flexed elbow.
    - Workers should not greet each other with handshakes or embraces at any point during the day.
    - Workers will be advised to wash their clothes frequently.

- Only essential visitors (workers, supervisors, and managers) should be allowed on site. Program/monitoring visits should be reduced to the minimum and can be planned when workers are not on site (i.e. lunch or prayer time).

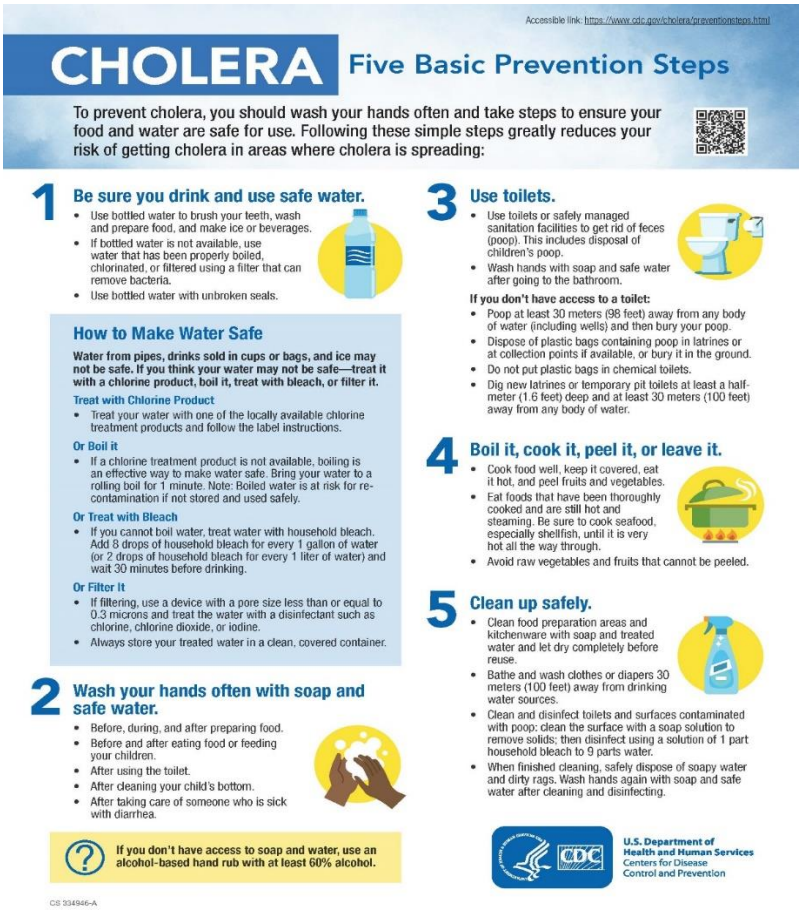
Figure 5 - COVID-19 Signs

3.9. Cholera Response and Prevention Procedures

In line with the national measures set by the Ministry of Public Health, and as per the CDC recommendations, cholera prevention measures will be applied during project execution by spreading awareness on the prevention and the precaution measures related to this topic:

- Water will be supplied on site from known and accredited water facilities.
- If the water being abstracted, water testing will be completed on a regular basis, moreover, chlorination will be completed as per the ministry recommendation.
- Wastewater will be disposed properly as abovementioned. No discharges will be allowed on site.
- Open defecation will be prohibited.
- Bathrooms shall be always kept sanitized and disinfected throughout the day.
- Toilets and washing facilities will be established to the required standards. All the facilities will be maintained to a high standard of cleanliness.
- Training for employees on the basic prevention steps will be completed within the induction sessions.
- In the event of encountering any case, the ministry of health is to be contacted and the employee is to be transferred to the nearest hospital if needed.

Figure 6 - Cholera Prevention



3.10. Environmental Auditing and Site Monitoring

3.10.1. Site Inspection and Monitoring

Site inspection and monitoring will be conducted as stipulated in the monitoring plan to ensure compliance with the set standards, identify potential impacts on the environment and communities, and implement effective mitigation measures. Inspection will include the monitoring of the construction activities, housekeeping, hazards at work, waste management. Identified non-conformities will be managed as per section 3.11. All non-conformities - verbal and written - will be registered and communicated through monthly meetings. All data such as induction, training, accidents and non-conformities will be submitted to the Consultant Engineer on a monthly basis.

Routine site inspection reports shall be prepared and shared with the consultant and included in the monthly progress reports

3.10.2. Weekly Audits

Weekly audits are to be conducted by the site engineers as well as the HSE personnel for identifying non-conformities such as those related housekeeping, discharges, onsite hazards. Non-conformities will be resolved as mentioned within the above section.

3.10.3. Ad Hoc Audits and Inspections

Ad hoc audits and inspections are important tools used in the environmental and social context to ensure compliance with ESHS management system, identify areas for improvement, and address potential risks or issues that may arise. These assessments are typically conducted on a monthly basis or as deemed necessary, with the goal of providing a thorough evaluation of the environmental and social practices.

3.11. Steps to Address Non-Compliance

In case of non-compliance to the CESMP management measures, immediate corrective actions should be taken. Depending on the severity of the issue, it can be resolved through:

- A direct instruction by the E&S Specialist for immediate action by the site engineers and workers;
- A meeting between the E&S Specialist, Safety Officer and the Project Manager to discuss corrective actions;
- Immediate reporting to the Supervision Engineer and CDR in case of critical incidents, such as GBV related complaint, severe injuries, or conflict that affects the progress of the works.

Cases of non-compliance will also be documented and reported. Depending on their nature and frequency of occurrence, the E&S Specialist would suggest preventive measures that would reinforce the CESMP and avoid future incidents.

4. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS DURING CONSTRUCTION PHASE

The project ESMP included an in-depth screening of the potential environmental and socio-economic impacts that could arise during the project. It also evaluated the risk or impact significance based on the likelihood of impact occurrence and the impact's consequences. The latter were based on the nature, magnitude, extent, timing, duration, and reversibility of a given impact. Therefore, the significance of the impacts i.e. risk was classified as Low (L), Medium (M) and High (H).

Table 8 below summarizes the significance rating of potential negative environmental and social impacts during the construction phase that will be prevented or mitigated by the Contractor. It is worth noting that the ESMP was conducted for all activities under sub-component 1.2 i.e. Lots 1, 2, and 3. Only relevant information for Lot 2 works were extracted.

Table 8: Environmental and Social Impacts during Construction Phase

Impact	Related project activity	Impact Significance
Increased exhaust and dust emissions that can cause disturbances to local community	Operation of machinery, excavation activities, transport of material	Medium
Increased noise levels in project area that can cause disturbances to local community	Construction activities in urbanized areas of the project (residential and commercial)	Medium

Impact	Related project activity	Impact Significance
Land and water pollution	Accidental spills of fuel or oils, inadequate management of solid waste and wastewater from site facilities	Medium
Potential for soil erosion, collapse or compaction	Excavation and compaction activities	Medium[2]
Increase in traffic	Road detours, works in main roads with high commercial activity, works in narrow roads	Medium
Potential damage to undiscovered archeological features	Excavation works in Chtaura, Taalabaya, and Jdita where evidence of historically significant occupation was found	High
Potential child labor	Employment of unskilled laborers without proper verification of age	Medium
Potential tension between workers and local community	Labor misconduct and mismanagement of laborers during works, impact of the works on the livelihood of commercial stores	Medium
Potential sexual abuse, exploitation or harassment	Labor misconduct and mismanagement of laborers during works, especially in residential areas with minors, girls and women	Medium
Potential damage to existing infrastructure (telephone, internet cables, drinking water pipes, and asphalted roads) which will result in grievances from the local community	Excavation works. The poor and haphazard infrastructure in Lebanon increase the likelihood of this impact.	Medium
Potential risks to general health and safety of the site workers, nearby residents, commuters, and pedestrians	Lack of proper safety measures on construction sites during and outside working hours, especially in urbanized areas	Medium

Additionally, the ESMP concluded that the project sites have no value, and no threatened or endangered plant species were observed. Therefore, there are no negative biodiversity impact.

The potential environmental and social negative impacts identified can be prevented and properly mitigated by the management and monitoring plans proposed in the forthcoming sections of this document.

To reduce the impacts identified, this section will describe the prevention and mitigation measures that will be taken by the Contractor. The measures are grouped into several specific management plans that all constitute the CESMP. Table 9 below summarizes the relevant management plan to mitigate the impacts previously identified.

[2] For Lot 2 works, since most of the network will be constructed in urban areas where paved roads exist, the impact on soil compaction, erosion or collapse has medium severity.

Table 9: Summary of CESMP components

Impact	Specific Management Plan | Procedure
Increased exhaust and dust emissions that can cause disturbances to local community	Air Emission Management Plan
Increased noise levels in project area that can cause disturbances to local community	Noise Emission Management Plan
Land and water pollution	Waste Management Plan
Potential for soil erosion, collapse or compaction	Soil Management Guidelines
Increase in traffic	Traffic Management Plan | Community GRM
Potential damage to undiscovered archeological features	Chance Find Procedure
Potential child labor	Social Management Plan | Community GRM
Potential tension between workers and local community	
Potential sexual abuse, exploitation or harassment	
Potential damage to existing infrastructure (telephone, internet cables, drinking water pipes, and asphalted roads) which will result in grievances from the local community	Preventive Measures for existing infrastructure | Community GRM
Potential risks to general health and safety of the site workers, nearby residents, commuters, and pedestrians	OHS Plan | Workers' and Community GRM | Traffic Management Plan

4.1. Air Emission Management Plan

The objective of this management plan is to establish procedures and work practices that mitigate air emissions from all construction activities abiding by the laws and regulations.

4.1.1. Regulatory Framework

Table 10: Air Quality Regulations

YEAR	LAW / DECREE	RELEVANT PROVISIONS
1996	Decision 52/1	Requirements to protect air, water and soil pollution
2018	Law 78	Air Quality Law
2022	Decision 16	ELVs for air emissions (Updating air quality standards) entered into act in the beginning of year 2023 and replaced MoE decision 8/1 (2001)

Table 11: Air Quality Guidelines as per Decision 52/1

PARAMETER	DECISION 52/1
Sulfur dioxide (SO_2)	-
Nitrogen dioxide (NO_2)	200 (1 hr) 150 (24 hrs) 100 (Annual)
Carbon Monoxide (CO)	30,000 (1 hr) 10,000 (8 hrs)
Ground-level Ozone (O_3)	150 (1 hr) 100 (8 hrs)
Total Suspended Particles (TSP)	120 (24 hrs)
PM10	80 (24 hrs)
PM2.5	NA
Lead	1 (annual)
Benzene	16.2 (annual)

4.1.2. Mitigation Measures

The construction activities will generate dust emissions from excavation works and the transport of construction material. Moreover, exhaust emissions will be emitted from the machinery used. These emissions could cause disturbances to the local community, especially in windy dry days and for the works in densely populated areas of the project. To reduce the impacts of emissions, the following measures will be implemented:

- When the works are in residential and commercial areas, the residents will be informed about the duration of the works ahead of time in collaboration with the municipality. The community GRM will be also properly communicated for residents to raise any complaints, if needed.
- On dry and windy days, unpaved roads will be regularly sprayed to reduce dust emissions from the movement of construction equipment.
- Material stockpiles and trucks carrying construction material shall be covered to reduce dust emissions. If covering material stockpiles is not feasible, water spraying will be adopted.
- The exhaust of construction equipment and the generator used on site facility will be equipped with adequate exhaust filters to reduce emissions.
- Regular equipment maintenance will be carried out.

4.1.3. Monitoring Measures

In order to control atmospheric emissions and monitor ambient air quality, the following will be monitored:

- Visual inspection of dust emissions on windy and dry days at material stockpiles and during material transportation
- Regular maintenance of equipment and exhaust filters
- Maintenance record of machinery and vehicles onsite
- GRM log for any complaints about air emissions from construction works

4.2. Noise Emission Management Plan

The objective of this plan is to establish procedures and work practices that are designed to reduce noise levels from all construction activities to within permissible limits and to abide with the permissible limits as applicable.

4.2.1. Regulatory Framework

Table 12: Noise Quality Regulations

YEAR	LAW / DECREE	RELEVANT PROVISIONS
1996	Decision 52/1	Allowable noise level according to type of areas and the permissible duration of exposure
2008	Decree 11802	Occupational Prevention, Safety, and Health in All Enterprises Subject to the Code of Labor

Table 13: Noise Quality Guidelines as per Decision 52/1

TYPE OF AREA	MOE Decision 52/1-1996		
	Day (7 am- 6 pm)	**Evening (6 pm - 10 pm)**	Night (10 pm – 7 am)
Residential	45-55	40-50	35-45
Institutional	-	-	-
Educational	55-65	50-60	45-50
Industrial	60-70	55-65	50-60
Commercial	55-65	50-60	45-50

Table 14: National Occupational Noise Exposure Standards in Work Areas

SOUND LEVEL DB(A)	EXPOSURE DURATION (HRS.)
95	4
100	2
105	1
110	0.5
115	0.25

4.2.2. Mitigation Measures

Construction activities will inevitably lead to an increased level of noise, which may cause disturbances to the workers and the local community. To reduce the impact of increased noise level during the project, the following measures will be taken by the Contractor:

- The generator on the site facility will be equipped with a muffler.
- When the works are in residential and commercial areas, the residents will be informed about the duration of the works ahead of time in collaboration with the municipality. Works will be

carried out during regular working hours from 7:00 AM to 4:00 PM. If for any reason, works will occur outside these hours, the local community will also be informed.
- The community GRM will be also properly communicated for residents to raise any complaints, if needed.
- According to the OHS Plan, workers operating heavy machinery will wear noise-cancelling headphones.

4.2.3. Monitoring Measures

- Noise monitoring will be done by the HSE officer using sound level meter near the sensitive receptors as per the work schedule. Noise monitoring will be undertaken on daily basis and upon receiving any complaint.
- Verification that workers operating heavy machinery use noise-cancelling headphones.
- GRM log for any complaints about noise from construction works.

4.3. Water and Soil Management Plan

The objective of the water management plan is to provide the mitigation measures and controls to minimize surface and ground water contamination from all project construction activities.

4.3.1. Regulatory Framework

Table 15: Water and Soil Quality Regulations

YEAR	LAW / DECREE	RELEVANT PROVISIONS
1993	Decree 2761	The prohibition of wastewater discharge into water streams
1996	MOE Decision 52/1	Requirements to protect air, water and soil pollution
2001	MOE Decision 8/1	Revised standards for air emissions, liquid effluents and wastewater treatment plants
2002	Law 444, 2002	Framework law for environmental protection
2018	Law 77, 2018	Water Law

4.3.2. Mitigation Measures

The main identified potential sources of impact on water resources from the project construction activities include accidental oil spills during site constructions. The proposed mitigation measures are as follow:

- Prohibit the discharge of wastewater or concrete wash water into near water bodies.
- Ensure that washing areas have collection system in place.
- Ensure that all hazardous material is bounded.
- Construction activities as per the work schedule.
- Proper maintenance for the vehicles.
- Proper waste management as per section 4.4.
- Avoid working in adverse weather conditions
- Coordinate equipment movement along fixed routes to reduce the number of detours.
- When deemed appropriate, reuse excavated/ cut materials as general fill.

Accidental spills of fuels/chemicals

Accidental spills of diesel fuel or chemicals used for equipment maintenance could result in the generation of hazardous waste and potential land and water pollution. The Contractor will minimize the risk of spills by:

- Ensuring that equipment maintenance activities are carried out in the dedicated maintenance area at the site facilities; Maintenance of equipment to be done offsite unless sudden failure occurred and necessities repair onsite;
- Carrying out all re-fueling in designated areas with impervious surfaces with spill collection in case of accidental spills;
- Storing all chemicals in dedicated areas on a paved or sealed floor and in tightly closed containers protected from adverse weather conditions based on the measures outlined in the OHS plan;
- Keeping a fuel/oil spill clean-up kit next to the fuel storage area. The kit will include hand-operated fuel pump, recovery containers such as empty drums, long-handled shovels, low-density rope, impervious soil (silt or clay bearing gravel), and absorbent pads.
- Keeping a hazmat spill clean-up kit at chemical storage areas in the site facilities, along with the Material Safety Data Sheet (MSDS) in Arabic and English. The kit will include recovery containers such as empty drums or plastic pails, nitrile gloves, vinyl apron, vinyl sleeves, safety goggles, socks as Personal Protective Equipment (PPE), and absorbent pads.
- Posting the spill response procedure in Arabic and English at the site facilities;
- Training workers to handle accidental spill incidents as part of OHS training schedule.

Soil management

Since most of the network will be built in urban areas where paved roads already exist, the impact on soil compaction, erosion or collapse is unlikely. However, the following measures will be implemented by the Contractor:

- Dedicate specific routes for the transport of materials and equipment, especially in cases where paved roads do not exist, in order to reduce the impact on the natural terrain;
- Minimize the excavation extent as per design requirements;
- Ensure proper soil compaction and drainage design before road reinstatement based on AASHTO design standards;
- Ensure proper excavation and shoring design based on engineering design requirements to avoid slope instability and soil collapse.

4.3.3. Monitoring Measures

- Presence of spill kits at the dedicated area (complete and accessible)
- Proper storage of oils and fuels.
- Training of personnel on the management plan.
- Regularly inspect construction equipment to ensure that they are in good working order and that any leaks or spills are detected.
- Conduct regular visual assessments of the site to detect any signs of spills or discharges.

4.4. Solid Waste Management Plan

The objective of the Solid Waste Management Plan is to provide an effective framework to avoid generation of wastes, maximize material recovery, and adequately manage generated wastes during the construction works.

4.4.1. Regulatory Framework

Table 16: Solid Waste Regulations

YEAR	LAW / DECREE	RELEVANT PROVISIONS
1974	Decree 8735	conservation of public hygiene
1996	MOE Decision 52/1	Requirements to protect air, water and soil pollution
2001	MOE Decision 8/1	Revised standards for air emissions, liquid effluents and wastewater treatment plants
2017	Circular 7/1	Integrated Solid Waste Management guidelines on the for Municipalities, Union of Municipalities, Qaem maqams and Governors.
2018	Law 80	Integrated solid waste management
2019	Decree 5605	Management of domestic solid waste
2019	Decree 5606	Management of hazardous waste

4.4.2. Mitigation Measures

In order to minimize the amount of waste generated and to mitigate potential land and water pollution, the following measures will be implemented by the Contractor:

Disposal of Construction Waste

Construction waste will first be minimized by re-using excavated or cut materials as general fill where considered suitable. Construction waste will be disposed in a location approved in writing by the municipality or respective authority. At the time of writing this CESMP, the location of disposal sites is still pending. The Contractor will inform the Supervision Engineer and the CDR prior to the start of the works about the authorized location of disposal sites (appendix 9). The estimated volumes of disposed construction wastes will be monitored and reported in the Contractor's monthly reports. Moreover, any further letters from the municipalities concerning the dumpsites, will be reported in the monthly reports.

Solid waste generated from site offices and construction sites

Domestic solid waste generated from site offices and construction sites will be disposed in dedicated municipal waste containers. Segregation of waste as well as the placement of bins onsite (organic/paper, cardboards/metal, glass and plastic). The E&S specialist will raise awareness among the workers against littering on construction sites, and the site engineers will ensure proper housekeeping.

4.4.3. Monitoring Measures

- Submit official approval from authorities on the disposal site for construction waste
- Record of cut, fill and disposed volumes of construction waste
- Training of workers against littering
- Training of workers to handle accidental spill incidents
- Inspection of chemical and fuel storage area for the availability of spill clean-up kits, MSDS and spill clean-up procedures.
- Visual inspection for any scattered waste and to ensure that good housekeeping practices are in place.
- Inspection on waste segregation and frequency of waste removal.

4.5. Wastewater Management Plan

The objective of this management plan is to ensure that all wastewater streams are properly controlled and managed during construction.

4.5.1. Regulatory Framework

Table 17: Wastewater Regulations

YEAR	LAW / DECREE	RELEVANT PROVISIONS
1933	Decree 2761	The prohibition of wastewater discharge into water streams
1974	Decree 8735	conservation of public hygiene
1996	MOE Decision 52/1	Requirements to protect air, water and soil pollution
2001	MOE Decision 8/1	Revised standards for air emissions, liquid effluents and wastewater treatment plants.

4.5.2. Mitigation Measures

In order for wastewater does not contaminate existing surface water bodies, groundwater and soil, the below mitigation measures will be implemented:

- Site offices will be connected to the local wastewater network in Makse. As for construction sites, depending on their proximity to site offices, portable toilet cabins will be provided for workers. They will be emptied regularly as needed by a contracted wastewater tanker or the municipality tanker, if available.
- No discharge of wastewater into water bodies.
- Washing of the concrete mixer offsite and the vehicles are to be washed in the dedicated areas only and to be furnished with impermeable base.

4.5.3. Monitoring Measures

- Conduct regular visual assessments of the site to detect any signs of spills or discharges.
- Proper disposal of wastewater from portable toilets using private or municipality tanker
- Training personnel to ensure that washing vehicles is within the dedicated area.

4.6. Ecology Management Plan

The objective of this plan is to mitigate the impacts of the construction activities on flora and fauna.

4.6.1. Mitigation Measures

To protect the ecology and wildlife in the construction work areas, the contractor will:

- Suppress dust by watering down the areas during construction.
- Ensure no wastewater or hazardous discharges.
- Waste will be properly segregated and collected in a timely manner.
- Opting to the main roads to transport the materials and equipment to and from the project site.
- Minimize the outward light emissions.
- Covering of the stockpiles.
- Proper signage such as No hunting, collecting or trapping of animals.
- Noise levels will be kept at the minimum where practical.

4.6.2. Monitoring Measures

The E&S Expert will check activity scheduling against restricted bird migration season and will conduct weekly visual site inspections to monitor construction activities and ensure that the protection measures are implemented.

4.7. Water and Energy Management Plan

The objective of this plan is to efficiently use water and energy sources.

4.7.1. Mitigation Measures

The following measures will be implemented to ensure efficient use of water and energy:

- Regular inspection to detect water leaks.
- Ensure that the correct quantities are being purchased.
- Use dry cleaning instead of wet cleaning whenever possible
- Electronic documentation is to be enhanced.
- Machinery and equipment shall be turned off or on idle mode when not in use.
- Usage of equipment with higher fuel efficiency.
- Lights are to be turned off at the offices.
- Ensure that fuel consumption is as per manufacturer specifications.
- Minimal packaging is to be requested where applicable.

4.7.2. Monitoring Measures

Monthly inspection of fuel consumption levels, electricity and water bills.

4.8. Archeology and Cultural Resources Management Plan

The objective of this plan is to ensure that any encountered cultural resource is preserved and reported to the relevant authorities.

4.8.1. Regulatory Framework

Table 18: Archeology and Cultural Resources Regulations

YEAR	LAW / DECREE	RELEVANT PROVISIONS
1993	Law 166, amended by law 37	Antiquity Law
1977	Decree law 118	Municipal act
1983	Decree law 68	Organizing drilling to extend lines of public services in roads
1990	Law 21	Ratification of the UNESCO convention for the protection of antiquities
1998	Ministerial decree	Prohibits the illicit trafficking of cultural artifacts
2008	Law 37	Cultural policy law
2016	Decree 3057	Procedures for the preventive and rescue excavations

4.8.2. Mitigation Measures

Even though the project works will mostly be in urbanized areas where road and utility infrastructure exist, there is a chance of finding archaeologically significant sites due to the documented historical occupations in the area. Therefore, the Contractor will follow the procedure described below in case any historical remains were discovered during excavation. The E&S specialist will ensure through training and awareness sessions that the Site Engineers and workers are aware of the possibility of uncovering historical remains and the chance find procedure.

1. Construction activities will be immediately stopped.
2. The Site Engineer will inform the project manager that will notify the Directorate General of Antiquities (DGA) and the CDR within less than 24 hours.
3. The construction site will be delineated and supervised at all times until the arrival of a representative from the DGA.
4. The DGA will evaluate the uncovered findings, which might take time. The site will be secured during the evaluation period or until the responsible authority (DGA) takes over to avoid any damage or losses.
5. Based on the evaluation, DGA will decide on how to handle the finding, which could affect the project work. This will depend on the case, and it would be discussed with the DGA, Supervision Engineer, and CDR.
6. Works can only be resumed following DGA decision and permission.

4.8.3. Monitoring Measures

The E&S specialist will ensure:

- Training of site engineers and workers on chance find procedures.
- Continuous supervision during excavation and documentation in the event of encountering any archeological significance.

4.9. Social Management Plan

The objective of this plan is to ensure a safe working environment for the workers, and that community needs and grievances are addressed.

4.9.1. Regulatory Framework

Table 19: Labors and Community Regulations

YEAR	LAW / DECREE	RELEVANT PROVISIONS
1942	Decree 340	Penal code
1946	Labor law	The Lebanese labor code
2000	Law 207	Amendment of Articles in Labor Law
2001	Law 335	Pursuant to International Labor Organization (ILO) Convention No 128
2002	Law 400	Pursuant to the ILO Convention No 138
2008	Decree 11802	Occupational prevention, safety, and health in all enterprises subject to the Code of Labor
2012	Decree 8987	Prohibition of employment of minors under the age of 18 in work that may harm their health, safety or morals
2016	Decree 3791	Minimum Wage
2018	Decision 29/1	Businesses, professions, crafts and jobs that must be restricted to Lebanese only

4.9.2. Mitigation Measures

The social management plan will describe the measures that the Contractor will implement to mitigate the potential risks of child labor, tensions between local community members and workers, sexual abuse, exploitation or harassment, GBV, and to reduce the impact of the project on shops and stores in commercial areas.

Risk of Child Labor

The Arab Contractors strictly abides by Lebanese Labor Code of 1946 that sets the minimum age of employment to 18, and will ensure it is implemented by all sub-contractors, if any, through verification of the workers' age upon employment, and through daily monitoring of the workers present on site.

Risk of Tensions Between Local Community Members and Workers and Control of Interaction with School Children

- All workers shall attend an induction training session that raises awareness on the expected work behavior and the sanctions in case of any misconduct.
- All workers shall sign the code of conduct. Attached to Appendix 8.
- Site engineers will be responsible for supervising the workers and for reporting to the project manager and E&S Specialist any incident or misconduct in a timely manner.

- HSE department shall assign an employee to ensure that during the entry/exit of the school, there is no interaction or communication between the workers and the children, other than implementing the TMP.
- Enclose site facilities and restrict access to project personnel.
- Avoid entry/ exist of construction vehicles to/ from yard when the students enter school in the morning and when they leave in the afternoon. The Contractor will ensure that the community is aware of the available GRM.
- In collaboration with the municipality, the Contractor will inform the community about the duration of the works especially in residential and commercial areas.

Risk of GBV, Sexual Abuse, Exploitation or Harassment

- All workers shall attend awareness sessions on sexual abuse, exploitation or harassment and GBV and the sanctions in case of any misconduct.
- Site engineers will be responsible for supervising the workers and for reporting to the project manager and E&S Specialist any incident or misconduct in a timely manner.
- The Contractor will ensure that the community is aware of the available GRM.
- Complaints related to Gender Based Violence (GBV), such as verbal or sexual harassment, will be dealt with a high level of confidentiality, and actions will be taken based on the code of conduct. External service providers, such as ABAAD, an accredited organization for gender equality, can be asked to support in case deemed necessary.

Reduce Impact on Commercial Stores

Construction activities in commercial areas mainly in Chtaura will disrupt access to the stores and shops, which might affect the work of the commercial stores. The Contractor will ensure the following:

- In collaboration with the municipality, inform the shop owners about the duration of the works and ensure the timely completion of the works.
- Install safe overpass structures to allow pedestrian access from the road to the shops, as necessary based on safety standards defined in the OHS plan
- Ensure that the community is aware of the available GRM to raise any complaints.

4.9.3. Monitoring Measures

- Training on sexual abuse, exploitation or harassment and GBV and the sanctions in case of any misconduct
- Signed code of conduct by all workers
- GRM log for any complaints related to tension between community and workers, misconduct or GBV, sexual harassment
- Monitor the age of workers on construction sites
- Training on available GRM for workers and how to raise a complaint
- Effective resolution of complaints within 10 days
- Monitoring of the employment of workers from the surrounding areas.
- Attendance sheets to all trainings.
- Number of accidents.

4.10. Traffic Management Plan

The objective of this plan is to provide the measures and the mitigation strategies to be followed to manage movement of people, vehicle, materials, equipment, in order to minimize the interference with existing roads and traffic during the construction phase.

4.10.1. Mitigation Measures

The Traffic Management Plan (TMP) will be submitted as a separate document. The goal of the TMP is to reduce the project's impact on traffic. It will also take into account the hospitals, which are sensitive receptors in the project area and ensure undisrupted and safe accessibility to them. A list of hospitals is attached to Appendix 4. The TMP will depend on the project schedule of works. The Contractor will collaborate with the local municipalities to identify acceptable traffic detour routes for the different phases of the project. The TMP will identify the alternative routes for each phase of the project. Traffic safety measures based on international standards will be described in detail in the OHS plan to ensure the safety of vehicles and pedestrians.

4.10.2. Monitoring Measures

The monitoring measures of the TMP include:

- Number of grievances
- Number of accidents
- Presence of signs at the sites
- Vehicle maintenance recordings.

4.11. Occupational Health and Safety Management Plan

The objective of this plan is to conduct the works with a safe manner and to minimize the incidents and near-misses.

4.11.1. Mitigation Measures

The Operational Health and Safety (OHS) plan will be submitted as a separate document. It will include all the safety measures to be implemented by the Contractor to ensure the general health and safety of workers and nearby residents, commuters, and pedestrians. It will cover the following:

- Storage and handling of hazardous materials and equipment that can cause injuries
- Personal Protective Equipment (PPE)
- First Aid kits availability and components
- Emergency Response Plan in case of any medical injury
- Fire protection and evacuation plan for site facilities
- Road safety measures (fencing, barrier, signage, flagman, lights during night, etc.)
- Content of the training sessions for workers:
    - Mandatory induction sessions and signing of code of conduct
    - Awareness and training sessions on CESMP, OHS topics (general hazards, PPE use, first aid response, emergency response plan, fire evacuation plan, road safety, accidental fuel or chemical spills), GRM

    - Specific training on any construction related procedures, such as working in confined spaces, operating specific equipment
- Incident reporting
- Steps to address non-conformity

4.11.2. Monitoring Measures

- Review of the training and induction records
- Number of incidents / accidents
- Number of complaints
- Submitting permit to work prior to commencement of high risk activities
- PPE inspection

4.12. Demobilization and Cleaning Management Plan

The objective of this plan is to demobilize in accordance with the safety management plan as well as the CESMP guidelines that are applicable for the demobilization stage.

4.12.1. Mitigation Measures

During demobilization and cleaning, the contractor will ensure that all of the abovementioned plans will be implemented upon the removal of the material, equipment and vehicles from the site.

- All waste and debris will be removed from the construction site to prevent pollution of nearby water sources. The municipality will collect the solid waste and the bins will be removed by the contractor.
- Properly dispose of hazardous materials in accordance with local regulations.
- Wastewater generated during the cleaning process should be properly collected and disposed of in accordance with local regulations.
- No wastewater release upon dismantling is to be ensured.

4.12.2. Monitoring Measures

- Daily visual observation and photographic documentation of the site cleaning activities.
- Final visual inspection of the decommissioned site.

4.13. ENVIRONMENTAL AND SOCIAL MITIGATION AND MONITORING SUMMARY TABLES

Table 21 below presents a summary of the mitigation measures and their relevant management plan.

Table 20: Environmental and Social Mitigation Plan

Impact	Mitigation Measures	Specific Management Plan | Procedure
Increased exhaust and dust emissions that can cause disturbances to local community	- When the works are in residential and commercial areas, the residents will be informed about the duration of the works ahead of time in collaboration with the municipality. The community GRM will be also properly communicated for residents to raise any complaints, if needed. - On dry and windy days, unpaved roads will be regularly sprayed to reduce dust emissions from the movement of construction equipment. - Material stockpiles and trucks carrying construction material shall be covered to reduce dust emissions. If covering material stockpiles is not feasible, water spraying will be adopted. - The exhaust of construction equipment and the generator used on site facility will be equipped with adequate exhaust filters to reduce emissions. - Regular equipment maintenance will be carried out.	Air Emission Management Plan section 4.1
Increased noise levels in project area that can cause disturbances to local community	- The generator on the site facility will be equipped with a muffler. - When the works are in residential and commercial areas, the residents will be informed about the duration of the works ahead of time in collaboration with the municipality. Works will be carried out during regular working hours from 7:00 AM to 4:00 PM. If for any reason, works will occur outside these hours, the local community will also be informed. - The community GRM will be also properly communicated for residents to raise any complaints, if needed. - According to the OHS Plan, workers operating heavy machinery will wear noise-cancelling headphones.	Noise Emission Management Plan section 4.2

Impact	Mitigation Measures	Specific Management Plan | Procedure
Land and water pollution - potential for soil erosion, collapse or compaction	- Prohibit the discharge of wastewater or concrete wash water into near water bodies. - Ensure that washing areas have collection system in place. - All hazardous material is bounded. - Construction activities as per the work schedule. - Proper maintenance for the vehicles. - Accidental Spills Methodology - - Dedicate specific routes for the transport of materials and equipment, especially in cases where paved roads do not exist, in order to reduce the impact on the natural terrain; - Minimize the excavation extent as per design requirements; - Ensure proper soil compaction and drainage design before road reinstatement based on AASHTO design standards; - Ensure proper excavation and shoring design based on engineering design requirements to avoid slope instability and soil collapse. - Waste segregation and recycling - Waste disposal in approved location - Site offices will be connected to the local wastewater network in Makse. As for construction sites, depending on their proximity to site offices, portable toilet cabins will be provided for workers. They will be emptied regularly as needed by a contracted wastewater tanker or the municipality tanker, if available. - No discharge of wastewater into water bodies. - Washing of the concrete mixer offsite and the vehicles are to be washed in the dedicated areas only and to be furnished with impermeable base. - Avoid working in adverse weather conditions - Coordinate equipment movement along fixed routes to reduce the number of detours. - When deemed appropriate, reuse excavated/ cut materials as general fill	Water and Soil Management Plan section 4.3 Waste Management Plan section 4.4 Wastewater Management Plan section 4.5
Flora and fauna disturbance	- Suppress dust by watering down the areas during construction. - Ensure no wastewater or hazardous discharges.	Ecology Management Plan section 4.6

Impact	Mitigation Measures	Specific Management Plan | Procedure
	- Waste will be properly segregated and collected in a timely manner. - Opting to the main roads to transport the materials and equipment to and from the project site. - Minimize the outward light emissions. - Covering of the stockpiles. - Proper signage such as No hunting, collecting or trapping of animals. - Noise levels will be kept at the minimum where practical.	
Increase in traffic	- Implement the TMP. - In collaboration with the municipality, the Contractor will inform the community about the duration of the works especially in residential and commercial areas.	Traffic Management Plan section 4.10 - Community GRM section 3.7.1.1
Resources Depletion	- Regular inspection to detect water leaks. - Ensure that the correct quantities are being purchased. - Use dry cleaning instead of wet cleaning whenever possible. - Electronic documentation is to be enhanced. - Machinery and equipment shall be turned off or on idle mode when not in use. - Usage of equipment with higher fuel efficiency. - Lights are to be turned off at the offices. - Ensure that fuel consumption is as per manufacturer specifications. - Minimal packaging is to be requested where applicable	Water and Energy Management Plan section 4.7
Potential damage to undiscovered archeological features	- Chance Find Procedure	Archeology and Cultural Resources Management Plan section 4.8
Potential child labor Potential tension between workers and local community Potential sexual abuse, exploitation or harassment	- All workers shall attend an induction training session that raises awareness on the expected work behavior and the sanctions in case of any misconduct. - All workers shall sign the code of conduct. Attached to Appendix 8. - Site engineers will be responsible for supervising the workers and for reporting to the project manager and E&S Specialist any incident or misconduct in a timely manner.	Social Management Plan Section 4.9 Community GRM section 3.7.1.1 Workers GRM section 3.7.1.2

Impact	Mitigation Measures	Specific Management Plan | Procedure
	- HSE department shall assign an employee to ensure that during the entry/exit of the school, there is no interaction or communication between the workers and the children, other than implementing the TMP. - Enclose site facilities and restrict access to project personnel. - Avoid entry/ exist of construction vehicles to/ from yard when the students enter school in the morning and when they leave in the afternoon. The Contractor will ensure that the community is aware of the available GRM. - In collaboration with the municipality, the Contractor will inform the community about the duration of the works especially in residential and commercial areas.	
Potential risks to general health and safety of the site workers, nearby residents, commuters, and pedestrians	- Implement the OHS plan - Implement the TMP - In collaboration with the municipality, the Contractor will inform the community about the duration of the works especially in residential and commercial areas.	Community GRM section 3.7.1.1 Workers GRM section 3.7.1.2 Traffic Management Plan section 4.10 Occupational Health and Safety Plan 4.11
Land and Water Pollution	- All waste and debris will be removed from the construction site to prevent pollution of nearby water sources. The municipality will collect the solid waste and the bins will be removed by the contractor. - Properly dispose of hazardous materials in accordance with local regulations. - Wastewater generated during the cleaning process should be properly collected and disposed of in accordance with local regulations. - No wastewater release upon dismantling is to be ensured.	Demobilization and Cleaning Management Plan section 4.12

The purpose of the environmental monitoring plan is to define the monitoring measures and performance indicators to monitor the proper implementation of the mitigation measures proposed in the ESMP (previous section). The Contractor will report on the indicators in the monthly reports submitted to the Supervision Engineer and the CDR. The E&S Specialist will be mainly responsible for the supervision and reporting of the CESMP, in coordination with the project manager and the safety officer. Table 21 below presents the monitoring measures, performance indicators and frequency of monitoring for each management plan described in the previous section.

Table 21: Environmental and Social Monitoring Plan

Environmental and Social Management Plans	Monitoring Measures	Performance Indicator	Frequency
Community GRM	Verify GRM information is available on project signboard, municipality bulletin boards and mobile sign boards at construction sites	Pictures	At the start of the project and as part of weekly checkup
	Reporting on GRM log in monthly reports	GRM log	Monthly
	Effective resolution of complaints within a week time	Resolution time/complaint | Documentation in monthly report	When complaint is registered
Air Emission Management Plan	Visual inspection of dust emissions on windy and dry days at material stockpiles and during material transportation	Covered stockpiles | Low dust emissions	Daily
	Regular maintenance of equipment and exhaust filters	Equipment registry	Monthly
	GRM log for any complaints about air emissions from construction works	Number of complaints in GRM log	Daily
Noise Emission Management Plan	Verification that workers operating heavy machinery use noise-cancelling headphones.	Use of PPE | Pictures	Daily
	Noise measurement when conducting noisy activities	Leq.	Daily
	GRM log for any complaints about noise from construction works	Number of complaints in GRM log	Daily
Waste Management Plan	Submit official approval from authorities on the disposal site for construction waste	Official municipality letter	Prior to start of works
	Record of cut, fill and disposed volumes of construction waste	Reported quantities in monthly progress reports | Pictures from disposal site	Monthly

Environmental and Social Management Plans	Monitoring Measures	Performance Indicator	Frequency
	Training of workers against littering, training on good housekeeping practices (segregation, storage, recycling, etc.) Visual inspection on good housekeeping practices, and records keeping of all types of solid waste including recyclables	Induction training attendance sheet and material | Pictures | Records	At start of the project and upon recruitment of a new worker
	Proper disposal of wastewater from portable toilets using private or municipality tanker	Pictures	As needed / weekly
	Training of workers to handle accidental spill incidents	Training attendance sheet and material | Pictures	Upon recruitment and as per OHS training schedule
	Inspection of chemical and fuel storage area for the availability of spill clean-up kits, MSDS and spill clean-up procedures in Arabic and English	Visual inspection based on a checklist | Pictures	Weekly
Workers' GRM	Training on available GRM for workers and how to raise a complaint	Training attendance sheet and material | Pictures	At start of the project and upon recruitment of a new worker
	Effective resolution of complaints within 10 days	Resolution time/complaint | Documentation in monthly report	When complaint is registered
Social Management Plan	Training on sexual abuse, exploitation or harassment and GBV and the sanctions in case of any misconduct	Training attendance sheet and material | Pictures	At start of the project and upon recruitment of a new worker
	Signed code of conduct by all workers	Records of code of conduct	At start of the project and upon recruitment of a new worker
	GRM log for any complaints related to tension between community and workers, misconduct or GBV, sexual harassment	Number and nature of complaints in the GRM log	Daily
	Monitor the age of workers on construction sites	Daily attendance sheet | Workers' records	Daily / upon worker's recruitment
Chance Find Procedures	Training of site engineers and workers on chance find procedures	Training attendance sheet and material | Pictures	At start of the project and upon recruitment of a new worker

Environmental and Social Management Plans	Monitoring Measures	Performance Indicator	Frequency
Preventive Measures for existing infrastructure	Monitor road condition prior to start of works especially in narrow roads	Pictures from before and after execution of works	At the start of the project and upon completion of a sewer line/road
	GRM log for any complaints related to damaged infrastructure	Number of complaints in GRM log	Daily
General CESMP	Awareness session of all project team on the purpose and requirements of the CESMP	Training attendance sheet and material | Pictures	At start of the project and upon recruitment of a new worker

5. FORMS CHECKLISTS AND NOTES

5.1. Induction Register Form
5.2. Training/TBT Register Form
5.3. Solid waste log Register Form
5.4. Incident Register Form
5.5. Environmental Incident Investigation Form
5.6. Site Inspection Form
5.7. Complaint /GRM Form
5.8. GBV-Specific Incident Reporting Form
5.9. Grievance log
5.10. Non Compliance Form
5.11. Fire extinguishers Inspection

6. APPENDICES

List of Appendices:

Appendix 1: Anjar Lot 2 Wastewater Network
Appendix 2: List of Equipment
Appendix 3: Site Facilities Plan: General Layout Plan | Site Offices | Workshop Area
Appendix 4: List of Nearby Hospitals
Appendix 5: Letter from Municipality for Wastewater
Appendix 6: Program of Works
Appendix 7: GRM Public Notice
Appendix 8: Code of Conduct of Contractor's Personnel
Appendix 9: Approved Dumpsites for Disposal of C&D wastes